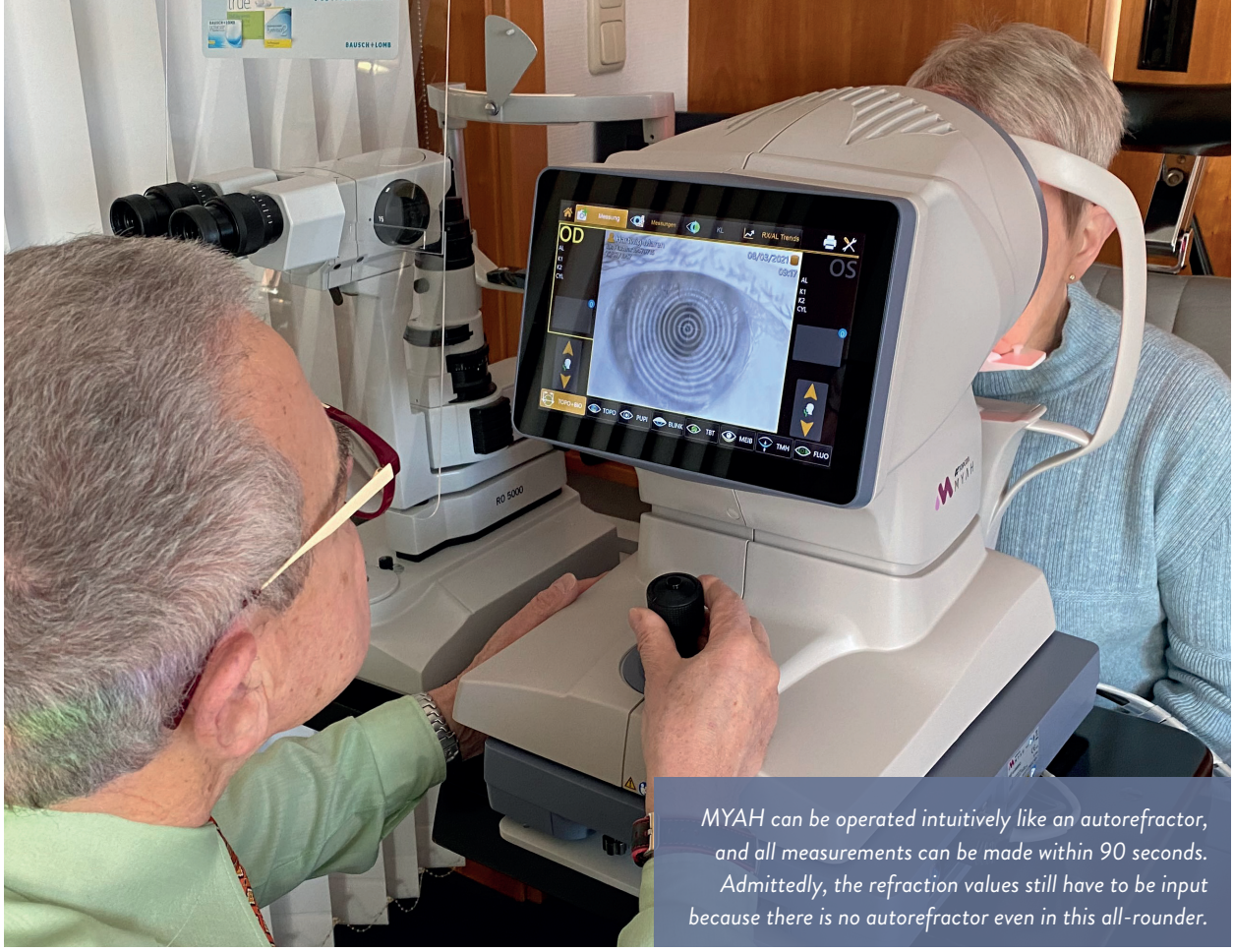



*MYAH can be operated intuitively like an autorefractor, and all measurements can be made within 90 seconds. Admittedly, the refraction values still have to be input because there is no autorefractor even in this all-rounder.*

MYAH is an ideal tool for myopia management

# A wealth of functions in one system

**A "nice, small and manageable device with really nothing to criticise about it" is how Dr. Andreas Hartwig describes the MYAH topography device whose wealth of functions allow myopia management and screening for dry eyes among other things. In the process, MYAH also simplifies the communication with the parents, which is obviously at least as important in the area of myopia management as the actual measurements and possibilities. Hartwig has taken a look at MYAH in more detail for DOZ.**

The possible influence on the development of short-sightedness in children and adolescents and the connected service from eyecare professionals including their colleagues who are even more optometrically oriented has been dealt with comprehensively in previous editions of DOZ. Everyone is talking about myopia management – at least in our industry, but from now on the topic could attract more attention in the general population and thus in the target group.

There are plenty of reasons why myopia management could, and should, play a more significant role in the future. On the one hand, there are more and more robust insights about and an increasing selection of therapy possibilities for advancing myopia – and as a result also increasing successes to report. On the other hand, the apparently even more quickly advancing technology is becoming better and making it more easily possible to recognise progressive myopia and

Photos: Hartwig • Topcon Healthcare

then to initiate the correct steps. Last but not least, current developments in home schooling and the additional increase in the use of digital devices by children and adolescents as a result of the pandemic are fuelling the topic.

In this respect, in his business, Hartwig Optik, Uhren & Schmuck in Heikendorf near Kiel, Dr. Andreas Hartwig, PhD, FAAO, has yet to notice a significant increase in demand or interest from customers, but he is naturally taking an intensive interest in this topic anyway as the operator of the Hartwig Research Center UG. He has had a close look at the new MYAH device from Topcon Healthcare for DOZ. According to the manufacturer, alongside the normal functions and possibilities for contact lens fitting, it is particularly suitable for screenings as part of myopia management and for dry eyes: Using optical low-coherence interferometry (OLCI), MYAH can measure the axial length of the eye, which makes the instrument an ideal tool for opticians, optometrists and ophthalmologists. In other words, that enables simple myopia management. Because, according to Hartwig, "with myopia management, above all, the increase in axial length needs to be reduced".

## Expectations of the user are also one side of the coin

The theory is one side of the coin. In conversation with Hartwig it became clear in addition that obviously the experience and expectations of the user are also another side. MYAH is impressive in a test, but Hartwig would probably not be true to himself if he didn't include at least some alternatives for particular measurements and screenings in his findings. However, the first impression scarcely differs from the overall judgement: "MYAH is a nice, small and manageable device with really nothing to criticise about it. Handling is intuitive and as easy as with an autorefractor. As a first-time user, there is almost nothing you need to get used to", explains Hartwig.

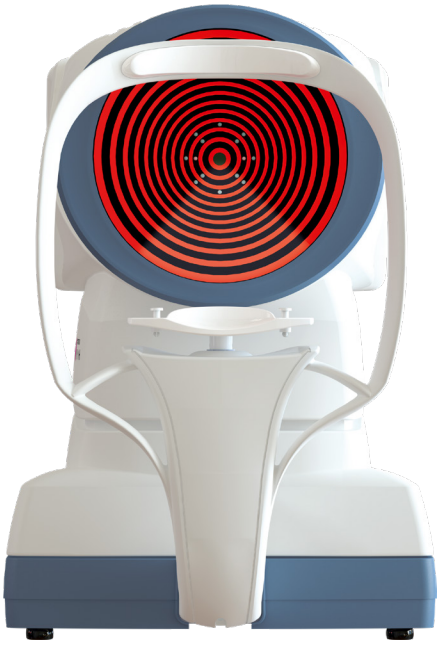
You operate MYAH largely using the touch screen, and despite the range of functions, the user is unlikely to lose the overview. It is true that centring, initiating the measurement and changing eyes are carried out manually, but that doesn't make the measurement protracted for either the user or the customer. "No, the time needed for the biometry and topography for three measurements per eye – as recommended in the instructions – is around 90 seconds in total", explains Hartwig.

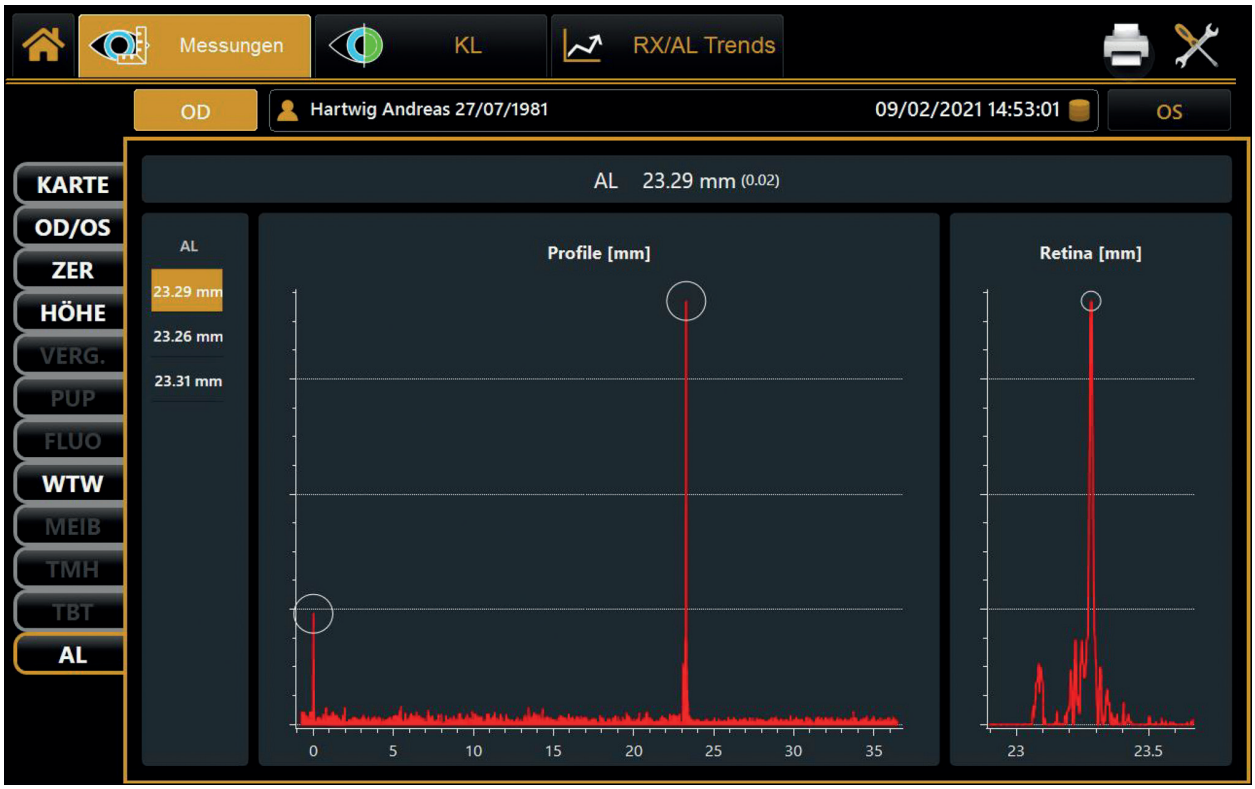
In the Topcon brochure, MYAH is described as space-saving and user-friendly, but also as patient-friendly because of the fast analysis. Hartwig doesn't contradict this, given the remarkable abundance of functions, but the specialist notices quickly: "that an autorefractor is missing. As a result, the values for the determination of refraction have to always be manually entered." The optometrist considers that as a disadvantage for his daily work, but it is offset by numerous measurement possibilities. The use of MYAH for myopia management and for screening for dry eyes is front and centre in the Topcon communication. Hartwig lists what the device can also do beyond that:

- Topography & biometry: "The fact that only axial length can be measured is optimal in daily use as that is the decisive value. But when you look a little further, then the anterior chamber depth and lens thickness are also important. But that shouldn't be a decisive factor."

- Use as topographer: "As with all topographers, the central corneal radii are not measured but simulated. That makes no difference in practice, but if you want to measure the central radii, you still need a keratometer. For fitting ortho-K lenses, MYAH has everything."

- Keratoconus screening, contact lens fitting and pupillometry: "MYAH points out corneal signs that make the recognition of Keratoconus easier, there is a database available with conventional RGP lenses and ortho-K lenses and, in addition, MYAH offers a fluorescence imaging simulation. Higher-order corneal aberrations and eccentricities are likewise shown. The pupillometry is dynamic and the measuring process is fast and smooth. This is a very practical application, particularly for fitting multi-focal contact.






*The measurement of the axial eye length in the course of myopia management is a significant if not the most important measurement. MYAH averages the value from three measurements that can be easily compared over a long time period.*

- Measuring the corneal diameter: "A very good and important function when fitting contact lenses."
- 3D simulation of the corneal topography: "Very interesting to be able to show the customer possible changes in the cornea. The visualisation works well and provides clear images."
- "Finally, the device offers a photo and video function as well."

The standard tools available for determining a dry eye are considerable according to Hartwig. MYAH measures the amount of tear film and analyses the quality of the tear film. Alongside the blink frequency, the height of the tear meniscus and the tear break-up time (NIBUT test) can be determined and the real fluorescein imaging visualises any corneal aberrations between blinks using video recording and review. The analysis of the Meibomian glands rounds off the exact appraisal of a potential dry eye in the shortest possible time.

But naturally someone like Hartwig does not however allow anything bad to be said about the slit lamp: "The beautiful, three-dimensional view through the slit lamp cannot be improved! But MYAH is the better device for the customer and for visualisation. Because here I can show the customer everything and make it comparable so that they get a good impression of what I have found out. Ultimately I determine the tear meniscus height preferably with the slit lamp. Still, the measurement with MYAH would be too laborious for me."

## MYAH automatically measures the number of blinks

However, the slit lamp is not only necessary because of the beautiful view, but also for the qualitative evaluation of the blinks. "I also need to know whether the blinks are complete. MYAH only measures the number of blinks, but for that it is automatic, which is certainly a great advantage and probably often more exact than manual counting with the slit lamp." The optometrist suggests that the dry-eye tools "certainly do not form the main focus of the device". For MYAH is certainly an all-rounder on the one hand, but on the other it follows the goal of allowing simple and responsible myopia management to be built up.

The discussions are well-known: by the middle of this century, according to a forecast by the Australian Brien Holden Institute, every other person will be short-sighted. The trend in myopia of previous years is cause for concern and it is progressing rapidly. In the coming three decades, the number of affected people

compared to 2010 will double. The indication that the numbers are alarming, particularly in Asia, is certainly correct, but that changes nothing about the importance of a possible new service that is possible today concerning eye health care.

In Germany as well, the target group for myopia management exists and independent of the actual number of myopic people is clearly defined: For every child with incipient short-sightedness there must be a clarification of whether it concerns a progressive myopia, the consequences of which could be slowed with suitable measures. With therapies and corrective possibilities that today, alongside a different way of thinking about the progress of short-sightedness, also allow active treatment. MYAH has the appropriate tools on board for the decision - progressive myopia or not – and is intended to promote interdisciplinary cooperation between ophthalmologists and ophthalmic opticians, which is indicated anyway for myopia management.

The technology used makes targeted myopia management possible for optometrists and makes the decision about the best possible treatment methods possible. For the latter, the administration of atropine in very small doses can be monitored, for example. Ophthalmic opticians can sit children of all ages at the device. Hartwig has done that "in order to get basic data and to measure the axial length". The test phase was not long enough to compare the measured data with the following data, but with MYAH the individual measurements, generally taken six-monthly, can be easily and meaningfully compared: "The results and data are then all represented on a time axis, which allows a growth in length to be recognised. The refraction values can be input and the spherical equivalent displayed."

## MYAH shows its strengths

MYAH shows its strengths here according to Hartwig, not only concerning myopia management: When fitting orthokeratology lenses for reducing myopia progression, opticians cannot rely solely on the refraction values. Also here Hartwig suggests the measurement of the overall length of the eye is of decisive importance. And the work with the brand new device has yet another advantage: "MYAH simplifies the communication with the parents, because the good visualisation of the measured values also serves to persuade the parents of a measure beyond corrective glasses."

The fact that Hartwig is requested to carry out a calibration every time the device is switched on might seem excessive for ophthalmic needs. But the calibration only lasts 30 seconds as long as the necessary measuring eye is immediately to hand. In the same category, and presumably rectified by the first software update, is the translation error that Hartwig suggests should be "Überbrechung" instead of "Überrefraktion".

## Conclusion

MYAH shows its strengths as an all-rounder for myopia management and beyond that it is a topographer that is intuitive to operate that unifies an impressive wealth of functions under the hood. Its possibilities for visualisation for customer advice are enormous and therefore it is a shame that no external monitor can be attached, for example with an HDMI connector. According to Topcon, it is possible to integrate MYAH into the network with the in-house software, ImageNet. In this way, the customer does not have to miss out on an impressive screen visualisation. For the test operation for Hartwig, however, this would have been somewhat time-consuming. The integration is definitely worthwhile in the long term. It would be really annoying if the photo and video functions had to get by without this output.

**Integration in the network is worthwhile, because the screen visualisation is impressive.**

The Harmony system software goes another step further by allowing an uncomplicated cooperation with the ophthalmologist and also a telemedical connection. The lack of an autorefractor is the actual shortcoming for Hartwig, as he has his slit lamp in addition for everything else. MYAH only measures the aberration for the cornea and not for the whole eye: "but that is logical, as anyone who expects that from MYAH is simply sitting behind the wrong device", thinks someone who truly knows about optometric devices and who was impressed by the many functions of MYAH and its operation.

*Ingo Rütten summarised the test experience of Dr. Andreas Hartwig*