

OEP

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Equipment for Sale

It's Back! Billy Boards are again available through OEP. The newly named VIBE Disc costs \$139.99 plus shipping/handling. The product # is XBB100. Call OEP 800 424 8070 to place your order.

Don Blackburn has two stereo orthopters that he is willing to give away if you just pay the shipping. If you are interested in one or both of these orthopters, please contact Don directly. Phone 302 998 1395 or email visionrehab@doctor.com.

Bruce Ginsberg has an office full of vision therapy equipment for sale that is just a couple years old. It is like new. Bruce has left his vision therapy practice to work with nursing home patients. He is selling everything. Contact Bruce personally at 954 384 1127 or email Baginsberg@aol.com.

Frank Rubin, O.D. is retiring from his practice and has optical and vision therapy equipment available. Please contact Dr. Rubin personally. Pictures of the equipment are available by sending him your e-mail address. The pictures will be sent as an attachment. You can contact Dr. Rubin via email at frankrub@erols.com.

Practice Opportunity

Randy Schulman, MS, OD, FCOVD, is looking for an associate/partner/buyer for her Norwalk CT office. If you have interest, please contact her directly. Her phone number is 203-840-1991, email address is www.optometrists.org/schulman.

Heidi Johnson is looking for an associate to work with her in her Marquette, MI practice. Please contact Heidi if you are interested or if you know of someone who might be, by phone 906 228 4401 or by email hjohnson@superioreye.com.

Genetic Astigmatism

By: Robin Lewis, O.D.

In the Clinical Curriculum Art & Science of Optometric Care Course we describe astigmatism in detail. There are five broad categories of astigmatism we are concerned with in the course. The categories include: 1) Small cylinders X 90. 2) Small cylinders X 180 3) Occupational astigmatism 4) Pathological Astigmatism 5) Genetic Astigmatism. This article is concerned with this last unusual category.

High, relatively-symmetrical, with-the-rule cylinders are endemic in many Native American populations. They are rarely seen away from those populations, at least in North America. As it turns out a large percentage of our Native American populations are descendents of peoples native to the Gobi desert who seem to have migrated across the Bering Strait to what is now Alaska; and from Alaska, throughout North America. This can be

traced with genetic and Athapascan linguistic links. The languages which compose the Athapascan family are plainly related to each other and are clearly distinct from other American languages. The Navaho "code talkers" were able to speak their Athapascan language freely over the radio during WW II because their language is so distinct that it was impossible for outsiders to understand. Athapascan is the most widely distributed of all the Indian linguistic families of North America, extending over parts of the continent from the Arctic coast far into north Mexico. For more information on these links you may want to access:

<http://www.accessgenealogy.com/native/tribes/athapascan/athapascanindiantribe.htm>

Recently Paul Harris was in Greece teaching. A Greek ophthalmologist showed him a topograph of a Greek patient that showed astigmatism similar to that found among Native American populations in the US. How did this happen? As it turns out, there was once quite a bit of traffic from Africa to Asia and throughout the Mediterranean carrying Frankincense and Myrrh to the East and bringing trade items westward from India to the Mediterranean. This traffic went at least as far east as India. Some of those roads are still there and can be seen in satellite views.

<http://www.nizwa.net/env/frankincense/fkincense.html>

There is a city (Petra) in modern day Jordan carved out of a mountain that played an important role. The city is probably more famous for its role in an Indiana Jones movie than its historic role for thousands of years as a portal between Asia and the Middle East.

<http://www.raingod.com/angus/Gallery/Photos/MiddleEast/Jordan/Petra/>.

<http://www.usu.edu/anthro/museum/exhibits.php?gallery=Petra>

The Mongol connection with India is direct. Shah Jehan, the fifth Mughal (Persian for Mongol) emperor was the builder of the Taj Mahal.

The point is that there is a plausible genetic trail from Asia to Europe as well as from Mongolia to the Americas. The incidence of the high cylinders might be less common in Europe due to multiple genetic influences where individuals or smaller groups left their genetic imprint compared to the much larger and homogeneous migrations in North America.

In the US, we see these cylinders show up in the -3.00 or greater range, they are relatively symmetrical, and very near to axis 180. The visual acuity with the compensating lens is about 20/25; and without the compensating lens, it is about 20/25. Kids who grow up without compensation on the reservation seem to do well without glasses or contact lenses. The reservation kids often will not wear their glasses, even if they have them. Similar kids who grow up in town and who wear glasses seem to lose their ability to function without the lenses. Their VA without glasses is more like we might expect among the population at large who have greater amounts of astigmatism. This, by itself, is an interesting phenomenon and speaks to the adaptability of the visual process.

Where might this astigmatism have come from? Human beings adapt along the lines of stress to meet the stress. This is true on both an individual and a population basis. This special type of high astigmatism may be based on a phenomenon similar to sickle cell anemia in Africa and diabetes in Native American populations. The principle is that there is a biological advantage to a trait in a specific environment that would be a disadvantage otherwise. The sickle cell trait in Africa makes the person less affected by malaria and confers a benefit in an environment rife with a disabling disease. The cost is a decreased ability to provide oxygen to the tissues. Diabetes can be a metabolic advantage in feast or famine conditions such as are found in a desert environment like in Mongolia, the desert American SW or on the Great Plains. When a person with diabetes or a metabolism that favors diabetes encounters a northern European diet, they tend to put on weight easily and become a full blown diabetic with all the associated problems.

How does the high cylinder confer a benefit? The biological advantage of astigmatism is the ability to move vision through space by shifting attention without the need for a shift in focus. With astigmatism, there is an enhanced depth of focus based on the circle of confusion created by the cylinder coupled with the normal depth of focus in the visual system. There is some penalty in resolution, but less than a purely optical model of vision would predict. In contrast, motion detection is not impaired and may even be enhanced by a reduced emphasis on foveal information. Since the important information for the desert hunter was: “Is it there”?, “Will it eat me”?, or “Will I eat it”?, fine discrimination was less important than motion detection and quick visual reaction.

Those who could catch the mouse, ate the mouse, made babies, and passed on their genetics. Those less able to catch the mouse faded from the evolutionary picture. This led, here in the US, to a population with a genetic predisposition to low metabolism, diabetes, and high astigmatism.

How should one of these patients be treated? It is tempting to say, “Just like anyone else”. In many ways this is true. It really depends on their goals. A 25 year old Navajo shepherd is probably going to do well with no compensating lenses and in fact probably wouldn't wear them. Unless there is something he can't do that he wants or needs to do; unless he has an unmet visual need, glasses probably won't help him. A seven year old who has been raised in town and who is having trouble seeing the chalkboard will probably do well with the appropriate glasses prescription. Young people with this kind of astigmatism will have learned to move their vision through space, but may not have learned to change focus to do so. It is highly likely that a person with high cylinders such as those we are talking about will benefit from a near prescription.

What about vision therapy? If therapy is done solely to change the refractive condition, it is not likely to be successful. While the refractive condition may change in response to changes in the visual process, the goal of therapy is improved visual skill, not different glasses. If vision therapy is a treatment option chosen to develop an improved visual process, one could expect the same success as with any other vision therapy patient.