

## Impact of Visual Skills Training on the Performance of Sportspersons Involved in Outdoor Games

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### Abstract

Sports vision is not only limited to achieving 20/20 eye sight, it also includes a set of several skills. It influences the capacity of the Sportsperson to perform the visual task that's why visual fitness like speed, power and strength, is an important aspect for the best performance in games. 95% of all physical movements are controlled visually and it is a trigger-mechanism for the first movement of the Sportsperson.

The aim of this review study was to determine the role and the impact of a visual skills training programs on the skills performance of outdoor players, and whether visual training programs are beneficial to competitive sports performance. Highly skilled players who were actively participating at a provincial level of competition, served as participants.

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.

**KEYWORDS:** Visual-Skills, Sportsperson, Outdoor Games, Optometrist, Sports-Vision

### INTRODUCTION

Sports vision is not only limited to achieving 20/20 eye sight, it also includes a set of several skills. It influences the capacity of the Sportsperson to perform the visual task that's why visual fitness like speed, power and strength, is an important aspect for the best performance in games. 95% of all physical movements are controlled visually and it is a trigger-mechanism for the first movement of the Sportsperson.

Vision is a signal that directs the body to respond and provides athletes with the information regarding where and when to perform. If the visual system is not receiving messages accurately or quickly enough, performance may suffer<sup>1</sup>. It is important for the visual systems to be functioning at advanced levels because athletic performance can be one of the most rigorous activities for the visual system.<sup>2</sup>

This complex process requires a set of visual-motor skills in the form of depth perception, saccades and pursuits, eye hand co-ordination, vergence, peripheral awareness and visual reaction time. These skills are amenable to training and therefore can be predicted to provide the athletes with a potential advantage over their counterparts.<sup>3</sup>

Every sport requires a set of visual skills that are critical elements to most sports performance and it is the training of these specific skills that influence to strengthen specific visual abilities leading to actually improved performance.

While the term “sight” emphasizes the clarity of image on the retina, vision encompasses a broader meaning as the mental process of deriving meaning from what is seen and is the output of visual pathway integrity, visual efficiency and visual information processing. Although, the eyesight play a critical role in image formation in the retina of the two eyes, the complex process comprising of the relay of the information as well as its processing by the visual and visual association areas of the brain enables one to achieve better vision. Because the brain is dedicated more to vision than all the other senses combined, inefficient use of the visual processes can profoundly affect an individual’s potential.<sup>3</sup>

In totality, vision is a learned complex and developed set of functions that involve a multitude of skills and therefore, can be taught through specific training of the visual skills through an individual specific program administered by qualified eye care professionals.<sup>4</sup>

Outdoor games are complex skilled sport with the need to integrate sensory input to be successful; vision plays a key component.<sup>5</sup> To play outdoor games, players need to see, to track, and to identify multiple targets for successful performance, as well as to avoid injuries. Success in these games requires robust vision tracking, the substantial intake of visual information, and rapid analysis of this information<sup>6,7</sup> that’s why no competition can be mastered successfully without the players’ capability to use their maximum visual potential and required visual skills for that particular game.

Visual perception training programs have a great impact on the improvement of visual abilities: “visual training may well make the difference between winning and losing, between reveling in keen competition and shrinking from it.”<sup>8</sup>

#### **PURPOSE**

The aim of this review study was to determine the role and the impact of a visual skills training programs on the skills performance of outdoor players, and whether visual training programs are beneficial to competitive sports performance. Highly skilled players who were actively participating at a provincial level of competition, served as participants.

It also explore that the Sports vision training would significantly reduce both practice and competition concussion incidence in outdoors.

#### **DISCUSSION**

The concept of vision training to improve the athlete’s on-field performance has evolved into a common practice of players.<sup>9</sup> multiple authors have suggested that training the visual field may improve several elements of competition.<sup>10,11</sup>

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).

The visual system plays a crucial role in guiding the player's search for essential information underlying skilful behavior.<sup>12</sup>

According to Abernethy (1996) the role of vision can generally be accepted as a critical source of information for the planning and the executing of motor skills.

The training of the visual skills, also called as vision therapy since "the eyes lead the body" concept was put into perspective by Blanton Collier, a football coach, a greater impetus has been given to understand the impact of visual skills on sports performance

Vision skills are essential to success in most sports. Visual sensory input may account for up to 85-90% of the sensory input an athlete is receiving during an athletic contest. Since, vision is learned; 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 out.<sup>13</sup>

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.

There is a growing body of evidence that vision training may have an added benefit of injury prevention including mild traumatic brain injury that's why statistics taken from various sports vision screenings at the Olympic and junior Olympic level shows the visual status of different sports persons.<sup>14</sup> 20% of athletes competing at a high level tournament but never have a complete eye examination, 30% had less than 20/20 vision, 25% had decreased depth perception, 26% had poor eye-hand coordination for the demand of their sport, 12% had inaccurate eye movement abilities tracking and able to keep their eyes on the ball). Having visual difficulties leads poor performance and injuries on face and head that's why 70% male sports persons are accounts for 20% of unilateral blindness and 7% of bilateral especially in the outdoor games like hockey, cricket, football, golf etc. <sup>15, 16</sup>

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. <sup>17, 18, 19, 20, 21, 22, 23, 24</sup>

With regard to choice reaction time, there are only very few sports that do not depend on choice reaction time.

P.E. Kruger,(2009) reported that most sports like hockey, cricket, volleyball, golf etc. depend on an excellent eye-hand or eye-foot coordination which in turn is directly linked to the speed of visual reaction and motor response. The capability of becoming aware of a movement or a situation a split second faster than an opponent is important in ball sports as well as many other sports as it may offer athletes the decisive advantage. Or think of a goalkeeper in field hockey in a penalty corner situation. This means that the outdoor players showed significant improvements in, for example, peripheral vision, ball skills, concentration, focus flexibility and coordination.<sup>25</sup>

Every person has a dominant eye that processes and transmits information to the brain a few milliseconds faster than the other. The dominant or sighting eye also guides the movement and fixations of the other eye.

According to Abernethy (1996) the role of vision can generally be accepted as critical source of information for the planning and the executing of motor skills.<sup>26</sup>

In the similar way, golfers have the potential for excellent visual attention skills, including spatial attention skills, an aspect of attention that has not been examined in golfers to date. Most visual attention research on golfers has used the sport-specific approach.

Visual skills are the key for player's timing, co-ordination and overall performance. Motor skills, which bridges the gap between fitness and technical ability is vital in training for the excellence in particular game. The body must be trained to respond to what the eyes sees. The eyes cannot be trained in isolation, the body must be taught to work as a unit.<sup>27</sup>

Training was integrated into the performance enhancement segment of the athletes' program includes the instruments like dynavision, strobe glasses, Tachistoscope, eye port, pin hole glasses etc.<sup>28</sup> The eyes can be trained just like any other muscle in the body to improve reaction to what is seen. Just as exercise and practice increase strength and speed, so can the visual performance be improved to achieve maximum results (Smythies, 1996).<sup>29</sup>

## 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.

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