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**HEADLINE:** WAKE FOREST UNIVERSITY: Temperature and humidity can affect **LASIK** surgery results

**BODY:**

Humidity and temperature levels can affect **LASIK** surgery results, increasing the number of people who need follow-up procedures, report researchers from Wake Forest University Baptist Medical Center.

"This is the first study to show that environmental factors can affect **LASIK** outcomes," said Keith Walter, MD, assistant professor of ophthalmology. "For best results, physicians should take these factors into account when calibrating laser equipment."

The results are reported in the Journal of Cataract and **Refractive Surgery**.

Walter found that a 10% increase in treatment room humidity meant an additional 9 out of every 100 patients required an enhancement procedure. Results also were influenced by outdoor temperatures and humidity in the weeks before surgery, said Walter, with more enhancement surgeries required during the humid summer months.

The number of eyes requiring an enhancement procedure ranged from 0% in the winter months to 50% in September, when outdoor humidity was at its highest. During less humid months, there was a tendency to overcorrect vision. During the more humid summer months, there was a tendency toward undercorrection.

In the study of 191 patients, Walter evaluated 12 variables that were suspected to affect **LASIK** results. These factors included age, sex, environmental factors such as room and outdoor temperature, and curvature of the cornea, the clear, front part of the eye that provides most of the focusing power.

**LASIK**, which stands for Laser-Assisted In Situ Keratomileusis, is a procedure that permanently changes the shape of the cornea using an ultraviolet laser.

"The goal of **LASIK** should be for a maximum number of patients to achieve eyeglass-free vision with a single procedure," said Walter. "This study evaluated environmental variables that may influence outcomes."

Walter performed the surgery on 368 eyes, with an average of 15.5% requiring a second procedure to fine-tune vision. An analysis of the variables showed that indoor humidity had the largest impact on whether enhancement surgery was required. But outdoor temperature and humidity in the 2 weeks before surgery also played a role.

Walter said additional moisture in the air may decrease the laser energy absorbed by the stroma, the thickest layer of tissue in the cornea. Also, some patients' corneas may become

more hydrated before the procedure, making it more difficult for the laser to remove tissue.

"Environmental data should play a role in how the equipment is programmed to further refine the visual outcome," said Walter. He has developed a formula for programming the equipment at Wake Forest, and has already seen improved results.

"Our study doesn't mean that consumers should avoid **LASIK** surgery during the summer," said Walter. "But they should make sure that their physicians compensate for temperature and humidity" (Walter KA, Stevenson AW, Effect of environmental factors on myopic **LASIK** enhancement rates. J Cataract Refract Surg, 2004; 30(4): 798-803).

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