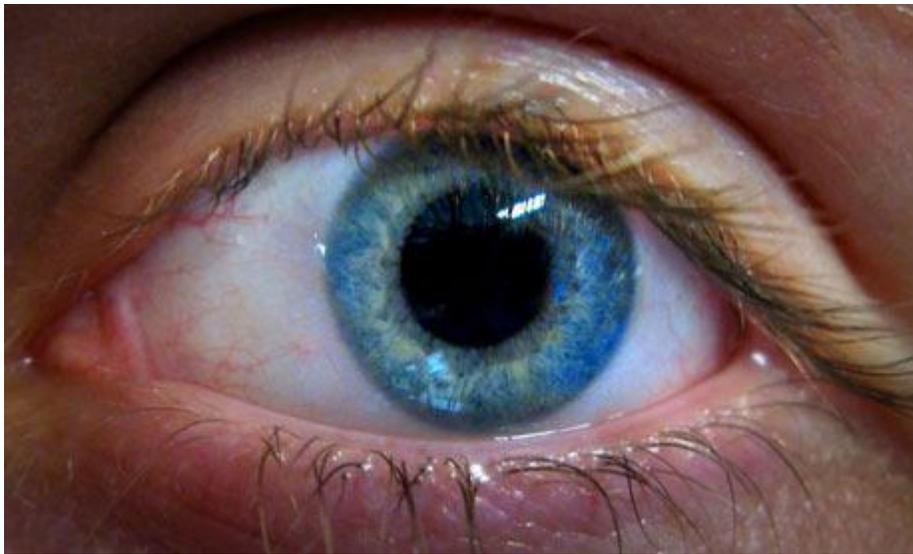


Stroke patients regain sight after intensive brain training

People left partially blind by a stroke learned to use undamaged parts of their brains to improve their vision

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The study overturns received medical wisdom that you can't retrain vision after a stroke.
Photograph: John Stillwell/PA

Thousands of people left partially blind by strokes could regain some of their sight by doing exercises to retrain their brains, according to a study.

Patients who completed an intensive course designed by [neuroscientists](#) showed a marked improvement in their vision, with some being able to see well enough to drive a car once again.

Other patients who had struggled to get around in unfamiliar places became confident enough to go shopping and do other everyday tasks such as crossing the road, the scientists said.

The exercise regime, which required patients to spend around an hour a day at a computer for at least nine months, forced them to process visual signals with parts of their brain that had not been damaged by the stroke.

The exercises worked even if people had suffered a stroke more than a year previously, giving hope to many older patients whom doctors often expect to make no further recovery.

"When we started the study, we were not sure what to expect because of the current dogma that in fact you can't retrain vision after a stroke," said Krystel Huxlin, a neuroscientist at the University of Rochester Eye Institute in New York state, who led the study. "It turns out you can recover vision after stroke. It's very hard to do, and it takes a lot of exercising of your visual brain, but it is possible."

As many as 60% of people who have had a stroke have impaired vision as a result. In most cases, the stroke destroys cells in the visual cortex, leaving people with large blindspots on one or both sides.

Huxlin's team wondered whether stroke patients could be trained to work around the part of their brain damaged by stroke, using other regions to make sense of visual information still getting through from their retinas.

To find out, the researchers recruited four women and three men in their 30s to 80s who had suffered a stroke between eight months and three-and-a-half years previously. All had lost between a quarter and a half of their field of vision following a stroke.

In a series of tests, the volunteers were asked to stare at a dot on a computer screen. As they focused, a group of moving dots appeared on the screen outside their field of view.

Even though the patients could not see the dots at first, they were asked to guess whether they were moving to the left or right. At first, the patients got the right answer around half of the time, but after weeks of training their success rate went up to 80 or 90%.

After many months of training, patients found their vision improved and the blindspots caused by stroke became smaller. They were learning to process visual information that was previously only barely registering in their subconscious brain.

The research, which appears in the [Journal of Neuroscience](#), overturns previously held beliefs about the ability of the brain to adapt to such serious damage.

"A lot of neurologists and clinical practitioners are not really aware that it is possible to recover vision after stroke," said Huxlin. "People who've had a stroke affecting the visual cortex are usually sent home and told there's nothing that can be done for them."

He said the exercise regime led to substantial improvements in the patients' lifestyle. "As their vision improves, they feel more confident to go out in unfamiliar places or in crowded places, and get around and not lose their way or bump into things. In some cases the improvements are big enough that patients have been able to regain their driving licences."

Joanne Knight, director of research at [The Stroke Association](#), said: "Every year 150,000 people in the UK have a stroke and many stroke survivors have to deal with visual problems which can

severely affect their mobility, ability to judge distances and likelihood of falling. We welcome this research and look forward to further in-depth studies into vision rehabilitation for stroke survivors."