



Southwestern Oklahoma State University
SWOSU Digital Commons

Oklahoma Research Day Abstracts


2013 Oklahoma Research Day

Jan 10th, 12:00 AM

14. Optometry

University of Central Oklahoma

Follow this and additional works at: <https://dc.swosu.edu/ordabstracts>

 Part of the [Animal Sciences Commons](#), [Biology Commons](#), [Chemistry Commons](#), [Computer Sciences Commons](#), [Environmental Sciences Commons](#), [Mathematics Commons](#), and the [Physics Commons](#)

University of Central Oklahoma, "14. Optometry" (2013). *Oklahoma Research Day Abstracts*. 13.
<https://dc.swosu.edu/ordabstracts/2013oklahomaresearchday/mathematicsandscience/13>

This Event is brought to you for free and open access by the Oklahoma Research Day at SWOSU Digital Commons. It has been accepted for inclusion in Oklahoma Research Day Abstracts by an authorized administrator of SWOSU Digital Commons. An ADA compliant document is available upon request. For more information, please contact phillip.fitzsimmons@swosu.edu.

Abstracts from the 2013 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

14. Optometry

05.14.01 Axis Orientation of PureVision® 2 for Astigmatism at One, Five, and Ten Minutes

Lauren Frost, April Parker, Latricia Pack,

Northeastern State University

ABSTRACT Purpose. We evaluated the axis orientation of PureVision® 2 for Astigmatism (Bausch & Lomb, Rochester, NY) lenses to conclude whether or not these lenses provide successful (\pm five degrees of six o'clock) orientation. Successful orientation with one diagnostic lens in less than ten minutes will likely encourage the use of this lens in practices and allow practitioners to decide whether or not the implementation of this lens will be time and cost effective. **Methods.** We fit 60 astigmatic eyes (34 test subjects) with PureVision® 2 for Astigmatism soft toric lenses and recorded the orientation of the lenses at one, five, and ten minute intervals. **Results.** PureVision® 2 for Astigmatism stabilized within five degrees of six o'clock 38.33%, 58.33%, and 58.33% of the time at one, five, and ten minutes post-application, respectively. **Conclusion.** PureVision® 2 for Astigmatism positioned within five degrees or less of six o'clock 58.33% of the time at both five and ten minutes. We conclude that a practitioner can expect approximately 60% of PureVision® 2 for Astigmatism initial diagnostic lens toric markings to be oriented within five degrees of six o'clock by five minutes post-insertion. **Key Words:** PureVision® 2 for Astigmatism, stabilization, rotation, astigmatism, toric

College of Optometry * BS † OD, FAAO Northeastern State University Oklahoma

05.14.02 The Accuracy of iCare Tonometry Over Silicone Hydrogel and Hydrogel Contact Lenses

Elise Bolay, Alissa Proctor, Vanessa Williams,

Northeastern State University

Purpose: The purpose of this study is to assess the accuracy of intraocular pressure (IOP) using the iCare over disposable hydrogel and silicone hydrogel contact lenses of different powers. Methods: The experimental group was comprised of twenty subjects. IOP measurements were taken on the subject's right eye using the iCare. The contact lens powers included +3.00, -3.00, +6.00, -6.00. A total of ten IOP measurements were taken with eight measurements being over a contact lens. The first and the last measurements were without contact lenses. Results: An ANOVA showed that material, power, and the interaction between the two (material with power) all are statistically significant. Although, the ANOVA shows material as significant, the Scheffe Post Hoc test reveals that no group (hydrogel, silicone hydrogel, or no lens) was significantly different than the rest; and in regards to power, +6.00D was significantly different than -6.00D, -3.00D, +3.00D, and no lens. The non linear plots do not show a significant trend in detecting differences between the two measures of IOP (with and without contact lenses) as a function of their mean value for powers +3.00, -3.00 and -6.00. It does, however, show a significant difference when using the +6.00 lens. Conclusion: IOP did not change significantly for lens powers +3.00, -3.00 and -6.00, but did change for +6.00 D. Therefore, when performing iCare tonometry on patients with more than 3.00D of hyperopia, the contact lens should be re

05.14.03 Tonometry for the Management of Glaucoma

Kelsey Grounds, Jenna Lighthizer, Sarah Boone,

Northeastern State University

Purpose. To evaluate the agreement of intraocular pressure measurements obtained by the Goldmann applanation tonometer and the new ICare ONE tonometer. Methods. Intraocular pressure measurements were obtained in the eyes of 31 normal, healthy subjects aged 20-40 years using the ICare ONE tonometer and the Goldmann applanation tonometer. Subjects were divided randomly into two groups to vary the order in which the tonometers were used. All Goldmann applanation tonometry measurements were made by the same examiner, who was masked to the readings obtained. Questionnaires were given to each subject asking about his or her experience with the ICare ONE tonometer. Results. Intraocular pressure measurements were found to read slightly, but not significantly, lower with the ICare ONE tonometer compared with the Goldmann applanation tonometer (mean bias \pm SD of 0.131 ± 2.901 mmHg). Upper and lower 95% limits of agreement between readings with the ICare ONE and Goldmann tonometers were +5.933 mmHg and -5.671 mmHg, respectively (0.1311 ± 5.802). Conclusion. Intraocular pressure measurements obtained with the ICare ONE tonometer show excellent correlation with those provided by the Goldmann applanation tonometer, the gold standard of tonometry. Measurements using the ICare ONE in normal, healthy subjects produced a small, statistically insignificant bias when compared with the Goldmann applanation tonometer.

05.14.04 Academic Predictors for Success in Optometry School

Randall Sauer,

Northeastern State University

The purpose of this retrospective study is to examine the predictive reliability of incoming ACT scores, undergraduate grade point average, undergraduate science grade point average, optometry school GPA, and Optometry Admission Test scores in predicting success in optometric education. Success in optometry school is defined as National Board of Examiners in Optometry Part One score and cumulative optometry school GPA. Eleven years of student data (2000-2011) collected from Northeastern State University- Oklahoma College of Optometry. 275 student academic transcripts and admission data were made unidentifiable to by a school administrator. Data was analyzed using a step-wise linear regression. Total OAT score was found to be statistically significant to performance on NBEO Part 1 test scores (R=.556). Correlation improved when undergraduate GPA was added to the model (R=.601). NBEO Part 1 scores can be predicted by the following probability model equation: $NBEO = -770.705 + (2.923 \times \text{total OAT score}) + (90.981 \times \text{undergraduate GPA})$. In predicting optometry school GPA upon graduation, undergraduate GPA ($p < .001$) (R=.509) was the most correlative. The ability to predict optometry school GPA improved when total OAT score was included with undergraduate GPA (R=.570). Optometry school GPA can be predicted by the following equation: $\text{Optometry school GPA} = .088 + (.537 \times \text{undergraduate GPA}) + (.005 \times \text{OAT})$.

05.14.05 Selective Laser Trabeculoplasty Outcomes in Native American Glaucoma Patients

Chad Mies, Josh Golden, Michelle Welch,

Northeastern State University

Purpose. The purpose of this study is to question whether the SLT procedures performed at Northeastern State University Oklahoma College of Optometry provide proper IOP lowering effects in the Native American population that we provide eye care. **Methods.** Our research was based on a retrospective chart review of the outcomes of SLT surgeries performed on Native American glaucoma patients. Pre- and post-operative IOP measurements were collected from the medical charts of twenty five patients who have had an SLT procedure done over a four year time period. The significant time intervals of which IOP measurements were taken into consideration for statistical analysis are the following: 1. Initial IOP reading (pre-SLT) 2. 2-6 weeks post-op 3. 5-7 months post-op. **Results.** We found no statistically significant difference between IOP reduction at 2-6 weeks post-op and 5-7 months post-op in either eye. The average IOP reduction was approximately 14% at 2-6 weeks and 12.75% at 5-7 months. **Conclusion.** Our research showed that SLT performed at NSUOCO has been effective at lowering IOP in many glaucoma patients. The average decrease in IOP was slightly less than expected from what previous research has shown. Many factors could have contributed to these results including clinician variability, patient compliance, and diurnal variation of IOP.

05.14.06 Correlation between viewing distance and asthenopia associated with viewing of three-dimensional televisions

Erin Ridder, Bonnie Rigney,

Northeastern State University

Asthenopia symptoms may include blurred vision, headache, tiredness, soreness, and pain concentrated around the eyes. We used active shutter technology, which is most commonly used for 3D televisions. Manufacturers of 3D televisions list the optimum viewing distance, which seems close in relation to normal television viewing. We hypothesize that more subjects will have asthenopic symptoms while viewing at a shorter viewing distance, due to the greater dissociation between accommodation and convergence.

05.14.07 Survey Review of the Demonstrated Benefits of Completing an Optometric Residency

Sarah Mulliniks, Emily Bruce,

Northeastern State University

INTRODUCTION Graduating optometry students are challenged with the decision of whether or not to complete a residency. Further, many factors currently exist that were not considered during previous residency studies. The goal of this research project is to provide current information for optometry students demonstrating the benefits they may receive from completing optometric residency training. **METHODS** We anonymously surveyed the optometric residents from each of the schools and colleges of optometry in the United States from the previous five years using a survey company called CheckBox. **RESULTS** Of the 109 residents who completed the survey: almost half (48.62%) chose to enter private practice, 76.64% received up to four job offers, 73.79% currently earn between \$75,000 and \$124,999, over half (56.88%) incurred a student loan debt between \$100,000 and \$200,000, 30 are FAAO certified, 10 are ABO certified, 95.41% felt completing an optometric residency better prepared them for their current job positions, and 99.10% stated they would complete a residency again if given the choice. **DISCUSSION** Many of our survey findings seemed to contradict commonly held beliefs about reasons students choose to enter residency programs and the benefits a residency program provides. Our survey results will be a source of the current advantages and benefits of optometric residency programs for optometry students to reference when choosing whether or not to pursue an optometric reside

05.14.08 Tear Osmolarity Changes after Instilling Isotonic Hyaluronate Artificial Tears

Owen Setter, Aaron Reinert, Thomas Salmon,

Northeastern State University

Introduction. Tear hyper-osmolarity may be a fundamental cause of dry eye. Blink Contacts contains hyaluronate, which is designed to bind water and protect against evaporation and hyper-osmolarity. It may therefore be an effective treatment for dry eye. Purpose. Our purpose was to measure changes in tear osmolarity over time following instillation of Blink Contacts and normal saline in order to better understand artificial tear efficacy and to gain a rational basis for dosing schedules. Methods. After taking baseline TearLab osmolarity measurements, four subjects received a drop of Blink Contacts, and four received normal saline in both eyes. We measured tear osmolarity five minutes later, and then at 15-minute intervals up to 95 minutes. Subjects also rated comfort at each time. The following day, the experiment was repeated with the drops switched for each subject. Results. There was no statistically or clinically significant change in tear osmolarity over time for either drop, and there was no significant difference between the two drops. Comfort ratings showed no significant difference between Blink Contacts and saline at any time. Conclusions. Since neither drop significantly affected tear osmolarity or comfort at the times tested, the result are inconclusive. Small sample size, insufficient number of dry eyes and variability in the TearLab data may have contributed to these findings. Further research with more subjects is warranted.

05.14.09 Melanoma Screening in Primary Eye-care: Dermoscopy vs. Gross Clinical Visualization

Andrew Whitley, James Thirion,

Northeastern State University

Does dermoscopy of suspicious skin lesions permit significantly greater diagnostic accuracy of melanoma than clinical visualization alone? Methods:A dermoscopy training tutorial for optometrists was created.The tutorial was presented to study participants in a multimedia/power-point format.A cohort of 1 clinically experienced and 11 inexperienced subjects were trained with the tutorial.The subjects were asked to visually screen gross lesions (presented as photographs) utilizing the conventional screening methods of gross observation and analysis taught in the NSU-OCO optometry program.After the dermoscopy tutorial training, the subjects were given dermoscopic images of the same lesions and asked to employ the dermoscopic screening criteria taught in the tutorial.Improvement in the diagnostic yield after training was scored and analyzed with common statistical methods.A control group containing 3 inexperienced subjects and 2 experienced subjects was used.This group did not undergo tutorial: Experimental group screening sensitivity improved from 52% to 79%. Specificity dropped from 46% to 20%.Conclusion:Overall screening sensitivity improved by dermoscopy.Dermoscopy effectiveness was neither proved nor disproved, due to the drop in specificity.More studies are needed to confirm the usefulness of dermoscopy as a melanoma screener in primary eye-care.

05.14.10 Was Rembrandt Strabismic?

Roger West, Nicholas Mondero, Russell Crotty,

Northeastern State University

ABSTRACT Purpose. We studied a set of Rembrandt's self portraits to reassess a previous claim that those portraits show that Rembrandt had a large exotropia, which was based on measured differences between the painted irises. Methods. We scanned 10 of Rembrandt's 24 self portraits that depict significant ocular detail; the five with the largest measured difference between the irises, and the five with the smallest. Then, the right and left eyes in each image were occluded using Photoshop to produce two additional images that gave monocular gaze. Thirty observers then judged where the portraits appeared to be gazing within the plane of their face. Results. Rembrandt's apparent strabismus was large for only a short time early in his career, which would not be typical of a true strabismus. Also, the one portrait whose head was turned in the direction opposite to the others showed the opposite eye as troping. We also examined portraits that Rembrandt and his students produced of other presumably non-strabismic individuals, and found similar exotropic postures. Conclusions. We conclude that the apparent exotropia in Rembrandt's self portraits may have been simply a preferred artistic style.