Sports Vision & Decision Making

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Sports Vision
Sports Vision

Firstly, a couple of questions...

• How many of you are athletes??
• How many of you believe that being physically fit helps you perform at your best????
• How many of you believe that practicing your sports skills helps you improve as an athlete??
• How many of you believe that your eyesight is crucial to your sporting performance??

Final question...
How many of you have had your eyes checked by an optometrist or sports vision specialist in the last year??
Introduction

- The visual system is the **undisputed king** among all the special senses.

- **Visual information** dominates over information from the other sensory systems.

- **80-90%** of the sensory input an athlete receives while taking part in his/her chosen sport comes from the visual system.
• Just picture yourself trying to perform your sport blindfolded…

• If you cannot move your eyes quickly and effectively, then you cannot perform sport-specific tasks to the best of your ability.

• Your vision is therefore critical in order for you to perform successfully in your chosen sport.
The Visual System

• The visual system is like any other motor system in the body.

• It can be trained and improved through specific exercises just as athletes use sport-specific drills to improve overall sporting performance.

• Most athletes would not go into a game without having practiced their skills and developed their strength and conditioning to the optimal level.

• The same should be true for the athletes visual system – it should be trained just like every other aspect of preparation for competition.
The Visual System

• The visual system responds positively to overload and to progressive increases in the demands that athletes place on it.

• It responds exactly the same way as the musculoskeletal system responds to the demands and overload it faces during training in the gym or out on the field.

• By overloading the visual system during sport-specific training, you will learn to deal with both visual and physical stress and will thus be able to overcome fatigue and breakdown caused by those two stressors.

• Therefore, when it comes to competitive situations, you can perform at an advanced level because you can deal with both visual and physical input with greater efficiency.
Hardware vs Software

- The visual system can be thought of in terms of "hardware" and "software" components.

- **Hardware**: - non-task specific abilities that are resistant to change…
  - in other words, the physical makeup of the eye itself.

- **Software**: - how information received from the retina in the eye is processed and interpreted by the brain…
  - in other words, how your brain makes sense of and processes the image that it receives from the eyes.
Experts agree that it is the structurally-fixed (hardware) components of the visual system that may limit an athlete’s performance...

However, once any deficiencies have been addressed, it is the visual-perceptual (software) component that may separate the expert athlete from the non-expert athlete.

Sports Vision therefore looks at how we can train the software components of the visual system in order to enhance performance.

**Hardware**

- The physical makeup/characteristics of the eye.

**Software**

- Eye receives visual input, brain interprets the input, and initiates the most appropriate motor response.
Visual Skills

Static Visual Acuity

“This is the degree of detail that can be seen in an object or the ability of the eyes to resolve various sizes of objects at various distances.”

Important because good static visual acuity may guide the other visual skills.

All athletes need to have good static acuity; however athletes in static sports such as archery, pistol shooting & darts.
Dynamic Visual Acuity

“Is also known as kinetic visual acuity and it is the visual acuity that is measured when either the target or the athlete is in motion.”

The foundation of good dynamic visual acuity is good static visual acuity, however because of the dynamic and ever changing situations of the sporting environment, dynamic visual acuity will be more important.
Visual Skills

Eye Movements (Ocular Motilities)

“This is the ability of the athlete to accurately use his/her two eyes together to fixate on an object or target and to maintain this fixation while the athlete and or the object is in motion or stationary.”

Pursuits  Horizontal Saccades  Vertical Saccades  Near-Far Saccades

These visual skills make up the two eye movement systems used i.e. Smooth Pursuit Tracking and Fast Saccadic Tracking.
Visual Skills

Depth Perception (Stereopsis)

“Stereoscopic vision is the ability to judge the relative distances of objects from the athlete by means of binocular vision (using both eyes).”

Stereopsis is of utmost importance in any sports where the relative distance of moving or stationary objects need to be judged with great precision.
Visual Skills

Colour Vision

“The ability to distinguish different colours clearly and accurately.”

Deficits in colour vision can cause you to incorrectly react to a visual stimulus because you are unable to distinguish the object/person from the “background noise”.

[Image of rugby players]
Visual Skills

Central-Peripheral Awareness

“This is the ability of an athlete to maintain central fixation on a target yet to be aware of what is happening to the sides or in the peripheral visual field.”

Several sports require high degrees of central-peripheral awareness – typical situation are where athletes must concentrate on a ball (central fixation) while also being aware of the position of teammates, opponents and boundary lines.
Visual Skills

Eye-Hand/Body Coordination

“This skill involves the integration of the eyes and the hands/body. It determines the effectiveness of a perceptual motor response to a visual sensory stimulus.”

Eye-hand/body coordination is most often regarded as a measure of an athlete’s ability to make a quick response to a stimulus.

Sports Vision Trainer (SVT)
“This is the ability to pay constant active attention to visual stimuli.”

Poor visual concentration may result in an overall poor motor response. This may result in responses not only being late but also inaccurate. Visual concentration may be needed in short durations, such as in cricket batting, or over a long duration, such as in mountain biking.
Why is Sports Vision & Decision Making Training Important?

• Elite athletes are becoming more and more similar with regards to their physical strength and conditioning.

• Coaches and athletes are therefore constantly looking for different training methods and utilities that can give them the competitive edge over the opposition.
Why is Sports Vision & Decision Making Training Important?

- **Sports Vision & Decision Making Training** is an area in sport science that is often overlooked, but can dramatically impact an athlete or teams performance.

- This is mainly because not much is known about it even though it has been around for years.

- However, more recently **Sports Vision & Decision Making Training** has come into the spotlight through the media and coaches/athletes have started to show an interest in exploring this avenue of training in order to enhance performance.
Why is Sports Vision Training important?

• Quite often, the difference between winning a **gold medal** or a **silver medal**, **catching** or **throwing** the important pass in a match, or accurately **kicking** or **hitting** the ball into the back of the net comes down to **hundredths of a second**...

• If your visual system is well trained, it is these hundredths of a second that can **fall in your favour** as you are able to **process** what you are seeing slightly **quicker** than your opponent.

• This can be the difference between **winning** or **losing**, coming **first** or **second**, or scoring the match **winning point**.
Sports Vision Screening Process

- Have your eyes checked by an **optometrist** at least once a year, prior to the start of your athletic season.

  **Recommend:** Margo Klingenberg at Neelsie Mellins
  neelsie@mellins.co.za
  021 887 1778

- **Sport-specific sports vision assessment** by Centre for Human Performance Sciences.

- **Sport-specific sports vision training** to improve your visual skills.

- **Sport-specific decision making training** to improve your on-field decision making skills.

- **Nike Vision Sport-specific eyewear** to help you “see” your sport better.
Sports Vision & Decision Making
Training Equipment

BATAK Pro

Peripheral Awareness
Reaction Time
Eye-hand Coordination
Sports Vision & Decision Making
Training Equipment

Sports Vision Trainer (SVT)

Peripheral Awareness

Eye-hand Coordination

Depth Perception

Binocularity

Eyeport
Fusion Sport Smart Speed

Peripheral Awareness

Decision Making

Whole Body Reaction Time

Visual Focus & Concentration

Sports Vision & Decision Making Training Equipment
Sports Vision & Decision Making Training Equipment

- Kanon Ball Machine
- Peripheral Awareness
- Decision Making
- Nike Vapor Strobes
- Eye-hand Coordination
- Whole Body Reaction Time
- Visual Focus & Concentration
Summary

• **Sports Vision Training** works and can have a major influence on your sporting performance.

• If you train your body in the gym and out on the field, then it makes sense to **train your eyes** as well.

• It can give you the **edge** over your opponent.

• It can give you the additional **confidence** to take your athletic performances to the “**next level**”.

• For coaches, **Sports Vision Training** can add an extra dimension to training that can be a nice **alternative** to the usual training routines of your athlete, as well as help to **prevent athlete boredom**.