



Footwork in modern tennis

You can't hit what you can't reach: Being in the right place at the right time is key to success

In the process of writing about a complex subject such as footwork, it becomes evident that there is so much to learn that it is almost impossible for it all to be committed to words. This is the reason why, despite there being so many great teachers with knowledge and experience that would be invaluable to others, the intricate details of tennis teaching often are not committed to paper.

continued next page

For example, in the first of these Player Development Program inserts published last September, is a graphic of the six General Performance Components and another with their 43 general subcomponents. Not only do the subcomponents have to be defined, they must also eventually be expounded upon to include all the intricate details of the subcomponents that are vital to tennis teachers. In many cases a knowledgeable writer could write a full chapter, if not an entire book, on each of the subcomponents.

Footwork is only one of the 43 subcomponents. The process of producing this insert about it – which we believe just scratches the surface – highlights the magnitude of what it will take to train the comprehensive tennis teacher, especially considering the modern aspects of play that still require research and inspection.

We also are wrestling with an interesting dilemma that even some of our advisory council members question at times: How much information should we deal with and how deep should we dig into the respective ways in which the game is taught? Obviously, all of the information is not intended for all students. It would only confuse students who, in most cases, only need bits and pieces of the information to supplement their natural or previously learned abilities. However, all of the information is needed by every teacher, so that when and if a student has one or two particular problems, he is capable of immediately diagnosing and curing those problems. It is certainly the duty of every capable tennis teacher to be able to see a problem and offer the most expedient solution.

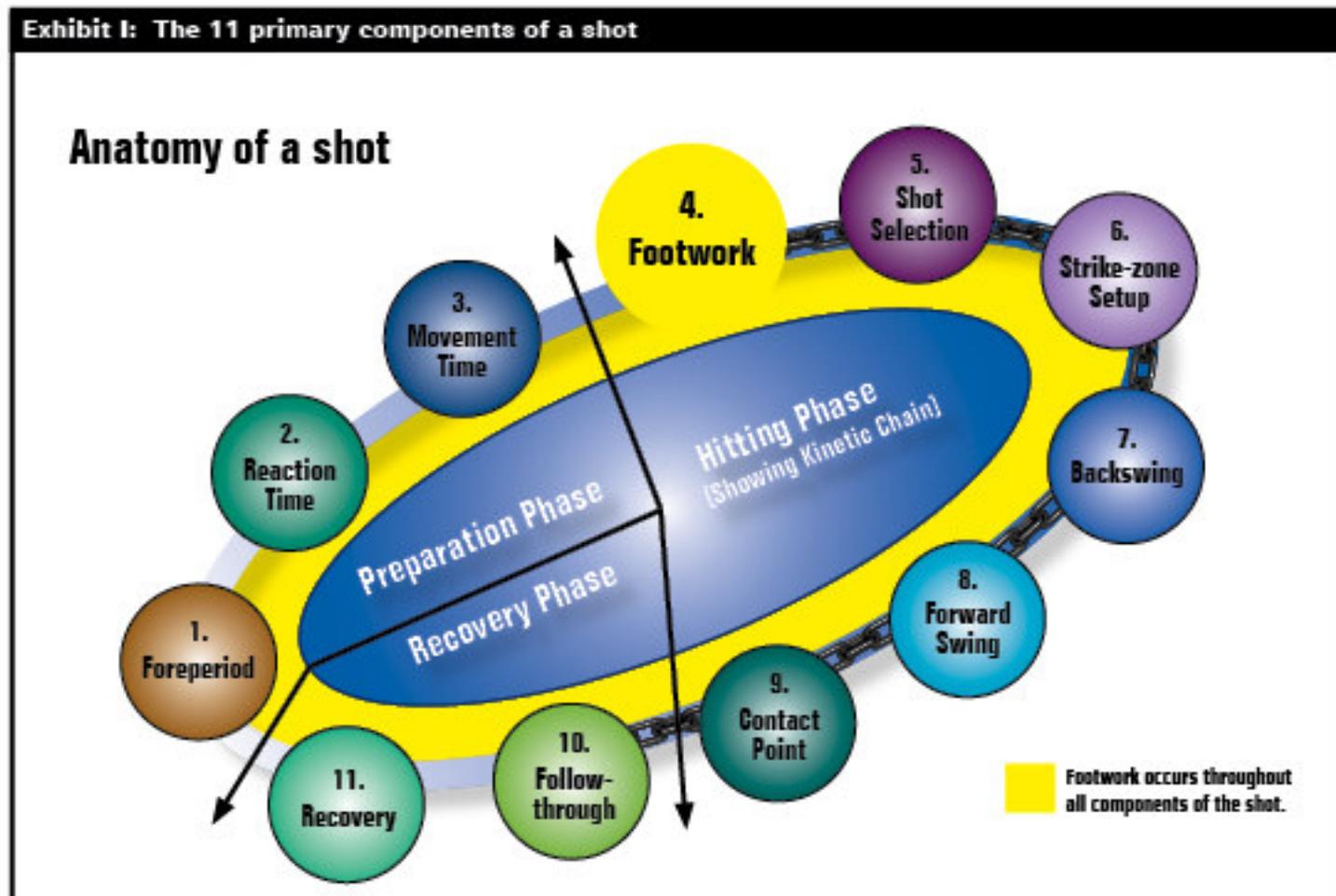
The perfect teaching book cannot have too much information in it. It should be like a dictionary or thesaurus of tennis. Maybe a better

analogy is the notorious *Gray's Anatomy* manual for physicians. This book has everything that a physician should know about anatomy, and is a reference piece that is certainly not intended for the patient's information. The patient of a doctor who does not understand everything in the manual should think twice about any grave diagnosis or cure proposed for him or her. Writing the tennis professional's equivalent guide to *Gray's Anatomy* is a monumental goal, but there isn't any group more qualified to do it than USPTA Professionals.

Footwork is the foundation for building solid technique – technique that can grow with a player. Good footwork enhances powerful, controlled shot-making and increases player efficiency. Footwork also is the foundation for the transition into the modern game, where use of the kinetic chain and angular momentum has helped define the era.

Footwork is part of every phase of shot-making, from the beginning of a point to the end, and is one of the most complex components of modern shot anatomy (see Exhibit I). However, the exhibit does not do justice to the role of footwork in the modern game. Our goal with this insert is to break down and present the details in a format that tennis teachers can understand and use, and open the door to additional, more comprehensive resources.

As we move into studying the hitting phase of shot-making with this insert, you'll notice a slight change to the Anatomy of a Shot diagram introduced in the previous insert (Vol. 2, No. 3). We have moved footwork to No. 4 since the other hitting phase components are so dependent on it.



We will discuss the footwork patterns largely unchanged between traditional and modern tennis – that is, the footwork used to get to and from the ball – then look more in depth at some of those that have changed. There are some excellent resources about modern footwork, and we've tapped several extensive ones (see Resources, Page 8) in order to look at what is new and modern – the footwork patterns of open-stance groundstrokes.

Here's what we've included:

- Section 1 – From turn-step-hit to load-explode-land
- Section 2 – Terms
- Section 3 – Loading and landing
- Section 4 – Open-stance footwork at the baseline

Understanding modern footwork patterns can prove to be invaluable for teaching all levels of players. Learning a new footwork pattern can be much less intimidating to students than changing their strokes. Once results are seen, it can be the starting point for other modifications if they are needed.

Keep in mind that what you see here is written specifically for you, the tennis teacher or technician, and not the player. We want to bring the information to you, and then you can decide the best way to communicate the information to your players.

Section 1 – From turn-step-hit to load-explode-land

The traditional groundstroke footwork pattern – turn-step-hit – establishes a linear (straight line) type of hitting, where momentum comes from stepping into ball contact. In the past, this footwork may have been stressed to just about all players in all circumstances, whether in front of or behind the baseline, in an offensive or neutral situation.

“Turn-step-hit” (linear or traditional style)



Certainly, there are still times in today's game at any level where a player will need to use this type of footwork. But it is only one type of footwork, and teaching it as the primary way for players to use their feet during the hitting phase of a forehand is doing an injustice to students. Knowing when and where to use certain footwork, so that players have the whole picture, should be the goal.

Prevalent among advanced players today are semiopen and open hitting stances created by a footwork pattern we've shortened to a name indicative of today's power game – load-explode-land. The loading of the outside leg, the explosion of the shot (especially when hit extremely aggressively), and the landing on the appropriate foot to aid in balance and a quick recovery, are the hallmarks of a more angular style of hitting. The angular hitting style includes several footwork patterns that work in different situations.

This angular hitting style is dominant today for good reason. First is that power and pace are much more important, and the open stances facilitate this. By using the kinetic chain and angular momentum, players found they could hit the ball with more pace using the large muscle groups of the legs and core. In this vein, it can also be argued that the younger a player starts, the more the child must rely on the body's core to power the shot. When you see film of younger students hitting the ball efficiently, you will see that a rotating trunk provides the power. The arms and racquet look as if they are along for the ride. For those who begin play early in their physical development, using the core is the only way to swing the racquet through.

The need for faster recoveries and direction changes after shots are executed is another reason stances and footwork have changed. Without landing in the most efficient way, players lose precious seconds needed to intercept the next shot in a rally.

An added benefit is that the change to a more open stance enhances the ability to handle the pace of oncoming shots. The open stance can provide a more stable base to absorb heavier groundstrokes and take the ball higher in the strike zone.

“Load-explode-land” (angular or modern style)



Section 2 – Terms

When we're discussing modern footwork patterns for semiopen and open-stance shot-making, there is not a standard dictionary of terms. Different people may refer to the same footwork sequence by different names. In this insert, we have tried to use the terms that seemed the most logical or descriptive.

Most of these footwork patterns become automatic. The key is to understand the footwork and help players when you see a way to enhance their ability to get in position, flow into a shot or recover more quickly for the next ball.

The **preparation phase** of a shot is discussed at length in Vol 2, No. 3 of this insert series (June 2005 *ADDvantage*). In short, it involves:

- Foreperiod – the time between points or between strokes in a rally, when a player prepares physically and mentally for what's next
- Reaction time – the time it takes for the brain to recognize what to do and muscles to begin to move
- Movement time – the time it takes to move to address the incoming ball



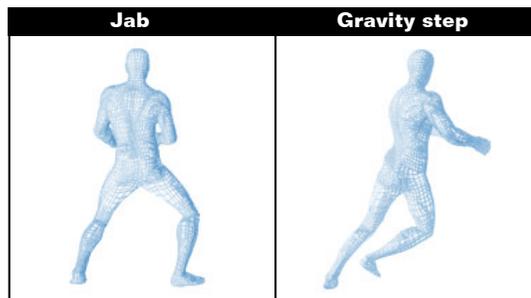
The **split step** generally occurs between ready and introduction of the stimulus, and is extremely important. It's also a commonly used term that everyone is familiar with, but let's look at the action in depth:

- What – a slight upward hop that, on landing, enables the player to move quickly to the oncoming ball
- When – before the opponent's contact, when the mover can anticipate the direction of the shot
- Where – ideally in the middle of the opponent's angle of play
- Why – to start as soon as possible after the read, for efficiency
- How – the landing can be on two legs or one to facilitate efficient movement

- Two-legged landing – easier to execute, more common
- One-legged landing – landing on one foot, turning the hips toward the anticipated contact point and then either jabbing or dropping the appropriate foot (see gravity turn below); a highly sophisticated split

First step to the ball (the example is to the forehand)

- Jab – right foot moves out toward the ball, hips turn slightly; a lateral motion
- Gravity step – hips turn, right foot steps under the body or base, the body leans and motion is initiated with gravitational assist



Adapted from Jim McLennan

The next steps to the ball

- Crossover step – follows a jab or gravity turn, leg crosses over other leg to cover more distance
- Running – longer strides taken toward ball
- Positioning steps – small steps used to position player in optimum strike zone for shot

Hitting stance (see photos and explanation on Page 5)

Recovery

- Shuffling – used when the recovery distance is short, or the time to recover is ample
- Running – used when the recovery distance is greater, and the time to recover is brief
- Running steps to shuffle steps – the high-performance variation that flows from the open stance – first running steps followed by shuffle steps to the split
- Gravity step to running to shuffle steps – high-performance variation flows from the open stance but offers more robust movement

In describing **movement**, the direction is used along with the type of steps used to execute the movement. This is general as players may choose a step based on position or their own style of movement.

Movement

- Forward – turning toward the ball, the hips face the direction of movement, as in walking or running
- Lateral – moving to the ball with the hips facing the net, shuffling or sidestepping
- Backward – running around the backhand, one turns the hips and shoulders for a forehand, then moves backward into position
- Diagonal – both backward and forward, turning toward the anticipated line of interception for the shot



1. Kuerten – open stance



2. Agassi – square (neutral) stance



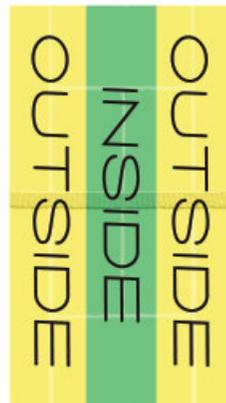
3. Philippoussis – closed stance

Hitting stance – use of these stances is situational (from Page 4)

- **Open stance** – at contact, the hips and shoulders are parallel to the net before contact
- **Square stance** – at contact, the hips and shoulders are diagonal to the net
- **Closed stance** – the front leg of the hitting stance steps across the body before the shot

The **location of the incoming ball** will help us reference movement as it relates to player position.

- **Inside balls** – those shots landing in the middle third of the baseline; to reach these balls, players generally use positioning steps, e.g., shuffle steps
- **Outside balls** – those shots landing in the two outer thirds of the baseline; generally, footwork includes movement to the ball followed by positioning steps



The **footwork descriptors** describe the footwork that is used to get the player to the ball and then back to a recovery position after the shot. Although you may be familiar with some or all of these terms, they will prove useful in setting a base for discussion and communication when we get to footwork for the hitting phase.

- **Movement** – motion is constant during each point for optimal efficiency
- **Quickness** – early reaction time; ability to move at speed with the first steps
- **Efficiency** – amount of energy expended to move, similar to the MPG ratios done with automobiles
- **Agility** – ability to move and change direction quickly and easily (e.g., McEnroe, Federer, Clijsters)
- **Explosion** – powerful starting movements characterized by muscular effort (e.g., Roddick)
- **Gliding** – graceful movements to the ball where the head remains relatively still (e.g., Sampras, Federer, Agassi)
- **Freely chosen stride** – the players' preferred or habitual style of movement; some glide, some hop, some turn, some move well, some don't

Balance

- **Base of support (BOS)** – the area that includes the feet, toes and space in between
- **Center of gravity (COG)** – basically the center of the body
- **Stability** – when the COG lies above the BOS
- **Dynamic stability** – when moving and the COG lies above the BOS
- **Dynamic instability** – when moving and the COG lies beyond the BOS in the desired direction of movement; captures gravitational forces that increase efficiency; the gravity turn promotes dynamic instability

Section 3 – Loading and landing

So far, we have covered footwork terms that are used mostly during the preparation phase and the recovery phase of a groundstroke. This section will cover the details of the different types of footwork needed in the hitting phase of the semiopen and open-stance shots. This is very applicable to the forehand and two-handed backhand groundstrokes.

For the hitting phase of the groundstroke, there are few terms that describe the action and purpose of the step and also provide a foundation for speaking about the steps. The two steps to key in on when understanding the modern footwork are:

- **Loading step** – The loading step is the final step in the adjustment of the strike-zone setup, and should happen on every shot. The load can easily be seen on most shots, and is especially evident with open or semiopen stances and when the player intends an aggressive shot.

Loading is the storing of energy for an angular stroke, facilitated by rotation of the shoulders and hips and a knee bend, and may also be known as the stretching of the large muscle groups to store energy before a shot. Force is generated from loading weight primarily on the inside of the outside leg and a kinetic motion that ultimately explodes through the contact zone with the body and feet leaving the ground.

The key to the footwork for the modern forehand is the stance associated with it. Footwork for the modern forehand is about creating a solid base to allow angular momentum, rather than linear momentum, to power the shot.

- Landing step – There are two types of steps that are associated with landing:
 - Brake step – Players take a brake step to stop their momentum and help them change direction. The brake step is the first step or the start of the recovery. The brake step will always go in the direction of the player's momentum.
 - Balance step – Happens when a player wants to continue his momentum in the direction of his shot. The player is usually inside the baseline and hits a shot with the intent to follow it in and finish the point from the front court.

Section 4 – Open-stance footwork at the baseline

Remember, footwork is an important part of the stroke, but it is still just a part of it. Footwork must be taught along with the right techniques and tactics for a player's optimum benefit.

So, explaining the footwork for open-stance shots without putting it in the context of when and where they should be hit is only giving a part of the story. That's why defining the court zones, as is done with System 5®, is helpful for describing areas where different types of footwork will take place. A player will move differently and use different stances to execute a shot from different areas of the court.

Open-stance footwork at the baseline

Wide forehand

This sequence is referred to as the right-right footwork (right foot load-player hits-right foot land). The right foot starts almost parallel to the baseline and then lands pointing to the net or in the direction of the shot. It generally occurs when the



1. Hewitt's last step with left foot before contact



2. Heel strike of right foot



3. Loading the right leg

Inside-out and inside-in forehand – The player has run around the backhand to hit a forehand. The load is on the right foot and the land is on the left. The momentum may carry the player's landing step beyond the strike zone, depending on



1. Roddick has run around the backhand and set up to hit an inside-out forehand. He is loading the right leg.



2. Unloading into the shot



3. Roddick's angular momentum has started and force is being transferred through the kinetic chain

A variation: the reverse pivot – In this situation, the player hit the previous shot from inside the baseline and now is moving behind the baseline for the next shot. This type of footwork generates power even when moving backward, creating



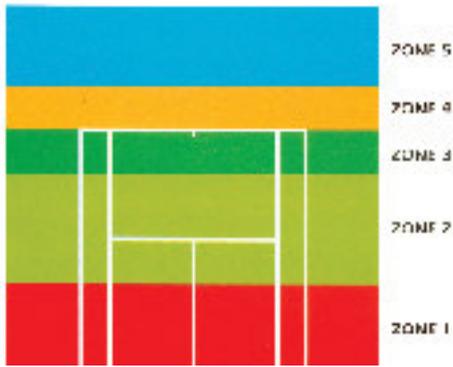
1. Safin is moving back to take a forehand



2. He is loading on the right leg



3. Contact has been made and he is rotating to complete the kinetic chain



The baseline area is where points start, many rallies occur and where it is easy to see the different footwork sequences in the hitting phase. So, we'll concentrate here on Zone 4, which begins at the baseline and continues 7 feet back. This is the area where most baseline exchanges occur, the recovery area for a player if they hit in Zone 5 and also the recovery area for Zone 3 if a player does not follow the shot in.

The hitting phase footwork for an open-stance forehand is characterized (for right-handed players) in the text and photos on this and the previous page. This is the basic, modern footwork, to which several variations might be added.

Digital stills provided by Advanced Tennis Research.

(right-handed) player has moved to the right or been pulled wide.



4. Unloading shoulders, hips and legs into contact



5. Right leg extending to land



6. Landing on the right leg and braking

the player's speed of movement to the ball.



4. Contact



5. The racquet finishes and left leg extends to land



6. Landing and braking on the left leg

angular momentum to turn a shot from a defensive one into an offensive one. The load is on the right and the brake step is with the left foot as it swings back behind the body to stop momentum.



4. Further rotation in the direction of the momentum



5. Landing on the left foot to limit his backward momentum



6. Shot completion

We have used the modern forehand to explain the footwork patterns that form the base of support for unleashing the kinetic chain and angular momentum, the hallmarks of modern shot-making. Of course, there are two other shots that help define this modern tennis era: the loaded, open-stance backhand and the swing volley. The forehand footwork patterns discussed here provide a base for understanding the footwork patterns for those two shots. So, our discussion of hitting phase footwork will continue in future inserts with the open-stance backhand and swing volley.

As we discuss these defining modern shots, it's important to realize that today's players need to know how to hit shots both in the traditional linear style and the modern, angular style. Most professionals still teach the traditional style to their players first. However, this requires many players to later add modern techniques out of necessity or by copying their role models playing on television.

As tennis teachers, most of us should be more proactive in recognizing when and how players can be helped with modern techniques and tactics and offering modern solutions to their competitive challenges. This shouldn't be a daunting idea to tennis teachers or players. It simply means adding more advanced options to our arsenals and to theirs, not a complete change in style for either the professional or the student.

Professionals and coaches who care about the development of their players will incorporate not only the footwork and swing style techniques of modern shots, but also the tactics and strategies that go hand in hand with them. This is an exciting time to be involved in the game, and we can all look forward to learning more about modern tennis and how it can help us improve as teachers.

Resources

The USPTA Player Development Advisory Council continually provides ideas, feedback and recommendations regarding the information provided in these inserts. It also meets annually at the World Conference for discussion and debate about modern tennis and the teaching professional. Council members are:

- David T. Porter, Ed.D., chairman; men's and women's head tennis coach and full professor of exercise and sports science at Brigham Young University–Hawaii
- Nick Bollettieri, founder of the Nick Bollettieri Tennis Academy
- Rick Macci, founder of the Rick Macci International Tennis Academy
- Paul Roetert, Ph.D., and Eliot Teltscher, representing USA Tennis High Performance Coaching
- Jim Loehr, Ed.D., and Jack Groppe, Ph.D., founders of LGE Performance Systems
- Tim Heckler, USPTA CEO

For this insert we used information from "The Strategy Zone" video by Nick Bollettieri and Lance Luciani, plus the accompanying DVD, "Nick's Ten Strategic Footwork Moves with Jose Lambert." Go to www.nicksstrategyzone.com for more information.

Also, many of the terms and definitions we used came from Jim McLennan, a frequent contributor to USPTA educational resources. In some cases, we used his terms as a jumping-off point and added or altered definitions according to other resources. For more from McLennan, see his video, "Secrets of World Class Footwork," available at usprottennisshop.com, or articles at www.tennisone.com.

Brett Hobden's DVDs, "The Modern Forehand– Part 1 & 2," were used to describe open-stance footwork for the hitting phase. Hobden has been a presenter for the USPTA on modern tennis technique for many years and his DVD can be found at www.moderntennis.com.

What to look for next

In future inserts, we will present a small section on hitting-phase footwork for the open-stance backhand and the swing volley. Also upcoming are a look at shot selection, plus more from the USPTA Player Development Advisory Council meeting at the 2005 USPTA World Conference on Tennis (see CEO's Message, Page 5 in this issue of *ADDvantage*).