

AMERICAN ACADEMY
of OPTOMETRY

**You Play What Sport?!? Introduction
to Sports Vision Through Case
Discussion**

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Disclosure Statement
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Today

- You are all practicing some form of sports vision
 - I want you to consider some minor tweaks that will allow you to provide even more SV care
- This lecture is condensed and is designed for primary care practices
 - However, this can be applied to all practices!

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Today

- Expectations
 - To give you some “take-home” advice you can use on Monday
 - To be interactive
 - To enjoy the lecture

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Today

- By utilizing Cases, we will cover:
 - Analysis of sport
 - Sport Specific Case History
 - Sports Vision Eye Exam in a Primary Care Setting
 - Eye protection
 - Promoting your services

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Introduction

- Who is an athlete?
 - “If you have a body, you are an athlete”
 - Bill Bowerman, co-founder of Nike

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Why should you incorporate sports vision techniques into your practice?

- Expand what your clinic offers to your patients
- Increase your patient base
- Set yourself apart from your competition
- Increase your bottom line
- Have fun in clinic

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Case 1

- 19 yowf
 - CC: It is hard for me to track the ring while playing Ringette
- What is Ringette?

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Case 1

- If you know very little about Ringette, how can you find out about this sport?
 - Ask your patient, a coach, colleague, trainer, etc
 - Personal observation
 - Print or on-line (youtube.com)
 - Television
 - The best way...
 - Personal participation

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So What Exactly is it?

- Players use a **straight stick** to pass, carry and shoot a **rubber ring** to score goals
 - In strategy - ringette is more like basketball, soccer or lacrosse than it is like hockey
- **Team play** is promoted by the rules:
 - a single player cannot carry the ring from end to end and score a goal
- Team of 9 to 17 skaters
 - Six skaters on the ice at the same time (per team)
 - A Goalie, two defense, a center and two forwards



Info Courtesy of Ms. Lauren Usher and
<http://www.visioncenter.com/ringette>

<http://www.visioncenter.com/ringette>

Case 1

- What visual skills are important when it comes to Ringette?
 - Can you test these skills in your office?



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<http://www.visioncenter.com/ringette>



Step 1 for Sports Vision: Analysis of sport

- One needs to analyze what visual skills and risks are involved with a sport
 - This will provide a “road map” for your SV specific exam
- Ex. Eye-hand reaction may not be important in golf, but may be critical in Lacrosse

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Analysis of sport

- After thinking through the various skills, rank them as:
 - Critical
 - Important
 - Marginal, or
 - Not important

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Analysis of sport

- Skills to consider:
 - Static vs. dynamic
 - Snooker vs. Lacrosse
 - Central vs. peripheral awareness
 - Target shooting vs. ice hockey
 - Target size
 - Wrestling vs. darts



www.sportindustry.biz

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Analysis of sport

- Skills to consider:
 - Contrast levels
 - Indoors vs. outdoors (sunny vs. overcast)
 - Gaze angle
 - Cycling vs. basketball



www.stoke.bloggic.com



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Case 2

- 42 yowf
 - CC: dry eyes while driving

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Case History

- Case 2 – Introduction of Case History
 - Case history
 - Identify level & frequency of play
 - Location of sport
 - Eyewear utilized
 - Eye Care history

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Case History

- Case history
 - Performance specific questions...
 - Does vision ever compromise your performance?
 - Do you ever have difficulty with...
 - Timing?
 - » Depth perception?
 - » Tracking?
 - » Anticipation?

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Case History

- Case history
 - Performance specific questions...
 - Do you ever feel like you have minimal gain in performance even if you train hard?
 - Do you ever feel like your performance becomes inconsistent during difficult times during your game?

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Case 3

- Visual Acuity
 - Very few things are static in sport
 - Preferred type of VA assessment is dynamic visual acuity
 - Tough to evaluate in most primary care settings



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Case 3

- Perform a thorough refraction
 - Consider demands of their sport
 - Ex. Trap shooter vs. wrestler
 - Don't assume that a small change is "not worth it" to an athlete
- Trial frame

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Fundamentals of a Primary Care SV Exam

- Prescribing – You may prescribe a "sport specific prescription"
 - This may be¹...
 - 0.25 to 0.50 D extra minus for improved VA and contrast
 - A small amount of plus for relief of visual strain in an athlete with hyperopia
 - Low amount of cyl or sphere that you may not "normally" prescribe

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Fundamentals of a Primary Care SV Exam

- Prescribing
 - Dr. Erickson recommends the following guidelines for when to prescribe¹:

Refractive error	Consider prescribing at:
Myopia	-0.25 or more
Hyperopia	+1.00 or more
Astigmatism	-0.50 or more
Anisometropia	-0.50 or more

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Case 3

- Prescribing
 - Contact Lenses (CLs)
 - Probably the most popular choice for compensation of refractive error in sport
 - CLs reduce many common issues reported by spectacle wearers (ex. Lens fogging, distortion, etc)¹


www.daviddarling.info

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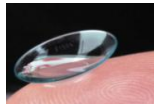
Case 3

- Prescribing (cont)
 - Contact Lenses (CLs)
 - The critical factors with CL fitting are¹:
 - Stability
 - Hydration
 - Clarity (VA and CSF)
 - Cleaning regimen


www.daviddarling.info

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Case 3



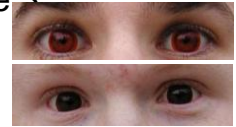
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- Prescribing (cont)
 - Contact Lenses (CLs)
 - In general, I will primarily fit...
 - Daily disposables
 - Tighter fitting lenses
 - Low to moderate water content lenses
 - Multiple trials until I get optimum clarity and comfort
 - Possibly over-minus for sport

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Case 3



- Prescribing (cont)
 - Contact Lenses (CLs)
 - Tinted contact lenses
 - These are designed to combine the benefits of sunglasses and contact lenses
 - The most recent attempt was the Nike MAXSIGHT, which has since gone out of production
 - One study did show improved contrast discrimination, speed of visual recovery and subjective performance compared to clear CLs⁵

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Case 3

- Evaluation – Input
 - Prescribing (cont)
 - Alternatives
 - Orthokeratology
 - » Great option, especially for younger athletes
 - » May have some issues with higher order aberrations and CSF⁶

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Fundamentals of a Primary Care SV Exam

- Evaluation – Input
 - Prescribing (cont)
 - Alternatives
 - Refractive surgeries⁷
 - » RK
 - » AK
 - » PRK
 - » LASIK
 - » LASEK
 - » Intracorneal ring segments
 - » CK
 - » Phakic IOLs
 - » And more

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Case 3

- Prescribing (cont)
 - Alternatives
 - Refractive surgeries
 - Same side effects that we all know
 - Study looked at offensive performance of baseball players after laser refractive surgery⁸
 - » No statistical improvement in performance post-surgery

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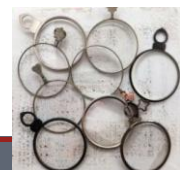


Visual Acuity

- Ways to train?¹
 - Blur interpretation
 - Hart chart with isolated letters
 - Provide feedback
 - “Fogging”
 - Lens / Prism sorting



From Dr. Graham Erickson



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www.mhprofessional.com



Case 4

- 21 yo aam
 - Noticing more difficulty reading the greens while playing golf
 - Has been worse since switching to new toric CLs
 - Has really lost his confidence on the greens

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Case 4

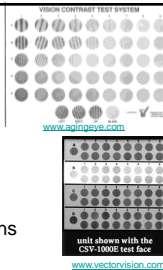
- Contrast Sensitivity Function (CSF)
 - Most tasks in sport have a contrast component
 - Ex. Reading the greens in golf; fly ball on a cloudy day in baseball, etc
 - Studies have shown that the CSF is elevated in athletes^{3-4, 9-11}
 - CSF may be hampered by poor fitting contact lenses¹²⁻¹⁵

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Case 4

- Contrast Sensitivity Function
 - Most use grating patterns
 - Vistech
 - Vectorvision
 - Multiple computer generated designs
 - Want to assess binocularly with correction that is habitually worn during sport
 - If wearing CLs, should check monocular¹



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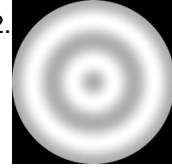


Which is better?

1.



2.



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Case 4

- Contrast Sensitivity Function Recommendations
 - Test before and after you fit with contact lenses
 - Test with any filters¹ (ex. Ski goggles)
 - Perform testing in the conditions filters are utilized (ex. Outdoors for ski goggles)
 - Try to optimize contrast as much as possible

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Dr. Kirschen's Pyramid

- Optometry Times – June 2009¹⁷
 - Dr. Kirschen describes a pyramid of vision
 - The foundation is based on the monocular components of acuity and contrast
 - The next level is binocular function
 - The third level includes visual mechanics
 - Receiving visual input, processing it and performing a reaction
 - Ex. Anticipation; Reaction time; etc

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Figure 1 Vision pyramid

- Each step builds on the previous level.
- Maximizing previous levels increases performance upward.
- Poor performance below endangers stability of all.

Optometry Times / Source: David Knicker, OD, PhD, FCO

From June 2009 Optometry Times¹⁷

- At the very least...
 - Maximize visual acuity and contrast sensitivity for all of your patients

Case 5

- 15 yoaf – ice skater, nationally ranked
 - Notices some difficulty judging depth and mild shadowing with certain head positions

Case 5

- Binocular function
 - Stereoacuity
 - Professional Baseball Players³
 - 81% of the players achieved stereoacuity of 25 seconds of arc or better



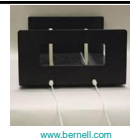
Case 5

- Binocular function
 - Stereoacuity
 - What about using near stereo tests?
 - Boden et al¹⁸ evaluated youth baseball/softball players vs. non-ball players.
 - » Found that ball players had better stereo than non-ball players
 - » Utilized targets up to 20 arc seconds



Case 5

- Evaluation – Input
 - Binocular function
 - Stereoacuity
 - Recommendations
 - Ideally want to test distance stereoacuity; however, can use near stereo
 - Need targets that go down to 20 seconds of arc



Case 5

- Binocular function
 - Cover Test
 - Perform at different angles of gaze¹
 - Ex. Bicyclist – primary and up gaze
 - Vergence & accommodation facility⁴
 - Near – Far rock test
 - 30 sec vs. 60 sec vs. 120 sec



From Dr. Graham Erickson

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Case 5

- Motilities
 - Pursuits and Saccades
 - There is no ideal way to assess
 - Doctors have utilized:
 - Vistech
 - NSUCO testing
 - Projected DEM
 - A “fast movement” technique
 - And more
 - Still being developed

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Case 6

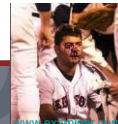
- 24 yohm
 - I play on a basketball team in a local rec. league

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Case 6

- Eye Protection
 - Regardless of what you prescribe, you need to recommend and promote protective eyewear to your athletes
 - This is not only to keep them a two-eyed athlete, but also to keep you in practice



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Case 6





- Eye Protection
- Protective Eyewear recommendations include
 - Polycarbonate or Trivex lenses
 - Frames that meet and are labeled with the appropriate American Society for Testing of Materials (ASTM) standards
 - F803 for most sports
 - There are sport specific standards
 - F513 – Ice hockey
 - F1776 – Paintball
 - And more



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Case 6

- Eye Protection
 - Prescribing (cont)
 - Protective Eyewear recommendations include
 - Along with ASTM, there are other groups that certify equipment, including:
 - » The Protective Eyewear Certification Council (PECC) 
 - » The Canadian Standards Association (CSA) 
 - » Hockey Equipment Certification Council (HECC) 
 - » National Operating Committee on Standards for Athletic Equipment (NOCSAE) 



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Case 6

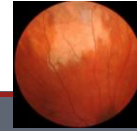
- Evaluation – Input
 - Prescribing (cont)
 - Protective Eyewear recommendations
 - It is truly our duty, as eye care providers, to recommend protective eyewear
 - Public health concern
 - Check out statement at <http://www.aao.org/about/policy/upload/Protective-Eyewear-for-Young-Athletes.pdf>

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Case 6

- Ocular Health
 - Be sure to assess and document all health findings
 - This will be a baseline in case of eye injury


<http://www.aao.org/about/policy/upload/Protective-Eyewear-for-Young-Athletes.pdf>
<http://www.aao.org/about/policy/upload/Protective-Eyewear-for-Young-Athletes.pdf>


Case 7

- 21 yoaf
 - “I play on the local University’s volleyball team. I saw a thing about strobe glasses...what are those all about?”

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Case 7

- While I do not have time to get into SV training, I do want to cover the Nike Vapor Strobes.
- So, what do you know about them?



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Case 7

- Basically, a strobe light effect in glasses
- Blocks part of the information the athlete is receiving
 - Works on anticipation, imagery, reaction/response, balance, and more

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Strobe



- Based off of classic strobe training
 - Must be performed indoors

www.alliesparty.com

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Case 8

- 43 yoam
 - Coaches local NCAA Div III basketball team
 - Wants to know if vision has any part with basketball...
- Does it?
- What can you do for him?

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Case 8

- If you are going to evaluate athletes and work with teams, you **MUST** be prepared
 - You may only get this opportunity once
- Be ready to provide evaluation feedback and training advice

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Case 8

- For this coach...
 - You can develop a basic assessment (screening) for his team
 - Assess basic visual functions and can compare all of the teammates to each other
 - You could run each individual through a full SV evaluation
 - More time, but better info

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Case 8

- An example of a screening:
 - Provide informed consent to team prior to screening
 - Discussed that this does not take the place of an exam
 - Informed about importance of eye protection
 - Included a release of information to the coach

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Case 8

- An example of a screening:
 - If athlete needed Rx, discussed need for protective eyewear and Rx
 - Discuss option of CLs

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Case 8

- An example of a screening:
 - Athlete returned to office if...
 - LEE > 1 yr prior
 - Failed part of screening
 - Needed CL fit
 - Developed report for coach and reviewed with coach

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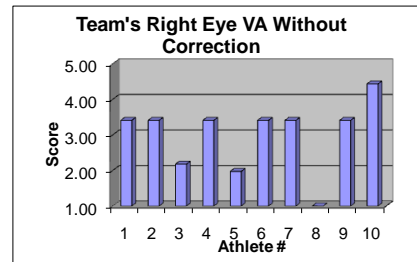
Case 8

- Ways to report
 - Presented a packet that included:
 - Definitions of terms and tests used in screening and report (ex. VA, contrast, etc)
 - Team cumulative results1
 - A score of 3 is average for the team
 - If a lower value is desired, use:
 - » $\text{score} = \frac{(\text{average score} - \text{athlete score})}{\text{standard deviation}} + 3$
 - If a higher value is desired, use:
 - » $\text{score} = \frac{(\text{athlete score} - \text{average score})}{\text{standard deviation}} + 3$

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Report Example



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Case 8

- Presented a packet that included:
 - Each individual results compared to team average, with commentary
 - Overview of Case history
 - Includes strengths and areas to improve
 - Also discussed recommended follow-ups (eye exam, cl fit, etc)

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Case 8

- Promoting your practice
 - Use your contacts...
 - Family
 - Friends
 - Company reps
 - Patients
 - Trainers
 - Athletic Directors
 - Coaches
 - Place this service in your newsletter or local paper

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Case 8

- Promoting your practice
 - Social Media
 - Advertise your services in your practice
 - Preset your patients with photos and testimonials
 - Have a SV open house
 - Sponsor or advertise at local sporting arenas
 - Provide education in the community

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Case 8

- There is plenty of equipment you can purchase relative to sports vision evaluation and training
 - Basically, if you can imagine it, we can find a way to evaluate or train it

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Today's Lecture

- You can provide sports vision care to your patients in any practice
- You are now educated on some basic expectations and sports vision evaluation methods you can utilize

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Any Questions?

- Thank you
- Fraser C. Horn, O.D., F.A.A.O.
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