

INFORMATION FOR PATIENTS

SCHWIND
eye-tech-solutions

SAFE LASER EYE SURGERY

THE THREE MAIN METHODS



Safe laser eye surgery: What are the factors that make vision treatment successful?

Every year, almost four million* patients around the world have laser eye surgery to improve their eyesight – and those numbers are increasing all the time. You may soon be one of those patients. To help you prepare for your treatment, this brochure explains how the various technologies and methods work. See for yourself why doctors and patients trust laser eye surgery so much.

These three factors are crucial for the success of your treatment:

Success factor 1: Your doctor.....	Page 4
Success factor 2: Tried and trusted methods.....	Page 6
SmartLASIK (FemtoLASIK).....	Page 8
SmartSurf ^{ACE} (TransPRK).....	Page 10
SmartSight (lenticular extraction).....	Page 12
Success factor 3: Our laser technologies.....	Page 14

* Market Scope, Global Refractive Surgery Market Report 2021

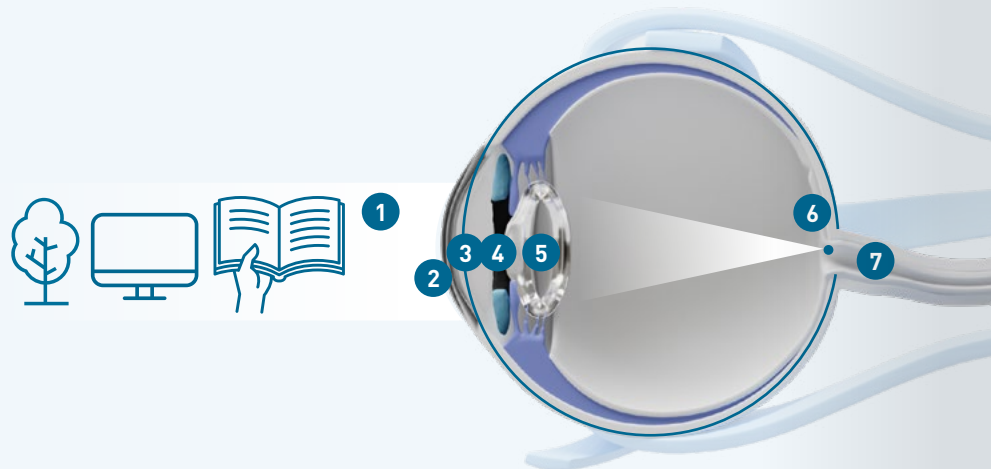
Your doctor supports you throughout your treatment

Refractive errors affect about 60% of the world's population* and are the most common type of vision problem. Your doctor detects these problems, suggests appropriate treatment and carries out the vision correction. Doctors who work with our eye lasers are medical experts who are

* Market Scope, Global Refractive Surgery Market Report 2021

up to date with the latest technology and provide support throughout your treatment journey. Before explaining the exact process for treating refractive errors, let's answer the basic question first: What does your doctor consider to be a "refractive error" that they can treat with eye laser surgery?

This is how the eye normally works.



The human eye is an impressive system that converts light rays into signals that are turned into images by the brain.

Light rays 1 reflected from objects in the environment enter the eye through the cornea 2. The cornea is protected on the outside by the epithelium, a transparent layer of tissue. The cornea accounts for about 70% of the refractive power or focusing of the eye. Then the light passes through the pupil 3, which is the central opening of the iris 4, and reaches the lens 5. The lens sharpens the focus and bends the light onto the retina 6. The retina converts the

light into electrical signals and passes the information to the optic nerve 7. The optic nerve carries the signal to the brain, where it is converted into images.

When everything is working properly, the cornea and lens focus incoming light correctly on the retina. This is what we call "normal vision" – when the objects we see are crisply outlined from any distance.

Your doctor detects and treats these refractive errors.

SHORT-SIGHTEDNESS

Myopia or short-sightedness is caused when your eyeball is too long or your cornea is too steeply curved. This means that incoming light focuses **IN FRONT** of the retina instead of **ON** it.

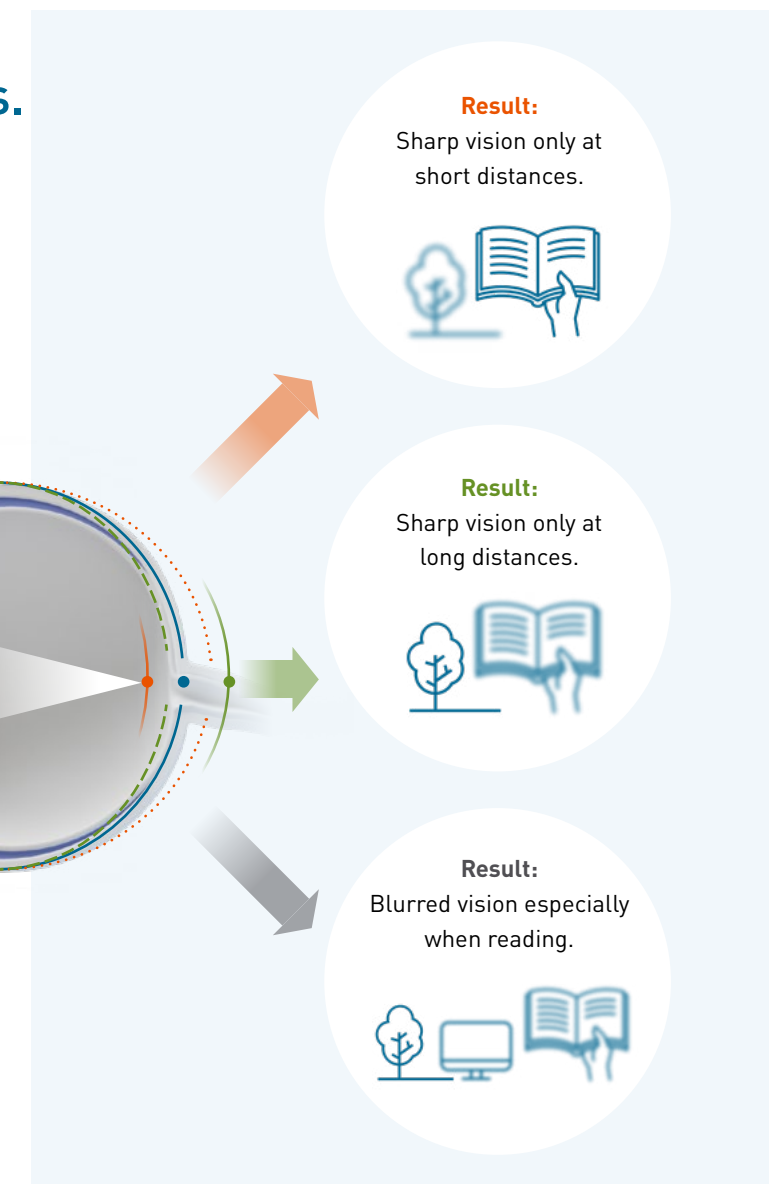
LONG-SIGHTEDNESS

Hyperopia or long-sightedness is when the eyeball is too short or the cornea is too flat. This means that incoming light focuses **BEHIND** the retina.

AGE-RELATED LONG-SIGHTEDNESS

Presbyopia or age-related long-sightedness happens when the lens of the eye **BECOMES LESS FLEXIBLE**. Your eye is less able to adjust to different distances, especially when looking at objects up close. The light does not focus tightly enough on the retina to produce a sharp image.

OTHER REFRACTIVE ERRORS Other eye conditions apart from these ones include astigmatism and higher-order aberrations. With astigmatism, your vision is blurry because the cornea is the wrong shape. Higher-order aberrations



result in individual refractive errors. About 80% of aberrations are caused by specific corneal distortions. Only 20% involve the lens or vitreous body.

Which eye laser methods are there and which is the right one for your vision problem?

Laser vision correction was invented in the 1980s. In the years since then, laser technologies and laser vision correction procedures have been thoroughly researched and become standard clinical practice. There are a number of different procedures to choose from, and your doctor will select the one that is right for you. The main options are:

SMARTLASIK (FEMTOLASIK)

SMARTSURF^{ACE} (TRANSPRK)

SMARTSIGHT (LENTICULAR EXTRACTION)

Although the procedures differ, all three have these things in common:

- A long and successful track record.
- Safe to perform.
- Fast results for the patient.

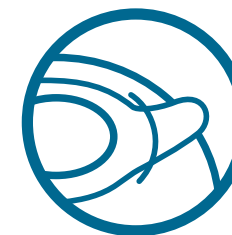
To find out more about each method, read on.



SmartLASIK



SmartSurf^{ACE}



SmartSight





Method 1: Laser treatment with SmartLASIK

The tried and trusted method for good vision and fast regeneration

Key facts at a glance

- All-laser LASIK
- Treatment with two lasers:
 - Flap creation (femtosecond laser)
 - Intrastromal ablation (excimer laser)

An option for people with*...

- Short-sightedness up to -12D
- Long-sightedness up to +6D
- Astigmatism up to 6D

Special feature

- Tried and tested over many years

Total treatment time per eye ...

About 8 to 15 minutes

... including lasering time of:

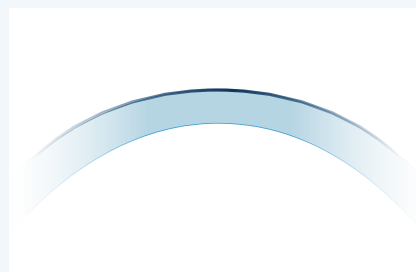
About 1 minute (with both laser systems)

Recovery time

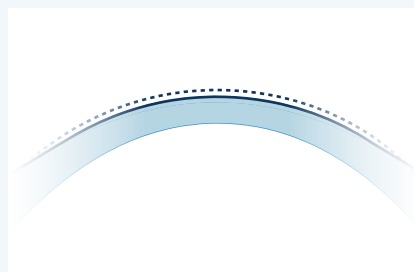
- 1 to 2 days

Outcome

Before



After



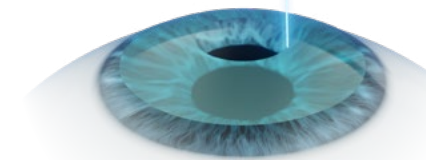
Benefits

- Virtually painless
- Improved vision immediately after treatment ("wow" effect)
- Fast regeneration

**It is the doctor's responsibility to decide about the most suitable procedure and limits of treatment for each patient. Legal requirements and recommendations of ophthalmological organisations may differ from country to country.

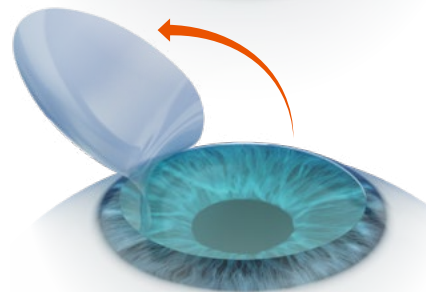
Here's how your doctor corrects your vision with laser eye surgery:

1



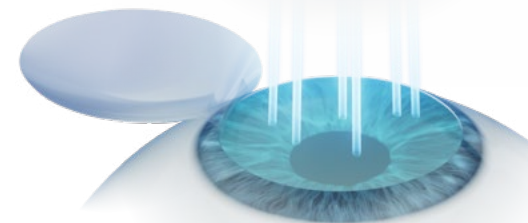
The femtosecond laser creates a thin corneal flap in the top corneal layer of the eye. On one side, the flap remains connected to the cornea.

2



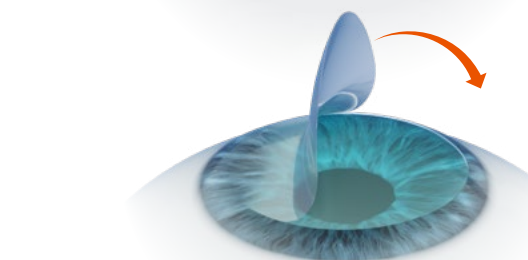
This untouched strip acts like a hinge which the doctor uses to lift the flap.

3



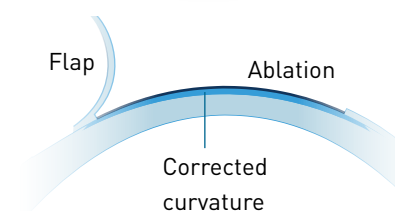
The excimer laser reshapes the exposed cornea to correct the refractive error.

4



The flap is folded back to its natural position and covers the treated area.

Schematic view





Method 2: Laser treatment with SmartSurf^{ACE}

The method for high corneal stability

Key facts at a glance

- Procedure with only one laser: Excimer laser
- Done at the surface of the cornea
- One-step treatment
- No-touch

An option for people with*...

- Short-sightedness up to -9D
- Long-sightedness up to +6D
- Astigmatism up to 5D

Special feature

- No-touch treatment

Total treatment time per eye ...

About 5 to 10 minutes

... including lasering time of:

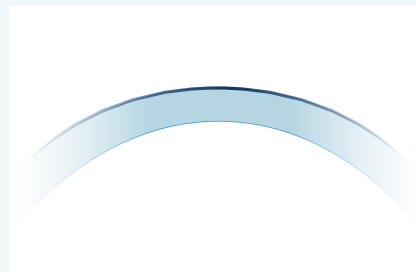
Less than a minute

Recovery time

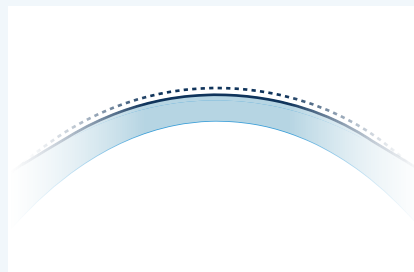
- 3 to 5 days

Outcome

Before



After



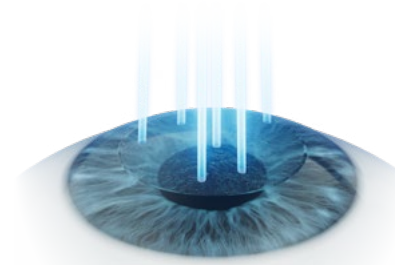
Benefits

- High corneal stability
- Ideal for people with thin or irregular corneas
- Frequently recommended for contact and water sports enthusiasts

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Here's how your doctor corrects your vision with laser eye surgery:

1



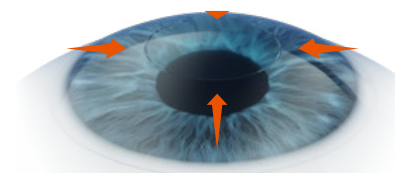
The excimer laser removes the top layer of the cornea (epithelium) in one step, reshaping the corneal tissue below and correcting the refractive error.

2



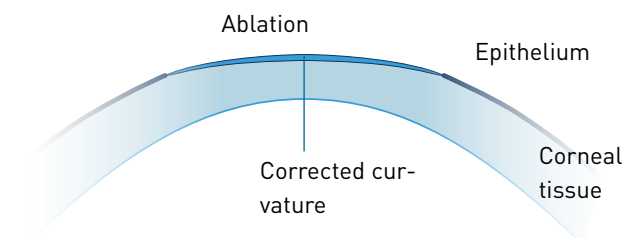
The doctor places a bandage lens (soft contact lens) over the eye to protect it.

3



The epithelium takes about 3 days to close. The bandage lens is removed after about 4 days.

Schematic view





Method 3: Laser treatment with SmartSight

The minimally invasive, practically painless method

Key facts at a glance

- Procedure with only one laser: Femtosecond laser
- One-step treatment
- The procedure is called lenticular extraction
- Minimally invasive

An option for people with*...

- Short-sightedness up to -12D
- Astigmatism up to 6D

Special feature

- Minimally invasive

Total treatment time per eye ...

About 7 to 12 minutes

... including lasering time of:

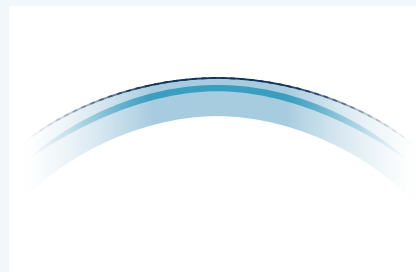
About 30 seconds

Recovery time

- About 2 to 3 days

Outcome

Before



After



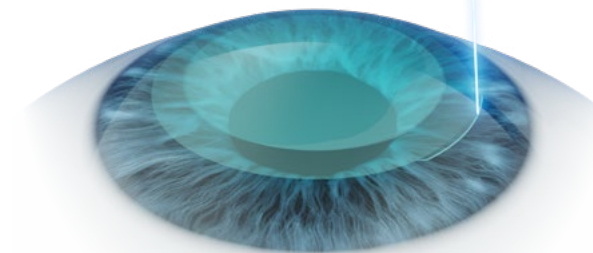
Benefits

- High corneal stability
- Virtually painless
- Fast regeneration

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Here's how your doctor corrects your vision with laser eye surgery:

1



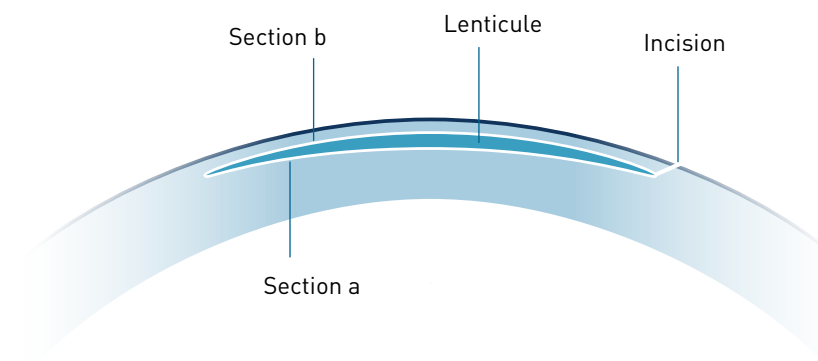
The femtosecond laser creates a lenticule (lens-shaped piece of tissue) by cutting two sections of corneal tissue (a, b) and makes a small incision for lenticule removal.

2



The surgeon removes the lenticule through the incision. This changes the curvature of the cornea and corrects the refractive error.

Schematic view



Eye lasers by SCHWIND eye-tech-solutions State-of-the-art technology, putting our expertise at your service

In addition to doctors and methods, another crucial factor for successful treatment is – of course – the lasers themselves. We have spent more than 30 years perfecting our high-tech devices with and for doctors. Thousands of our products are used to treat millions of patients all over

the world. Experts love our laser eye equipment too: Our lasers regularly win national and international awards. Numerous scientific publications document the high precision of our products. And naturally, our decades-long success story benefits you as a patient.

FEMTOSECOND LASER SCHWIND ATOS

The benefits for you as a patient:

- Precise and safe due to sophisticated eye tracking
- Spares tissue by optimising lenticular geometry
- Low-energy concept is gentle on tissue
- High-tech scanning ensures consistently high cutting quality across the entire cornea

For the following procedures:

- SmartLASIK (flap)
- SmartSight (lenticular extraction)



EXCIMER LASER SCHWIND AMARIS

The benefits for you as a patient:

- Quick lasering with short treatment times
- Sophisticated eye-tracking for safe and precise treatment
- Small laser spot smoothes the corneal surface
- More gentle tissue removal through thermal control

For the following procedures:

- SmartLASIK (intraströmatal treatment)
- SmartSurf^{ACE} (TransPRK surface treatment)



For further details about
treatment methods or
laser eye surgery, please
contact your specialist:

