

NASA APPROVES DUAL-LASER LASIK FOR ASTRONAUTS -and Navy Gives OK for Fighter Pilots

On September 21, 2007, the National Aeronautics and Space Agency (NASA) approved dual-Laser LASIK eye surgery for U.S. astronauts. The NASA decision was made following review of extensive military clinical data, which showed the combination of femtosecond laser for LASIK flap creation and wavefront-guided excimer laser for corneal sculpting provides superior safety and vision. Dual laser LASIK is the first and only LASIK technology approved for vision correction on NASA astronauts. The earlier technology using a single laser and a steel blade remains unapproved.

NASA's approval of dual laser LASIK gives U.S. astronauts a much needed option for vision correction. Glasses and contact lenses created numerous problems during blast off and in zero gravity space.

["We have used dual-laser LASIK at Grene Laser for two years and our results show excellent safety and visual results, similar to the armed forces reports. This is the proven level of safety many patients have been waiting for,"](#) said Dr. Grene, medical director of Grene Laser Center.

Approved for consumers almost a decade ago, more than 11 million LASIK procedures have been performed to-date, making it the most-common elective surgical procedure in the U.S. but it wasn't until LASIK developed into a dual-laser procedure that NASA approved it for use on pilots, mission and payload specialists who face extreme, physically demanding conditions in space. The dual-laser LASIK technologies, which utilize wavefront guided and femtosecond lasers, have also been cleared for U.S. military personnel, including most recently, Navy pilots.

["Our patients won't experience the stress of rocket lift-off or landing a 40 million dollar jet, but our patients do want the same high level of safety and great vision required by astronauts and Navy pilots"](#) Grene said.

"NASA's approval is further evidence that today's LASIK exceeds all established standards of safety and effectiveness," said Steven Schallhorn, M.D., retired captain of the U.S. Navy, investigator in multiple studies involving use of LASIK and other refractive surgeries for treatment of nearsightedness, farsightedness and astigmatism. "NASA followed the Naval Aviation clinical studies closely with a particular interest in both safety and quality of vision under extreme conditions. Wavefront guided and femtosecond lasers were proven to provide excellent safety with consistent visual results of 20/20 or better. LASIK was able to withstand even the most extreme rigors of warfare and flight. All surgical procedures have risks, but with this exceptional track record, the average consumer has nothing to fear from LASIK." Dr. Schallhorn, a retired naval "Top Gun" aviator, spearheaded the majority of the Defense Department's research in laser vision correction.

STUDIES SHOW EXCELLENT SAFETY AND VISION

NASA recently made dual laser LASIK the first refractive surgery approved for US astronauts. NASA based its approval in part upon the excellent results and safety that

dual laser LASIK demonstrated in several Department of Defense studies. These notable results include:

- An evaluation of Custom LASIK in 100 military personnel showed that 95 percent achieved 20/20 uncorrected vision or better; these patients, on average, were previously only able to read the first line (the big “E”) of the vision assessment chart.¹
- In a study of different methods to create the LASIK flap, 370 naval personnel underwent bilateral wavefront-guided LASIK with either the femtosecond laser or microkeratome blade. One week after surgery more than 76 percent of femtosecond laser patients achieved an uncorrected visual acuity of at least 20/16 (better than 20/20) compared to 58 percent of microkeratome patients.²
- In an evaluation of 785 aviators, 89% of Navy pilots rated their ability to land on an aircraft carrier as moderately to significantly better after laser vision correction. None said it was worse after surgery.³
- A separate study determined that over 90 percent of marksmen had improvement in marksmanship skills after laser vision correction; a significant result given the visual precision of marksmen.⁴

TODAY’S ADVANCED LASIK USES DUAL-LASER TECHNOLOGY

LASIK is a two-step procedure. In dual-laser LASIK, the computer guided, ultra-fast IntraLase FS (femtosecond) laser is used in the first step to create the corneal flap, virtually eliminating almost all of the most severe, sight threatening LASIK complications related to hand-held microkeratome blade historically used to create corneal flaps.⁵ The IntraLase FS laser also provides an optimal corneal surface below the flap, allowing better visual outcomes from the second step of the procedure.

In the second step of advanced LASIK, wavefront-guided technology maps, and then custom-corrects vision based upon the unique characteristics of an individual’s eye. This sophisticated measurement provides 25 times more precision than measurements using standard methods for glasses and contact lenses, taking patients to 20/20 vision and beyond.⁶

1. Source: Captain (Retired) Steven C. Schallhorn, “US NAVY Study: Custom PRK versus custom LASIK”. Presented at the European Society of Cataract and Refractive Surgeons annual meeting; September 8, 2006; London, UK.
2. Source: Tanzer DJ, Schallhorn SC. Comparison of visual outcomes with femtosecond and mechanical mikrokeratomers for wavefront-guided LASIK. Presented at the American Academy of Ophthalmology annual meeting; November 13, 2006; Las Vegas, NV.
3. Source: Schallhorn SC, Tanzer DJ, ‘Refractive Surgery in Naval Aviation’, Presented at the Aerospace Medical Association annual meeting, May 15, 2006, Orlando, FL
4. Source: Captain (Retired) Steven C. Schallhorn, “Refractive Surgery in the Navy”, Presented at the Aerospace Medical Association annual meeting; May 17, 1999; Detroit, Michigan.
5. Source: Captain (Retired) Steven C. Schallhorn, “Refractive Surgery in the Navy”, Presented at the Aerospace Medical Association annual meeting; May 17, 1999; Detroit, Michigan.
6. Source: Binder PS: “One thousand consecutive IntraLase laser in-situ keratomileusis flaps” Journal of Cataract and Refractive Surgery. V32. June 2005.

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