



The Ultimate Guide to VRT for Stroke Patients

By David Cantor and Cristina Racasan

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About the Authors

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Cristina Racasan is the Clinical Services Manager at NovaVision. For years she has been sharing the company's forward thinking vision solutions, targeted at a substantial and largely unaddressed market of people who have lost their sight as a result of stroke or other brain injury.



Introduction

Suffering from a stroke or other brain injury is a scary and strenuous time for everyone involved. Whether you are experiencing the effects first hand or taking care of a loved one, the road to recovery can be long.

All too often, vision defects after a stroke or brain injury can be overlooked early on as more severe and life-threatening injuries sustained from the stroke or brain injury are treated by medical professionals. Although your safety and survival should always be the number one priority, too many patients are left suffering from vision loss that often goes undetected or untreated. Even if you don't perceive any problems with your vision, defects may be present, and they can have an extensive negative impact on your daily life as well as your other rehabilitation efforts.

If you find yourself or your loved one bumping into objects, tripping, falling, knocking things over, or being surprised by people or objects that seem to appear suddenly out of nowhere, **keep reading**. We wrote this ebook for you.

Many of those who have had stroke or other brain injury will experience vision problems, but often times they will not realize they have a visual field deficit. Their brains may adjust to process visual

Introduction *(continued)*



information coming from the seeing part of their visual field and then be surprised to encounter objects in the blind area. Although spontaneous recovery is possible within the first three months the vast majority of patients need specific therapeutic intervention.

NovaVision's Vision Restoration Therapy (VRT) is the only FDA cleared therapy for the restoration of lost vision due to neurological brain damage such as stroke or other brain injury. NovaVision provides VRT in a therapy suite which also includes NeuroEyeCoach, an eye movement-training program that is also FDA registered. VRT has been demonstrated through extensive clinical data to actually help restore lost vision while NeuroEyeCoach helps the patient make

the most of their remaining vision. NovaVision provides the therapies together to maximize patient benefit.

Although VRT is backed by decades of scientific research, not every physician is aware of the therapy and the potential benefits for you, the patient. This ebook will walk you through what causes vision loss after a stroke or neurological brain damage, whether or not VRT and NeuroEyeCoach is the right solution for you, and if appropriate how to move forward pursuing this therapy with your doctor.

What Causes Vision Loss After Stroke?



Various types of vision deficits can occur after a stroke, other brain injury, including the inability to recognize objects or faces, color vision deficits and difficulty in perceiving certain types of motion. These conditions occur because of damage caused to specific regions of the visual cortex or its connecting neural network.

In some cases the patients are unable to articulate their symptoms as blindness. Patients with visual field deficits often experience difficulties walking, are prone to bumping into objects or people, and may be unable to read or even see different foods on their plates. Typically, the loss of vision is due to damage that has been done to that part of the brain that processes visual information which is transmitted to it using ones eyes as the conduits.

According to [stroke.org](https://www.stroke.org), up to 66% of people who suffer from a stroke experience changes to their vision. Aside from difficulty seeing, these changes can also have negative effects on your recovery over all. Decreased coordination and balance issues are not uncommon. Fortunately, vision problems do sometimes improve however in the vast majority of cases specific rehabilitation is required.

Approximately 20% of stroke sufferers will have a permanent visual field deficit. Visual field deficit usually manifests itself as half of one's visual picture being blanked out or may appear as spots or blank spaces in the patient's field of vision. Patients may experience visual field loss in different ways so we've outlined the most common occurrences:

What Causes Vision Loss After Stroke? *(continued)*



Hemianopia

Stroke victims with Hemianopia experience blindness in one half of their line of vision. If you have suffered from a stroke that occurred in the left hemisphere of your brain, your ability to see properly in the right visual field of each eye may be negatively affected. On the other hand, if you have suffered a stroke in the right hemisphere of your brain, the left visual field of each eye may be affected.

Quadrantanopia

This is similar to hemianopia but the loss of vision occurs in a quarter of your visual field, as opposed to half.

Scotoma

This condition refers to spotty vision or smaller area of blindness than hemianopia or quadrantanopia.

Tunnel Vision

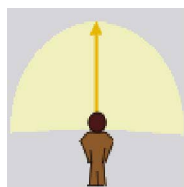
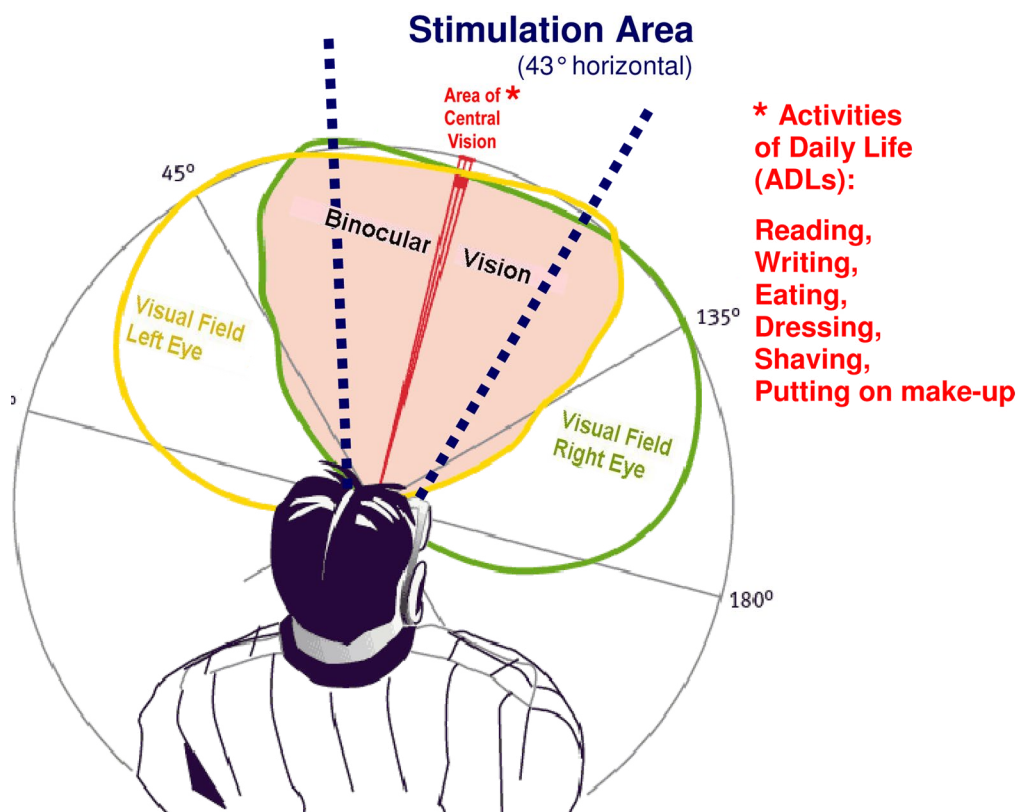
This condition is fairly self explanatory, referring to a loss of peripheral vision that mimics looking through a tunnel. The technical term for tunnel vision is asbitemporal hemianopia.

Impact on Daily Life from Visual Field Loss

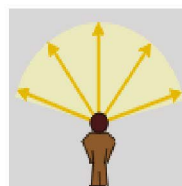
Patients suffering from visual field loss may run into objects, trip or fall, knock things over, lose their place when reading, or be surprised by people or objects that seem to appear suddenly out of nowhere. They may become afraid of venturing out in public, often because they easily get lost in crowded areas.

In addition, some visual field loss patients experience visual neglect; that is, they may be unaware that they cannot see to one side. They may orient their body to compensate,

What Causes Vision Loss After Stroke? *(continued)*



Visual Field:
The entire area that can be seen when the eye is directed forward (without moving eye or head).



Field of View:
The area that we can perceive, while wandering around with the eyes.



Visual Acuity:
Area of the clearest and sharpest vision.



Peripheral Vision:
The ability to see objects that are not located directly in front of the eye (Perception of movements).

not walk in a straight line, bump into objects on the affected side, or miss parts of words when reading. It is also common for those affected by visual field loss to believe that they have vision loss in only one eye.

A skilled clinician can effectively diagnose the type and extent of visual field loss, and then plan a course of rehabilitation.

What Is Neuroplasticity?

Following a stroke or brain injury, not only are you trying to focus on healing from a number of symptoms, but the people charged with your care often use unfamiliar language to communicate with you throughout the process. One term in particular that you should familiarize yourself with during this challenging recovery period is **Neuroplasticity**.

The traditional view has been that the brain is hardwired in early childhood; therefore one could not expect significant recovery of function in an adult's injured brain. Recent findings show that in fact the brain has remarkable plasticity that is retained throughout an adult's lifetime, and hence specific therapies for both motor and visual impairments have been developed leading to significant recovery. The process that the brain goes through to regain lost functions, for example lost vision, is called **Neuroplasticity**

Definition:

The word Neuroplasticity is derived from the root words **neuron** and **plastic**.

Neuron – The nerve cells in your brain.

Every particular neural cell is made up of an axon and dendrites. Each one of these cells is linked to another cell by a small space called the synapse.

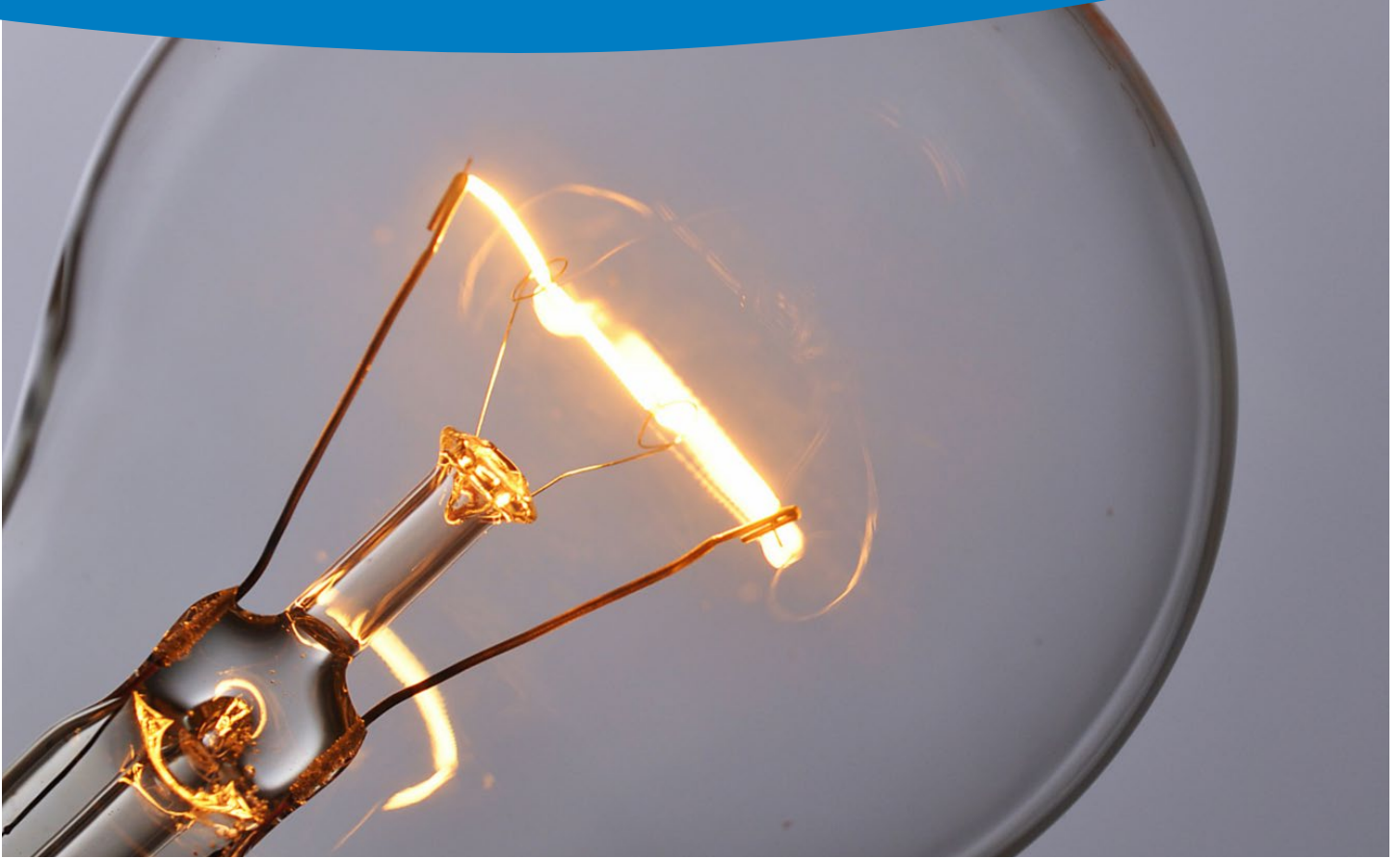
Plastic – The ability to sculpt, mold, or modify.

When these words are combined, the term **Neuroplasticity** refers to your brain's natural ability to compensate for injuries and adjust to deal with these changes by creating new neural pathways and adapting as needed.

When a brain is damaged, so is the network of neurons that process information. Some networks in the brain are duplicated and Neuroplasticity enables the activation and usage of alternative routes to process information. The brain in effect develops a bypass mechanism.

Your brain will be constantly changing throughout your recovery period and Neuroplasticity is the brain's way of adjusting to meet your changing needs.

What Is Neuroplasticity? *(continued)*



Why Is It Important?

Ultimately, the theory behind Neuroplasticity is that your brain will continue to build new neural pathways and heal as long as it is challenged by new information in a stimulating environment. If harnessed and carefully guided, plasticity can enhance and speed up recovery and restore lost function.

According to Dr. Pascual-Leone, Professor of Neurology and an Associate Dean for Clinical and Translational Research at Harvard Medical School, "Researchers delving into brain based healing are discovering that changes that benefit one person may be detrimental to another. For that reason neuroplasticity treatments must be

backed by science, prescribed to fit each patient and monitored which goes against the plethora of non-prescription brain training type Apps promising benefits to all."

NovaVision's Vision Restoration Therapy (VRT) is an FDA cleared prescription therapy that is supported by years of research.

Neuroplasticity won't heal the damaged parts of the brain, but it does allow for recovery by essentially reprogramming your brain. For example, you will be able to perform a function that was previously managed by a damaged area of the brain by now utilizing the undamaged area of your brain.

Prepare For the Discussion with Your Doctor



The relationship between Doctor and patient is a very personal one, especially after a traumatic event such as stroke or other brain damage. Although every practitioner operates differently, there are certain things you can do to make yourself well prepared to discuss exploring Vision Restoration Therapy (VRT) as a way to help address your visual field deficit.

It is important to note that VRT is currently the only commercially available therapy clinically supported to actually restore lost vision after a stroke or other brain injury. You may be surprised despite the huge amount of clinical data supporting VRT many physicians are not yet familiar with VRT and genuinely aren't aware that this solution is available. The clinical data supporting VRT demonstrates that the vast majority of patients benefit from the therapy

so here's what you can do to ensure the conversation goes as smoothly as possible:

Keep Lines of Communication Wide Open

In addition to your struggles with eyesight, be certain to disclose any additional health care issues, past or present. It's important to share as much information as possible. Examples of details you should be sure to share include:

- Current symptoms
- Health history prior to the event
- Stress level and personal life
- Current medications
- Any side effects you are currently dealing with from the event

Prepare For the Discussion with Your Doctor *(continued)*



- Vitamins or supplements you are currently taking
- Test results and medical records

Prepare to Hear “NO”

Some physicians may discourage you from undertaking VRT. This normally arises either because the physician believes the brain is hardwired in early childhood and therefore does not expect significant recovery of function in an adult’s injured brain or is not familiar with the clinical data supporting VRT. Although VRT is not a guaranteed cure, NovaVision has spent years and countless resources to ensure VRT is a very strong option to restore some of your eyesight and we believe that every patient should have the chance to experience first hand the benefits so many others have already experienced. If your physician however has questions relating to the therapy and won’t initially write a prescription for VRT it doesn’t have to be the end of the road.

Let NovaVision do the Heavy Lifting

If your physician is unaware of VRT and its medical support, should he or she show some resistance to prescribing VRT or should you have concerns that he or she will, then why not let NovaVision contact your physician directly and lay the seeds early on. NovaVision has a number of resources that can be printed or shared with your physician including our [testimonials](#), [clinical studies](#), and [general information on VRT](#).

However, we understand that explaining a therapy that you are still unfamiliar with yourself can be difficult. If you would like assistance explaining the method and benefits of Vision Restoration Therapy to your physician, NovaVision is happy to reach out on your behalf. With your permission, we will contact the doctor and will explain the therapy in detail. We are also happy to share success stories and describe the extensive clinical research that has been done to validate VRT over the years.

Prepare For the Discussion with Your Doctor *(continued)*



Find a Prescribing Physician

If you don't have a physician or want a second opinion and are uncomfortable with NovaVision contacting your current physician directly, we are happy to find a Physician who is familiar with VRT and comfortable prescribing the therapy to the right candidates for you. You can either start the process independently by contacting your physician or feel free to [contact us at any time](#) and we will connect you to a qualified professional.

Seek a Second Opinion

In our experience with patients just like you, we've noted that some professionals tend to have more traditional views on vision rehabilitation and may say no. Although there is nothing wrong with traditional approaches, this may limit your options for recovery. Try presenting VRT to your Optometrist or seek the opinion of another practitioner.

Taking an active role in your recovery or the rehabilitation of a loved one can result in the best care possible from your Physicians. Do your homework, don't be afraid to seek a second opinion, and use NovaVision as a trusted resource. Our primary goal is to provide you with every available option during these uncertain times. Our patient testimonials say it all!

Clinical Studies



Over the years, companies like NovaVision have dedicated countless time and resources to conducting scientific studies to help their team create the best possible solution for victims of stroke and traumatic brain injury.

NovaVision's VRT solution in particular is supported by 15 years of research with over 20 clinical studies published in leading journals. Through this extensive research, we have found that:

- Approximately 70% of patients experienced a positive outcome reflected by an increase in their visual field (*Mueller I, et al., 2007; Romano JG, et al., 2008*).
- Time elapsed since the injury does not seem to impact VRT therapy's success. (*Romano JG, et al., 2008*).
- Improvements are permanent and do not appear to be age or gender dependent.

We've pulled three powerful studies that demonstrate the potential and success of vision restoration therapy:

The first study takes a close look at vision and health-related quality of life before and after vision restoration training in cerebrally damaged patients. The aim of the study was to examine whether VRT-related improvements in stimulus detection of patients with visual field defects are associated with changes in self-reported vision- and health-related quality of life. Results: both vision and health related quality of life measures improved after VRT. To learn more, you can read more about the study here: [Vision and health-related quality of life before and after vision restoration training in cerebrally damaged patients.](#)

Clinical Studies *(continued)*



Another powerful study was carried out to examine whether VRT would induce visual field location-specific changes in the brain's response to stimuli. The study concluded that VRT appears to induce an alteration in brain activity. To read more about the study or to share the results with your Physician, download [Brain Activity Associated With Stimulation Therapy Of The Visual Border Zone In Hemianopic Stroke Patients.](#)

Partial blindness in the form of a visual field defect after brain injury has long been considered non-treatable. The third study evaluated whether patients with visual-field

defects can benefit from computer-based visual restitution training. This study showed that VRT led to a significant improvement in a patient's ability to detect visual stimuli. Visual-field enlargements were confirmed by the observation of a visual-field expansion of 4.9 degrees-5.8 degrees. To learn more about this study and view the results, download [Computer-based training for the treatment of partial blindness.](#)

For even more information for you or your Physician, you can download a summary document as well as see the complete list of [NovaVision's clinical studies here.](#)

Stories Of Recovery



Although the scientific studies and statistics supporting VRT are impressive, the people behind these stories are even more relevant to your assessment of the potential benefits to you. We'd like to introduce you to Carole Urban, here is her story:

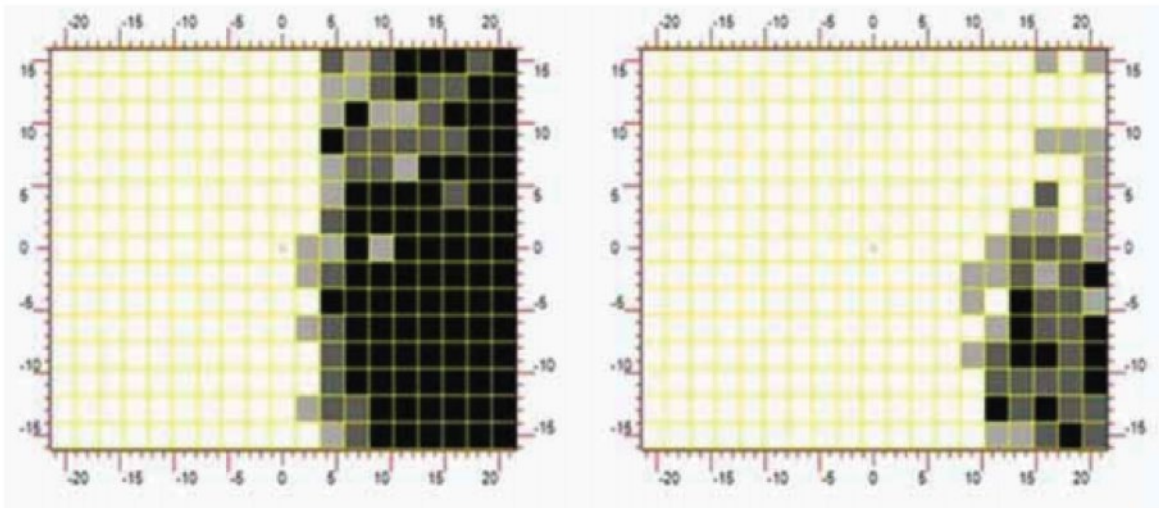
"On October 10th, 2010 I was Involved in a motorcycle accident; the police reported me as a fatality, but I fooled them."

Unfortunately I suffered from vision loss attributed to homonymous hemianopsia. After being seen at a prestigious local hospital by the Clinical Professor of Ophthalmology & Visual Science and Neurology, he told me I would never improve and to become accustomed to my vision loss.

My Family researched therapy options and we insisted on trying NovaVision. The therapy was easy to set up. I meticulously followed the instructions. Vision is so important; I believe I had to give it my all to get as much of it back as I possibly could. I continued the therapy for several months and only stopped once my therapy advisor and I believed I had achieved the maximum vision improvement, which in my case was 92%. I am actually surprised this is not the generally accepted treatment like other physical therapies are.

Before NovaVision everything was difficult such as, reading, cooking, walking stairs, all the simple like things. Now I have a new job, I ran my first marathon and finally published a book.

Stories Of Recovery *(continued)*



Pre-VRT

Post-VRT

Life is a challenge, but I do believe I accomplished all these wonderful achievements because I found NovaVision and did the daily exercises and monthly tests I needed to do. The wonderful encouraging support I received made the hard work easier.”

Click here to [listen to Carole’s amazing story](#) in an interview she did on the Lucy Ann Lance Show or you can download [Carole Urban’s testimonial here](#).

For more success stories, [visit our patient testimonials](#).

Is Vision Restoration Therapy Right For You?



Before you meet with your doctor, we want to make sure you have a full understanding of the types of problems Vision Restoration Therapy (VRT) can help and where the therapy may not be able to help. You will know your problems and capabilities better than anyone, but this will allow you to have a full and frank discussion with your doctor.

Who is VRT Right For?

NovaVision VRT is intended for the diagnosis and improvement of visual functions in patients with impaired vision that may result from trauma, stroke, inflammation, surgical removal of brain tumor(s) or brain surgery.

Patients who may benefit from VRT are those with **partial residual vision**, either in one or in both eyes. VRT will not be effective for patients without any residual vision whatsoever (i.e., total blindness). It is important to note, however, that many people who are considered “legally blind” do still have some residual vision. In this case, you should receive an evaluation from your health care professional to see if the therapy could be beneficial. You can also try our [Online Visual Field Screening Test](#); although a lot simpler than the diagnostic test your doctor would give you, it will help you determine if you might be suitable for VRT.

Is Vision Restoration Therapy Right For You? *(continued)*



VRT can help treat the following vision deficits:

- Hemianopia: Decreased or lost vision in one-half of the visual field.
- Quadrantanopia: Decreased or lost vision in one-quarter of the visual field.
- Scotoma: Island-like blind spot.
- Diffuse Field Defect: Scattered areas of decreased or lost vision in one or both eyes.

Who is VRT Not Right For?

Patients with a history of seizure disorders, especially those who are photosensitive, **must NOT** undergo VRT until they have consulted with

their health care professional. In patients with uncontrolled photosensitive seizure disorders, visual stimulation may have adverse effects including, but not limited to, seizures.

NovaVision VRT should also not be carried out by patients with severe cognitive defects, particularly due to the requirement to be able to concentrate for two sessions of 15-25 minutes a day, six days a week.

In addition, the following conditions are not treatable by VRT, may impact the ability of a patient to carry out VRT, and/or may reduce its effectiveness:

Is Vision Restoration Therapy Right For You? *(continued)*



- Uncorrected vision defects such as myopia, hyperopia, astigmatism, presbyopia or tropia (strabismus).
- Nystagmus.
- Progressive disorders such as glaucoma, multiple sclerosis, diabetic retinopathy or macular degeneration.

What Else Should You Be Aware Of?

If you have active acute inflammatory diseases of the eyes or central nervous system, you should not initiate VRT until the acute phase has subsided. Also, VRT treatment requires you to be seated for 15-25 minutes at a time. If you have been previously diagnosed with deep vein thrombosis (DVT) or have been identified by your doctor as having an increased risk of experiencing DVT, you consult your doctor.

In common with all activities requiring extended use of a computer screen, NovaVision VRT may cause light headaches or fatigue if performed too intensively or without sufficient relaxation periods (breaks). If this occurs, you should take more frequent breaks during the session or request NovaVision to shorten your therapy times. If this persists, you should temporarily discontinue the therapy until symptoms subside and tell your doctor.

Finally, although there are no age limits for the therapy, VRT is not recommended for children, due to the requirement to be able concentrate for two sessions of 15-25 minutes a day, six days a week.

About NovaVision



NovaVision is a world leader in the provision of rehabilitation therapies for those suffering vision disorders following stroke or other brain injury, with a mission to improve the vision of these patients and to enhance the quality of life for our patients and their families alike.

The traditional rehabilitation programs offered after stroke or other brain injury involve speech, physical and occupational therapies. The treatment of vision loss has remained a big unaddressed issue. NovaVision focuses on this critical missing therapy area, and provides a comprehensive range of clinically supported and affordable vision compensation and restoration therapy offerings for both patients and medical professionals, which complement each other to maximize patient benefit.

Our therapies are evidence-based, supported by decades of scientific research and clinical studies, and there are no scientifically supported, commercialized alternative restorative approaches to NovaVision VRT; other therapies based on compensatory or substitution techniques are unable to improve lost vision.

Our headquarters are in Boca Raton, Florida and we have offices in Germany and the UK. You can [learn more by visiting our website.](#)

Next Steps



A large part of the success of this therapy is that NovaVision patients do commit to VRT and find that, over time, it becomes part of their daily routine. Like any therapy, recovery will require work from the patient.

The process to start is very straightforward and we have a number of resources to get your started. To get started with VRT today, please explore the option below that best suits your needs:

[Visit our website and chat with a professional.](#)

[Contact us](#) at any time!

