



## VISUALLY INDUCED DIZZINESS

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*This handout is intended as a general introduction to the topic. As each person is affected differently, speak with your health care professional for individual advice.*



### Key points

- An umbrella term for a group of symptoms resulting from some vestibular disorders.
- Refers to chronic dizziness or unsteadiness usually brought on by looking at complex patterns or movement.
- Symptoms can be distressing and upsetting.
- Treatment depends partly on what has caused the dizziness or unsteadiness.
- Vestibular rehabilitation (an exercise-based therapy) and home-based optokinetic exercises (using videos designed to bring on dizziness) can help.
- Treatment takes time and persistence.
- Trying to “push through” symptoms can make them worse.
- Keeping active is important – doing nothing is NOT the road to recovery.

### What is visually induced dizziness?

Visually induced dizziness is not a disorder. It is an umbrella term for a group of symptoms that result from some vestibular disorders.

Visually induced dizziness is chronic (long-lasting) dizziness or unsteadiness that is caused or made worse by large areas of complex patterns or movement, such as supermarket shelves, moving traffic or movies on a big screen.

Visually induced dizziness can be very uncomfortable and can cause problems with a person's daily activities, work, social life and mental health.

Visually induced dizziness is also called visual vertigo, space and motion discomfort, supermarket syndrome or visual vestibular mismatch.

Cyber sickness, nausea or discomfort triggered by view moving digital content on devices, is a subset of visually induced dizziness.

### What are the causes?

Visually induced dizziness usually develops as a result of a problem with the vestibular system, such as:

- head injury
- persistent postural-perceptual dizziness (PPPD)
- benign postural-positional vertigo (BPPV)
- vestibular migraine
- Ménière's disease or gentamicin therapy for Ménière's
- vestibular neuritis
- acoustic neuroma

It is a common symptom in whiplash injuries. There are several theories about why visually induced

dizziness happens. Most researchers believe that it is caused by a mismatch or conflict between the different parts of the brain's balance system, similar to motion sickness. Others believe that it happens when a vestibular problem causes the brain to rely too much on visual signals for balance (visual dependency).

The brain's balance system combines information from many sources, including:

- the vestibular system (the semicircular canals and otoliths in the inner ear), which senses when your head tilts, turns or changes speed
- the visual system, which lets you see
- the proprioceptive system, which sends signals about position, pressure, movement and vibration from the legs and feet and the rest of the body

At any moment, your brain is evaluating all these different signals and deciding which ones are more important and reliable at that moment. For example, if you are watching a movie, the visual system says there is motion, but the vestibular and proprioceptive systems say that your head is not moving and your body is sitting in a chair. Normally, your brain takes all these signals and correctly assesses the situation: you can see movement, but your body is not moving.

With visually induced dizziness, the brain relies too much on information from the visual system and not enough on the vestibular and proprioceptive systems. This is sometimes called "visual dependency." When there is a conflict between the visual system and the other systems, the brain is more likely to believe the visual system and decide that you are moving when you are not. The conflict between signals can produce feelings of dizziness or unsteadiness.

Some studies have found subtle differences in how areas of the brain are connected in people with visually induced dizziness. This may mean that some people are more prone to visual dependency and more likely to develop visually induced dizziness after a vestibular problem.

Visually induced dizziness is usually triggered by one or more of the following situations:

- driving or riding in a car, bus or train (motion sickness)
- being in a busy visual environment like a supermarket
- seeing movement over a large area, such as when watching a movie, playing a video game, or scrolling on a phone, tablet or computer, or when looking at clouds, leaves, water, crowds or traffic

## What are the symptoms?

When someone has an episode of visually induced dizziness, they may have some or all of the following:

- dizziness
- unsteadiness
- light-headedness
- disorientation
- nausea
- vomiting
- sweating
- salivation (mouth watering)
- tiredness
- turning pale

Some people say it feels like seasickness or being drunk.

Visually induced dizziness usually does not include feelings of rotation or spinning (vertigo). It is also not the same thing as oscillopsia, where what you see appears to wobble or jump around.

People with visually induced dizziness may feel anxious about doing things that could trigger their symptoms.

## How is it diagnosed?

Visually induced dizziness can be caused by several different vestibular disorders. This means your doctor needs to figure out if you have a vestibular disorder or another problem that is causing your symptoms. You may need to see a specialist, such as a neurologist or an otolaryngologist (an ear, nose and throat or ENT doctor).

Your doctor will ask about your medical history, including any times you have been sick or injured.

Your doctor will ask questions about your symptoms and what triggers them. Try to answer with as much detail as you can. This is important information that can help your doctor make a diagnosis.

Your doctor may ask you to fill out one or more questionnaires that ask about:

- things that trigger your symptoms or make them worse
- how your symptoms affect you

Your doctor will also do a thorough physical and neurological exam, including an ear exam. Tests may include asking you to watch the doctor's nose while the doctor moves your head, or to watch your own thumbs while the doctor turns you in an office chair.

You will likely have some of the following diagnostic tests:

- hearing and vestibular function tests
- balance tests that measure what happens when you get less input from your visual or proprioceptive systems; for example, by asking you to stand on a soft surface or a moving platform with your eyes closed
- imaging (MRI scan)

## How is it treated and managed?

Treatment for visually induced dizziness partly depends on what is causing it. If it is caused by an underlying condition, such as migraine with

dizziness or Ménière's disease, treating that condition may help with some of your symptoms.

You will also need specific help with visually induced dizziness, such as vestibular rehabilitation and home-based optokinetic exercises. The goal of these treatments is to "retrain" your balance system and reduce visual dependency.

One study has found that a drug called acetazolamide may help with visually induced dizziness. But more research is needed before this is widely used.

## Dealing with avoidance and anxiety

It is important to keep doing your normal activities. Try not to avoid things that make you dizzy. You need to get used to them again.

However, do not push too hard. This can make your symptoms worse. Vestibular rehabilitation can help by giving you controlled exposure to things that trigger dizziness.

If you have anxiety about your symptoms, talk to your doctor about ways to manage it. For people with visually induced dizziness that is part of PPPD, cognitive-behavioural therapy (CBT) to help manage anxiety, cope with symptoms and gain confidence can be an important part of treatment.

## Vestibular rehabilitation

Vestibular rehabilitation is a type of exercise-based therapy. Its goal is to help your brain relearn how to balance and how to respond to signals from the visual and vestibular systems. A vestibular therapist can help you set treatment goals and design an appropriate program.

Vestibular rehabilitation for visually induced dizziness may include:

- Habituation, a type of rehabilitation that involves getting the brain used to signals that trigger dizziness. This is done through repeated, controlled exposure to signals such as complex patterns, busy environments and head movements. You may do exercises indoors and outdoors. You may go on short trips to places

that trigger symptoms, such as grocery stores or shopping malls.

- Optokinetic exercises, discussed in the next section
- Balance exercises with the eyes closed, both standing still and moving, to help reduce visual dependency

Remember that vestibular rehabilitation takes time and effort. Your therapist will teach you the exercises you need to do, but you are the one who needs to do them on schedule.

### Home-based optokinetic exercises

Your vestibular therapist may give you optokinetic exercises to do at home. These exercises use videos that are designed to make you feel dizzy. You should start slowly and gradually with simple videos. With practice, you will be able to build up to longer and more complex videos.

Some tips to keep in mind:

- Before you start watching any of the videos, make sure your symptoms are mild.
- Make the room as dark as possible so you can focus on the video.
- Try expanding the video to a full-screen view.
- Start by watching less busy videos for short periods—less than 30 seconds at a time.
- When you get the feeling that you want to look away, watch for three to five seconds longer.
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Wait for your symptoms to go back to where you started before you watch again.

- Each session should be at most 10 minutes long. Your symptoms should clear up within 20 minutes after you end the session.
- Follow the schedule set by your vestibular therapist, even if it does not seem challenging enough. Trying to do too much, too soon will not help.

Doing exercises such as the tai chi “cloud hands” movement can help with visually induced dizziness. It follows the same principle as optokinetic exercises by habituating your brain to the movement of your hands.

### What to expect in the future

Cyber sickness, a related problem caused by exposure to virtual reality, is becoming more common as eXtended reality (XR) used more widely. As a result, more research is being done into the underlying causes of visually induced dizziness. As technology advances, we may learn more about how to prevent and treat the problem.

### Visit our website

View this and other articles about vestibular disorders – [www.balance&dizziness.org](http://www.balance&dizziness.org).

In addition, find information about how the balance system works, the journey from diagnosis to treatment, building a wellness toolkit, and more.

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