



The effect of training in visual skills on athletes participating in outdoor sports

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ABSTRACT

Sports vision comprises more than just having 20/20 vision; it also involves a number of other skills. Similar to power, strength, and speed, visual fitness also affects a player's ability to perform visual tasks, which is why it's crucial for optimal game performance. A sportsperson's initial movement is triggered by their visual cues, which account for 95% of all physical movements. This review study was to find out if visual training programs improve performance in competitive sports as well as the function and influence of such programs on outdoor players' skill sets. Participants in the competition were very good players who participated at the provincial level participated in the competition as participants. There is ample evidence in this review study to suggest that providing visual skills training in a definitive manner and on an individual basis according to specific guidelines can improve performance in a variety of sports-related domains, ultimately leading to the elite level of performance that most athletes strive for.

KEYWORDS: sportsman, outdoor games, optometrist, sports vision, visual skills

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INTRODUCTION

Sports vision encompasses more than just having 20/20 vision; it also involves a number of other abilities. Similar to power, strength, and speed, visual fitness also affects a player's ability to execute visual tasks, which is why it's crucial for optimal game performance. A sportsperson's initial movement is triggered by their visual cues, which account for 95% of all physical movements. Athletes use their vision to choose where and when to perform, as well as to guide their body's response. Performance may suffer if messages are not reaching the visual system fast enough or accurately¹. The visual systems must be operating at the highest levels possible since sports performance can be one of the most rigorous activities for the visual system².

A variety of visual-motor abilities, including vergence, saccades and pursuits, depth perception,

eye-hand coordination, peripheral awareness, and visual reaction time, are needed for this intricate process. Since these are talents that can be learned, it is possible that the athletes will have an advantage over their competitors. Each sport has a set of visual skills that are essential to most sports performance, and it is through the development of these particular skills that specific visual talents are strengthened, ultimately leading to increased performance.

Although the term "sight" refers to the retina's clarity of picture, vision is more broadly defined as the mental process of understanding what is seen and is the result of visual information processing, visual pathway integrity, and visual efficiency. Better vision is possible through a complex process that includes information relaying and processing by the brain's visual and visual association areas, even though vision plays a crucial part in the production of images in the retinas of both eyes. An



individual's potential can be greatly impacted by improper utilization of the visual processes because the brain is more dedicated to vision than to all other senses combined³. All things considered, vision is an educated, sophisticated, and evolved collection of functions including numerous abilities. As such, it can be taught through specialized training of the visual skills through an individual-specific program run by licensed eye care specialists⁴.

Playing outdoor activities requires a high level of expertise and requires the integration of multiple senses, with vision being a crucial aspect. 5. In order to play outdoor games successfully and prevent injuries, players must be able to see, track, and recognize various targets. No competition can be successfully mastered without the players' ability to use their maximum visual potential and the necessary visual skills for that specific game. This is because success in these games requires robust vision tracking, a substantial intake of visual information, and rapid analysis of this information 6, 7.

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PURPOSE

This review study aimed to ascertain the role and impact of visual skills training programs on outdoor players' skills performance, as well as whether visual training programs are beneficial to competitive sports performance. Participants were highly skilled athletes actively competing at the provincial level. It also explored the possibility that sports vision training would significantly reduce the incidence of head trauma during practice and competition.

DISCUSSION

The concept of vision training to improve the athlete's on-field performance has evolved into a common practice of players.⁹ multiple authors have suggested that training the visual field may improve

several elements of competition^{10,11}. Extraordinary sport performance depends on successfully using all available visual information. As such, there has been a growing acceptance that perceptual skill precedes and determined skilful actions in sport (Harris & Jenkin, 1998; Williams et al., 1999).

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Abernethy (1996) asserts that vision is widely acknowledged as a vital information source for the preparation and use of motor skills. Since football coach Blantor Collier introduced the idea that "the eyes lead the body," there has been a stronger push to comprehend the influence of visual abilities on athletic performance. This has led to the training of visual skills, often known as vision therapy. In order to succeed in most sports, one must have good vision. Up to 85–90% of the sensory information an athlete receives during a competition may come from visual sources. Given that vision is acquired, this can be learned well or poorly by the athletes and hence, the training of the visual skills is essential in maintaining a superior performance day in and day out¹³.

An awareness of the importance of the eye examination has grown over the years and has led to the need for optometrists to be able to recognise and diagnose pathology. What seems to have been sidelined, however, is the importance of the optometric routine, including refraction, as a



powerful diagnostic tool and a means of clinically justifying an optical appliance.

Empirical evidence indicates that the vision training, which included ocular motor and visual conditioning, led to an improvement in the control and fidelity of the extra ocular and intraocular muscles of the eyes^{17, 18, 19, 20, 21, 22, 23, 24}. With regard to choice reaction time, there are only very few sports that do not depend on choice reaction time. Each person has a dominant eye that processes and sends data to the brain a little bit quicker than the other, usually only a few milliseconds slower. The opposite eye's movements and fixations are also guided by the dominant or sighted eye.

Abernethy (1996) states that it is commonly acknowledged that vision plays a crucial function as a source of information for the preparation and use of motor abilities.²⁶ Similarly, golfers may have very good visual attention abilities, including spatial attention abilities, a component of attention that hasn't been studied in golfers before. The majority of studies on golfers' visual attention have employed the sport-specific methodology. The secret to a player's timing, coordination, and overall performance is their visual skills. To excel in a given game, one must possess motor skills, which fill the gap between technical proficiency and physical fitness. It takes training to get the body to react to what the eyes observe. It is not possible to train the eyes alone; the body also needs to be taught to work as a unit²⁷.

CONCLUSION

This review study has ample evidences that training of visual skills administered in a definitive approach and on individual basis following particular guidelines can lead to an improved performance in various aspects of sports eventually leading to a top level performance desired by most Sportspersons. So, more Future studies are needed to determine a causal relationship of vision training and injury prevention. In summary, many more studies suggest that certain visual abilities, e.g. the peripheral perception, eye- hand and eye feet coordination, stereopsis, visual field or the choice reaction time are trainable and can be improved by means of an appropriate visual training.

REFERENCES

1. Berman A (1990). Starting a sports vision practice. *Optometric Management* 25: 30- 34.
2. Hitzemen SA, Beckerman SA (1993). what the literature says about sports vision. *Optom Clin* 3(1): 145-169.
3. Safal Khanal. Impact of Visual Skills Training on Sports Performance: Current and Future Perspectives. *MedCrave* 2015; Vol. 2(1): 1-3
4. P.E. Kruger. The role of visual skills and its impact on skill performance of cricket players. *African Journal for Physical, Health Education, Recreation and Dance (AJPHERD)*, 2009; vol. 4(1): 605-623
5. Stine CD, Arterburn MR. Stern NS. Vision and sports: A review of the literature. *J Am Optom Association*, 1982; vol. 53: 627-33. *Online International Interdisciplinary Research Journal, {Bi-Monthly}*, ISSN 2249-9598, Volume-07, Issue-06, Nov-Dec 2017 Issue w w w . o i i r j . o r g | S S N 2 2 4 9 - 9 5 9 8 Page 255
6. Helveston EM. Visual training: current status in ophthalmology. *Am J Ophthalmol*, 2005; 140:903-10.
7. Hayes A, Chen CS, Clarke G, Thompson A. Functional improvements following the use of the NVT vision rehabilitation program for patients with hemianopia following stroke. *Neuro Rehabilitation* 2012; vol. 31: 19-30.
8. Sebastian Schwab and Daniel Memmert. The impact of a sports vision training program in youth field hockey players. *Journal of Sports Science and Medicine*, 2012; vol. 11: 624-631
9. Clark JF, Ellis JK, Bench J, Khoury J, et al. High performance vision training improves batting statistics for University of Cincinnati baseball players. *PLoS ONE*, 2012; (7)1: c29109.
10. Zupan M, Wile A. Eyes on the prize. *Train Cond* 2011; 21(2): 11-5.
11. Abernethy B. Training the visual-perceptual skills of athletes. Insights from the study of motor expertise. *Am J Sports Med* 1996; 24(6 Suppl): S 89-92.
12. Kofsky M (1988) Sports vision visual training and experimental program with Australian Institute of Sport Basketball Players. *Australian Journal of Optometry* 6: 15.



13. Williams AM, Ward P, Knowles JM, Smeeton NJ (2002).

Anticipation skill in a realworld task: measurement, training, and transfer in tennis. *J Exp Psychol Appl*; vol. 8(4): 259-270.

15. Knudson D, Kluka DA (1997). the impact of vision and vision training on sport performance. *JPERD* 68(4): 17-24.

16. Center for Disease Control. Preventing fall: How to Develop Community-based Fall Prevention Programs for Older Adults. <http://1.usa.gov/1GllahK>. Last Accessed May 6, 2014.

17. Ramsey K. <http://cin.ci/19l2ukW>. Cincinnati Magazine, March 14, 2014. Last Accessed May 6, 2014.

18. Vesia M, Esposito J, Prime SL, Klavora P. Correlations of selected psychomotor and visuomotor tests with initial Dynavision performance. *Percept Mot Skills* 2008; vol.107: 14-20.

19. Zupan M, Wile A. Eyes on the prize. *Train Cond* 2011; vol. 21(2): 11-5.

20. Clark JF, Ellis JK, Bench J, Khoury J, et al. High performance vision training improves batting statistics for University of Cincinnati baseball players. *PLoS ONE*. 2012; vol. (7)1: c29109

