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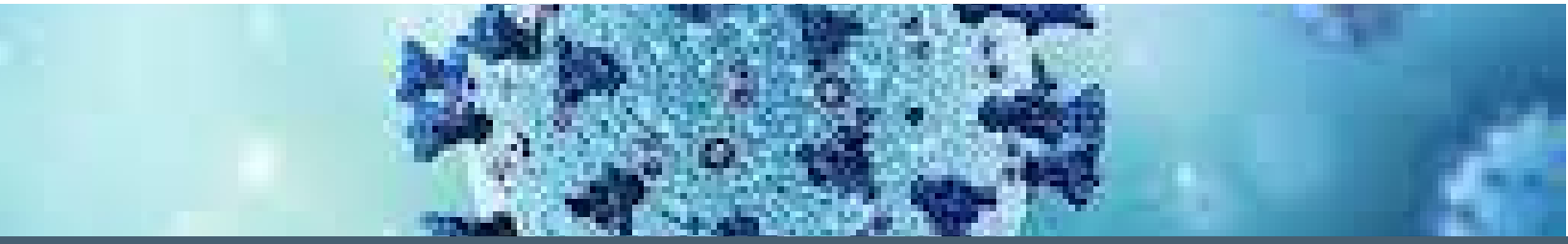
Eye Research Center

SUMMER 2021 E-NEWSLETTER



INSIDE THIS ISSUE

Research News

Author

Stuart Richer, OD, Ph.D, FAAO

Title

Let there be Light

Summary

The management of visible and invisible light, with prescription of specific lighting sources and / or spectacle filters, is an under-appreciated and under-utilized therapeutic modality. Greater awareness of photometric science and the seminal role that light plays in clinical practice is growing. Examples include AMD treatment (The Lumithera® photo-biomodulation device), a dense cataract in a monocular patient (orange tint), migraine (FL41 lenses or Therapsecs®) , traumatic brain injury (blue tints), photosensitive epileptic seizures (BPI Zee Indigo tint) , myopia prevention (outdoor lighting and colder color temperature reading lamps), autism (magenta painted room for emotional / physiological equilibrium), Parkinson's traditive dyskinesia (BPI Electric Blue ®) etc.

Of course, this summer, we all know that fisherman are best served by lenses with both photochromics and polarization. Other disorders such as dyslexia, are also regularly encountered in clinical eye care. Optometrists and Ophthalmologists must explore the characteristics of visible and near-visible light and research underway allowing optometrists to both protect, promote and enhance human potential. This information should be communicated directly to the patient.

In order to improve their skill set, optometrists and ophthalmologists must be able to 1) Describe the characteristics of the visible electromagnetic spectrum; 2) Understand basic photometric principles, and how to use a portable palm sized spectroradiometer; 3) Describe the characteristics of the invisible electromagnetic spectrum (UV & IR) and its potential importance in eye care; 4) Describe the hazards of visible and invisible light to the eye and body; 5) Describe the importance of choosing the most appropriate tint (filter) for patients suffering from conditions mentioned above and finally 6) Understand the benefit of too much or too little light and their hazards with respect to the intersection of sleep & screen technology.

We certainly don't want our patients asking Jiff at the "Big Box Store" what type of light bulbs to buy or which sunglass filters to select. Because, we are the true light warriors, and it's our job.

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Research News

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Title

Keratoconus detection using Artificial Intelligence

Summary

Every day more people are diagnosed with the keratoconus (KCN) disease, many of them children. Even with all the available technology early stage KCN can be easily misdiagnosed by the clinical staff. The future includes KCN detection by means of machine artificial intelligence (AI) techniques that include machine learning and deep learning algorithms. The developed AI algorithms by me and my team [1]-[3] can augment clinical practice and aid corneal specialists in identifying those at higher risk of developing keratoconus or at the early stage of the disease.

Me and my team developed in 2019 the first deep learning model based on a convolutional neural network (CNN) called KeratoDetect [5] that is able to detect KCN based on colored topographic eye maps. The paper is cited being considered a landmark in KCN detection using deep learning techniques while achieving a high accuracy.

Our multidisciplinary team, composed of artificial intelligence experts and corneal specialists, for the first time provides solid evidence, based on a large dataset of participants, that visual field damage can be detected with a good accuracy from corneal shape, thickness, and elevation parameters only. The results were recently in 2021 published in the Scientific Reports Nature [1].

The potential of the developed diagnosis algorithms is huge, due to its possible contribution in streamlining the KCN diagnosis process and the detection of this illness at an early phase, thus saving lives.

References

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RESEARCH NEWS

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Title

Trabeculoplasty Update

Summary

Although selective trabeculoplasty has been in use for decades, the number of publications on SLT has significantly increased in recent years. It has gained widespread acceptance as a viable first-line therapy for open angle glaucoma. High baseline intraocular pressure is likely the strongest predictor of laser response. Recent literature supports the long-standing assumption that SLT is repeatable. In fact, repeat treatments may have a cumulative effect which may provide longer duration of clinical benefit then the initial treatment. The development of MIGS glaucoma procedures may have contributed to less clinical interest in trabeculoplasty; however SLT outcomes compare favorably with MIGS procedures. The clinician should not hesitate to turn to selective trabeculoplasty for primary therapy of open angle glaucoma, or for repeat therapy in patients who have had prior SLT.

Publication Information

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UPCOMING EVENTS

Live-COPE approved Webinars

August 7th, 2021

August 22nd, 2021

September 19th, 2021

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Opens August 1, 2021

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