# THE 4 REASONS WHY YOU'RE DIZZY AND HOW TO FIX IT

## *The Complete Guide to Understanding Dizziness*

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## Introduction

- Over 70% of people will experience an episode of dizziness in their lifetime.
- Dizziness is the 2nd most common complaint heard in a doctor's office.
- Balance disorders are the number 1 complaint in people over the age of 70.

With this being said, shouldn't dizziness be easily treatable and providers very knowledgeable of the condition? Unfortunately this isn't always the case.

Here, you will find the 4 reasons why you are having dizziness and what to do to fix it.







## Basic Anatomy and Physiology

To understand what causes dizziness, and how to fix it, we must have a basic understanding of the anatomy and physiology of the balance system (Vestibular system).

The vestibular system is defined as,

"The sensory system that provides the brain with a sense of balance and spatial orientation for the purpose of coordinating movement with balance."



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I want you to think of this system as having sensors and a processor. Just like modern cars have tire air pressure sensors to detect air pressure levels and convey this knowledge to the car's computer, the processor.

The vestibular system is made up of three main sensors and a processor:



These sensors relay their information to the brain, which then processes it to determine where the body is in space. If any of these sensors are giving faulty information to the brain, it will no longer have an accurate understanding of where the body is in space and dizziness is the result.

Let's break down each sensor

### The Muscles and Joints

Each muscle and joint has a collection of sensory nerve fibers called proprioceptors. These nerve fibers sense how much their muscle is contracted, or what angle their joint is at, and then send this information to the brain. This is how the brain knows where every part of its body is located in space.

Close your eyes and think about where your right arm is in space. You can feel what angle your fingers, wrist, elbow, and shoulder are at. You have a sense of where your hand is in space. This is





because of your proprioceptive system from your muscles and joints. Now, the vast majority of the body's proprioceptors are located in the ankle and the upper neck. Remember this as it will become a very important fact when we discuss how to fix dizziness.

### The Inner Ear

The purpose of the inner ear, or vestibular apparatus, is to tell the brain where the body's head is in space. It consists of two main sensors. The **canals**, and the **otoliths**. Let's start with the canals.

#### The Canals

The canals are tube-like structures that are filled with a honey-like fluid. When the head turns, the fluid moves in the canal which presses on a circular structure called the cupula. There are sensory nerve fibers at the base of the cupula, that when pushed by the cupula, send signals to the brain. These signals tell the brain that the head is turning.

There are three canals, each designated for all three head rotary motions. The motions are turning the head horizontally (think shaking the head "no"), turning the head vertically (think of shaking the head "yes"), and tilting the head from shoulder to shoulder.





#### The Otoliths

The otoliths are like a block of Jell-O with little pebbles on top of it. The purpose of this sensor is to tell the brain that the head is moving straight forward, or back (think of driving in a car), or moving straight up or down (think of riding in an elevator).



## The Eyes

The eyes play a few roles when it comes to the vestibular system.

The first role of the eyes is to help the brain understand if the sensory information that it is receiving makes sense.

Say the proprioceptors are telling the brain that your arm is next to your side. The brain will confirm this information by simply having the eyes look at the arm.



The eyes and the inner ear have some overlap when it comes to function of the vestibular system. When the head rotates to one side, a neurological reflex occurs called the vestibulo-ocular reflex, or VOR, causing the eyes to move an equal and opposite amount.

You can try it right now! Put your thumb out at arms length in front of your eyes. Now, slowly turn your head to the right while keeping your eyes on the thumb. Your eyes stay on the thumb due to the VOR. The signals that the inner ear sends to the brain to tell it the head is rotating to the right, also tell the eyes to turn to the left. So, your eyes are actually turning when you did this.

If this reflex didn't exist, the eyes would move with the head every time the head turns. Think of a shaky video where someone is moving the camera all over the place. If this reflex didn't exist, or if it isn't working well, this is what the person would see in real life. Holy motion sickness!

Think of this reflex as the eyes suspension system. Just like a car's suspension system keeps the rider comfortable and level, the VOR stabilizes the eyes.

#### So, what are the 4 reasons why you could be experiencing dizziness?

Because there is dysfunction with:

- 1. The muscles and/or joints
- 2. The inner ear
- 3. The eyes
- 4. Or the brain

The rest of this book will be dedicated to discussing different forms of dizziness and how to correct the 4 underlying causes of dizziness.





## **Dizziness Defined**

An issue with the word "dizziness" is that it is used to describe a collection of feelings. So, let's break down each subcategory of "dizziness".

#### Vertigo:

The sensation that the world, or the person, is spinning in circles.

#### **Raftiness / Tilting:**

The sensation that the person is rocking back and forth, or being pulled to one side.

#### Lightheadedness:

The sensation that the person may pass out. They feel a disconnect between their conscious awareness and their physical body.

#### Imbalance:

The sensation that the person may fall, or is simply unstable on their feet.

#### **Motion Sickness:**

The feeling of nausea combined with lightheadedness or raftiness.





## Let's Dive into Each Subcategory

Now that we understand the definitions to all of the subcategories of the word "dizziness", let's go into detail about each one. We will use our understanding of anatomy from the previous chapters to discuss where this symptom comes from and different named conditions that cause this symptom.

## All About Vertigo

Vertigo is the sensation that the world, or the person, is spinning in circles. Remember, the inner ear canals are the sensor for rotation of the head. So, vertigo is due to faulty signals coming from the inner ear canals. It could be a problem with the canals themselves, the nerve that connects the canals to



the brain stem, the brainstem itself, or the brain. The faulty signals are from an injury due to **inflammation, a structural issue, or vascular.** 

#### Inflammation

**Labyrinthitis** and **vestibular neuritis** are two inflammatory conditions that injure the canals / canal nerve pathways and cause vertigo. These conditions are typically the result of a viral infection. I have treated many patients that developed vestibular neuritis during a COVID-19 infection.

#### Vascular

1–3% of acute isolated vertigo attacks are from a stroke. Anytime a person experiences a vertigo attack without a previous known cause, they should seek emergency medical attention for a stroke evaluation.

#### Structural

**Benign Paroxysmal Positional Vertigo, or BPPV.** Remember how we discussed that the otolith organs are basically little blocks of Jell-O with tiny pebbles on top of them? Well, these tiny pebbles, or otoconia, can dislodge from the "Jell-O" and fall into the canal. People refer to this as "the crystals that get into the inner ear".





When this happens, the honey-like fluid, or endolymph, that is within the inner ear canal becomes more dense due to the otoconia, causing the sensors to send more powerful signals to the brain than they should when the head turns.

People typically notice this when turning over in bed. BPPV is one of the most common causes of dizziness.

#### Meniere's Disease (MD):

MD is a condition where too much endolymph dumps into the inner ear canals. As you remember from Chapter 1, the endolymph pushes on the cupula to tell the processor (brain) that the head is turning. Well, if there is too much fluid in the inner ear, the canals will send too many signals, telling the processor that the head is rotating when it is not. This causes vertigo. I have published a research article on how an upper neck injury can lead to MD symptoms.

#### Inner Ear Canal Dehiscence:

This is when a hole forms in one of the canals. It is not common.

#### Upper Cervical Spine Misalignment:

We know that an upper cervical spine misalignment can cause raftiness and tilting (see below); however, there is new evidence to suggest that a misalignment of the vertebra at the top of the spine can cause vertigo symptoms as well.

### All About Lightheadedness

Lightheadedness is the sensation that the person may pass out. Lightheadedness is almost always vascular - related to blood - whether that be a problem with the blood itself or a problem with the blood getting to the brain.



#### **Blood Related Disorders**

Think anemia. If the blood doesn't have the correct "items" in it, the brain will not be getting the nutrients it needs and lightheadedness can result.

#### Dysautonomia

The nervous system is designed to be able to constrict and relax blood vessels all throughout the body to move blood to where it needs to go. If this system is dysfunctional, "dysautonomia", lightheadedness can result from not enough blood being sent to the brain.



## All About Imbalance

Imbalance is the sensation that the person may fall, or is simply unstable on their feet.

Imbalance can be the result of weak muscles or it can be neurovestibular in nature.



Imbalance can come from dysfunction of any of the vestibular systems sensors. It can also be the result of brain problems such as **multiple sclerosis** or **Parkinson's disease**.

### All About Raftiness, Tilting, Rocking

#### Otoliths

These sensations can be due to faulty signals from the inner ear otoliths. Remember, the purpose of these sensors are to sense direct forward and backward motion as well as straight up and straight down (like an elevator). So, when one of these sensors is over or underactive, it will give the person a sense of rocking, tilting, like they're on a boat, or being pulled to one side.

#### Proprioceptors

When faulty signals are being sent from the muscle or joints, the processor won't have a good idea where the limbs are in space, making the person feel these sensations. Earlier we discussed that the vast majority of these nerve fibers are located in the upper neck and the ankle. Anyone that has ever injured their ankle or neck is at a higher risk of developing these sensations of dizziness.

### **All About Motion Sickness**

The feeling of nausea combined with lightheadedness or raftiness. Motion sickness is a "visual vestibular mismatch". This means that what the inner ear and muscle / joints are sensing doesn't match up to what the eyes are seeing, and nausea, lightheadedness, and raftiness result.

This is why people can feel sick when on an airplane or riding in a car. In an airplane, the inner ear is sensing changes with rotation and gravity, but the



eyes don't see any movement so it confuses the processor (the brain), and motion sickness is the result. Some people are more sensitive and prone to feeling this; therefore, not everyone experiences motion sickness with these activities. Most cases of motion sickness resolve on their own within a short amount of time. If a person has dysfunction with any of their vestibular system sensors, they are at a greater risk of suffering from motion sickness.

#### Mal de debarquement syndrome (MDDS)

A motion sickness disorder that does not improve in a short amount of time. People that acquire MDDS typically developed it after being on a cruise ship. It is a relatively uncommon condition.





## How Do We Fix Dizziness?

Now that you are educated on all things dizziness, you can see why so many people are likely to suffer from it and why all providers may not be fully educated on the condition. It is a diverse problem, resulting from many different causes.

Because dizziness is a multifactorial issue, a full vestibular and neurological evaluation should be conducted.

The healthcare provider that you choose to treat your dizziness must evaluate your muscles and joints, your inner ear, your eyes, and your brain. If they don't evaluate all 4, the problem can easily be missed.



## **3A Brain Restoration Program**

Because of this, we have developed the 3A Brain Restoration Program at our clinic. Our program is designed to be able to comprehensively evaluate each vestibular system sensor and the processor (brain) to determine where the underlying cause is coming from. Then to correct the underlying cause through rehabilitating the 3A's.





## **3A Brain restoration program Evaluation**

The 3A Brain Restoration Program uses laser focused examination techniques such as a hands on neurological exam, video-oculography to measure the function of the eyes, posturography to pinpoint where imbalances are, and digital x-ray to objectively measure alignment of the spine.



Digital X-ray



Video-oculography



Posturography



### **3A Brain restoration program Treatment**

The 3A Brain Restoration Program uses treatment techniques such as gentle upper cervical chiropractic adjusting, extremity joint adjusting, vestibular repositioning maneuvers, eye stabilization, and balance exercises to name a few.



Repositioning maneuver



Upper cervical chiropractic





## **About Our Clinic**

Peak Vestibular Center is a privately owned, patient centered clinic located in Hudson, WI. We are dedicated to achieving patient health results!



### CONSULTATION

If you are suffering from any of the subcategories of dizziness that we discussed in this book, please reach out to our clinic for a 3A Brain Restoration Program consultation with Dr. Tyler Steward!

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Dr. Tyler Steward attained his Doctor of Chiropractic degree from Life University in Marietta GA, the largest chiropractic college in the world. He completed a preceptorship at Berner Upper Cervical Clinic where he learned from one of the best doctors in the nation on how to correct the upper neck alignment. After his preceptorship, Dr. Steward opened Peak Vestibular Center in Hudson, WI, just outside of the Minneapolis MN metropolitan area.

Dr. Steward loves continuing his education. He continues to further his knowledge of clinical neuroscience from the Carrick Institute. His favorite course was the 150 hour Vestibular Rehabilitation program.

Dr. Steward shares a personal connection with his patients that suffer from dizziness. He acquired vertigo after suffering multiple concussions from high school and college hockey. Dr. Steward was able to overcome his vertigo through the 3A Brain Restoration Program.

In his free time, Dr. Steward loves to compete in cross country ski marathon races, such as the 50K American Birkebeiner. He also loves to cook and do anything outdoors.





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