

[Driving + Mobility](#) 16-Oct-2017

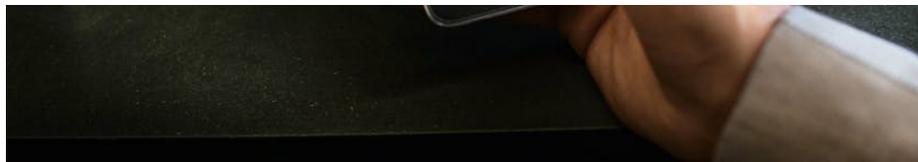
What's the best way of developing spectacle lenses tailored to our digital lifestyle?

BETTER VISION interviewed Timo Kratzer from ZEISS Vision Care to discover more about the development of Digital Lenses

You might think people have already created spectacle lens solutions for every conceivable vision-related problem – but it turns out that's not the case. ZEISS decided to take a closer look at how vision works in our new digital world of regular smartphone and tablet PC use – and the results were nothing short of astonishing. The findings led to the development of a vision solution that provides effective relief from eye strain. Keen to discover what lay behind the development of ZEISS Digital Lenses, BETTER VISION decided to interview Timo Kratzer, who heads up the development department for lens design and patents at ZEISS.

BETTER VISION: ZEISS recently launched its new portfolio of Digital Lenses, a product that addresses a key requirement of vision in modern times. What triggered the development of [ZEISS Digital Lenses](#)?





Timo Kratzer: The development of Digital Lenses was a lengthy process, and the idea behind the development came from many different sources. These included, feedback from opticians and consumers, the results of the wearer trials that we regularly carry out for our lens products, and the data from our lens production processes which we constantly evaluate.

Digital devices, such as smartphones and tablet PCs have become our constant companions, something that we are continually looking at and browsing. We decided to analyse people's vision in this context because we saw that many people between the ages of 30 and 40 were suffering from tired, strained eyes, particularly in the evenings. In some cases, people didn't realise that it was getting harder to focus on close-up objects, they simply felt less relaxed and comfortable than they did before. In many cases, they were having to hold their smartphones, iPads and other devices further and further away from their eyes in order to focus properly.

Our findings showed that this stems from a combination of multiple factors. Firstly, the eye's ability to adjust its focal length to different distances – what we refer to as accommodation – is already starting to deteriorate by the time people hit their mid-30s. That's something that tends to creep up on us without us really noticing it. Secondly, smartphone use in particular – though this also applies to reading the newspaper – requires us to switch our gaze from a close-up viewing to distance vision much more frequently than usual. Our eyes are continuously having to focus on varying distances. This causes strain, especially if the eye muscle's flexibility has deteriorated due to the hardening of the crystalline lens. And, thirdly, it involves a different visual distance to the one we're familiar with for reading, for example. Reading materials used to be the closest things we focused on with any great frequency, but now people hold digital and mobile devices much closer to their eyes than a book.

BETTER VISION: How did this knowledge lead to the design of the new ZEISS Digital Lenses?

Timo Kratzer: We realised that we needed to design a new category of spectacle lenses based on this knowledge, because we understood that it needed a visual solution that was different to just single vision or progressive lenses.

The key to the ZEISS Digital Lenses which are now available on the market, was to support people's close-up vision to enable them to focus on digital devices at a distance of approximately 30 centimetres whilst also offering extensive distance vision with a rapid transition between the two visual zones. To do this, we used an addition of between 0.5 and 1.25 dioptres in the lower region of the lens – which is kept as low as necessary – combined with unimpaired distance vision. The advantage is that Digital Lenses can be used all day long as your main pair of spectacles, whatever activities you're involved in, plus you get used to wearing them very quickly. That means you avoid having to put on reading glasses or switching spectacles, unless of course you decide to enjoy the sun and pop on some sunglasses.

BETTER VISION: Does that mean Digital Lenses can also be used as a sunglasses?

Timo Kratzer: Yes, The ZEISS Digital Lens design is also available in a tinted version and as [> self-tinting lenses](#). For people wearing glasses for the first time who don't need any distance correction, it's also possible to simply design the upper part of the lens without optical power and confine the support for close-up vision to the lower part of the lens.

BETTER VISION: What were the other key factors in getting the design right?

Timo Kratzer: Intensive wearer tests are critical when it comes to developing new lens designs. We always want to know exactly how our design will work for different people on a day-to-day basis. For example, whether it will offer real improvements and be well tolerated. So we recruit a group of testers who follow a standardised process and provide us with a detailed account of the positive and negative aspects of each new lens. That enables us to compare designs based on slightly different calculations and continuously optimise our calculations until we get things exactly right.

BETTER VISION: In relation to Digital Lenses you also talk about digital eye strain, or the

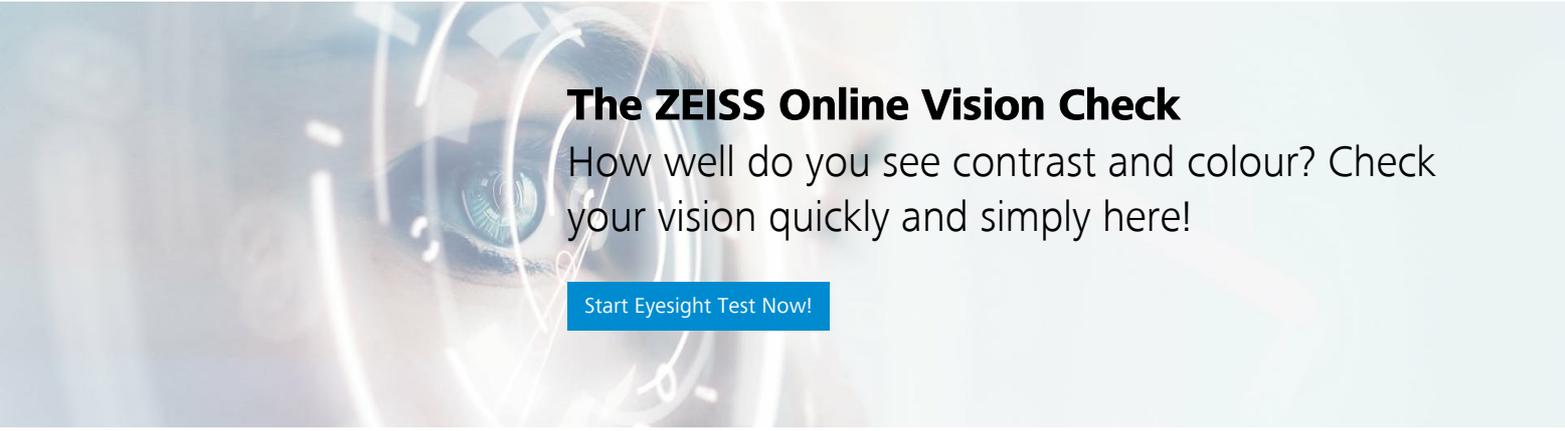
Computer Vision Syndrome (CVS). What exactly is that? And how can you find out if you're already suffering from digital eye strain?

Timo Kratzer: As we get older our eye's crystalline lenses get harder. If we're constantly switching between close-up and distance vision, it can be very tiring for our eyes, and that's what we refer to as digital eye strain. It doesn't necessarily mean that your eyes can no longer focus on objects at certain distances, but rather, that they take longer to do so and have to work harder in the process. I've noticed it myself, for example when my little boy had a splinter in his finger and I was trying to remove it with tweezers. You have to look at the finger very closely, but nowadays I have to hold his finger further away to get it in focus, because close-up vision is simply becoming more difficult.

We've actually developed a test to determine whether people's eyes are showing the first signs of digital strain. You switch between looking at a display and looking into the distance and the test analyses how quickly your eyes re-focus on each respective distance. This test can be performed by your ZEISS optician or you can even carry out a quick test yourself using our free eye strain test app.

BETTER VISION: Sounds easy! Is there anything else I can do to take the strain off my eyes?

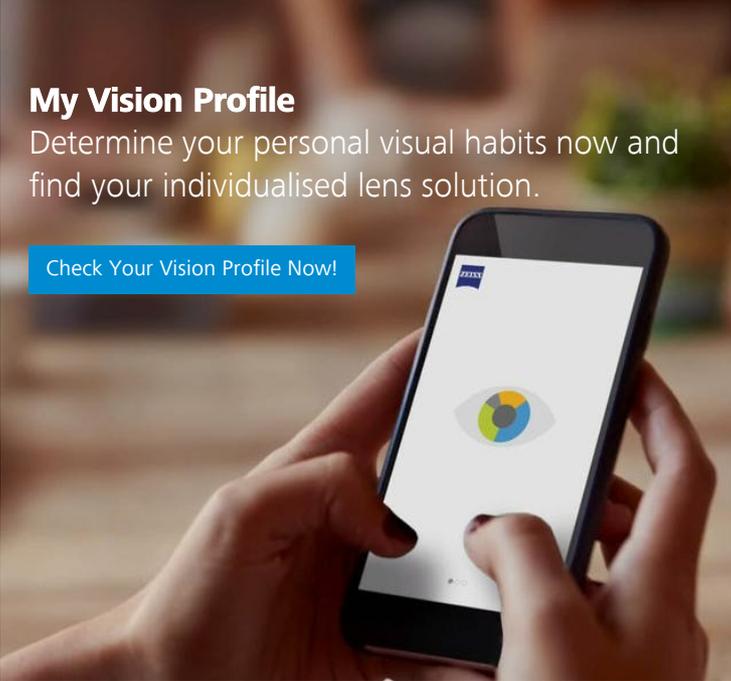
Timo Kratzer: There is some debate about whether eye training is effective or not. But what definitely helps is to periodically give your eyes time to relax over the course of the day. You can do that by looking into the distance while keeping your eyes relaxed and without focusing on anything in particular. But they say you need to do it regularly during the day – for five minutes every hour!



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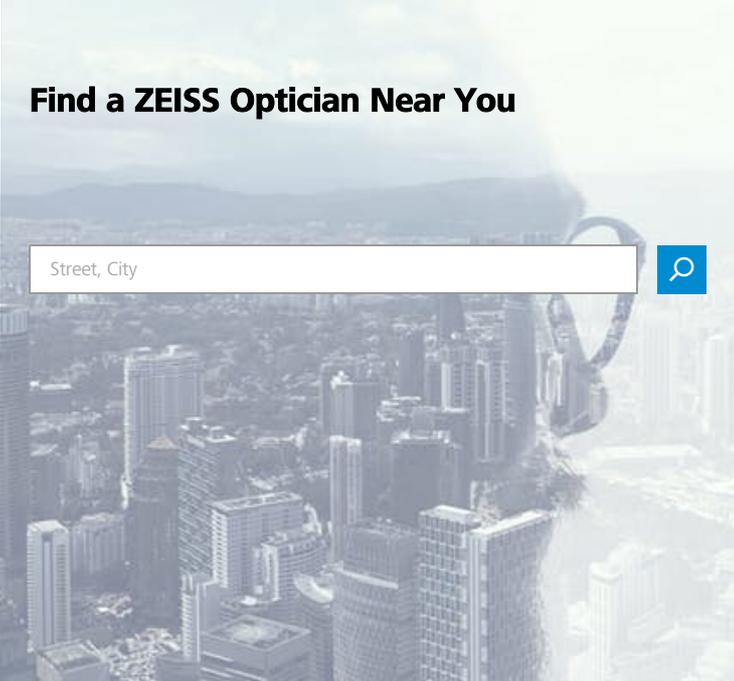
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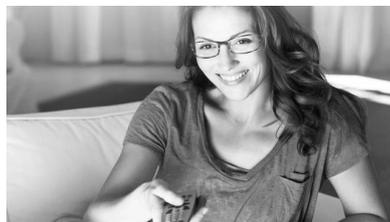
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