

## Personal opinion on - vision restoration therapy for Optic nerve disease

Fedorov Restoration Therapy, also known as vision restoration therapy, is a type of treatment that aims to improve vision in people with optic nerve damage, typically caused by conditions such as optic neuropathy, glaucoma, or brain injury. The therapy is named after Professor Svyatoslav Fedorov, a renowned Russian eye surgeon. It involves non-invasive electrical stimulation of the brain areas responsible for vision.

Here's an overview of the evidence and scientific considerations regarding Fedorov Restoration Therapy:

- 1. Underlying Principle:** The therapy is based on the principle of neuroplasticity, which is the brain's ability to adapt and reorganize itself. By stimulating the visual system, the therapy aims to enhance the functioning of remaining healthy retinal cells and improve the brain's processing of visual information.
- 2. Research and Studies:** There have been various studies conducted to evaluate the effectiveness of vision restoration therapies, including those similar to Fedorov's approach. Some of these studies have reported improvements in visual function, such as better visual field or contrast sensitivity, in patients with optic nerve damage.
- 3. Mixed Results and Controversy:** The results of these studies have been mixed, and the therapy remains somewhat controversial within the medical community. While some patients report improvements, other studies have found minimal or no significant change in visual function. This has led to debates about the efficacy of the therapy and the placebo effect.
- 4. Lack of Large-Scale Clinical Trials:** One of the key criticisms of Fedorov Restoration Therapy is the lack of large, randomized, controlled clinical trials, which are the gold standard for evaluating the efficacy of medical treatments. Without these trials, it's difficult to conclusively determine the effectiveness of the therapy.
- 5. Mechanism of Action:** The exact mechanism by which the therapy might improve vision is not fully understood. While the concept of neuroplasticity is well-established, how it applies to vision restoration in cases of optic nerve damage is complex and not fully elucidated.
- 6. Individual Variation in Response:** There appears to be significant individual variation in how patients respond to the therapy. This variability makes it challenging to predict who might benefit from the treatment.
- 7. Professional Opinion and Guidance:** Many eye care professionals remain cautious about recommending Fedorov Restoration Therapy due to the lack of conclusive evidence. They often recommend more established treatments and management strategies for optic nerve damage.

In summary, while there is some evidence suggesting potential benefits of Fedorov Restoration Therapy for certain individuals with optic nerve damage, the scientific community has not reached a

consensus on its effectiveness. On going research may lead to a clear understanding. Studies with glaucoma patients and sleeping neurones is undergoing trials in USA .

## Neurostimulation for vision restoration

Neurostimulation for vision restoration is a developing area in the field of ophthalmology and neurology, particularly for patients with visual impairments due to neurological causes. This approach involves stimulating the visual pathway or the brain to restore or enhance visual function. The scientific evidence for neurostimulation in vision restoration varies based on the type and cause of visual impairment.

- 1. Retinal Prostheses:** For patients with retinal diseases like retinitis pigmentosa, retinal prostheses such as the Argus II have shown some success. These devices work by electrically stimulating the retinal cells, conveying visual information captured by a camera to the brain. Clinical trials have demonstrated that these devices can provide limited restoration of vision, typically allowing users to detect light and motion, and in some cases, to recognize large letters and simple shapes.
- 2. Cortical Visual Prostheses:** These devices stimulate the visual cortex of the brain directly. They are intended for individuals with damage to the optical pathways, such as from glaucoma, trauma, or infection. The evidence for cortical prostheses is still in early stages, with various research teams conducting trials to assess their feasibility and effectiveness.
- 3. Transcranial Magnetic Stimulation (TMS):** TMS is a non-invasive method used in various neurological conditions. Studies have explored its use in visual restoration, particularly in patients with stroke-induced visual field defects like hemianopia. The results are mixed, with some studies showing improvement in visual fields, while others have not found significant benefits.
- 4. Transcoral Coil Stimulation (TCS):** Similar to TMS, TCS is another form of non-invasive stimulation, but it targets the eye directly. Research in this area is limited and still experimental.
- 5. Visual Neuroplasticity Training:** This is a broader category that involves various forms of visual training and rehabilitation, sometimes combined with non-invasive brain stimulation techniques. The idea is to enhance the brain's ability to process visual information, compensating for the damaged parts of the visual system.

The current evidence suggests that while neurostimulation can offer some benefits, it typically does not restore normal vision. The results vary greatly depending on the individual patient's condition, the type of neurostimulation used, and other factors. These technologies are continually evolving, and ongoing research is critical to understand their potential fully.

If a Home based system gets FDA (Food and Drug Administration) approved, one going trial in USA , then this could become a practical home based therapy.

It's important to note that neurostimulation for vision restoration is a complex and specialized field. Individuals with visual impairments should consult with their healthcare providers to discuss the most appropriate treatments for their specific conditions.

Patients interested in this therapy should consult with their eye care professionals and consider it as part of a comprehensive treatment plan, understanding the current limitations and uncertainties in the evidence supporting its use.

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Very good review article published December 2023 gives a good over view

<https://www.reviewofophthalmology.com/article/neurostimulation-for-vision-restoration>

By Christine Yue Leonard, Senior Associate Editor

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Neurostimulation for Vision Restoration

How neurostimulation research in glaucoma is progressing, and why stress management might help.