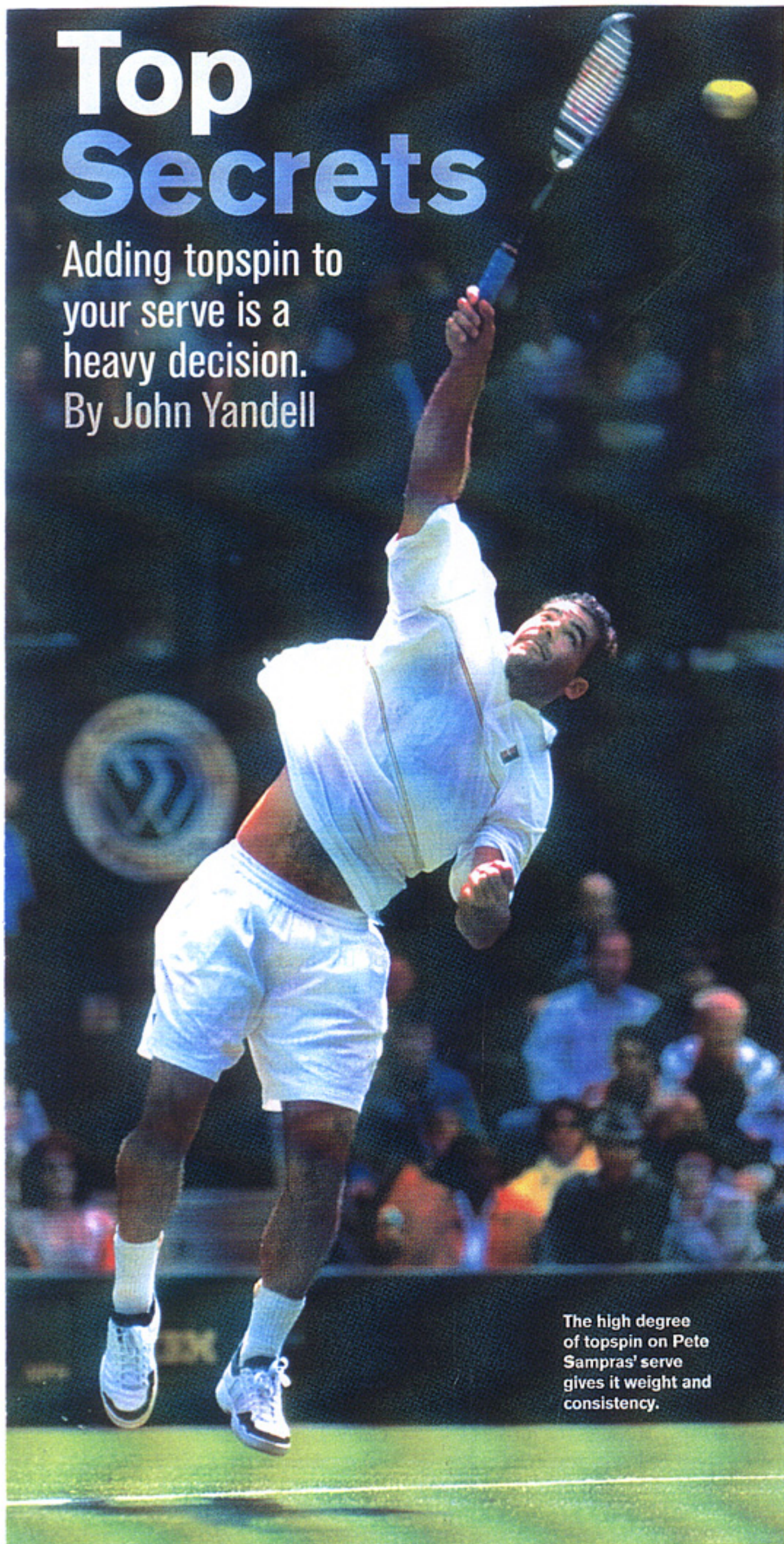


Top Secrets

Adding topspin to your serve is a heavy decision.
By John Yandell



The high degree of topspin on Pete Sampras' serve gives it weight and consistency.

A "heavy" serve. Announcers love the phrase, players want the stroke, but what does it mean? At the Advanced Tennis Research Project, which is dedicated to studying the pro game, we've compared the speeds and spins of the world's top players using high-speed videotape analysis and have come to this conclusion: applying topspin to the serve can make a big difference in the "weight" of the ball at the time of the return.

Although it's not widely known, a 120-m.p.h. serve is only traveling at about half that speed when it gets to the receiver. Most of this decrease is caused by the friction of the bounce. In that split second, the court "grabs" the bottom part of the ball and slows it down by about one-third. But while the court sucks the pace out of the serve, it also adds to the spin. How? Most serves are mainly sidespin, or slice, with some degree of topspin. Pete Sampras probably has the greatest topspin component of any Top 20 player, but it's still only 35 percent of his total spin. Greg Rusedski, another big server, has just 20 percent topspin or less on his deliveries. When the court grabs the bottom of the ball, the top part accelerates, wiping out the slice or sidespin and leaving the ball with pure topspin or something close to it. Depending on the level of initial topspin on the ball, a serve can leave the court with twice as much spin as it had off the racquet. Sampras and Rusedski both start with about 2,500 r.p.m., but because Sampras has a higher degree of topspin on his serve, his ball increases to 5,300 r.p.m. after the bounce, while Rusedski's gets to only 4,700 r.p.m. That extra 600 r.p.m. makes Sampras' serve that much heavier. Combine that spin rate with an average speed of 117 m.p.h. and it's easy to see why over the course of his career Sampras has hit so many unreturnable serves.

But making a serve heavier is not topspin's only reward. The greater the amount of topspin on the ball, the faster it will drop into the court. Sampras' serves can drop two feet more than other big servers who have smaller topspin components. This allows him to serve higher over the net, giving him more margin for error. A flat or slice serve must be served at a lower height over the net for it to land inside the service box. This may explain why Sampras has been successful on 61 percent of his first serves in his career, compared with 56 percent for Rusedski. So not only will topspin add weight to your serve, it should increase your consistency as well. ♣



John Yandell is director of the Advanced Tennis Research Project. He can be contacted at videoten@isp.net.