

# ***Vision training for soccer***

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# VISION TRAINING

*"Vision training for sport is the application of **specific exercises** conducted over a **period of time** that leads to **neural restructuring** of cortex and brainstem pathways allowing a person to **maximise efficiency** while performing **visual perceptual tasks** leading to **enhanced visual motor performance**"*

# ASSUMPTIONS

- Specificity of the vision training programs
- Skill level of the athlete
- No “hardware” eye problem

# VISUAL SKILLS

<b>EYE SIGHT</b>			
Visual acuity	Eye dominance	Contrast Sensitivity	Depth Perception
<b>OCULAR</b>	<b>MOTOR</b>	<b>SKILLS</b>	
Accommodation	Binocular vision	Dynamic VA	Saccades
Pursuits	stereopsis	Vergence	
<b>VISUAL</b>	<b>PERCEPTUAL</b>	<b>MOTOR</b>	<b>SKILLS</b>
Eye hand coordination	Eye foot coordination	Peripheral vision	Visualisation
Visual memory	Visual perception	Visual processing	

## **Soccer specifications**

- **FIFA Laws of the game specify the field dimensions as:  
Length: min 90 m max 120 m  
Width: min 45 m max 90 m**
- **FIFA Laws of the game specify that a goal should be 7.32 m wide & 2.44 m height**
- **The official size of a soccer ball is not more than 70 cms in circumference**

# Six important skills for soccer

- *Gaze control*
- *Peripheral awareness*
- *Visual search strategies*
- *Visualization*
- *Visual coordination*
- *Visual memory*

# Gaze Control

- Gaze control is where you position your eyes before executing a task
- Quiet eye phenomenon (Vickers) – ability to maintain focus & concentration on one location as the shot is prepared & executed (>1 sec)

## Goal keeper during penalty shoot - out

- Goal keepers (GK) only stop 18% of penalty kicks
- GK's ability to anticipate the direction of the kick depends on cues picked up from the kicker eg direction the kicker is looking

# Gaze Control

## Goal keeper during penalty shoot – out

- GK's waited longer before initiating a response
- Novice GK's gaze on the trunk, arms and hips
- Expert GK's gaze on the kicking leg, non-kicking leg and ball areas particularly at the moment of foot to ball contact



# Gaze Control

## Players executing a penalty kick

### Gaze location

- Head down approach at the time of the shoot difficult for the GK to read
- Keeper independent strategy – actions of the GK are ignored & shot is executed pre planned more successful than keep dependent strategy (Kamp 2006, Journal of sport science)

# Gaze Control

## Players executing a penalty kick

### Insulation from choking

- Gaze control can help the athlete from choking under pressure
- 2 theories of choking
- Too much self-focus causing normal automatic actions to become too conscious & deliberate
- Too much external distraction causing athlete's attention to be diverted from the task

*Directing energy to gaze control during pressure situations insulates the goal kicker from choking*

# Peripheral awareness

- Offensive and defensive players use peripheral awareness to track opponents, teammates, passing lanes, the goal and developing plays
- Colour recognition of jersey is critical when developing drills
- **Peripheral awareness is used in:**
  - **Directional changes**
  - Speed of soccer players making cuts and turns decreased when sprinting with a restricted peripheral field of view
  - **Recognition & reaction**
  - Soccer players have quicker recognition & reaction speed during peripheral visual tasks than non-athletes

# Visual search strategies

- Elite athletes know where to look for the most important visual cues & information
- **Anticipation** (University of Liverpool, UK, 1994)
- Experienced players fixated on peripheral aspects of the play (position and movement of other players). Inexperienced players fixated on the ball and player passing the ball
- Increase in frequency of fixations an advantage for anticipating pass destination during open play

## **One on one defence** (Keio University, Japan, 2004)

- Expert players fixated more often than novices on the knee & hip regions of opponents) – suggests this strategy assists anticipating the opponent's next move

# Visual search strategies

## Passing & kicking accuracy (Keio University, Japan, 2006)

Study examined visual behavior while kicking with inside of foot

- Most accurate kickers displayed longer quiet eye durations (refers to a longer duration of the final eye fixation on the target prior to beginning the kicking movement)
- During the kicking movement, the most accurate kickers set their visual focus on an area between the target and the ball

# Visualization

## Mental training

- “Your performance on the field is determined by the quality of the thoughts which are programmed into your mind” **Craig Townsend**  
“Its mind over matter”

## Shot execution (Liverpool John Moores University, UK 2006)

- Showed highly skilled players are better able to visualize their shots than less skilled players. High skilled players rely on visualization to maintain performance

# Visual coordination

**Eye – foot coordination**

**Eye-hand coordination**

- **Chelsea FC exclusively use SVT to train their goal keepers**

# Visual memory

- **Liverpool John Moores University, UK, 2000**
- **Skilled soccer players can recall & recognize patterns of play more effectively than less skilled players**
- **Expert players use their knowledge of situational probabilities (expectation) to anticipate future events**



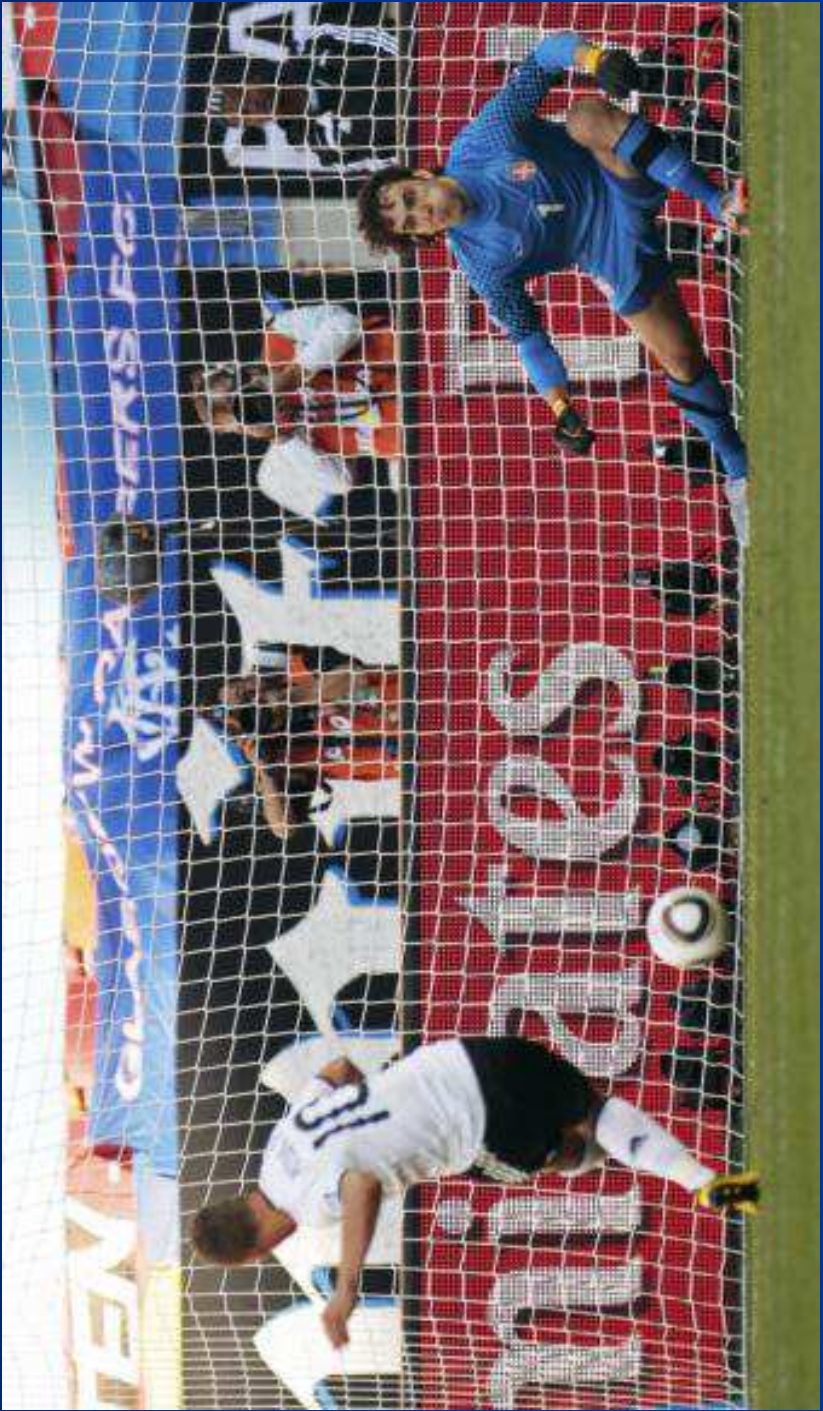
# The science of goal keeping influencing penalty kicks

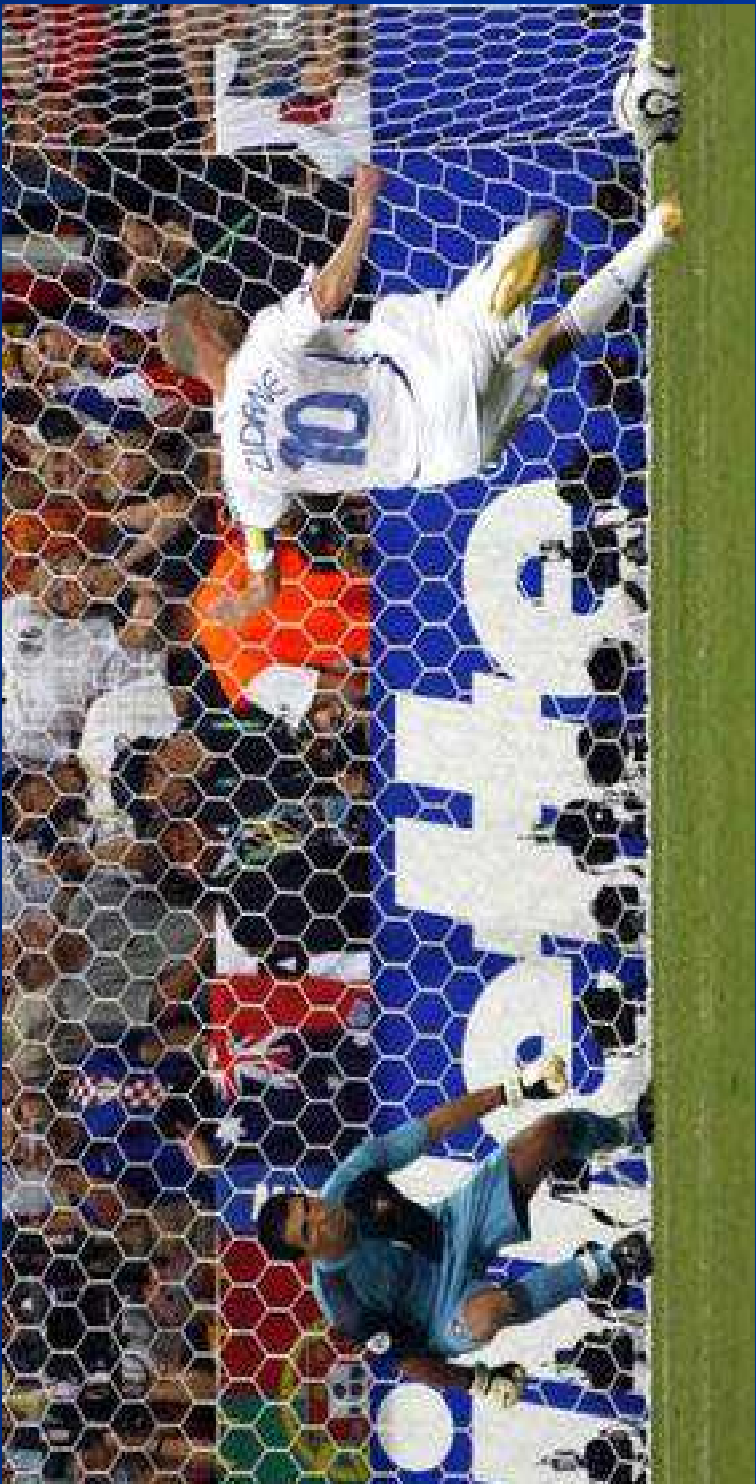
- 200 penalty kicks analysed from World Cup, African nations cup, European Championship & UEFA champions league. Institute of Human performance, University of Hong Kong 2006
- 96% of the time goalkeeper stood slightly off centre (doesn't appear to be a deliberate strategy).
- Where penalty kickers aware of the position of the goal keeper? 60% of the kicks were directed to the side of the goal with more space
- Feasible for a goalkeeper to influence the direction of penalty kicks by standing marginally to one side of the centre of the goal. **The goalkeeper can then strategically dive to the side with more space!**

# The science of goal keeping

## Visual search strategies

- **Research Institute, Vrije University, Netherlands, 2002**
- **Expert goalkeepers used a more efficient search strategy involving fewer fixations of longer duration to more meaningful areas**
- **The novice spent more time fixating on the trunk, arms and hips of the kicker, the experts found the kicking leg, non-kicking leg and ball areas to be more informative at the moment of foot to ball contact approached**











696/GETTYFILE

# Decision making process of soccer players

- Exercises used to develop anticipation, imagination & awareness in soccer should always have 3 objectives in mind:
  1. To develop composure in possession with the ball
  2. Increase time on the ball by anticipating situations ahead of time
  3. To decrease the time needed to move the ball by having total awareness of the positions of all players

# Decision making process of soccer players

Wayne Harrison Recognizing the moment to play, Reedswain Inc

- Coaches reinforcing these objectives can help players progress through the 8 step decision making process
- **Step 1:** Observing how & where the ball is coming from
- **Step 2:** Knowing where teammates are on the field
- **Step 3:** Knowing where the opposition are on the field
- **Step 4:** Deciding what to do with the ball after a good first touch, skill to use such as pass, run, shoot, cross, dribble
- **Step 5:** Knowing your options by observing where the ball is to be moved or passed
- **Step 6:** Deciding when the ball goes
- **Step 7:** Deciding how the ball goes
- **Step 8:** Deciding why the ball goes (the tactical objective )



# Soccer Psychology

- Mental training aims to work on Consistent play, focus & concentration, controlling negative thoughts and developing concentration techniques for critical moments in a game. [Soccerpsychology.com](http://Soccerpsychology.com)
- AC Milan – “mind room” helps players relax & relieve stress. Eight players at a time have mental training sessions lasting about 20 minutes

# [www.eyecoach.com](http://www.eyecoach.com)

- Offers vision training programs for soccer players at all levels including customised drills
- Developed in the UK - coaching tool for enhancing technical ball control and play making while under pressure using visual and sensory reactions
- Game specific use of a soccer ball

# BRAIN SKILLS

<b>Anticipation</b>	<b>Attention</b>	<b>Decision making</b>	<b>Neuroplasticity</b>
<b>Pattern recognition</b>	<b>Peripheral awareness</b>	<b>proprioception</b>	

# SPORT IQ SKILL

<b>Decision training</b>	<b>Gaze control</b>	<b>Skill acquisition</b>	<b>Visual cues</b>
<b>Visual search</b>	<b>The zone</b>	<b>Talent identification</b>	

# SPORTS PSYCHOLOGY SKILLS

<b>ULTIMATE</b>	<b>MENTAL</b>	<b>ATHLETE</b>	
Consistency	Flow	Killer instinct	Mental toughness
zone	Emotional toughness	Mind strength	
<b>PSYCHOLOGICAL</b>	<b>STRATEGIES</b>		
Arousal	Breathing	concentration	Motivation
confidence	Humor	Goal setting	Meditation
Visualization	relaxation	Positive thinking	Rituals
Perseverance	Faith	Self talk	

# SPORTS PSYCHOLOGY SKILLS

<b>PSYCHOLOGICAL</b>	<b>OBSTACLES</b>		
Adversity	Burn-out	Choking	Fatigue
Aggression	Pressure	Fear	Anxiety
Intimidation	Anger	Pain	Self Doubt
Slumps	Addication	Stress	

## ***SUMMARY/TIPS***

- ***Conduct “hardware” assessment and relate results to on field performance***
- ***Treat “hardware” deficiencies***
- ***Work closely with sports scientist/coaches to assess/train & enhance specific visual-perceptual parameters related to specificity to soccer at all levels***

***THANK YOU!***

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