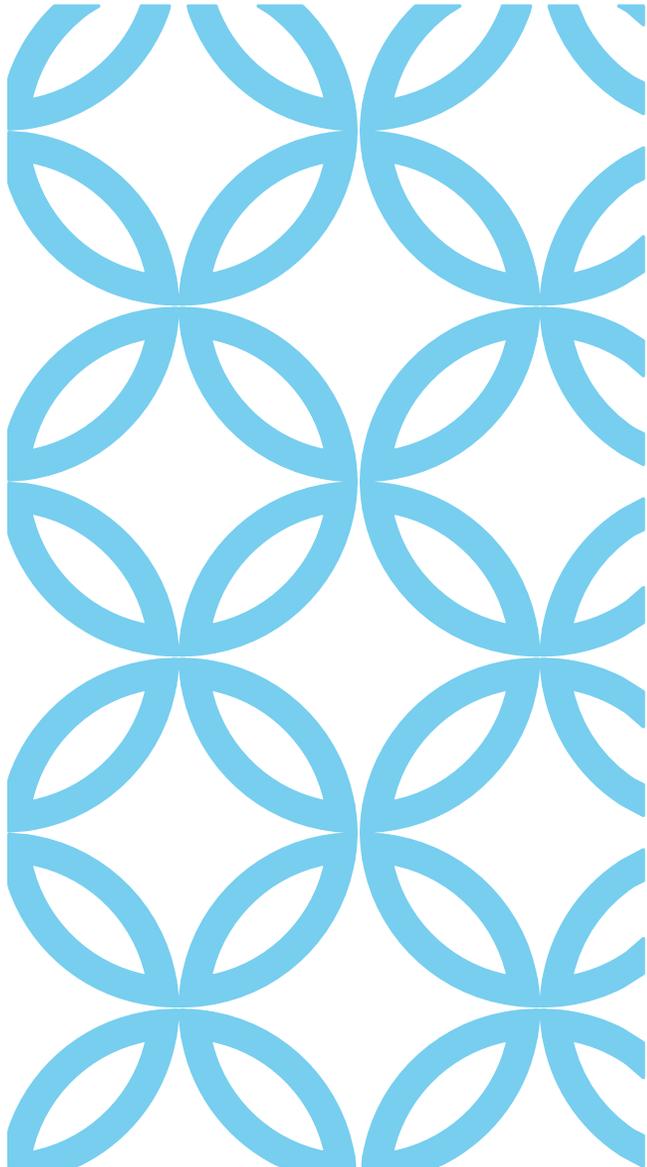


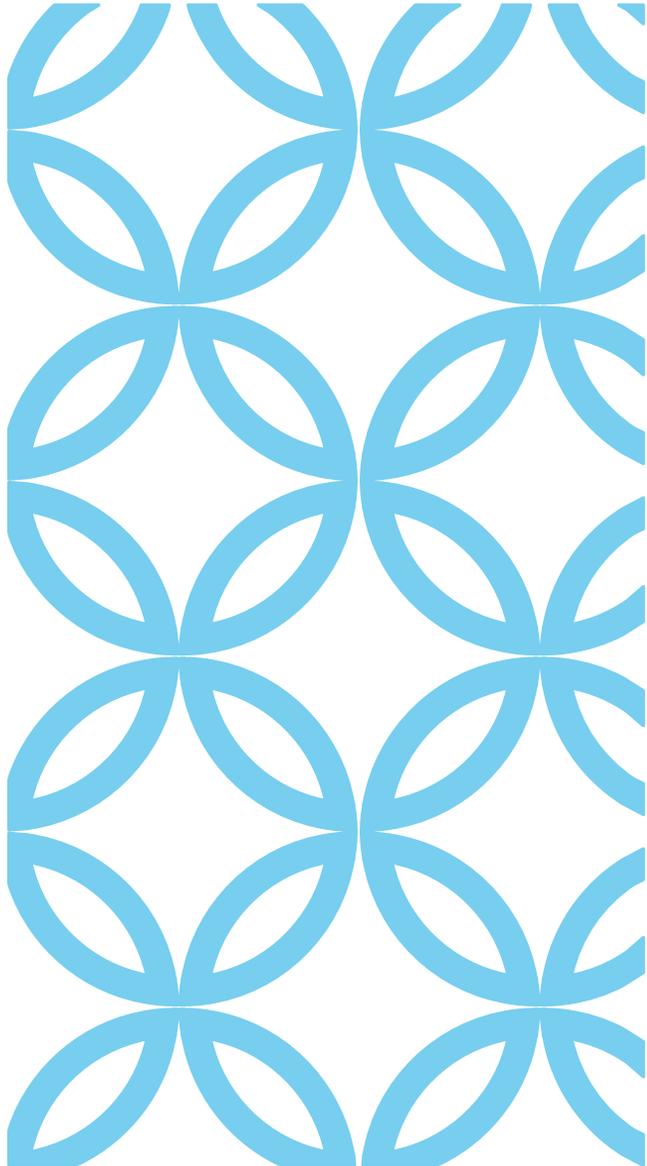
VESTIBULAR DISORDERS AND ANXIETY

Anna VerMeulen SPT, UNC-DPT



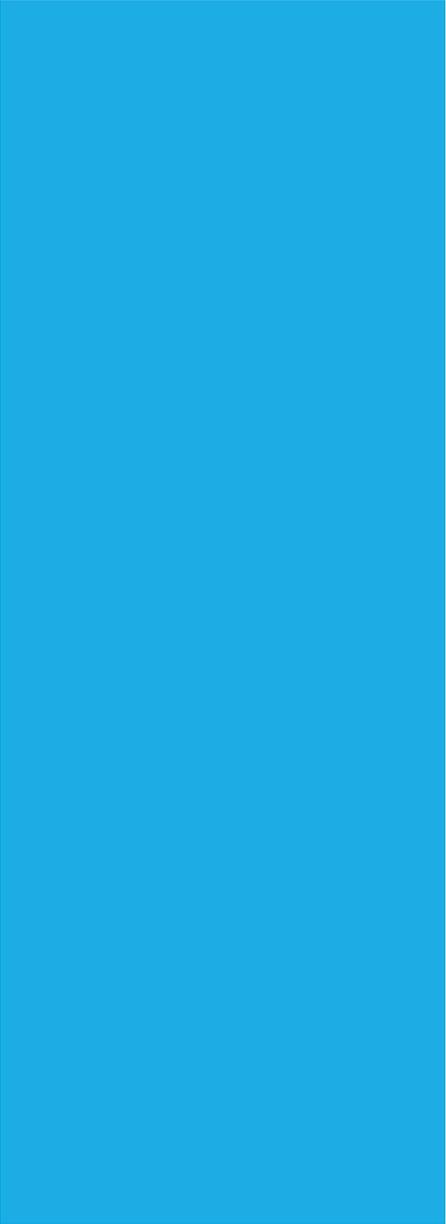
OBJECTIVES

- Participants should understand the link between vestibular dysfunction and anxiety and apply this knowledge to future patients.
 - Participants will be able to understand the signs and symptoms of anxiety in their patients with vestibular disorders and utilize resources and techniques to help reduce these symptoms.
-



Close your eyes...

Suppose that you are stopped at a traffic light on a hillside facing up. In anticipation of the traffic signal changing, a large bus that is alongside your car moves forward slowly, giving you a wide-field optic flow stimulus that you interpret as a backward drift of your car on the hill. You feel an urgent sense of panic as you vigorously depress the brake pedal. This is followed by a sense of relief as you realize that the perceived movement was merely illusory.



WHY I CHOSE THIS TOPIC

DIZZINESS RELATED TO ANXIETY AND STRESS¹

- Dizziness is a common symptom of anxiety
- Dizziness can be anxiety provoking
- If one already has a tendency toward anxiety, dizziness from the vestibular system and anxiety can interact, making symptoms worse



VESTIBULAR DISORDERS¹

Symptoms:

- lightheadedness
- dizziness
- unsteadiness
- feeling faint
- visual disturbances
- spatial disorientation
- anxiety, fear, panic

ANXIETY DISORDERS¹

- Impaired sleep patterns
- Nightmares/bad dreams
- Increased motor tension
- Dizziness
- Spatial disorientation
- Irritability
- Restlessness
- Uneasiness
- Imbalance



WHY THIS IS A PROBLEM ²

Conditioned avoidance of factors prevents habituation and neurophysiological adaptation.



This avoidance creates greater anxiety in the patient, as symptoms increase with even minor positional adjustments.



As a result, chronic anxiety may increase autonomic and sympathetic nervous system activation, leading to greater vestibular difficulties.

WHY THIS IS A PROBLEM¹

Avoidance of environments that provoke symptoms:

- open areas
- heights
- grocery stores
- sporting events

Coping mechanisms for anticipation of unsteadiness:

- walk near walls
- carry a cane

WHY THIS IS A PROBLEM³

- Dizzy patients who report higher levels of autonomic symptoms are seen to have a greater reported handicap and increased recovery time.
- Health status was predicted better by levels of anxiety-related symptoms than by tests of balance function or measures of vestibular symptoms.
- Anxiety is associated with lower balance confidence and increased time where symptoms interfered with activities.

WHY THIS IS A PROBLEM

Hyperventilation is common among patients with vestibular disorders.

- causes disorientation
- increases anxiety

Dizziness induced by head movement is often accompanied by increase in respiration rate

“SUCCESSFUL VESTIBULAR REHAB” 4

1. Facilitate adaptation to changing or altered vestibular function
2. Improve gait stability including momentum control in response to unanticipated perturbations
3. Ameliorate movement-related symptoms
4. Correct overdependence of visual or somatosensory inputs
- 5. Reduce or eradicate anxiety and somatization arising from movement-related disorientation**
6. Facilitate return to normal ADLs
7. Improve or restore neuromuscular conditioning

“SUCCESSFUL VESTIBULAR REHAB” 4

Anxiety may initially be an appropriate response because balance and posture are “life-critical functions.”

Sustained anxiety may lead to:

- A self-perpetuating cycle of dizziness and anxiety
- Development of avoidance behaviors
- Physical deconditioning
- Distress
- Social withdrawal
- Disability

THREE HYPOTHESES⁵

1. Psychogenic Vestibular Disturbance

2. Somatopsychic Impairment

- Signals from the inner ear are misinterpreted by the CNS and signify an immediate threat, causing anxiety

3. Psycho-cognitive Problem

- Difficulty multitasking therefore balance control is decreased when attention is diverted. “This results in less mental availability for psychological processing and therefore causes anxiety.”

POSSIBLE BIOLOGICAL BASIS⁴

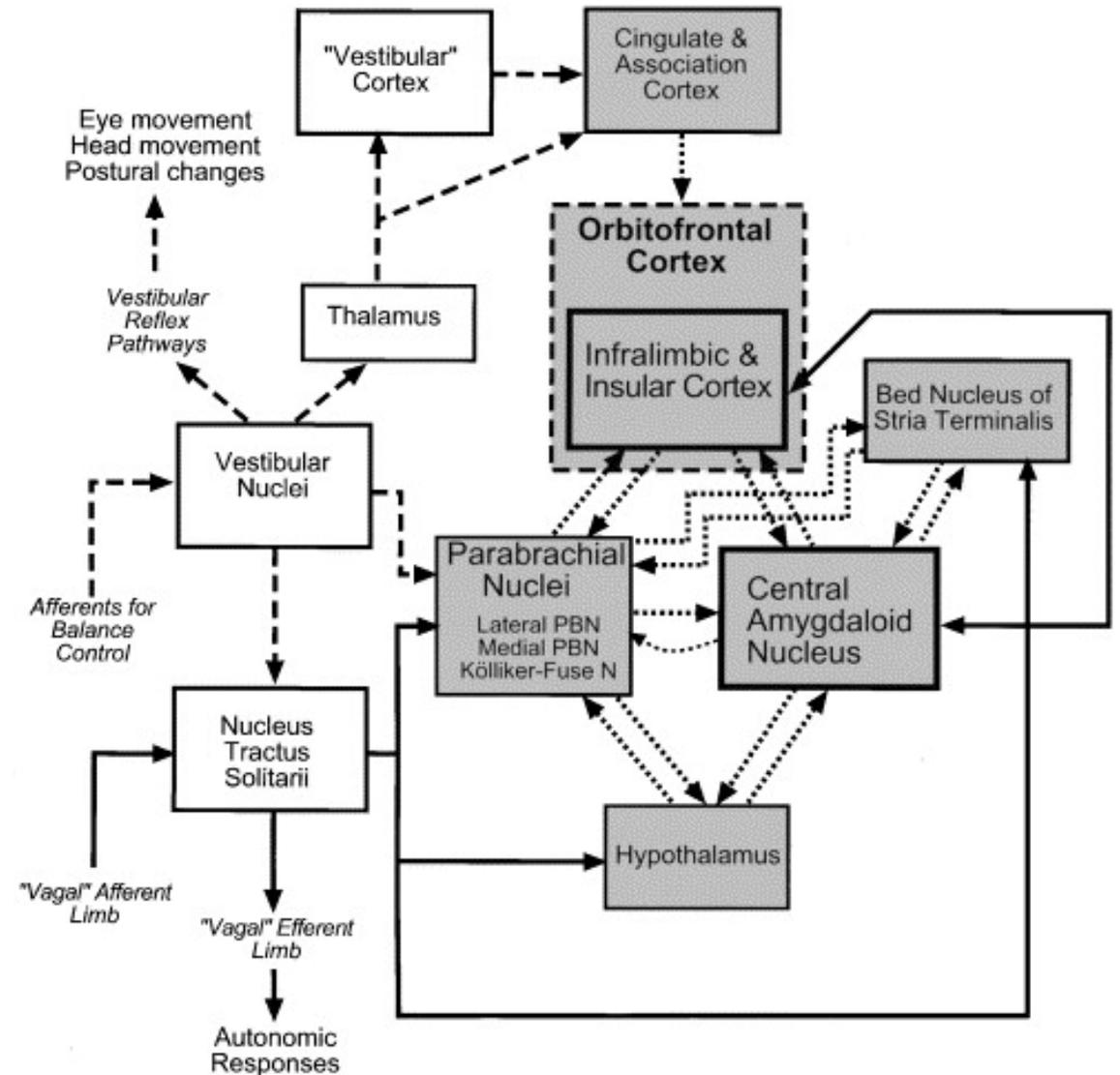
Parabrachial nucleus:

- nuclei in the dorsolateral pons
- receives taste information from the solitary nucleus
- receives pain and other visceral sensations
- sends information influencing respiratory rate
- influences other autonomic regulations

NEUROLOGIC LINK 4

Parabrachial nucleus is a site of convergence of vestibular processing and somatic and visceral sensory information processing in pathways that appear to be involved in avoidance conditioning, anxiety, and conditioned fear.

Monoaminergic influences on these pathways are potential modulators of both effects of vigilance and anxiety on balance control and the development of anxiety and panic.



IN THE ELDERLY 5

Too often physicians do not attribute symptoms of anxiety to an “organic” problem or to a vestibular explanation.

- Anxiety can also be associated with common symptoms of aging.

- 3-14% prevalence of anxiety disorders

- Vestibular system functions poorly with age increasing the risk of falls.

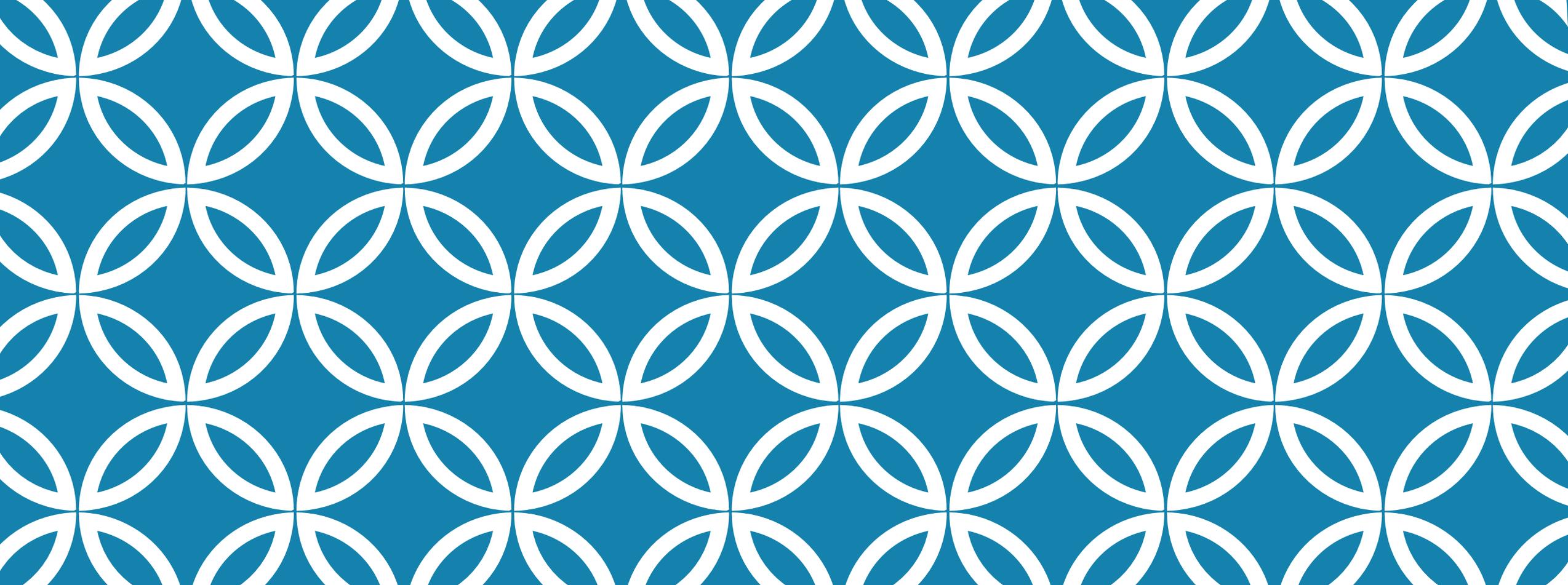
- 5-8% prevalence of vestibular vertigo with aging

IN THE ELDERLY 5

Evaluation of anxiety vs. vestibular is important with proper treatment of each with cognitive behavior therapy and/or vestibular rehab.

Differential diagnoses should be ruled out:

- Cardiovascular disease
 - Postural hypotension
 - Aortic stenosis
 - arrhythmias
- Neurological disease
 - MS
 - Brain tumor
- Metabolic disease
 - Hypoglycemia
 - hypothyroidism
- Adverse drug reaction



WHAT CAN WE DO?



BALANCE RETRAINING¹

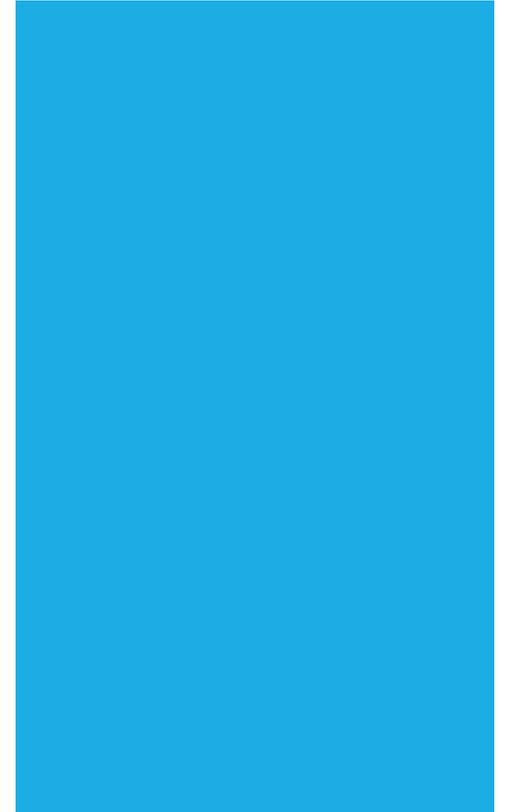
Help the patient relearn postural control across a wide range of activities and situations.

Teaches the individual that they are able to cope physically and psychologically with motions that were previously perceived as a threat.



WHAT CAN WE DO?⁶

- Working through symptoms of dizziness in anxiety-producing environments.
- Develop skills in managing dizziness and learning to be able to control symptoms through pacing.
- Education
- Build trust
- Helping patients cope with anxiety as well as they can:
 - Meditation/Mindfulness
 - Referring to psychological counseling:
 - Cognitive behavioral therapy
 - Medication



COPING STRATEGIES⁷

- Educate on the cause of dizziness
- Identify symptoms of stress
- Identify triggers of stress
- Learn stress management techniques
- Ask for help
- Improve communication skills
- Have a sense of humor
- Join a support group
- Individual psychotherapy



GROUNDING¹

Jacobson's relaxation exercises:

- focuses on body proprioception to address spatial orientation and anxiety associated with it.



DIAPHRAGMATIC BREATHING

Go to www.YourTherapySource.com/calm for the complete download.

DEEP BREATHING



1. Put your hand on your stomach. Take a deep breath in slowly through your nose. Your stomach should rise.
2. Let your breath out slowly through your mouth. Your hand on your stomach should move in as your stomach muscles tighten to help you exhale.
3. Repeat several times.

INTERDISCIPLINARY APPROACH²

- 129 patients
- Age range: 25-82yo
- Screened by neurotologist, audiologist, physical therapist, neurologist, and neuropsychologist
- 3-8 patients per group
- Every other week for 5 sessions
- Co-led by a neuropsychologist and physical therapist

INTERDISCIPLINARY APPROACH²

Session:

- Began with mindfulness meditation
- Homework review (vestibular exercises, diaphragmatic breathing, logs of skill usage)
- New skills: vestibular rehab, mindfulness, and Dialectical Behavior Therapy (emotion regulation, distress tolerance, challenging disordered thinking)
- Ended with mindfulness meditation

INTERDISCIPLINARY APPROACH²

Conclusion:

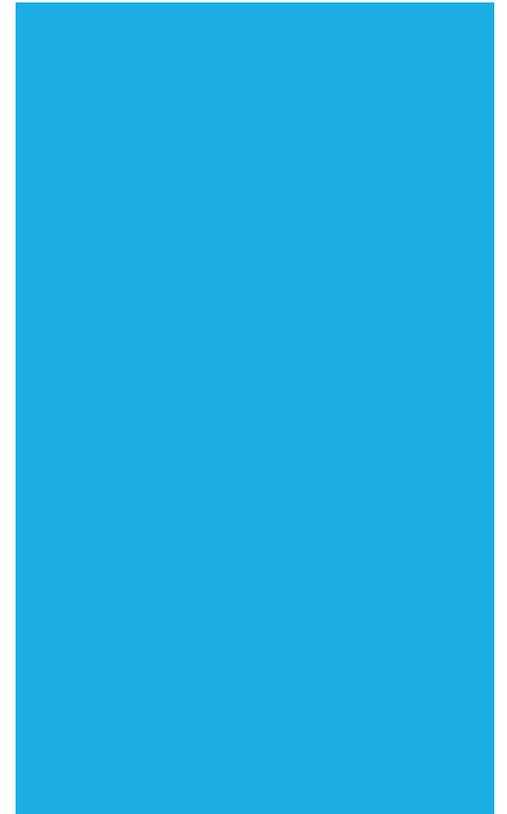
- Improved mood, coping, functionality, skill usage, and physical and mental health
- Reduced impairment and dizziness
- Group treatment decreased overall health care utilization
- Treatment did not reduce anxiety as measured by the Beck Anxiety Inventory, but did improve on other variables of mental health and coping.

COGNITIVE BEHAVIORAL THERAPY ¹⁰

- Well established for treatment of anxiety disorders
- Addresses anxiety, beliefs, and behavior
- Teaches to challenge counterproductive/avoidance behavior
- Anxiety rates decrease significantly when mindfulness techniques are integrated into CBT
- Combining with vestibular rehab can target avoidance associated to dizziness

A CONTROLLED TRIAL OF CBT COMBINED WITH VESTIBULAR REHAB IN THE TREATMENT OF DIZZINESS⁸

- RCT of 29 patients without panic disorder
- 90% females, ages 22-62 years old
- Mean duration of dizziness 5.7 years
- None had previously received vestibular rehab
- Divided into groups of 3-4
- 5 sessions over 7 weeks



A CONTROLLED TRIAL OF CBT COMBINED WITH VESTIBULAR REHAB IN THE TREATMENT OF DIZZINESS⁸

Improvements in:

- self reported handicap
- behavioral measures of exposure to dizziness-provoking movements
- daily reports of dizziness and distress associated with unsteadiness

Combination of VR and CBT facilitates exposure to movements and teaches strategies to handle the associated thoughts and beliefs regarding dizziness.

MINDFULNESS ¹¹

- “The basic human ability to be fully present, aware of where we are and what we are doing, and not overly reactive or overwhelmed by what is going on around us.”
- Can alter negative conditions and desensitize patients to bodily sensations and conditioned avoidance by increasing awareness and acceptance.
- Focus on “now”
- Improves patients’ ability to regulate emotion
- Emotional sensitivity and intensity

A SIMPLE MEDITATION PRACTICE¹¹

- 1. Sit comfortably.**
- 2. Notice what your legs are doing.**
- 3. Straighten your upper body.**
- 4. Notice what your arms are doing.**
- 5. Soften your gaze.**
- 6. Feel your breath.**
- 7. Notice when your mind wanders from your breath.**
- 8. Be kind about your wandering mind.**
- 9. When you're ready, gently lift your gaze.**



RESOURCES

- APTA: fact sheets on Anxiety and Dizziness

http://www.neuropt.org/docs/vsig-physician-fact-sheets/anxiety-and-dizziness.pdf?sfvrsn=9a3273d1_2

- Vestibular Disorders Association: vestibular.org

- Jen is compiling a list of referral sources

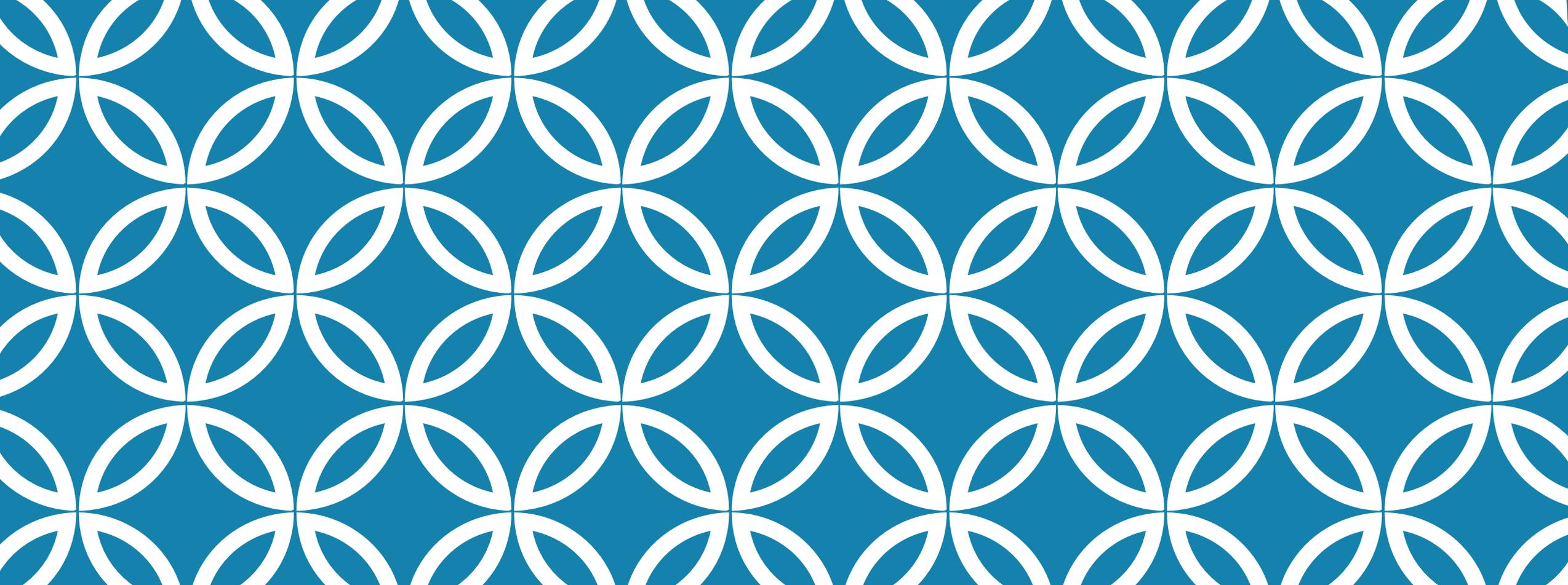
- mindful.org

- Mindfulness apps:

- Calm
- Headspace

SUMMARY

- Anxiety and vestibular disorders appear to be intimately related.
- Each may be a cause, as well as a consequence, of the other.
- It may be beneficial to refer patient to cognitive behavioral therapy
- It may be beneficial to combine mindfulness with vestibular therapy
- Goal: decrease dizziness and increase activity and participation



QUESTIONS?

Anna VerMeulen SPT, UNC-DPT

QUIZ TIME (DON'T WORRY, IT'S A GROUP QUIZ)

1. What are some common symptoms between vestibular disorder and anxiety?
2. Why is elevated anxiety a problem for treatment of vestibular disorders?
3. What is the proposed neurologic link?
4. What are some coping strategies that we can teach our patients?
5. Who should we refer patients to if we suspect that anxiety is negatively influencing treatment progression? What type of therapy may help?
6. What can we do in the clinic to reduce a patient's anxiety?
7. Do you think you will use mindfulness techniques with patients in the future?

QUIZ ANSWERS

1. What are some common symptoms between vestibular disorder and anxiety?
 - dizziness, faint, imbalance, fear, spatial disorientation
2. Why is elevated anxiety a problem for treatment of vestibular disorders?
 - conditioned avoidance prevents habituation, cycle of dizziness and anxiety, increased handicap, lower balance confidence, hyperventilation
3. What is the proposed neurologic link?
 - Parabrachial nucleus
4. What are some coping strategies that we can teach our patients?
 - Educate on the cause of dizziness, Identify symptoms of stress, Identify triggers of stress, Learn stress management techniques, Ask for help, Improve communication skills , Have a sense of humor, Join a support group, Individual psychotherapy
5. Who should we refer patients to if we suspect that anxiety is negatively influencing treatment progression? What type of therapy may help?
 - psychologist, CBT
6. What can we do in the clinic to reduce a patient's anxiety?
 - balance retraining, education, build trust, grounding, diaphragmatic breathing, mindfulness, meditation
7. Do you think you will use mindfulness techniques with patients in the future?
 - I hope so, if not you can use an app!!



“Vestibular disorders have real, physical symptoms that often cause patients to behave anxiously, which can be worrisome for their loved ones, especially when that behavior is different than the patient’s “pre-vestibular disorder” behavior. Sometimes it is useful to determine if worrying has become excessive to the point that it can be defined by a clinically diagnosable mental health condition so the patient can be encouraged to seek help. It is important to remember that labeling the patient’s condition is not intended as a judgment. Whether or not a vestibular patient or their loved one receives a mental health diagnosis, they can still benefit from professional counseling to help them cope with the intense and understandable changes these conditions impose on their lives.”

-vestibular.org

RESOURCES

1. Staab JP. Behavioral aspects of vestibular rehabilitation. *NeuroRehabilitation* 2011;29(2):179-183. doi:10.3233/NRE-2011-0693.
2. Naber CM, Water-Schmeder O, Bohrer PS, Matonak K, Bernstein AL, Merchant MA. Interdisciplinary treatment for vestibular dysfunction: the effectiveness of mindfulness, cognitive-behavioral techniques, and vestibular rehabilitation. *Otolaryngol. Head Neck Surg.* 2011;145(1):117-124. doi:10.1177/0194599811399371.
3. Yardley L, Redfern MS. Psychological factors influencing recovery from balance disorders. *J. Anxiety Disord.* 2001;15(1-2):107-119. doi:10.1016/S0887-6185(00)00045-1.
4. Balaban CD, Thayer JF. Neurological bases for balance-anxiety links. *J. Anxiety Disord.* 2001;15(1-2):53-79. doi:10.1016/S0887-6185(00)00042-6.
5. Carmeli E. Anxiety in the elderly can be a vestibular problem. *Front. Public Health* 2015;3:216. doi:10.3389/fpubh.2015.00216.
6. http://www.neuropt.org/docs/default-source/vsig-english-pt-fact-sheets/anxiety-and-stress-dizziness_2016.pdf. Available at: http://www.neuropt.org/docs/default-source/vsig-english-pt-fact-sheets/anxiety-and-stress-dizziness_2016.pdf. Accessed June 13, 2018.
7. https://vestibular.org/sites/default/files/page_files/Documents/Emotional%20Aspects%20of%20Vestibular%20Disorders_0.pdf. Accessed June 13, 2018.
- 8 Andersson G, Asmundson G, Denev J. A controlled trial of cognitive-behavior therapy combined with vestibular rehabilitation in the treatment of dizziness. *brat* 2006;44:1265-1273.
- 9 www.yourtherapysource.com/calm
- 10 In-Depth: Cognitive Behavioral Therapy | Psych Central. Available at: <https://psychcentral.com/lib/in-depth-cognitive-behavioral-therapy/>. Accessed June 13, 2018.
11. Mindfulness: Getting Started - Mindful. Available at: <https://www.mindful.org/meditation/mindfulness-getting-started/>. Accessed June 13, 2018.