



## **ACQUIRING VISION SKILLS ESSENTIAL FOR TENNIS**

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Majority of tennis-training programs have been designed with the following criteria in mind: technique, speed, agility, footwork, strength, mental toughness and match strategies. These criteria have also been used to judge tennis ability.

However, our body will only respond to what it can see. Despite this fact, little attention has been paid to vision.

For decades, players have been told to “watch the ball” or “keep your eye on the ball”. These phrases seem to be a maxim that should solve this problem when playing tennis. Remember, it’s not hard to know what to do, but how to do what you know! Not watching the ball is typically due to “visual wandering” and a lack of visual discipline/training. Running, acceleration, eye movement and the speed of the ball are the visual spoilers. Try reading a newspaper and running on the spot. You will notice that the running caused difficulty reading the newspaper.

By undertaking a simple visual training program, a tennis player can improve his performance. That’s because the eye, like the muscles in our bodies, can be strengthened to perform better with exercise. By seeing better, you can play better because what and how you see, is what and how you will do.

Some of the required visual skills that can be enhanced through training are:

**HEAD POSITIONING**

**DYNAMIC VISUAL ACUITY**

**EYE TRACKING**

**EYE TEAMING & DEPTH PERCEPTION**

**PERIPHERAL VISION AND**

**EYE-HAND COORDINATION.**

**HEAD POSITIONING:** The average adult head weighs 12 – 15 pounds. When the head is moved excessively in order to see, we risk throwing the whole body out of balance. Thus, players need the ability to identify and feel their head positioning during strokes.

**DYNAMIC VISUAL ACUITY:** Playing tennis is a visual stress test. It requires more from your eyes than the daily activities of reading the newspaper and working on the computer. The player who sees the ball late and exercises poor visual judgment is at a distinct disadvantage. An aggressive player will move around the court, which tires and weakens your visual judgment of ball placement and speed. Running impairs visual acuity; many errors occur after a player has been forced to run for a shot. The solution, of course, is preparation. You can hone dynamic visual acuity so that you can function optimally in matches in which the ball is hit hard and you are forced to run a great deal. The two factors that make seeing the ball difficult are your motion and the speed of the ball. Thus, players need the ability to see the ball more effectively and efficiently while

the player and the ball are moving.

**EYE TRACKING:** This is the ability to follow a moving object smoothly and accurately with both eyes. In tennis, it is desirable to track the ball to the moment of contact, that is to “see the ball hit the racquet”. But, according to Dr. Jack Groppe, a tennis ball contacting the strings happens way too fast to see with the human eye. The comparison he offers was of a normal everyday 60-cycle deck lamp. The light of this standard lamp seems steady enough, but actually it is flickering on and off 60 times every second, so fast that it appears to be a steady beam of light. Have any of us ever seen this light either on or off? No. The reason is that it simply turns off and on too fast for the human eye to record. According to Dr. Groppe, the moment of a tennis racquet striking a ball takes less time than a 60-cycle light flickers on and off.

It takes 1/10th of a second to relate information from the eyes to the brain. Research by the LTA shows that watching the ball only occurs 5-6 feet in front of the player, so after this (tracking the ball), de-emphasize watching the ball, emphasize on getting into the right position and bring your eyes to the point of contact. We need to “anticipate” and pay attention to *preparation- where* the ball is going to be and *when* it’s going to be there.

**EYE TEAMING & DEPTH PERCEPTION:** This is the ability to use both eyes together (in unison) and to judge relative distances of objects and to see and move accurately in three-dimensional space. Although we look at the world with both eyes, we are aware of only a single impression of the environment. When the eyes work together as a team, the perceptions of each eye are coordinated. Depth, for example, is perceived when two-dimensional images received by each eye are fused in the brain into one three-dimensional image. As a result, we can judge distance easily and locate objects in space. On the other hand, anyone whose eyes do not team up finds it very difficult to judge distance.

**PERIPHERAL VISION:** This is the ability to maintain and interpret what is happening on the court (in your side vision) while attending to the ball (the specific central vision). Think of a wide receiver in football. When a pass is thrown in his direction, he must focus on the ball, the opponent trying to prevent him from making the catch, and his feet in relation to the sideline. If he does not account for all three things, he won’t be consistently successful. The same thing applies to tennis. A player must concentrate on the incoming ball, account for his own position on the court and what his opponent is doing across the net. All three are crucial for a player’s “triple vision”.

**EYE-HAND COORDINATION:** This is how the visual system guides the motor system. The eyes lead the hands- not the other way around. Coaches and players who refer to “hand-eye coordination” have missed the significance of this relationship. The visual system leads the motor system. We all use eye-hand coordination in our daily lives and take this skill for granted. Driving a car requires constant coordination between vision, and hands, and feet. Turning a car at an intersection requires the processing of visual information by the brain and an immediate reaction by the hands on the steering wheel to the brain’s command. Parallel parking, a more difficult task, requires a series of

quick adjustments between the visual system and the hands and feet. Braking is a good example of eye-foot coordination. When we want to stop or slow down, the foot controls the brake pedal, but our vision first processes the information that tells us where and when to brake.

The goals of this article are to:

1. To demonstrate a simple on-court Vision Training program which will improve the performance of a tennis player.
2. To coordinate the proper eye movements with the body.
3. To make quick and accurate decisions on the court.

## **THE VISION TRAINING PROGRAM**

The VISION TRAINING PROGRAM is broken down into SIX types and levels of exercises:

**LEVEL 1: HEAD POSITIONING EXERCISES**

**LEVEL 2: DYNAMIC VISUAL ACUITY EXERCISES**

**LEVEL 3: EYE TRACKING EXERCISES**

**LEVEL 4: EYE TEAMING & DEPTH PERCEPTION EXERCISES**

**LEVEL 5: PERIPHERAL VISION EXERCISES**

**LEVEL 6: EYE-HAND COORDINATION EXERCISES**

### **LEVEL 1. HEAD POSITIONING EXERCISES**

Purpose: to help players identify and feel the head positioning during strokes.

#### **A. General head positioning**

The head should remain above center of gravity and stay relatively still at all times. The more your head is over your center of gravity, the more efficient your visual tracking, balance, strokes and recovery. If the head gets too far off the center of gravity as you move to the shot, you will have difficulty hitting in balance, control and recovery.

**DRILL: UPSIDE-DOWN CAP (or FOLDED TOWEL)**

Place a cap upside-down or a folded towel on your head. Balls could be hit to you, or points played out. Your goal is to keep the cap or folded towel on your head.

The dominant eye is the eye that sends information to the brain quicker than the non-dominant eye. The brain gets the information a few milliseconds faster. And since the brain gets the information quicker, the body reacts quicker. Research shows that the dominant eye's connection with the brain is 10-13 times faster than the non-dominant eye.

The test to determine the dominant eye is a simple one. Make a circle with both hands about the size of a tennis ball. Then look through this circle at a fixed object about 15-20 feet away. Next, while holding your line of sight on the object, close your left eye and look through the circle at the object with your right eye. If you can still see the object

through the circle, you are right eye dominant. On the other hand, if you can no longer see the object through the circle, you are left eye dominant.

**B. Head positioning for GROUNDSTROKES:** The goal on the groundstrokes is to get the dominant eye closer to the ball.

TIP: Make sure your opponent can see both your eyes when you are tracking the ball.

**C. Head positioning for VOLLEYS:** The goal is to get your head at the same level as your racquet head when lining up for the ball.

**D. Head positioning for SERVES/OVERHEADS:** players typically drop their head prior to hitting the ball.

TIP: Keep your head up by keeping your non-dominant hand up “longer” (until the follow-through). Think of an outfielder in baseball getting ready to catch the ball.

**ALL STROKE DRILL:** Keep a pencil behind your ear. Play points. If the pencil falls anytime during the point, the opponent wins the point.

## **LEVEL 2. DYNAMIC VISUAL ACUITY EXERCISES**

Purpose: to help players see the ball more effectively and efficiently while the player and ball are moving.

### **DRILL: TWO-BALL RALLY**

Players have a ball in each. On the count of three, both players feed their ball to the other player and try rallying cooperatively with two balls in play.

### **DRILL: COLORED BALL**

Have a basket of balls with different colored balls in it, e.g. yellow, orange and white.

If the ball fed to you is an ORANGE ball, you hit a forehand; a WHITE ball, you hit a backhand; a YELLOW ball, you hit a lob.

Another variation could be using the same stroke. For example, if you get a WHITE ball, you hit a forehand CROSSCOURT; if you get an ORANGE ball, you hit a forehand DOWN-THE-LINE; if you get a YELLOW ball, you hit a forehand LOB.

## **LEVEL 3. EYE TRACKING EXERCISES**

Purpose: to develop the ability to follow a moving ball smoothly and accurately with both eyes.

### **DRILL: BALL CHARACTERISTICS**

Use command words (or trigger words) to identify the ball characteristics. Shout out the words as soon as you have identified the characteristics. Initially do one characteristic at a time:

### BALL CHARACTERISTICS

SPIN  
SPEED  
DIRECTION  
DEPTH  
HEIGHT

### TRIGGER WORDS

“top”, “slice”, “flat”  
slow, med., fast  
right, left  
short, middle, deep  
low, medium, high

#### **DRILL: DISTRACTION RALLY**

Rally normally from the baseline, while two other players are diagonally across from each other at the net hitting volleys (or touch shots) back and forth simultaneously.

#### **LEVEL 4. EYE TEAMING & DEPTH PERCEPTION EXERCISES**

Purpose: to develop the ability for your eyes to function in unison and to judge relative distances of the ball and to see accurately in three-dimensional space.

#### **DRILL: “IN-OUT”**

You are at net. Coach or another player feeds from the opposite baseline with different speeds, heights, spins, directions and depths. You call “in” or “out” based on ball going past you. A third person can on baseline acting as the line judge.

#### **DRILL: 4-QUADRANT**

Divide court into four quadrant by extending the center service line all the way back to the baseline. With the line extended, the court has four boxes or quadrants. Number each quadrant from one to four. As ball goes over net, you must call out the quadrant number that ball is going to land in.

#### **LEVEL 5. PERIPHERAL VISION EXERCISES**

Purpose: to develop the ability to monitor and interpret what is happening on the court (in your side vision) while attending to the ball (the specific central vision)

#### **DRILL: BALL TRAINING**

Have a partner (holding two balls) standing three to four feet from you. The balls are thrown to you simultaneously, and you must catch one ball in each hand. As you improve, cross your arms to make the catch.

#### **DRILL: HAND SIGNALS**

While rallying, have your partner make hand signals (fist, open fist, thumb up or thumb down) to see if you can recognize what the signals are.

#### **LEVEL 6: EYE-HAND COORDINATION EXERCISES**

**Purpose:** to train a player to effectively develop how their visual system guides their motor system

#### **SERVE DRILL: TWO-BALL COLLISION**

Have a ball in each hand. Mimic the serve motion and release both balls to try to make both balls “collide” or hit each other. This is great, not only, for an eye-hand

coordination drill but also great to develop synchronization of the hands on the serve.

#### RETURN OF SERVE DRILL: RACQUET HANDLE RETURN

You must return serve with the racquet handle (or grip).

#### GROUNDSTROKE DRILL: RALLY

Rally from the baseline, but rotate the racquet around your body two times after each hit.

#### NET PLAY DRILL: VOLLEY-RALLY

Players volley back and forth switching the dominant hand from the grip to throat of the racquet after each volley. This drill emphasizes eye-hand coordination with respect to the point of contact and getting used to muscle tension and relaxation.

Another variation is to switch the racquet from one hand to the other after each hit.

Trying to develop watching the ball and judging the ball flight skills are challenging tasks for any player.

This article is an example on how this might be achieved. The drills presented are just some on-court examples and should only serve as guidelines. Numerous drills that I shared in this article have been acquired from various coaches and players throughout my coaching career. I have had success with this program.

In summary, I believe a good vision training program should always lead to:

- controlling the head positioning and movement
- developing the following visual skills:
  - dynamic visual acuity
  - eye tracking
  - eye teaming and depth perception
  - peripheral vision and
  - eye-hand coordination