

# PHOTOSENSITIVE EPILEPSY

FACT SHEET



## PHOTOSENSITIVE EPILEPSY

**Some people with epilepsy have seizures triggered by flashing or flickering lights, or by certain geometric patterns. These are called photosensitive, or visually provoked seizures.**

Photosensitive epilepsy is a type of reflex epilepsy is seen in only a very small number of people with epilepsy (less than 5%) but can co-exist with other types of seizures. Seizures can often be reduced with simple avoidance strategies, but medication is usually used to help gain seizure control. Here we answer some common questions.



### How do I know if I have photosensitive epilepsy?

Photosensitive epilepsy can easily be diagnosed on a routine EEG with strobe (flickering) light or pattern stimulation. You may also have a history of seizures after exposure to flickering light or visual stimulation.

But I've never had a seizure?

Some people, with and without epilepsy, will show an abnormal brain wave activity on EEG to the light flashes performed during an EEG. Not all people with this abnormality have visually-provoked seizures in daily life. This response is a risk factor for visually-provoked seizures but does not mean that they will occur.

Some people may also experience very small seizures and not be aware of having them.



### How is it treated?

In most cases the photosensitive seizures can be well controlled with antiseizure medication and avoiding known triggers.

### Are there situations I should avoid?

Our modern environment is a rich source of potentially seizure-triggering visual stimuli. Typical triggers can include:

- strobe or flashing lights
- shimmering sunlight reflected off snow or water, or sunlight filtering through trees whilst in a moving vehicle
- some video games, or images viewed on screens
- venetian blinds, striped walls, flooring or clothing

People should be careful in disco's, with sunlight flickering through trees, with shimmering sun on water and with certain videogames. People with epilepsy should be aware of their individual triggers.

**Someone with photosensitive epilepsy may also have other seizures not triggered by visual stimulation.**

# PHOTOSENSITIVE EPILEPSY

## What can influence if a seizure happens or not?

Some people are more sensitive than others but some influences as to whether a seizure may occur include:

- If the eyes are open, closed or closing at the time of the stimulation
- The speed of the flashing light(s) – seizures most often happen when the frequency of the flash stimulus is 10–25 flashes per second
- The contrast and brightness – in general the brighter the visual stimuli the more chance of inducing seizures and high-contrast (dark to light) stimuli are more likely to trigger seizures
- How long the stimulation goes for – a seizure is more likely to occur with longer exposure
- The colour of the flicker (if any) – red flicker is more provocative and colour oscillating from red to blue
- How much field of vision is taken up – closer exposure/bigger screen is more likely to trigger seizures

Photosensitivity commonly occurs in several epilepsy syndromes but is not a defining feature. It is most prevalent in genetic generalised epilepsies.

## Managing photosensitivity

Most people with photosensitive epilepsy are sensitive to flickering lights, but many natural light sources can provoke epileptic seizures as well. With the increasing use of technology, there is more exposure to provoking factors (such as screen time and visual images) than ever before.

The simplest, most effective way to reduce the risk is to avoid situations you know trigger your seizures. However, if you do encounter flashing lights or patterns cover one eye with your hand, (if safe, cover both eyes), and leave the situation. Closing your eyes without covering them does not block enough of the light and may make matters worse.

In general, you can decrease your risk of a visually-provoked seizure by:

- Get enough sleep;
- Manage stress as best you can;
- Take your antiseizure medication as prescribed;
- Reduce daily exposure to flashing lights from screens, TV and video games; and
- Drink alcohol in moderation and do not use stimulant or illicit drugs.

## Can tinted glasses help?

[Clinical research](#) has found that particular shades of blue lenses can be beneficial for some people with photosensitive epilepsy.

These blue shades reduce the abnormal response that comes from being exposed to flashing lights by filtering out disruptive lights and

patterns, particularly flickering dot patterns. For more about this, [click here](#).

Keep in mind:

- Coloured or tinted glasses do not help everyone.
- Dark or polarized glasses may provide extra protection.



# STIMULI AND TRIGGERS IN DAILY LIFE

Video games, social media clips, occasional movies, and natural stimuli may provoke photosensitive seizures. Virtual reality and 3D images so far appear not to, unless they contain specific provocative content, for example, flashes or rapid colour changes.

In daily life, other factors such as sleep deprivation and drug or alcohol use may also play a role in provoking photosensitive seizures.

## Video games



Video games can trigger seizures not only because of the screen itself, but also due to images and patterns used in the game.

Playing for long periods can add to the risk, especially if you're feeling tired, stressed, excited, or haven't had enough sleep.

Being close to the screen can also make seizures more likely compared to watching TV from a distance.

## Television



Improvement in television technology means they are much less likely to trigger seizures.

Liquid crystal display (LCD) and plasma screen televisions do not use the scanning lines and therefore are less likely to trigger seizures than old CRT televisions.

## Computer screens

It's rare for computer screens to trigger seizures. In most cases, there's no need to limit computer use.

If you're sensitive to screen flicker, especially on older monitors, using a screen filter may help. Modern LCD screens with a refresh rate of at least 60Hz are usually safe.

More often, it's the images displayed on the screen that can be a trigger. To reduce eyestrain and fatigue, it's best to take regular breaks when using a computer.

## ! Tips:

- Sit as far away from the screen as possible
- Play the game in a well-lit room and reduce the brightness of the display
- Avoid continuous exposure to the same pattern and don't play when overtired
- Check games for epilepsy or seizure warnings
- If a game makes you feel like you are going to have a seizure, stop playing and keep exposure to the game in short bursts (have a break every 10-15 minutes).

## ! Tips:

- Sit at least 2 metres from the TV screen and keep the room well-lit
- Watch TV in a well-lit room
- Do not watch the screen when fast forwarding, rewinding or adjusting the vertical hold
- If buying a new TV then opt for a smaller version
- A smaller screen set at low brightness and contrast is preferable
- Look away from any content that makes you feel uncomfortable
- If you are sensitive, cover one eye to lessen the effect of any content
- Use a remote control
- Avoid prolonged exposure, take regular breaks
- Avoid if stressed, fatigued or sleep deprived



**Reducing screen brightness and contrast can lessen seizure risk**

# OTHER SOURCES OF STIMULATION

## Lights

The frequency of a flashing light most likely to trigger seizures will vary from person to person. Generally, it is quite fast - 10-25 flashes per second, but this can vary.

Most people seem to be sensitive around 15-20Hz. Ordinary lighting in a room is preferable to fluorescent, but faulty fluorescent lights are rarely the trigger of a seizure.

## Fans

Ceiling fans in a lit room can create a flicker effect. A pedestal fan is best if you feel the ceiling fan may trigger a seizure.

## Patterns and stripes

Some people are sensitive to geometric patterns which have strong contrasts of light and dark such as stripes or check patterns. Some buildings and public places may have large areas like this, such as carpet. The average person may just feel some visual distortion but if you feel strange in this environment, it is important to leave or at least cover one eye.

These patterns may also be on a TV or computer screens, or in the natural environment, such as sunlight through trees or through venetian blinds. Such contrasting patterns are more likely to be a trigger if they are moving, changing direction or flashing, rather than if they are still.

## Strobe or nightclub lighting

These may trigger seizures, particularly if the room is dark and there are other triggers such as stress, excitement, tiredness, sleep deprivation and alcohol or other substances. The risk may also depend on the speed of the flashing light.

It is sensible to avoid strobe lighting like those at nightclubs if you are sensitive. Some clubs and DJs may display warnings, and retail employers may turn off flashing lights in their store if requested.



## Sunlight

Sunlight can trigger seizures in a number of ways such as the shimmering or reflection of light off water or through leaves of trees, and light flickering through trees, posts or railings when moving quickly, such as travelling past in a vehicle.

Cover one eye to lessen the effect of the flicker as looking through both eyes is needed to trigger a seizure. Polaroid sunglasses with shaded sides may also help reduce the risk.

## Camera flashes

These rarely trigger seizures unless fired in rapid succession. It is also rare for seizures to be triggered by hand-held screens, however, there have been occasional reports of “selfie-seizures”.



**Seek expert diagnosis. Do not assume you are photosensitive as you may be placing unnecessary constraints on your lifestyle**

## PHOTOSENSITIVE TIPS

- Avoid known visual stimuli that may trigger your seizures, this can be the best mode of seizure control for photosensitive seizures
- Ensure the room is well lit when watching TV or using computers and video games. Don't play or watch them in the dark. If possible, also reduce the brightness of the screen
- Keep a good distance - approximately 2m from the television or large video screen and 30-60cm from a computer monitor or hand-held screen
- Take frequent breaks from electronic games and look away from screens regularly
- Avoid using screens when stressed, fatigued or sleep deprived
- Avoid using screens for long periods
- Photosensitive children should not play electronic games when they are alone
- Avoid excessive consumption of alcohol, as this can influence photosensitive seizures
- Close or cover one eye to reduce the effects of any flashing or flickering light. Some people may need to cover both eyes.
- If you feel strange or think you may have a seizure, immediately turn off the game/computer or TV, or look away
- Wear polarised sunglasses to reduce glare. Coloured lenses work for some people.

Contact us on:

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