Optometric trends in sports vision: Sports vision utilization entering the new millennium

Kenton M. Fredlund
Pacific University

Kathryn D. Whitehouse
Pacific University

Kyle D. Treick
Pacific University

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**Abstract**

Background: Sports vision is a relatively young and dynamically growing field of interest that has yet to reach its full potential. Vision is a key ingredient to performance, and high school, college, and professional athletes look to vision care specialists to help them achieve high levels of performance.

Methods: 735 optometrists, 255 universities and colleges, and 137 professional sports teams were surveyed to obtain a cross-sectional view role of the vision care specialist in the expanding world of sports.

Results: Optometrists felt there is still room for growth in the area of sports vision. Contact lenses are preferred to spectacles, and soft contact lenses are preferred to rigid lenses. College and professional teams are open to new technologies that will improve performance.

Conclusions: Since the establishment of the American Optometric Association Sports Vision Section (AOA-SVS) twenty-two years ago, advances have been made in the utilization, knowledge, and practitioner's role in sports vision. The area of sports vision continues to expand and there is still an unmet need for vision care and screening service at the collegiate and professional levels.

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Thesis

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Optometric Trends in Sports Vision:
Sports Vision Utilization Entering the New Millennium

By

KENTON M. FREDLUND, B.S
KATHRYN D. WHITEHOUSE, B.S.
KYLE D. TREICK, B.S.

A thesis submitted to the faculty of the
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Faculty Advisor:

Alan W. Reichow, O.D., M. Ed., FAAO
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Authors:
Kenton M. Fredlund, B.S.
Kathryn D. Whitehouse, B.S.
Kyle D. Treick, B.S.

Faculty Advisor:
Alan W. Reichow, O.D., M.Ed, F.A.A.O
About the Authors

Kenton M. Fredlund

Originally from Saskatoon, Saskatchewan. Graduated from University of Saskatchewan with a B.S. in Anatomy in 1997. Currently a fourth year intern at Pacific University College of Optometry.

Kathryn D. Whitehouse


Kyle D. Treick

Originally from Sheridan, Wyoming. Graduated from University of Wyoming with a B.S. in Biology in 1996. Currently a fourth year intern at Pacific University College of Optometry.
Abstract

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Conclusions: Since the establishment of the American Optometric Association Sports Vision Section (AOA-SVS) twenty-two years ago, advances have been made in the utilization, knowledge, and practitioner’s role in sports vision. The area of sports vision continues to expand and there is still an unmet need for vision care and screening service at the collegiate and professional levels.

KEY WORDS

athletic eyewear, contact lenses, optometric trends, sports vision, sports vision care, vision training, vision enhancement
Introduction

As an athlete trains for endurance, strength, and fine tuned skills to gain the competitive edge in his or her sport, there are many factors that add up to the most perfect equation of success. Because vision plays such an integral role in athletic performance, an increasing number of athletes, coaches, trainers and eye care practitioners are incorporating aspects of visual performance as related to specific sports in their athletic programs. Recognition of the importance of vision in sport is reflected by the establishment of the American Optometric Association Sports Vision Section (AOA-SVS) twenty-two years ago. Since this time, sports vision has expanded markedly, with greater public awareness of the importance of vision in sports.\textsuperscript{1,2,3}

For over twenty years, Pacific University College of Optometry has routinely surveyed optometrists and athletic coaches and trainers nationwide, exploring the scope of vision care provided to athletes by eye care practitioners. All four surveys (1980, 1983, 1988, and 1994)\textsuperscript{4,5,6,7} demonstrated the need, the interest, and the market opportunity in providing comprehensive vision care services to athletes at all levels of participation and competition. Now, in the year 2000, these questions are asked once again, along with those additional inquiries needed to explore the new innovations and trends of sports vision.

Previous studies conducted at Pacific University have sampled random optometrists, various college and university athletic programs, and major professional athletic teams in football, baseball, basketball, and hockey in North America. The design of each survey was tailored to look at each population’s awareness and utilization of sports vision. Diving further into the exploration of vision care related to today’s
athletes, professional soccer and expansion teams in hockey, football, baseball, and basketball were added to the current survey.

In searching for the role sports vision may play for athletes, previous surveys have suggested that there remains an unmet need with an increasing interest in the field. As athletes continue to reach to new heights, many efforts are made to enhance performance by optimizing skill levels in every area pertinent to a given sport. The surveys have shown both an interest by athletes and optometrists to include vision screenings, proper ocular health care, meeting refractive needs, and remedial and enhancement vision therapy as part of this optimization of visual performance.

Although most frequently the utilization of vision care was on an “as needed” basis, over time there have been an increasing number of teams utilizing the services of eye care practitioners who regularly tend to the athletes’ vision care needs. In the past surveys, this has been most commonly seen at higher levels of competition such as large universities and at the professional level. On the same token, the higher the level of competition, the increasing amount of financial commitment has been made to vision care consultants to more specifically care for athletes’ visual demands.

The use of contact lenses in relation to sport has also been an area of interest. Previous topics included the preference of contact lens use versus spectacle use, modality of contact lens wear, and the role of eye care practitioners and athletic trainers’ involvement in players’ contact lens use. The current survey addresses all these issues, as well as new technologies such as tinted contact lenses and specific frequency of contact lens wear.
To date, five projects have attempted to assess the utilization of vision care services as they relate to the sports world. The first study was completed in 1974 by Goss, Cary, and Holyk. In their study, 84 optometrists and ophthalmologists were questioned about factors taken into consideration when prescribing contact lenses for athletes. All practitioners surveyed were involved in sports vision and showed a general trend of increasing the use of flexible lenses. In 1980 and 1983, two unpublished surveys were performed by the Pacific University College of Optometry. These two surveys sampled random optometrists, college and university athletic programs, and major professional teams in football, basketball, baseball, and hockey. Another similar survey was conducted in 1988.

The results of the 1980 and 1983 studies were based on relatively small samples but revealed several interesting trends. The 1980 study indicated that there were opportunities available in high school and colleges for vision consultants. None of the 100 optometrists surveyed consulted with professional teams. There were also a small percentage of optometrists that were involved with collegiate programs, although a large percentage (85%) of optometrists expressed interest in providing sports vision services. Large colleges and professional teams were more likely to have vision care specialists on their payrolls, while small schools and high schools received services voluntarily. Contact lenses were preferred to spectacles, especially in sports with body contact. College and professional teams had a 1-4% failure rate with visual screenings and it was found that although many players were utilizing contact lenses, sports programs were not recommending them. Also, few optometrists recommended or utilized vision therapy.
Responses of optometrists in the 1980 and 1983 studies showed little change in responses. The number of consulting optometrists slightly increased, although their compensation remained unchanged. Optometrists still felt there was a potential for growth in the sports vision and more optometrists included vision training in their practices when compared to earlier studies. Although optometrist responses were fairly consistent with previous studies, increases were seen in the number of professional teams utilizing vision care specialists and paying them for their services.

In the 1988 survey, there were several changes noted. The longitudinal data showed a greater number of optometrists being paid for their services, and more optometrists offered vision therapy as part of their services. There was also an increase in the number of optometrists who took into consideration specific athlete needs when prescribing. Contact lenses were still prescribed over glasses, and loss and irritation of lenses remained the primary complaint of athletes wearing contact lens correction.

The 1994 study paralleled the 1988 study, showing that there continued to be a positive shift towards the utilization of vision care specialists at the collegiate and professional levels. Ophthalmologists were utilized at a higher percentage than optometrists. Although ophthalmologists are more often consultants to professional and collegiate teams, optometrists indicated a growth in provision of sports vision services in the practice setting. Practitioners continued to promote and provide protective eyewear by including them in their dispensaries. Vision therapy was offered by practitioners at a rate consistent with the 1988 study. Contact lenses were recommended more frequently by both university and professional teams, and teams were more likely to keep spare lenses and have personnel available for removal during emergencies. Professional and
university programs also showed a rise in the preference of soft over rigid contact lenses. The 1994 study concluded "that despite the increase in vision care consultants, an unmet need still existed for the provision of vision care/screening services at the collegiate and professional team level." 7

Sports vision is a relatively young and dynamically growing field of interest that has yet to reach its full potential. Vision in sports is a key ingredient to performance. With performance being sought after by all athletes, an examination of what optometry is doing or should be doing to assist this, is needed. Presently, only five studies have attempted to explore the utilization and awareness levels of vision care as it relates to sports and recreational participation. With the last study being completed in 1994 and sports and recreational participation on the rise, it is indicated that the current level of sports vision knowledge, utilization, and practitioner role expansion be assessed as we enter the new millennium.

Method

The method of choice for collection of data for this project was a postal survey. Surveys were distributed to optometrists and sports teams across the United States and Canada. There were two groups of optometrists surveyed; the first consisting of previously surveyed optometrists and the second consisting of randomly selected optometrists not previously surveyed. Both groups of optometrists were chosen randomly from the Blue Book of Optometry. 9 However, due to the low number of previous optometrists from the 1994 still in practice, and the low response rate of those able to be contacted, only cross-sectional data was accumulated. A total of 435
optometrists were surveyed in late October with a relatively low response rate (44 of 435; 10%). Accordingly, an additional 300 new optometrists were surveyed in late February, 2000. Of the 735 total optometrists surveyed, 100 were from Canada and 635 were from the United States.

The questionnaire distributed to the optometrists included such issues as the potential growth in the field of sports vision, use of contact lenses versus spectacles, sunglasses preference and utilization, and vision therapy and/or enhancement procedures for athletes. The survey also contained more specific questions with regards to the prevalence of rigid, extended wear, conventional daily wear, disposable, and planned replacement schedules. Questions regarding interest in tinted lenses and availability of dispensing sports vision products were also addressed. Feedback concerning glare-reducing eye black, applied under the eye, was also attained in relation to its use and effectiveness. A cover letter introducing the researchers and defining the survey objectives was sent with the questionnaire. A copy of the questionnaire is included as appendix A.

A separate questionnaire was sent to intercollegiate sports programs at various colleges and universities throughout the United States and Canada. Of the universities surveyed, 115 were Division IA, 108 were Division III, and 32 were Canadian Universities. The survey was sent in late October and was not repeated in early February.

The same sports questionnaire was sent to professional sports teams in the United States and Canada. The sports that were the focus of the survey included all professional sports teams within football, baseball, basketball, hockey, and soccer. The 137 surveys sent to professional sports teams in the current study were divided as follows: 31 NFL, 7
CFL, 30 baseball, 29 basketball, 29 hockey, and 11 soccer. A cover letter similar to that of the optometrists accompanied the survey. The survey process was repeated again in February due to the lack of response to the first survey (20 of 137; 15%). All professional sports were represented with responses except soccer, which had no responses. The sports team survey covered issues of availability of eye care and by whom, utilization of sports vision training programs, use of contact lenses versus glasses, use of glare-reducing eye black, use of sunglasses, and future interest in the area of sports vision. A cover letter accompanied the questionnaire explaining the purpose of the survey. Letters and surveys were addressed to the athletic trainers, since they are generally more familiar with team-related health care issues and tend to be with an organization longer than coaches and players. A copy of the questionnaire sent to professional and university sports teams can be found in appendix A.

Results

Optometrists

A number of interesting results came back from the optometrists that were surveyed in the study. 7% (7 of 89) of optometrists responding indicated that they were serving as a vision consultant to a sports team. Of the seven responding optometrists consulting with a sports team, five are volunteering their services, while two are being paid. The total reimbursement being received, both directly and indirectly, is considered to be less than 5% of their total gross income. Optometrists still feel there is a potential for growth in sports vision (77 of 81; 95%) and are divided in determining if sports vision potential has changed in any way over the years (44% Yes/56% No). Of those that feel
that the potential has changed (30 of 69, 44%), the most common change cited is greater public interest. Optometrists credit such factors as increased demand on vision, greater involvement in sports and recreation, refractive surgery, contact lenses on professional athletes, and a greater emphasis on winning as stimulating growing public interest in sports vision. In order for sports vision to continue to grow to meet the demands of athletes, optometrists feel they must make the public more aware of the available benefits, create forums where continuing education on sports vision is presented, and continue to support quality research.

Optometrists have recognized the need for specific visual demands by athletes as 68 of 84 (81%) take these under consideration when evaluating, diagnosing, and prescribing for athletes. Optometrists cite soft contact lens fitting and depth perception as the most common specific demands addressed, while better visual acuity, better visual fields, and eye tracking are also considered. The survey also indicated that 22 of 84 (26%) of responding optometrists utilized vision training in their practices with remedial training and vision enhancement being preformed equally. The most common instruments utilized by practitioners were the Brock string, distance rock charts, Marsden ball, balance rails, distance anaglyphs, and tachistoscope.

As is expected, contact lenses are preferred over spectacles in the majority of sports where there are fast moving objects and physical contact between players. The only sport mentioned where contact lenses were not preferred was swimming because of possible bacterial infection. Optometrists ranked planned replacement as the most preferred modality of choice, followed by daily disposable, conventional daily wear, extended wear, and RGP’s. Optometrists also showed interest in expanding their
practices to perform specialty fittings as 79 of 84 (94%) indicated an interest in fitting
tinted soft contact lenses and 60 of 88 (72%) in fitting tinted RGP lenses.

Results indicated an interest in providing athletes with eyewear as 81 of 85 (97%) of optometrist promoted protective eyewear and 69 of 81 (86%) worked in a practice with a dispensary that carried protective eyewear. The survey also indicated that 72 of 84 (86%) of optometrists prescribed non-prescription sunglasses. Although a high number of practitioners prescribed sunglasses, 49 of 79 (62%) of them felt that there are problems with the current selection of sunglasses. Poor optics, distortion, safety, comfort, cost, style, and quality were the main areas of concern. Optometrists were also questioned about glare-reducing eye black and while 17 of 50 (33%) of optometrists feel that eye black is truly beneficial in reducing glare, only 11 of 71 (15%) recommended it to their athlete patients.

College/ University

The cross-sectional sample consisted of NCAA Division IA (DIA) and Division III (DIII) institutions. This survey received 44 of 147 (30%) responses from DIA colleges and universities and 31 of 108 (29%) from DIII institutions. There are marked differences between the two divisions, with general budget being cited by many athletic trainers and coaches as the key difference between the programs. Other differences cited include enrollment numbers, scholarship numbers, and financial support and interest in the larger versus smaller athletics programs. The survey found significant differences in the level and frequency of eye care received at each level. 35 of 44 (79%) of Division IA teams utilize vision specialists as compared to Division III teams, where 7 of 31 (23%)
schools utilize vision specialists. Of the Division IA teams that utilize a vision specialist, 20 of 35 (57%) programs responding use an optometrist, 5 of 35 (14%) use an ophthalmologist, and 10 of 35 (29%) use a medical doctor. At the Division III level, 5 of 7 (71%) programs utilize an optometrist, while 2 of 7 (29%) retain the services of a medical doctor. In addition, of vision care specialists associated with collegiate programs at the DIA level, 17 of 29 (59%) indicated they were paid for their services in some fashion while 3 of 7 (43%) vision care specialists at the Division III level were paid for their services. Payment for vision care services varied and included monetary reimbursement and/or complimentary tickets.

Of the Division IA teams, 32 of 44 (73%) use some form of visual screening on their athletes while only 8 of 31 (26%) Division III programs include visual screenings. During their screenings, both Division IA and Division III programs indicate testing static visual acuity, depth perception, and color vision, while Division IA additionally include refraction, eye health, and eye movements. Despite the difference in the number of programs that screen their athletes, both DIA and DIII athletes failed their vision screenings at an average of 14%. Criteria for passing visual acuity in a visual screening varied between schools, with 35% of DIA schools and 25% of DIII requiring visual acuity of 20/20 or better to pass. Of those not passing visual exams, most failed due to refractive reasons and visual acuity, with three programs indicating that athletes had failed due to ocular health. Both DIA and DIII programs responded that roughly 3% of their athletes sustain an eye injury.

The type of visual correction an athlete uses is important. There are several options available to prescribing optometrists as technology continues to create new
possibilities. Respondents indicated that 3% of D1A athletes and 9% of DIII athletes wear spectacles during competition, while 64% of D1A athletes and 60% of the DIII athletes wear contacts. Division IA also indicated that 38 of 44 (86%) programs recommend contact lenses over spectacles while only 17 of 31 (55%) DIII programs do the same. Of those recommending contact lenses over spectacles, safety was cited as the primary reason; with performance, convenience, comfort, and weather concerns also receiving major consideration.

Contact lenses are by far the most common form of correction worn by athletes during sport, but there are many types of contact lens modalities available. At the Division IA level, 92% of the athletes wear a soft contact lens with 22% of the athletes utilizing daily disposables. Similarly 90% of DIII respondents utilize soft contact lenses with 30% of those polled using daily disposable contact lenses. Only 15% of athletes at DIA and 6% of athletes at DIII wear contact lenses for only competition.

With a high number of athletes wearing contact lenses, it becomes important for personnel to be familiar with handling and managing contact lenses. 32 of 44 (73%) DIA teams keep spare lenses, while 9 of 31 (29%) DIII teams keep spare contact lenses. Greater than 90% of the programs, regardless of classification, have a trained person that would be able to remove a contact lens should an injured athlete need a contact lens removed; the majority of whom are athletic trainers.

The utilization of vision therapy was also polled with only 4 of 42 (10%) DIA and 1 of 31 (3%) DIII programs utilizing vision training. Those that responded indicated that they had experienced success with vision therapy. The most common instruments
used in vision therapy included the Wayne Saccadic Fixator, BVAT, tachistoscope, anaglyphs, distance Brock string, and Strobespex.

The programs included in the survey were also polled on the usage of glare-reducing eye black among athletes in their programs. Approximately 13% of DIA athletes and 12% of DIII programs utilize eye black, with most respondents indicating that baseball and football were the primary users. 25 of 39 (64%) DIA and 16 of 28 (57%) DIII respondents believed performance was the key factor, while 14 of 39 (36%) DIA and 10 of 28 (36%) DIII respondents cited performance. 2 of 28 (7%) DIII respondents indicated that eye black was utilized for both cosmetics and performance. The athlete is much more likely to apply the eye black him or herself at the DIII level while the majority of DIA athletic trainers apply the eye black. Most respondents were unspecific on the location of the eye black indicating that somewhere under the eye was the most appropriate. 16 of 31 (52%) DIA respondents and 7 of 21 (33%) DIII respondents believe that eye black is effective and provides a glare-reducing benefit.

Performance-tinted contact lenses are a new technological development recently being marketed. Of the college programs responding to the survey, 25 of 40 (63%) DIA teams and 19 of 32 (70%) DIII teams indicated they would be interested in trying such a contact lenses. Sunglass usage is another category explored by this thesis project. Only 6-7% of college programs, regardless of classification, utilized sunglasses, with performance and protection being cited as the two major reasons for usage. The vast majority of programs cited Oakley sunglasses with gray or amber tints as the most prevalent, with Nike, Ray Ban, Gargoyle, Serengeti and Vuarnet being less utilized. Athletic trainers indicated that 13 of 16 (81%) DIA and 11 of 14 (79%) DIII programs are
satisfied with the quality and performance of the sunglasses that are being used by collegiate athletes.

Professional Teams

Two identical surveys were sent to professional teams on separate dates to increase the response rate of the subset. The total response rate in 2000 with resampling was 24% (33 of 137). For comparison of sports, professional data is separated into subsets of baseball, basketball, hockey and football. Individual sport data can be found in Table 3. All of the respondents, with the exception of one professional baseball team, utilized vision consultants. 32 of 33 (97%) professional teams utilize a vision care specialist, with 23 of 29 (79%) of these receiving compensation for their services. Although most were on contract, a portion of the vision consultants exchanged services for tickets. Of the vision professionals that work for professional teams, 20 of 33 (61%) utilized medical doctors, 10 of 33 (30%) utilized ophthalmologists, and 3 of 33 (9%) utilized optometrists. The vision consultants were found to provide a wide variety of eye care services including full vision exams (17 of 48, 35%) and visual screenings (12 of 48, 25%). Other less common services were emergency care, game day care, glaucoma screenings, and refractions. Professional organizations with vision care specialists noted increased performance and ease of mind about vision concerns and comfort. Utilization of vision screenings has continued at a high rate (26 of 32, 81%), consistent with earlier survey results. Professional athletes continue to fail visual screenings at about the same rare as previous surveys (5%), with the majority failing visual acuity tests. The average visual acuity that indicates failure of a screening is 20/25, although it varied slightly
between sports. Only four of the respondents, regardless of sport type, failed players due to ocular health concerns. Professional teams indicated that eye injuries occur in approximately 5% of players, with basketball and hockey reporting more eye injuries than football and baseball.

Currently, 25 of 33 (76%) professional teams recommend contact lenses over spectacles, resulting in the majority of athletes needing correction choosing contact lenses (89%) over spectacles (11%) for game time correction. Soft contacts (90%) are more common than rigid contact lenses (10%), with disposable lenses making up 29% of the soft lenses worn. Most athletic trainers and teams that recommend contact lenses over spectacles for games cite reasons of safety, peripheral vision, comfort, and performance. The only sport which failed to consistently recommend contact lenses over spectacles was basketball, citing safety from errant fingers and elbows with sport-spectacles. Due to the prevalence of contact lenses and their importance in the performance of the athletes, 33 of 33 (100%) teams stock spare lenses and have personnel available to remove lenses if need be. Athletic trainers are the personnel most commonly responsible for contact lens related problems.

Professional teams reported utilizing vision therapy minimally with their athletes (6 of 33, 18%). Of those teams using vision therapy, 4 of 5 (80%) indicated using both remedial and visual enhancement techniques when indicated by the player’s needs. 6 of 6 (100%) teams utilizing vision therapy indicated they had noticed team and/or individual player improvements.

Football and baseball were the only respondents who indicated that glare-reducing eye black was used on a regular basis. An estimated 25% of football players and 36% of
baseball players utilize eye black during competition. Professional athletes most commonly have the athletic trainer apply the eye black on the cheek below the eye. According to the survey, 45% of respondents feel that eye black is effective in reducing glare.

This survey also inquired about the new technological developments with tinted contact lenses by asking athletic trainers if they would be interested in such a medical device if it were shown that vision and performance could be enhanced by such a product. Of those responding, 14 of 18 (78%) football and baseball teams indicated their interest in utilizing this new product. Hockey and basketball were understandably indifferent.

Respondents to questions on sunglass usage were limited to baseball and football, with an estimated 62% of baseball players and 1% of football players using sunglasses. The primary reasons for sunglass use are performance, protection, endorsement, and cosmetic reasons. The brand of sunglass most commonly utilized by professional baseball players is Oakley's, followed by less commonly used Tiger Eyes and Gargoyles. Grey is the preferred tint, with amber, green, and yellow receiving minimal recognition. Of those responding, 13 of 13 (100%) are satisfied with the quality of the current sunglasses.

Discussion

A number of variables must be considered that may have influenced the results of present and past surveys. The survey mailing dates varied among each study. The current study was mailed initially in November 1999, and a follow up survey was sent out in February 2000. The previous survey in 1994 was sent in February 1994, with a
reminder sent to all three weeks later. The 1988 survey was mailed twice, in June 1987 and June 1988. Two prior studies had single mailings in May 1983 and September 1980. Only the 1988 survey included follow up mailings due to low response rates, whereas the first two surveys were completed following the initial mailing.

The bias of respondents must also be taken into consideration. Optometrists, athletic trainers, athletes, and coaches interested in sports vision topics may have been more likely to respond to surveys.

All previous surveys have included a longitudinal subset consisting of the same optometrists sampled from one survey to the next. Being that the five surveys span over a course of twenty years, most of the original optometrists comprising the longitudinal study were no longer available to respond. This was due to a substantial decrease in the number of optometrists listed in the current Blue Book of Optometry.9

The utilization of eye care practitioners at Division III collegiate and professional levels has increased mildly when compared to previous studies, while Division IA schools show a slight decrease. However, it was found that a lower percentage of optometrists responding to the survey presently serve as vision consultants to athletes; whether it be at a professional, collegiate, or recreational levels of competition. On the same token, the number of optometrists reporting payroll compensation for sports vision services has decreased as well. This coincides with a reported decrease in contracted vision consultants by athletic teams, with the exception of professional football and Division III teams. One area of concern from previous studies was the lack of quality eye care at the different levels of sports. While 79% of Division IA and 23% of Division III programs have a vision care specialist, only 35% of DIA and 0% of DIII programs
receive complete visual exams. While professional teams have a vision care specialist associated with the team 97% of the time, only 35% of teams receive complete visual exams. Screenings were given to professional team members 25% of the time, leaving 40% of teams that have vision care on an “as needed” basis.

The optometrist respondents reported an increase in potential for growth in the area of sports vision. Throughout the five surveys, there has been a steady increase in the projected potential of sports vision care, with 95% of current optometrists feeling sports vision has the potential for growth. Most eye care practitioners account for this by pointing to an increase in public interest. Public awareness and continuing education in the area of sports vision were noted as the most pressing needs in the advancement of sports vision.

Contrary to previous studies, respondents of the current study have shown a decrease in the utilization of vision therapy. However, of those using vision therapy, all reported improvement with remedial and enhancement training. Most commonly used instruments for the visual training included distance Brock string, distance accommodative/vergence rocks, and Marsden balls.

The modality of sunglass wear as it relates to sports vision was not previously included in studies but was questioned in the current study. The majority of optometrists carry sunglasses in their dispensary (86%), but 64% of optometrists feel there are problems with current sunglasses. Optometrists state that poor optics, distortion, safety, comfort, and cost are some of the problems found with current sunglasses. While optometrists feel that these problems exist at a fairly high rate, 80% of collegiate athletes and 100% of professional athletes are satisfied with their current sunglasses.
A majority of respondents show interest in the improvement of visual performance and are willing to try current and future sports vision technologies. Interest has been shown in tinted contact lenses, different contact lens modalities, and protective or tinted eyewear. The use of eye black was also a point of inquiry, with both athletic trainers and optometrists being skeptical about the efficacy of reducing glare. Less than half of responding optometrists and athletic trainers feel that eye black is efficacious. While most athletes utilize eye black for performance reasons, some indicate its use strictly for cosmetic reasons.

Having expanded upon previous surveys and searched for the current role of sports vision on a competitive level, it has been demonstrated that there still exists a potential for growth in the area of sports vision. With the present competitive nature of athletics today, the achievement of a competitive edge is desirable and much attainable with sports vision training. Current and future technologies continue to expand and specialize the capabilities of eye care practitioners, allowing them to better meet the needs of the athletes.
References


Uncited References


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Sports Vision Survey for Optometrists

Please circle (Yes / No), or fill in blanks as appropriate; additional space is provided at the end of the form.

Name: ____________________________________________

1. Are you presently serving as a vision consultant to a high school, college, or professional sports team? YES NO
   If so, name the team level(s), and describe your responsibilities, along with which aspects of Sports Vision Care you provide:

   If you test for: ________________________________
   Please circle:
   Static Visual Acuity Dynamic Visual Acuity Refractive Condition
   Contrast Sensitivity Eye Movement Skills Accommodation
   Visual Fields Depth Perception @ Distance Depth Perception @ Near
   Color Perception Near Point of Convergence Fixation Disparity
   Eye Hand Coordination Reaction/Response Times Speed/Span of Perception
   Eye & Balance Imagery Glare Testing
   Eye Health Refractive Condition
   Other? _______________________________________

   If a consultant, are you on the payroll, or is the program voluntary? ________________________________
   If a consultant, estimate the percentage of practice income (gross), which is directly derived from these services. _____
   If a consultant, estimate the percentage of practice income indirectly derived? (public relations, practice growth, market image, professional, sports courtesies, etc) _____

2. Previous surveys have determined that a strong potential for optometric growth in the field of sports vision existed. Do you feel there still remains potential for continued optometric growth in the field of sports vision? YES NO
   Do you feel the potential has changed in any way? YES NO
   If yes, how do you feel this potential has specifically changed over time?

3. What do you feel is presently the most pressing need for continued development of sports vision as an optometric specialty area?
   greater public awareness research continuing education
greater financial incentive new instrumentation certification as expert
   other? ______________________________________

4. In your practice, do you consider the specific visual demands of the athlete's sport when evaluating, diagnosing and prescribing for the high school or college student? YES NO
   If so, please give an example:

5. Do you prefer prescribing/dispensing contact lenses over spectacles in certain sports? YES NO
   If so, which specific sports and why? ____________________________________________

6. Which of the following contact lens modalities/replacement schedules do you prescribe for athletes (please check all that apply)
   ______ Daily Disposable SCL
   ______ Conventional Wear SCL
   ______ RGP
   ______ Frequent/Planned Replacement SCL
   ______ Extended Wear SCL

7. Rank your preferences of the following contact lens modalities/replacement schedules for athletes? (1-5; 1 = most preferred; 5 = least preferred)
   ______ Daily Disposable SCL
   ______ Conventional Wear SCL
   ______ RGP
   ______ Frequent/Planned Replacement SCL
   ______ Extended Wear SCL

8. What percentage of your athletic patients are spectacle wearers who wear contact lenses only for sport? ______ %

9. Would you prescribe Soft Contact Lenses if tints were available that improved visual performance (e.g. enhanced clarity, enhanced contrast sensitivity, reduced glare). YES NO
10. Would you prescribe RGP Contact Lenses if tints were available that improved visual performance (e.g. enhanced clarity, enhanced contrast sensitivity, reduced glare). YES NO

11. Do you provide visual training/therapy services for athletes? YES NO
   If so, are the techniques used mostly for remedial training or visual enhancement?
   — Remedial Training
   — Visual Enhancement
   — Both about equally

12. If you provide testing and/or training services, which instruments do you utilize? (check all that apply)
   — Wayne Saccadic Fixator
   — Anticipation Trainer/Timer
   — StrobeSpex
   — Distance Brock String
   — Balance Rails/Platforms
   — Distance Anaglyphic Stereo Targets
   — Distance Accomm./Vergence Rocks
   — VectorVision Contrast Sensitivity
   — Other

13. What professional aspect of your practice do you find most satisfying, fulfilling, or exciting?

14. In your practice, do you promote the use of protective athletic eyewear? YES NO
   If so, does your facility include a dispensary where protective eyewear is available to athletes? YES NO

15. Does your facility include a dispensary where non-prescription sunglasses are available? YES NO

16. Do you feel there are problems/limitations with current non-prescription sunglasses on the market? YES NO
   If so, what are the most significant problems that exist for the athlete or recreationist?

17. If performance sunglasses were developed with new technologies for such aspects as improved optics, tints, anti-fog capabilities, hydrophobic qualities, and fit, would you desire to incorporate them into your dispensary? YES NO
   If YES, do you feel new technologies resulting in a performance benefit would be appealing to the athletic patient? YES NO

18. Do you advocate the use of eye glare black (black tape or paste applied to the upper cheek area) to your athletic patient? YES NO
   Do you feel that eye glare black truly does reduce glare? YES NO

19. For the past twenty years, Pacific University has offered an elective course in Sports Vision to students. A condensed version of this course entitled; "Comprehensive Sports Vision Care: A Performance Oriented Approach," has also been offered to optometrists for continuing education credit. Would you be interested in this course? YES NO
   If you are interested in the results of this survey it will be submitted during Spring 2000 to JAQA for publication. If you are not a member of the AOA, please check here ____ and we will forward a copy of the article to you following publication.

20. Additional Comments:
Sports Vision Survey for Team Personnel

Please circle (Yes / No), or fill in blanks as appropriate; additional space is provided at the end of the form.

Name: ____________________________ Position on Team: Coach ___ Trainer ___
Sport(s): ________________________ Vision Care Specialist ___ Other ____________
University or professional team ________________________________________________

1. Is there a vision care specialist affiliated with the team? YES NO
   If so, are the services volunteered or contracted? ________________________________
   If so, what title does he/she hold? (optometrist, ophthalmologist, etc.)
   If so, what services does he/she provide? ________________________________
   If so, how has the team benefited? _________________________________________

2. Does your team utilize a vision screening program? YES NO
   If so, what visual skills are tested for (e.g. Static Visual Acuity, Depth Perception, Color Vision, etc.)?
   If so, what percentage of those players screened failed visual requirements when tested? _____ %
   Primary reasons (circle):
   - Static visual acuity
   - Refractive conditions (e.g. nearsightedness, farsightedness, astigmatism)
   - Eye movements
   - Depth Perception / Two-Eyed Use
   - Eye health
   - Other: ____________________________________________________________
   If so, what is the criteria for passing Static Visual Acuity at Distance (Snellen 20/40 for example)?
   If so, what are the criteria for passing other vision tests conducted on your athletes (List test and passing criteria)?
   ____________________________________________________________

3. What percentage of team members have suffered sports related eye injuries in their careers? _____ %

4. What percentage of players requiring visual correction for sport are wearing:
   spectacles _____ %  contact lenses _____ %
   Of those that wear contact lenses:
   What is the percentage who wear soft contact lenses? _____ %
   Of those, what percentage wear daily disposable contact lenses (throw away daily)? _____ %

5. Does your program recommend contact lenses over spectacles for sport? YES NO
   Why yes or no? _________________________________________________________

6. What percentage of full-time contact lens wearers wear their lenses only for games and practices? _____%

7. Are spare contact lenses kept for each of the players in case of loss or damage? YES NO

8. Is there someone knowledgeable to remove contact lenses from an injured player? YES NO
   If so, who? ___________________________________________________________________

9. Do you and your program recommend contact lenses over spectacles for participation in sports? YES NO
   Comments: __________________________________________________________________

10. Do you use visual training (V.T.) in your program? YES NO
    If so, are the techniques used mostly for remedial training or visual enhancement?
    _____ Remedial Training  _____ Visual Enhancement
    _____ Both about equally
    If so, what techniques are used? _____________________________________________
    If so, have individual or team improvements been noted? YES NO
    What sort of improvements? _______________________________________________
11. If your program (including your vision consultant) provides vision testing and/or training services, which instruments are utilized? (check all that apply)

- Distance Snellen Visual Acuity
- Wayne Saccadic Fixator
- StrobeSpex
- Distance Brock String
- Balance Rails/Platforms
- Distance Anaglyphic Stereo Targets
- Distance Accommod Vergence Rocks
- VectorVision Contrast Sensitivity
- Anticipation Trainer/Timer
- AccuVision
- Tachistoscope
- Strobe Lights
- Marsden Balls
- Trampoline
- Distance Projected Vectographs
- BVAT
- Vistech Contrast Sensitivity
- Other?

12. What percentage of your team members use eye glare black (black tape or paste)? _____ %

Of those who use eye black, what is the main reason(s) for usage?

- PERFORMANCE (reduced glare)
- COSMETIC (psychological)
- OTHER: _____________________________________________________

Who applies the eye black? TRAINER COACH ATHLETE

Where specifically on the face is the eye black applied? ______________________________

Do you find that eye black truly reduces glare? YES NO

13. Often times athletes do not wear sunglasses since they feel they interfere with judgement of the ball, timing and eye-hand coordination (e.g. baseball players, golfers, etc.). If tinted contact lenses that improved visual performance (e.g. enhanced clarity, enhanced contrast sensitivity, reduced glare), for indoor or outdoor use, were available for those athletes requiring a visual correction or even for those who do not (zero power), would your program be interested in the potential uses of this technology? YES NO

14. What percentage of team members wear sunglass protection during competition? _____ %

15. What is the main reason for sunglass usage?

- PROTECTION
- PERFORMANCE
- COSMETIC
- ENDORSEMENT

16. What brand of sunglass is most often worn? ______________________________

17. What tint is used or found to be most beneficial?

- GRAY
- AMBER(golden brown)
- GREEN
- YELLOW
- ORANGE

18. Are you satisfied with the performance level of the sunglasses? ______________________________

19. Pacific University College of Optometry offers Sports Vision seminars comprised of educational presentations and hands-on demonstrations to coaches, trainers, and other sports-related personnel. Are you or other representatives of your team interested in such a conference? YES NO

If yes, would you prefer attending such a conference in Oregon or having this program presented at your facility?

20. If you are interested in the results of this survey, please check here ___ and we will forward a copy of the article to you following publication.

21. Additional comments:
Appendix B
Table 1: Optometric Sports Vision Cross-Sectional Data (Canadian and United States Optometrists)

<table>
<thead>
<tr>
<th>Category</th>
<th>United States Optometrists</th>
<th>Canadian Optometrists</th>
</tr>
</thead>
<tbody>
<tr>
<td>735 Optometrists Surveyed</td>
<td>13% response (81 of 635)</td>
<td>8% response (8 of 100)</td>
</tr>
<tr>
<td>Optometrists consulting to athletic teams at the high school, collegiate, and/or professional level</td>
<td>9% (7 of 81) 6 OD high school 1 OD college</td>
<td>0% (0 of 8)</td>
</tr>
<tr>
<td>Skills tested</td>
<td>#1 Refractive, Eye Movements  #2 Static VA  #3 NPC, Health  #4 Color Vision, Accommodation  #5 Depth Perception  #6 Fixation Disparity, Eye-Hand Coordination</td>
<td>Equal distribution of Static VA, Visual Field, Color Vision, Eye-Hand Coordination, Eye Health, Eye Movements, Depth Perception, NPC, Refraction, and Accommodation</td>
</tr>
<tr>
<td>Paid versus volunteer</td>
<td>71% volunteer 29% paid</td>
<td>NA</td>
</tr>
<tr>
<td>Optometrists indicating a strong potential for growth</td>
<td>95% (77 of 81)</td>
<td>100% (8 of 8)</td>
</tr>
<tr>
<td>Has the potential changed over time</td>
<td>44% YES (30 of 69) 57% NO (39 of 69)</td>
<td>67% YES (4 of 6) 33% NO (2 of 6)</td>
</tr>
<tr>
<td>Most pressing need for continued development of sports vision</td>
<td>#1 Greater public awareness  #2 Continuing education  #3 Research  #4 Certification as expert  #5 Financial incentives  #6 New instrumentation</td>
<td>#1 Greater public awareness  #2 Continuing education  #3 Financial incentives, New instrumentation, Certification as expert</td>
</tr>
<tr>
<td>Optometrists considering specific visual demands of the athlete when prescribing</td>
<td>80% YES (61 of 76) 20% NO (15 of 76)</td>
<td>88% YES (7 of 8) 13% NO (1 of 8)</td>
</tr>
<tr>
<td>Optometrists preferring contact lenses over spectacles for athletes</td>
<td>83% (65 of 78)</td>
<td>100% (8 of 8)</td>
</tr>
<tr>
<td>Optometrists prescribing habits of contact lenses for athletes</td>
<td>37% Planned replacement 25% Daily disposable 15% Conventional wear 14% RGP 8% Extended wear</td>
<td>35% Planned Replacement 30% Daily Disposable 13% Conventional Wear 13% RGP 9% Extended Wear</td>
</tr>
<tr>
<td>Optometrists preferences in prescribing for athletes</td>
<td>#1 Planned Replacement</td>
<td>#2 Daily disposable</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Percentage of athletes wearing contacts only for sport</td>
<td>16% mean</td>
<td>25% mean</td>
</tr>
<tr>
<td>Percentage of optometrists interested in prescribing tinted soft contact lenses</td>
<td>93% (71 of 76)</td>
<td>100% (8 of 8)</td>
</tr>
<tr>
<td>Percentage of optometrists interested in prescribing tinted RGP's</td>
<td>71% (57 of 80)</td>
<td>37.5% (3 of 8)</td>
</tr>
<tr>
<td>Optometrists including vision training in their practice</td>
<td>26% (22 of 84)</td>
<td>29% Remedial Training</td>
</tr>
<tr>
<td>Instruments used in VT</td>
<td>#1 Brock String</td>
<td>#7 Wayne saccadic fixator</td>
</tr>
<tr>
<td>Promotion of athletic eyewear</td>
<td>96% (74 of 77)</td>
<td>88% (7 of 8)</td>
</tr>
<tr>
<td>Facilities including dispensary for protective eyewear</td>
<td>86% (63 of 73)</td>
<td>75% (6 of 8)</td>
</tr>
<tr>
<td>Facilities including dispensary for non-prescription sunglasses</td>
<td>88% (67 of 76)</td>
<td>63% (5 of 8)</td>
</tr>
<tr>
<td>Are there problems with current non-prescription sunglasses</td>
<td>60% YES (43 of 72)</td>
<td>86% YES (6 of 7)</td>
</tr>
<tr>
<td>Optometrists advocating the use of eye-black</td>
<td>14% YES (9 of 64)</td>
<td>29% YES (2 of 7)</td>
</tr>
<tr>
<td>Optometrists feelings that eye-black truly reduces glare</td>
<td>33% YES (15 of 45)</td>
<td>40% YES (2 of 5)</td>
</tr>
<tr>
<td>Professional aspect that is most satisfying</td>
<td>#1 Therapeutics/Disease</td>
<td>#1 Poor optics</td>
</tr>
</tbody>
</table>
Table 2: College/University Sports Vision Cross-Sectional Data

<table>
<thead>
<tr>
<th>Response rate of college athletic programs surveyed</th>
<th>Division IA</th>
<th>Division III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30% (44 of 147)</td>
<td>29% (31 of 108)</td>
</tr>
<tr>
<td>Vision care specialists affiliated with college athletic programs</td>
<td>79% (35 of 44)</td>
<td>23% (7 of 31)</td>
</tr>
<tr>
<td>Vision consultants paid vs. volunteering their services</td>
<td>41% paid (12 of 29)</td>
<td>43% paid (3 of 7)</td>
</tr>
<tr>
<td>Degree of vision consultant</td>
<td>17/29 OD 4/29 Oph. 8/29 MD</td>
<td>5/7 OD 2/7 MD</td>
</tr>
<tr>
<td>Services provided</td>
<td>68% Visual acuity 35% Complete visual exam</td>
<td>57% Vision Testing 29% As needed 14% Full physical</td>
</tr>
<tr>
<td>Team using a vision screening program</td>
<td>73% (30 of 44)</td>
<td>26% (8 of 31)</td>
</tr>
<tr>
<td>Skills Tested</td>
<td>Static VA Depth Perception Color Vision Refraction Health, Eye Movements, Comprehensive Visual Exam</td>
<td>Static VA Depth Perception Color Vision</td>
</tr>
<tr>
<td>Mean of athletes failing screening</td>
<td>14.1% Reason: #1 Refraction #2 VA #3 Health, Depth Perception #4 Eye movements</td>
<td>14.6% Reason: #1 VA #2 Refraction #3 Depth Perception</td>
</tr>
<tr>
<td>Criteria for passing distance static VA</td>
<td>35% 20/20 5% 20/25 15% 20/30 45% 20/40</td>
<td>25% 20/20 25% 20/25 25% 20/50 25% 20/60</td>
</tr>
<tr>
<td>Players sustaining injury</td>
<td>3% mean</td>
<td>3% mean</td>
</tr>
<tr>
<td>% of players requiring Rx for sport are wearing</td>
<td>5% Specs 95% CL</td>
<td>15% Specs 85% CL</td>
</tr>
<tr>
<td>Of those that wear contact lenses</td>
<td>SCL 92% Disposable 22%</td>
<td>SCL 90% Disposable 30%</td>
</tr>
<tr>
<td>Recommend CL over spectacles</td>
<td>86% (38 of 44)</td>
<td>55% (17 of 31)</td>
</tr>
<tr>
<td>% of players wearing lenses only for games</td>
<td>15%</td>
<td>6%</td>
</tr>
<tr>
<td>Spare lenses present</td>
<td>73% (32 of 44)</td>
<td>29% (9 of 31)</td>
</tr>
<tr>
<td>Personnel able to remove lenses</td>
<td>93%</td>
<td>90%</td>
</tr>
<tr>
<td>Athletic teams utilizing visual training</td>
<td>10% (4 of 42)</td>
<td>3% (1 of 31)</td>
</tr>
<tr>
<td>Vision training technique utilized</td>
<td>1 remedial training 2 visual enhancement 2 use both</td>
<td>1 remedial training</td>
</tr>
<tr>
<td>Vision improvements seen</td>
<td>3 of 4 YES</td>
<td>1 of 1 YES</td>
</tr>
<tr>
<td>Instruments used for VT</td>
<td>Distance Snellen Wayne Saccadic Fixator Anaglyphs Distance Brock String Strobospec</td>
<td>Distance Snellen BVAT Tachistoscope</td>
</tr>
<tr>
<td>% of team members using eye black</td>
<td>13%</td>
<td>12%</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Reason for using eye black</td>
<td>64% Performance 36% Cosmetic</td>
<td>57% Performance 36% Cosmetic 7% Both</td>
</tr>
<tr>
<td>Does it reduce glare</td>
<td>52% (16 of 31) YES</td>
<td>33% (7 of 21) YES</td>
</tr>
<tr>
<td>Those interested in using tinted contact lenses</td>
<td>63% (25 of 40)</td>
<td>70% (19 of 27)</td>
</tr>
<tr>
<td>Those using sunglasses during competition</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>Main reason for sunglass usage</td>
<td>#1 Performance #2 Protection #3 Cosmetic</td>
<td>#1 Performance #2 Protection #3 Cosmetic</td>
</tr>
<tr>
<td>Sunglasses brand used</td>
<td>#1 Oakley #2 Nike, Vuarnet, Ray-Ban, Serengetti</td>
<td>#1 Oakley #2 Gargoyles, Ray-Ban</td>
</tr>
<tr>
<td>Preferred tint</td>
<td>#1 Amber #2 Gray</td>
<td>#1 Gray #2 Amber</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>81% (13 of 16)</td>
<td>79% (11 of 14)</td>
</tr>
</tbody>
</table>
Table 3: Professional Sports Vision Individual Data

<table>
<thead>
<tr>
<th></th>
<th>Baseball</th>
<th>Basketball</th>
<th>Football</th>
<th>Hockey</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response rate of professional</td>
<td>43%</td>
<td>17%</td>
<td>21%</td>
<td>24%</td>
<td>26%</td>
</tr>
<tr>
<td>athletic programs surveyed</td>
<td>(13 of 30)</td>
<td>(5 of 29)</td>
<td>(8 of 38)</td>
<td>(7 of 29)</td>
<td>(33 of 126)</td>
</tr>
<tr>
<td>Vision care specialists</td>
<td>92%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>97%</td>
</tr>
<tr>
<td>affiliated with professional</td>
<td>(12 of 13)</td>
<td>(5 of 5)</td>
<td>(8 of 8)</td>
<td>(7 of 7)</td>
<td>(32 of 33)</td>
</tr>
<tr>
<td>athletic programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision consultants paid vs.</td>
<td>70%</td>
<td>60%</td>
<td>100%</td>
<td>83%</td>
<td>79%</td>
</tr>
<tr>
<td>volunteering their services</td>
<td>(7 of 10)</td>
<td>(3 of 5)</td>
<td>(8 of 8)</td>
<td>(5 of 6)</td>
<td>(23 of 29)</td>
</tr>
<tr>
<td>Degree of vision consultant</td>
<td>2/13 OD</td>
<td>1/5 Oph.</td>
<td>2/8 Oph.</td>
<td>1/7 OD</td>
<td>3/33 OD</td>
</tr>
<tr>
<td></td>
<td>4/13 Oph.</td>
<td>4/5 MD</td>
<td>6/8 MD</td>
<td>3/7 Oph.</td>
<td>10/33 Oph.</td>
</tr>
<tr>
<td></td>
<td>5/17</td>
<td>2/10</td>
<td>5/10</td>
<td>3/11</td>
<td>12/48</td>
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<tr>
<td></td>
<td>Screening</td>
<td>Screening</td>
<td>Screening</td>
<td>Screening</td>
<td></td>
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<tr>
<td></td>
<td>2/17 Glaucoma</td>
<td>4/10 Emergency</td>
<td>2/10 Game Day</td>
<td>3/11 Emergency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2/17 Refraction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team using a vision</td>
<td>77%</td>
<td>80%</td>
<td>86%</td>
<td>86%</td>
<td>81%</td>
</tr>
<tr>
<td>screening program</td>
<td>(10 of 13)</td>
<td>(4 of 5)</td>
<td>(6 of 7)</td>
<td>(6 of 7)</td>
<td>(26 of 32)</td>
</tr>
<tr>
<td>Mean of athletes failing</td>
<td>6%</td>
<td>0%</td>
<td>10%</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>screening</td>
<td>#1 Reason VA</td>
<td>#1 Reason VA</td>
<td>#1 Reason VA</td>
<td>unspecified</td>
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<tr>
<td>Skills tested</td>
<td>VA Glaucoma Depth Perception</td>
<td>unspecified</td>
<td>VA Color</td>
<td>VA Glaucoma</td>
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<tr>
<td>Criteria for passing</td>
<td>20/20</td>
<td>Unspecified</td>
<td>20/30</td>
<td>20/25</td>
<td>20/25</td>
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<tr>
<td>distance static VA</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Players sustaining injury</td>
<td>2%</td>
<td>7%</td>
<td>4%</td>
<td>10%</td>
<td>6%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of players requiring Rx for</td>
<td>12% Specs CL</td>
<td>20% Specs CL</td>
<td>2% Specs CL</td>
<td>3% Specs CL</td>
<td>11% Specs CL</td>
</tr>
<tr>
<td>sport are wearing</td>
<td>88% CL</td>
<td>80% CL</td>
<td>98% CL</td>
<td>97% CL</td>
<td>89% CL</td>
</tr>
<tr>
<td>Of those that wear contact</td>
<td>SCL 84% Disposable</td>
<td>SCL 90% Disposable</td>
<td>SCL 88% Disposable</td>
<td>SCL 96% Disposable</td>
<td>SCL 90% Disposable</td>
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<tr>
<td>lenses</td>
<td>46%</td>
<td>13%</td>
<td>40%</td>
<td>8%</td>
<td>29%</td>
</tr>
<tr>
<td>Recommend CL over spectacle</td>
<td>69%</td>
<td>10%</td>
<td>88%</td>
<td>100%</td>
<td>76%</td>
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<tr>
<td></td>
<td>(9 of 13)</td>
<td>(2 of 5)</td>
<td>(7 of 8)</td>
<td>(7 of 7)</td>
<td>(25 of 33)</td>
</tr>
<tr>
<td>% of players wearing</td>
<td>26%</td>
<td>3%</td>
<td>3%</td>
<td>20%</td>
<td>13%</td>
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<td>lenses only for games</td>
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<td>Spare lenses present</td>
<td>100%</td>
<td>100%</td>
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<td>(5 of 5)</td>
<td>(8 of 8)</td>
<td>(7 of 7)</td>
<td>(33 of 33)</td>
</tr>
<tr>
<td>Personnel able to remove</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>lenses</td>
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</tr>
<tr>
<td>Athletic teams utilizing</td>
<td>31%</td>
<td>20%</td>
<td>0%</td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td>visual training</td>
<td>(4 of 13)</td>
<td>(1 of 5)</td>
<td>(0 of 8)</td>
<td>(1 of 7)</td>
<td>(6 of 33)</td>
</tr>
<tr>
<td>Vision training technique utilized</td>
<td>3 of 4 use both remedial and visual enhancement</td>
<td>1 unspecified</td>
<td>NA</td>
<td>1 of 1 use both remedial and visual enhancement</td>
<td>4 of 5 use both remedial and visual enhancement</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------------------------------</td>
<td>----------------</td>
<td>---</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Vision improvements seen</td>
<td>4 of 4 YES</td>
<td>1 of 1 YES</td>
<td>NA</td>
<td>1 of 1 YES</td>
<td>6 of 6 YES</td>
</tr>
<tr>
<td>% of team members using eye black</td>
<td>36%</td>
<td>NA</td>
<td>25%</td>
<td>NA</td>
<td>31%</td>
</tr>
<tr>
<td>Does it reduce glare</td>
<td>46% YES</td>
<td>NA</td>
<td>43%</td>
<td>YES</td>
<td>45%</td>
</tr>
<tr>
<td>Those interested in using tinted contact lenses</td>
<td>82% (9 of 11)</td>
<td>NA</td>
<td>71% (5 of 7)</td>
<td>NA</td>
<td>78% (14 of 18)</td>
</tr>
<tr>
<td>Those using sunglasses during competition</td>
<td>62%</td>
<td>NA</td>
<td>1%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Main reason for sunglasses usage</td>
<td>#1 Performance</td>
<td>NA</td>
<td>#1 Protection</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>#2 Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#3 Endorsement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#4 Cosmetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunglasses brand used</td>
<td>#1 Oakley</td>
<td>Oakley</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>#2 Tiger Eyes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#3 Gargoyles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preferred tint</td>
<td>#1 Gray</td>
<td>#1 Amber</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>#2 Amber</td>
<td>#1 Amber</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#3 Green</td>
<td>#1 Gray</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#3 Yellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>100% (13 of 13)</td>
<td>Unspecified</td>
<td>Unspecified</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
Teams Using Vision Care Specialists

Division 1A | Division III | Pro Baseball | Pro Basketball | Pro Hockey | Pro Football

0% | 20% | 80% | 100% | 100% | 100%
Optometrist's Prescribing Habits of Contact Lenses for Athletes

- Extended Wear: 8%
- Conventional Wear: 15%
- RGP: 14%
- Daily Disposable: 25%
- Planned Replacement: 38%