

# Revolutionary Tennis

Tennis Instruction That Makes Sense

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## THE MYTH OF THE TENNIS "MYTHS"

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It always seems someone is declaring some point of a tennis teacher's instruction a "myth," as in it's a myth to take the racket back or see the ball, or some pro shows you one photo of a player in action to "prove" his opinion one way or another. Barkers demanding attention belong to the circus, Las Vegas, or Amstersdam's RLD, but not to tennis. And shame on these "myth" busters, some who have advanced degrees, because their self congratulatory and silly rhetoric not only turns people off but implies tennis is unsophisticated and perhaps isn't worthy of one's time.

**Revolutionary tennis** will show how a lot of these "myths" have value and that the arguments to them either are too narrow to draw the "myth," too simplistic, or sophomoric. I'm sure you've seen some of these and just shaken your head wondering why the tennis world tolerates them.

### "MYTH BUSTERS: RACKET BACK"

"One tennis myth started with the first instruction in this joke -- "Racket back," which... has caused numerous stroke limitations in literally millions of tennis players."

"...Why so much about power and topspin alongside the myth buster that "Racket back" may not be ideal instruction? Simple. To generate effective power and topspin on groundstrokes, and contrary to the popular instruction to take your racket back, you do not want to take your racket back and have it pause in the back position waiting to start the forward swing [photo right, top]."

"What's the alternative to the instruction "Racket back"? How about "Racket set" [photo right, bottom]? The difference between the two is where the pause takes place. In taking your racket back, you pause with your racket all the way back to its farthest backswing position. When you set your racket, you have a slight pause after a partial backswing, basically just far enough so your racket points straight to the side, approximately parallel to the net. Then, from there, when it's time to start your letter C loop swing, you end up with the racket in continuous motion until you strike the ball. Remember that you will still end up with a similar backswing to what you are accustomed, it's just that you pause at a different time in the swing." [uncredited photos from tennislife.com]



[Using the web site's quote above, you do take the racket back but shouldn't "have it pause in the

back position waiting to start the forward swing" but instead "have a slight pause after a partial backswing." In other words the racket still needs to "go back" doesn't it? Where's the "myth"?

What he really means is the racket shouldn't drop down too early and leave itself motionless prior to the forward and upward swing. This has nothing to do with taking the racket back and is itself a separate major issue. Dropping the racket down too soon is probably the one reason more than any other for unrealized forehand potential. I see it in players, in teachers teaching students. The student starts the loop well but drops the racket too soon before swinging forward into the ball.

"Take the racket back" is all about reminding you, the student, to start the *process* of taking the racket back *early enough* to avoid being late. As a teacher I find students often don't start (the process of) getting the racket back soon enough, which means they don't start the loop but hold onto the racket with both hands.

I find students who hold onto the racket with both hands while turning to the side like the girl in the second photo above miscalculate their spacing. They take 2 or 3 steps looking this way (or just wait) and miss-time the ball because, I think, their brain isn't getting the right information with two hands still on the (forehand) racket. When the student removes the off hand the spacing and timing issues disappear. You can still "turn" holding onto the racket throat but you need to let go right away to give your stroke the best chance at success.

No matter how you cut it "take the racket back" is valid. Personally I use "racket up" on the forehand loop, and then add if needed, "all the way back (racket head still above the hand), keep it up, drop-and-hit (at the end)."

And let's not forget the guys who say it's a "myth" to take the "racket back" because it never literally points straight to the fence behind you as you run over to a ball. One guy distinguishes this "myth" as "theoretical knowledge" vs. "application knowledge" because the pros don't do this (which is literally true, almost no one does). Of course we'll forget just how the pro learned about racket preparation to begin with.]

## **"MYTH: KEEP YOUR EYE ON THE BALL"**

"Most likely, the most often heard comment in lessons is, "Keep your eye on the ball until it hits the strings". If that's so important, why do we have thousands of shots of famous players looking over the net while the ball is being struck? The simple answer is, no human has ever seen a ball hit the strings because (1) the ball is on the strings approximately four milliseconds, and (2) the human eye can't record a four millisecond event. [Perhaps the human eye can't record a .004 event as it occurs in perfect focus but we have plenty of pictures of players "looking" at the ball on the strings at contact. Pictures where they are not serves to show how hard it is to do and not that it can't, or shouldn't, be done. Anticipating for the event helps to see the blur of the ball at contact. And is it true "no human has ever seen a ball hit the strings"?)]

"The swing you make is a product of some electrical signals sent from the brain to the muscles. Send the signal too late, and you're in deep trouble. The message for muscles is normally sent down from the brain at about the time the ball bounces. Depending on the speed of your opponent's shot, that's often approximately 150 to 200 milliseconds before impacting the ball. Thus, your eyes trying to follow the ball into the strings is useless because the nature of the swing has already been determined. Don't you remember how silly you looked one time when you tried

to change your swing at the last minute and the ball went over the heads of players on the next court. [The message to the muscles doesn't have to come from only the brain as assumed here, research written in a 1994 newspaper article indicates a loop back with the spine that explains faster response times. And this math is only for an extreme example, most players have more time than that.]

"To make matters even worse, most people suddenly become legally blind on the last 5.5. feet of incoming ball flight because the rapid eye movement trying to track the ball normally generates blurred vision. Dr. Bernie Slatt, after doing some post doctoral studies on eye displacement, wrote a book titled, "Hitting Blind". Vision specialists have looked into this issue for the last twenty years, but the myth continues. [You lose the ball if you try and see the ball literally all the time like a movie camera panning the horizon, the eye sees at fewer frames per second and can't see it literally all the time. The eye sees in sections, and to "see" the ball at contact the eye will, milliseconds before contact, look, or jump, ahead to the spot where/when the ball will be hit. In this way the ball, the eyes, and the racket hopefully converge at the same time.]

"But hold on, your coach may have something else in mind. If you pretend as though you are watching the ball into the strings, your head will remain quiet and will not disturb your swing pattern. In biomechanical studies... in the early 80's, Dr. A and I would constantly notice the swing pattern changing when a player's head made a sudden shift. That's partially because your head weighs more inch per inch than any other segment of your body. Thus, even though your brain has sent down a signal for a perfect stroke, it has also sent a message to shift your head, and the stroke pattern is destroyed. Most coaches call it, "Pulling off the ball too early". It's not uncommon to see a professional player do this and hit the ball into the stands. [The eyes are the initial and primary trackers of the ball in flight and the brain "swings" the racket based first on the information the eyes give it, secondary informational sources are involved milliseconds prior to contact and do not involve signals to/from the brain. A still head prior to swinging enhances vision acuity because head movement moves the eyes. Last minute head movement signals a change in plans to your brain and nervous system, thus the change in the swing pattern in this study. Furthermore any last minute head movement occurs as a result of body movement and swing. Your brain is not signaling you to move your head as the author states, consciously or subconsciously. Why would it? But a still head will do you no good unless you do try and watch the ball in, don't you think?]

"It's really difficult to convince players that they can't see the ball hit the strings. "Your wrong, ..., my next door neighbor, Helen, says she can see the Wilson logo as clear as a bell when it's on the strings". That a statement I've heard quite often and my response is always the same; "You just live close to a liar". [Shows disrespect for tennis players, and a belief that he alone is right.]

[The big picture here is this. A pro has learned to look at the ball into the string bed since s/he was 6 or 7 years-old and has developed an acute sense of hand-eye coordination brought about by a gradual and progressive process. This learned coordination allows them to return powerful shots when photos show they are not watching the ball literally into the string bed.]

## **"MYTH: TOSS THE BALL HIGH ON THE SERVE TO GAIN MORE TIME TO STRIKE THE BALL"**

"...The problem is that the ball falls [from the toss, when up] at the rate of gravity, 32 ft. per second/per second. That means the server must strike the ball on the way down. Depending on

the size of the rackethead and the acceptable area on the racketface where the ball can be struck, a ball thrown only to the peak of one's reach and hit at the apex will provide the server with 10 to 15 times more time to strike the ball. The high toss will provide a server more time to prepare to strike a ball that is in the window of the racket face less time.

[It is not a "myth" the high serve toss gains more time to strike the ball, the last sentence admits to it: "the high toss will provide a server more time to prepare to strike a ball." The real question the author poses is whether it is better to have more time to prepare to hit the ball or hit the ball when the ball is in the window of the racket face for more time.

A toss to the peak of your racket's reach rises slowly, pauses, remains within the window of the racket face all the time even before it drops back down out of the window with little acceleration. A higher toss quickly rises through the same racket window and goes above it, and when it drops back down it goes through the racket window faster than the low toss. In one the ball doesn't stay up in the air for very long, in the other it does.

When measured in absolute terms the low toss remains in the racket window for a longer time than one tossed higher but the claim "10 to 15 times more time to strike the ball" is specious. The low toss gives your stroke less time in which to hit the ball because the ball is up in the air for less time than when tossed higher, and the low toss means you have to speed up your swing.

Ultimately what is the "time" here we want to gain? Do we speed up our swing because we think the ball has more time to be struck, or do we give ourselves more time to swing at the ball?]

To be sure, the majority of the players use the high toss because that's the way they've been taught [in the same manner players developed the open stance not because they were taught but due to need we would see more apex-height low tosses in the pros but don't]. A great contributor to tennis science, Dr. B calculated that one could get a few more topspin revolutions on the serve if the ball were struck on the way down, but he simultaneously stated that the number of revolutions gained weren't earth shattering [any extra revolutions on a 120 mph serve affects ball movement and success]. He also stated that his calculations weren't meant to measure the effects of the racket swing pattern and the issue of timing a dropping ball.

Some German and American scientists feel that the high toss gives the upper body a chance to coil in such a manner that it loads the musculature and facilitates a much faster swing [More time does give the body a chance to coil or do anything "more," as a higher toss gives you more time to strike the ball, but does that directly equate into racket acceleration? If it did the fastest server would display the greatest coil or knee bend.] In the ...Research Center, Dr. A and I did not come to the same conclusion for the use of a light implement, such as a racket. We were, however, in agreement with Dr. E's research showing that the proper internal rotation of the upper arm provided the greatest rackethead speed.

Pete Sampras leads with the left hand. Steffi Graf led with the left hand and one could see her service toss rise above the first balcony, but senior player, Roscoe Tanner hit the ball at the apex and is still hitting serves harder than many players active in today's Open tournaments. [Roscoe also leads with the front hand, and perhaps if indeed he tossed at the precise apex and is basically alone in doing this one must consider the uniqueness and rarity of it since others have not easily imitated him. It should be considered, respectfully, that perhaps it is indeed easier to time a dropping ball than one at the apex.]

## MYTH: STEP INTO THE BALL FOR MORE POWER

"One day, I strapped a racket to my body, turned on the ball machine, stepped into the ball and managed to get about six miles per hours more speed on my forehand shot than simply letting the ball bounce off my stationary racket..."

"So, why did I only get six mph more speed when I stepped into the ball with no arm swing? Dr. B discovered, the speed of your shot is determined by getting approximately 1.5 times your rackethead speed, plus one-half of the incoming ball speed. That rule applies to both ground strokes and serves. That means I was stepping into the ball at about 4 mph and 1.5 times 4 got me an amazing 6 mph more speed.

"In a biomechanical study Drs. A, V and I did on Andre Agassi, we found he uses the forearm muscles, and physical principles, a little differently than most tour players. The majority of players generate rackethead speed by coordinating body link coiling and uncoiling, often called "The kinetic chain". One argument is that when one steps into the ball, there is a capability for greater body coiling and uncoiling. That also happens to be a myth, which will be discussed in another issue."

[Power in tennis, everyone agrees, is racket acceleration. The question here is do you get more racket acceleration if you step into the ball than if you don't? The author answered his own question, and the answer was yes.

The author takes offense that it was *only* 6 mph difference and then uses physics to infer there must be another way to get the racket to accelerate to 41.66 mph (to return a 90 mph groundie at the same speed). But how does strapping a racket to one's body and taking one step with no arm swing constitute an experiment proving or disproving it's a myth to step into the ball for more power? You can't be serious.

The easiest way to see how a step works in athletics is when a boxer steps onto his front foot, shifts his body weight, and snaps the jab. Athletic endeavor involves shifting body weight in one form or another to empower the athlete (athlete's limbs). In tennis we shift body weight prior to the stroke, no matter if we hit off the back foot or front foot, use linear or angular momentum. We just can't not move the body and hit, even if we don't step. And as with other athletic endeavors the step prior to the delivery (swing) relates to timing, coordination, and rhythm. You see this when you step and throw a baseball, step and shoot a basketball, or step and kick a soccer ball.

When learning to play any sport you learn to develop athletic ability. In tennis you learn what is the bread and butter to athletic endeavor, stepping and then executing, i.e. stepping into the ball and then swinging in our case. Of course this step is replete with pitfalls, as in you shouldn't step sideways or across in what's called a closed stance, you shouldn't step to the net or to where you want to hit the ball, you shouldn't take an arbitrarily long step. Because of these pitfalls and false ideologies players both past and present out of need developed a more open stance and large body rotation.

Bottom line it's not a myth to step into the ball, in fact that is what you have to do to develop your own athleticism.

The question of how to hit "for more power" belongs to which stance produces more power, open or front foot. Studies favor the front foot by a slim margin, and I'd agree, but I also know these studies are not that smart. I'm not talking about how hard it is to isolate the many variables involved in any tennis study, I'm talking about the set-up. In "Trunk Muscle Activation in Open Stance and Square Stance Tennis Forehands" they concluded, "The nonsignificant differences in muscle activation between stances did not support the belief of tennis experts that open stance forehands require greater trunk activation than square stance forehands."

I emailed the people involved a series of questions pertaining to their discovery methods. Players were literally standing still and swinging, either from an open stance or taking literally one step and hitting the ball, they did not move into position; the ball was bouncing off a carpet square; they didn't care how the weight shifting was done with the open stance (there are two ways); players were allowed to do whatever they wanted in terms of leaving the ground (some jumped, others transposed back foot to front foot); players were told to step forward toward the net where the front toe was pointing to the net (instead of to the ball).

So here we have "science" "experts" telling us the study does not "support the belief of tennis experts"... As a player I know my trunk muscles are not only taxed but activated much more in an open stance than a square stance, and so do you.]

#### **MYTH: BUY A RACKET THAT IS “FORGIVING”**

"There are those who feel that the racket will actually make corrections when the ball is struck incorrectly." [The author says you think "forgiving" means the racket will hit good shots for you all on its own. I'm sure "forgiving" to you means when hitting off center the racket doesn't seem to vibrate or tweak too much in your hand and that the ball doesn't really sail if you don't hit it pluperfectly. "Forgiving" also means forgiving on the arm, as in the frame is not too stiff or too flexible for you and doesn't jar the arm. Yet another example of underestimating the intelligence of tennis players.]

#### **MYTH - KEEPING YOUR EYE ON THE BALL TO HIT THE SWEET SPOT OF YOUR RACKET**

[I don't know if keeping your eye on the ball guarantees you will hit the sweet spot of your racket, but I do know you need to keep your eye on the ball in order to have the best chance of hitting the sweet spot of your racket. So where's the myth?]

#### **MYTH - YOU MUST STAND STILL AND BALANCED TO HIT EVERY SHOT**

[No one advocates that, it is a teaching method to help you learn, i.e. freeze. You must be stabilized to hit well, now does that mean still and balanced? I don't know about the still part but the balance yes, it's called dynamic balance, not standing still literally. And every shot? That's exaggeration, falsely used, to prove a point lacking substance.]

#### **MYTH - YOU SHOULD MOVE YOUR BODY WEIGHT INTO THE BALL ON ALL OF YOUR SHOTS**

[This is because the author points out pros sometimes go backwards when hitting their shots. I guess he means when running down a lob. Even when incorrectly going backwards on a ground stroke pros stop and move their body weight into the ball by any means available, it's called athletic execution. Upper body rotation alone is moving body weight into the ball..]

## **MYTH - YOU MUST HIT YOUR GROUNDSTROKES WITH A CLOSED STANCE**

[By closed stance he means the front foot steps literally sideways. Closed (including square) stance is used to juxtapose open stance, but stepping with the front foot prior to contact is not a myth, it is sound advice. Stepping sideways with the front foot is not a myth, it was a reality in tennis textbooks and still exists in print today. The fact you should not step sideways in what is called a closed stance, favoring either the open stance or revolutionary tennis' forward stance that has the front foot stepping to the ball (strictly defined as a closed stance because it is not open), means this closed stance business was a total misunderstanding on the part of earlier tennis teachers regarding athleticism in tennis, not a myth. A myth was that at the edges of the flat earth monsters would await seafarers and eat them alive.]

## **MYTH - CONVENTIONAL METHODS OF TEACHING TENNIS ARE NOT BASED ON THE NATURAL AND SPONTANEOUS WAY THAT PROS PLAY**

[Just how do pros learn to become natural and spontaneous, what did they practice as kids? Naturalness and spontaneity? No, convention. The best professional shortstop in the world can dance off of one foot and zip the throw in to first base off balance precisely because he practiced scooping up the ball with two hands, turning his body, planting the back foot, stepping into the throw with his front foot, releasing at 3/4 delivery angle, following through to his target.]

## **MYTH - YOU SHOULD BEND YOUR KNEES ON ALL OF YOUR STROKES.**

[He means just not all of the time, and not deep knee bend style. So where is the myth?]

## **MYTH - YOU MUST PRACTICE PRECISE INTRICATE FOOTWORK TO MOVE ON THE TENNIS COURT AND PLAY TENNIS WELL**

[He admits to (intricacies of) hitting off of a particular foot, taking adjustment steps and "straddle" steps, so where's the "myth"? But he tries to gloss over footwork skills by saying it all comes together "naturally with improved timing and judgment of the ball. Really!!!" Steps are taught students who quickly see it comes rather naturally if you either start or end correctly. Tennis is not ballroom dancing, a discipline that indeed involves precise, intricate footwork.]

## **MYTH - YOU SHOULD STAY ANCHORED TO THE GROUND WHEN YOU HIT MOST OF YOUR SHOTS**

...The pros jump off the ground on most of their groundstrokes, especially their power topspin shots. Jumping off the ground is a natural result of letting go and offers three important benefits. 1. More power 2. Improved fluency 3. Better balance... Here is the bottom line. The pros jump off the ground because they know instinctively that it is beneficial. You should do the same. Play without forcing yourself to stay on the ground and as a result jumping will occur naturally and instinctively. You will be playing and thinking like a pro! [Anchored is the modifier here, and it tries to spin for self benefit a "myth" of worthy advice. The only "anchor" in tennis has been the back foot, not the body, not both feet. Teachers know you won't be literally anchored during contact, but neither do they expect you to jump because the forehand is not a jumpstroke. We jump to relieve stresses and conflicts, we jump to shift body weight while being unable to step into the ball because we are there ahead of time, we jump because we are simply moving more and swing harder. But jumping has never been part of any teacher's technique to help you learn to

hit well, to reinforce sound technique you stabilize during the swing. Which is what pros look like when they warm up, when they practice, and which they try to do when they play but can't often since the ball's going so fast and they have to run and get there and hit hard and... often leave the ground. This is not a myth but a sound teaching axiom, and if you are losing control when playing kick in the stabilizers.]

**MYTH - TO LINE UP THE BALL ON YOUR OVERHEADS YOU SHOULD POINT YOUR FINGER UP AT THE ONCOMING BALL BEFORE YOU HIT IT.** Just another variable to think about that is NOT necessary.... Some pros point at the ball, some pros have their elbow up, and some pros have their hand up. [How is this a "myth" since he admits that pros do it? I think he means pointing is not the only way to line up the ball.]