

The Newsletter for Tennis Coaches

High-Performance Coaching

www.highperformance.usta.com Staying on the Cutting Edge of Coaching Resources

by **Scott Riewald, Ph.D.**, Administrator, Sport Science

It seems that there is new information coming out every day that can help you to become a better coach, optimize the talent in the players you work with and generally better understand elite-level sport performance. We recognize that you have precious little time to spend poring over every new piece of research or information that comes out, so in this edition of *High Performance Coaching*, we profile some of the best educational resources in the form of the best books, videos, DVDs and websites.

As you read through this article you will find it is broken down into sections that focus on a specific topic related to coaching or sport science. Within each section we will profile one or two of what we feel are the best resources and also provide a list of other books and websites that you can use to add “tools” to your “coaching toolbox.” This article is not meant to present all of the resources that are out there. Rather, it presents those that we use within High Performance and would recommend to a coach. With that said, let’s start to dig in.

High Performance Website (www.highperformance.usta.com)

The USTA website, USTA.com, now features a direct link to the new USA Tennis High Performance site. To access the High Performance site, you can either type www.highperformance.usta.com directly into the address line of your web browser or click on the “High Performance” link located in the left column of the USTA.com home page. When

you log on to the High Performance website, you will find information related to the USA Tennis High Performance Division and a series of links along the left edge of the page. The major headings on this page are:

- **About Us**—Learn about High Performance via press releases and meet the High Performance staff.
- **Key Information**—Obtain information on player grant, wild card applications and junior tournament entry forms.
- **Sport Science**—Access pertinent sport science information as well as resources and services available through the Sport Science program.
- **Coaching Education**—Download an application for the High Performance Coaching Program and access past issues of *High Performance Coaching*.

- **Junior Tennis**—Access all the information available on the Junior Tennis site.

While all of these sections have information that will benefit coaches, we want to further profile the Coaching Education and Sport Science components.

Coaching Education Section

When you are on the main High Performance page, you will see Coaching Education highlighted in the callout menu running down the



left side of the page. Under Coaching Education, you will see links that will take you to:

- **What is Coaching Education?** This page provides an overview of Coaching Education and its importance in developing world-class American champions.
- **High-Performance Coaching Newsletter.** Access all past issues of *High-Performance Coaching*, from the initial printing in 1999 to the most recent edition.

continued on page 2

Coaching Resources

- **High Performance Coaching Program.** From this page, you will be able to find information on the High Performance Coaching Program (HPCP) and Continuing Education Seminars, as well as download an application for the HPCP. Graduates of the program eventually will have access to a password-protected site where they can download HPCP presentations, products and updated course materials.
- **Resource Center.** Here coaches can access information on books, videos, websites and other resources related to coaching education.
- **Information for Parents.** This site contains information that highlights the role parents play in elite athlete development. Coaches and parents will be able to download an electronic copy of the *USTA Parent Manual* and access the findings of an on-going USTA research project that is studying how parents impact elite level performance.
- **Video Archive.** Eventually, this site will house a library of video clips, taken from the US Open and player camps, which show techniques of today's top players.
- The site will eventually contain a search function so that a coach can type in a topic and access all the information on the High Performance site related to that topic.

The Coaching Education site will continue to evolve and be updated with new material and video clips, so check back regularly to find out what is new.

Sport Science Section

The Sport Science section of the website is dedicated to the many different areas that make up sport science and provides information related to developing high performance players. Like Coaching Education, the Sport Science Section can be accessed from the main High Performance website by selecting the "Sport Science" link in the callout menu running down the left side of the page. These links will take you to:

- **What is Sport Science?** This section provides the mission of the Sport Science Department and outlines the role of sport science in tennis.
- **Knowledge Areas.** This section provides information, research summaries and resources related to exercise physiology, growth and development, nutrition and hydration, biomechanics and technique, sport psychology, sports medicine, and strength and conditioning.
- **Drug Education.** This section houses information related to the tennis anti-doping program and provides educational materials and resources for players and coaches. The site specifically provides information on drug testing procedures, the different organizations that conduct drug testing, and how to file for exemptions if a player is using a medically necessary drug that is on the "banned list."
- **Resources.** Sport science resources and publications, such as the *Emergency Care Guidelines* for tournament directors, hydration poster and white papers produced by the Sport Science Committee are available to download. This site also provides a list of books, videos and websites coaches can use to gain greater knowledge in the sport sciences.
- **Sport Science Grant Program.** This section of the website presents summaries of past and current research that has been funded through the Sport Science Research Grant Program.
- **The Sport Science Committee.** In this section, the members of the USTA Sport Science Committee are profiled.
- **Ask the Expert Section.** Here players, coaches and parents can submit sport science related questions. Members of the USTA Sport Science staff and Committee will post answers to selected questions.
- **Online Testing.** One of the key areas of the Sport Science site is the online testing section. Coaches are now able to take the Level I and Level II Sport Science exams from anywhere they can find an Internet connection. Previously, coaches had to attend a tennis function to take one of the Level II exams. To take any of the Sport Science exams, you first must log on to the High Performance website and choose the "online testing" link. Following the instructions that are presented, you will be directed through the exam registration process. Once you have registered for an exam, you will be given a user name and password to access your exam. After the password has been issued, you will have 6 months to take the exam before the password expires. There is still a \$10 cost associated with taking the exams, and this will eventually be handled electronically as well. Each payment gives you two attempts to pass an exam. That way, if you should fail to achieve a passing score of 80 percent correct you will have one additional attempt at the test before you have to register for the exam (and pay) again. It still will be up to the coach to obtain any review materials and study on their own.



Coaching Resources

Coaching Education Websites

International Tennis Federation Coaches Website

The ITF Coaches website, www.itftennis.com, has a new coaching section that can be accessed by clicking on the “Coaching” link in the call-out menu on the right of this page. From the coaching page you will be able to:

- Access past issues of the *ITF Coaching and Sport Science Review*—a newsletter that is published three times per year.
- Look through an extensive list of ITF and non-ITF publications related to coaching education, sport science and tennis.
- Learn about the ITF coaching education program and offerings.
- Access other practical information related to coaching and sport science, all by clicking on the links across the top of the page.

By visiting the ITF Publications section of the site and selecting the “How to Order” option from the left column, you will be able to download a publications order form that you can use to purchase materials from the ITF. There is great information here and this should be a resource that all coaches tap into.

Coaches' Infoservice Website

The *Coaches' Infoservice* website, www.coachesinfo.com, is a great resource for obtaining sport science information related to tennis. Upon logging onto the website, you can read articles specific to tennis by choosing the “Tennis” link located along the left hand side of the page. Here you will find both scientific articles as well as “thought pieces” that are designed to get you thinking about tennis in ways you might not normally. There also are discussion forums where coaches and scientists can exchange ideas. While you are on the *Coaches' Infoservice* site, also check out the pages dedicated to “Becoming a Better Coach” and “Strength and Conditioning” by selecting the appropriate link along the left hand side of the page. While the information contained on these sites is not specific to tennis, it still is valuable to tennis coaches.

Professional Teaching Organizations

Both the Professional Tennis Registry (PTR) (www.ptrtennis.org) and the United States Professional Tennis Association (USPTA) (www.uspta.com) offer websites where coaches can access information about membership and testing as well as many excellent resources to help you become a better coach.

Coaching Youth Tennis Online Course

This USTA online course focuses on teaching the youth coach about the organizational aspects of coaching, teaching tactics and technique via a games-based approach and understanding the roles and responsibilities of a coach. This course can be accessed by going to the High School link at the bottom of the USTA.com home page and following the links to “Coaching Youth Tennis.” While the course carries a \$30 fee, you will receive the book *Coaching Youth Tennis* and the *Games Approach to Coaching Tennis* video.

Sport Science Websites

Australian Institute of Sport Nutrition Website

The Australian Institute of Sport (AIS) oversees elite level sport in Australia and is similar to the USOC here in the United States. Their website (www.ais.org.au) contains a wealth of information on sport science and sport performance. However, one of the strongest aspects of their site is the section dedicated to nutrition and supplements—www.ais.org.au/nutrition/index.asp. Some of the highlights of this site are:

- Fact sheets on nutritional supplements
- Guidelines for fueling the body for tennis
- Nutritional guidelines for travel
- Healthy recipes

This is the most comprehensive sport-related nutrition site we have found and can serve as a useful resource to any coach.

Note that while this website provide answers to many of the questions you may have about nutrition and supplements, the USTA does not advocate supplement use. Any players using supplements do so at their own risk. The supplement industry is relatively unregulated and supplements that are tainted with banned substances are commonly found.

Gatorade Sport Science Institute

The Gatorade Sport Science Institute (www.gssiweb.com) has a number of valuable resources that can help coaches better train their athletes. Since the site is associated with Gatorade, you would expect a great deal of information on nutrition and fluid replacement. You will indeed find this information on the site, but you also will find articles on dietary supplements, sport performance, hydration and even sports medicine. Most of this information is accessible by choosing the “Sport Science Center” link in the left-hand column on the page. One of the most valuable aspects of the site is the “Sport Science Exchange.” Upon entering this portion on the site, you will have access to numerous roundtable discussions on topics that range from nutrition and supplements to training for improved performance. In these discussions, a mediator poses questions

Coaching Resources

to a panel of experts and the reader has the opportunity to hear from a number of leading authorities on a certain topic.

Additional Resources

American College of Sports Medicine

(www.acsm-msse.org/pt/re/msse/positionstandards.htm)

This site offers position statements on various aspects of health, fitness and training.

National Strength and Conditioning Association

(www.nasca-lift.org)

The NSCA is the world leader in providing strength and conditioning materials and information.

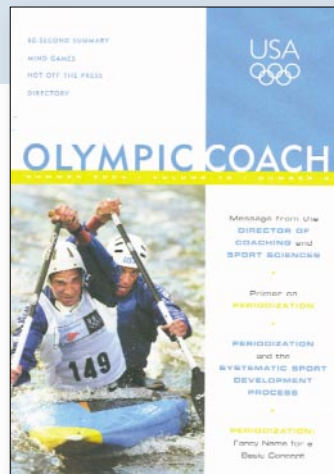
Newsletters and Journals

USA Tennis High Performance Coaching E-newsletter

Every month USA Tennis High Performance publishes an e-newsletter that presents short, easily-digestible articles ranging from research summaries to new coaching resources to announcements of opportunities that arise in USA Tennis. Past editions, which are available on the website, have featured articles on such topics as overcoming jet lag, nutritional supplements information, fluid replacement guidelines for tennis players and exercise descriptions for optimizing performance and preventing injury. To be added to the mailing list for the *USA Tennis High Performance Coaching* e-newsletter, e-mail sportscience@usta.com or sign-up in the e-newsletter section of the High Performance website.

Olympic Coach Magazine

The US Olympic Committee produces a quarterly publication for elite level coaches entitled *Olympic Coach*. This magazine applies science to sport in a form that coaches can use. While the information contained in *Olympic Coach* is typically not tailored specifically to tennis, many of the articles cross over sport "boundaries" to provide information that is relevant to all sports. Each edition of *Olympic Coach* highlights several feature articles that usually relate to a theme, like periodization or athlete recovery. The publication also provides regular columns such as "60-Second Summaries," which highlights findings from recent research, and "Mind Games," which looks at ways to develop the mental side of the game. *Olympic Coach* is available as a downloadable file. To receive an electronic subscription to *Olympic Coach*, please visit www.usolympicteam.com/12688.htm and sign up for your FREE subscription.



Other Newsletters and Online Journals

There are many other online journals and newsletters you can subscribe to in order to receive great information related to coaching and the sport sciences. While it would be impossible to list them all, here are several others you can consider:

Medicine and Science in Tennis

(www.stms.nl/)

This online journal is published by the Society for Tennis Medicine and Science and contains various scientific and medical articles that relate to tennis.

NSCA Performance Training Journal

(www.nasca-lift.org/Perform/)

This online journal contains applied strength and conditioning information that can help tennis coaches develop off court training programs.

ITF Monthly E-newsletter

This monthly newsletter contains a number of pieces of information about the world of international tennis. You can subscribe by signing up on the ITF Coaching page, www.itftennis.com/coaching, profiled earlier.

Sports Coach

This is an Australian coaching publication that provides both general and sport-specific information to coaches on topics ranging from nutrition to sport psychology or working with disabled athletes. *Sports Coach* can be ordered from www.ausport.gov.au/coach/spcoach.asp.

continued on page 9

The Forehand Stance

by E. Paul Roetert, Ph.D., Managing Director of USA Tennis High Performance, and
Scott Riewald, Ph.D., Administrator, Sport Science

Over the past 30 years we have seen a dramatic change in how the game is played. Players are hitting the ball from the baseline with more force and power and we are seeing a change in the way players approach the game from a technical and tactical perspective. There appears to be a shift away from the more traditional square stance forehand to the use of strokes that can be defined as semi-open or open stance forehands. Clearly racquet technology and new training techniques have had a lot to do with these changes, but have things really changed as much as we are led to believe?

To help answer this question let's examine Roger Federer's forehand and see how he uses open, semi-open and square stances during play. *The purpose of selecting these three forehands is to show that all three are important in today's game and that a well-rounded player will be able to use them all during play depending on the various tactical demands of a shot.* This leads us to make several points about the type of stance that should be used when executing a forehand.

1. The use of a certain stance is "situation specific"

Where you are on the court, the purpose of your shot (tactics) and how much time you have to prepare for the shot often dictates what type of stance is used. Although the photos we selected for these sequences are not synchronized at contact, you will clearly see how the same player utilizes different stances based on the situation. The first sequence shows Federer in pretty much a complete open stance as he returns a serve. The second sequence shows him in a semi-open stance during normal match play and the third sequence features him hitting with a square stance as he prepares to move forward to the net. All three stances are part of Federer's repertoire and are used regularly throughout the course of a match.

2. Both linear and angular momentum are important in all strokes

What is momentum? Momentum is the product of an object's mass and velocity and essentially defines the "quantity of motion" the object possesses. Linear and angular momentum define the amount of motion in a straight line or in rotation, respectively. In the square stance forehand, players step toward the ball, transferring their weight from the back foot to the front foot (pictures 2 and 3 in the bottom sequence). This allows linear momentum to be generated which then contributes to racket head speed and the force of Federer's forehand. In the open and semi-open stances (top 2 sequences), Federer relies heavily on trunk rotation to generate racquet speed and therefore, these strokes predominantly use angular momentum; research has shown that there is very little forward motion of the body's center of mass in an open stance forehand.

While we do see more and more semi-open and open stance forehands hit in today's game, let's not overlook the importance of linear momentum in modern strokes. The importance of horizontal linear momentum is explained above, but vertical linear momentum is important in all strokes as well—open, semi-open or square. Pushing off against the ground (note Federer's knee extension in each sequence), adds to the force production of the forehand and aids in generating spin. In many instances, the vertical momentum will drive the player off the ground as the shot is hit.

3. Forces are generated from the ground up and transferred sequentially all the way up to the racquet

The development of both linear and angular momentum starts from the ground up. The ground reaction forces are transferred through the *kinetic link system* all the way up to the racquet. Each of Federer's forward swings features knee extension, hip rotation, trunk rotation and forward arm swing (shoulder rotation) regardless of his stance. However, this is especially true in the open stance forehand. Note how Federer assumes a wider stance when hitting this shot. Not only does this enlarge his base of support, but it allows the ground reaction forces to produce greater rotation about the body's vertical axis. Forces generate torques, and the size of a torque is proportional to the distance between the body's axis of rotation and the point where the ground reaction force is applied. The need for this wide base of support is not as essential in the square stance. In both square and open forehands, if everything is timed correctly, each muscle group in the kinetic chain group is put "on stretch" before it is uncoiled, resulting in a very powerful motion.

Conclusion

As we can clearly see from the sequence pictures, top players possess the ability to hit different types of forehands based on the tactical demands of the point. Therefore, as we teach our players the modern forehand, let's not overlook the basics of the square stance. In fact, it may be prudent to still teach this stroke first, especially with younger children. As players get older and stronger, and more importantly, gain better control over their strokes, we should then add the open stance shots to their repertoire. Another key in not only improving your players' strokes but also keeping them injury free is the proper use of all the major muscle groups so that forces can be transferred sequentially from the ground up. Although there are some differences in Federer's stances, take a look at the commonalities between each of the forehands. He transfers forces so efficiently that he creates a beautiful flow of linear and angular momentum culminating in tremendous racquet head speed.



1

2

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Open Stance Forehand

Type(s) of momentum

- The open stance forehand primarily uses angular momentum to generate racquet head speed.

Balance and weight transfer

- To effectively generate angular momentum it is important to have a wide base of support. The ground reaction forces produced by the feet help create rotational torques that contribute to the angular momentum of the body.
- The body's center of mass should remain centered over the base of support as it rotates about the vertical axis.

Tactical considerations

- The open stance forehand is effective in dealing with power and/or generating power.
- This type of forehand shot can be employed when there is little time for the player to prepare (e.g., return of serve or forced wide in the court), and allows for a quick recovery.

Semi-Open Stance Forehand

Type(s) of momentum

- The semi-open stance forehand uses a combination of linear (as the body's center of mass moves forward) and angular momentum (as the body rotates about its vertical axis).
- Linear momentum, directed upwards, also help in the generation of topspin and power.

Balance and weight transfer

- This shot uses a narrower base of support and the body's center of mass also shifts forward slightly during the execution of the shot.

Tactical considerations

- The semi-open stance offers great versatility and is effective in dealing with power and/or generating power.
- This type of shot can therefore be used in offensive, defensive or neutral situations.

Square Stance Forehand

Type(s) of momentum

- The square stance forehand primarily utilizes linear momentum as the player's weight shifts from the rear foot to the front foot during the execution of the shot.
- A small amount of angular momentum, generated by the arm rotating about the shoulder (and other body segments rotating about joints), does contribute to the racquet head speed and the force behind the shot.

Balance and weight transfer

- The square stance forehand uses a narrower base of support with the weight being transferred from back to the front foot. The feet are typically parallel with each other.
- Dynamic balance, especially balance on one leg, is essential in the execution of this shot.
- Although Federer exhibits more body lean in the last sequence, he clearly keeps his head still and is tremendously balanced in each of the shots.

Tactical considerations

- The square stance forehand is typically considered an offensive shot and is frequently used when moving forward and/or attacking.

Coaching Resources

Sport Science and Coaching Education Books

Publishers

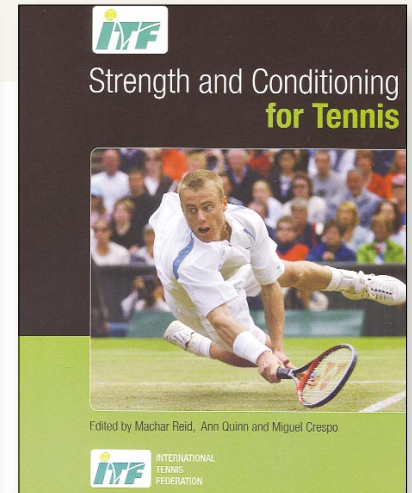
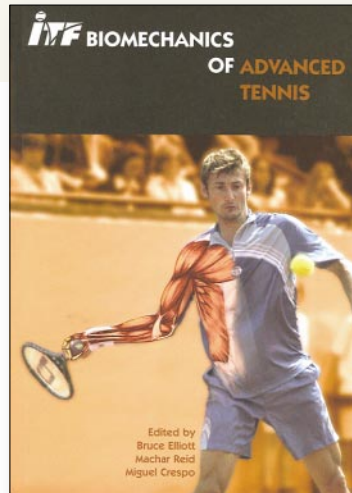
While we would like to provide you with a comprehensive list, there are just too many books on tennis, training and sport performance to list here. So we will do the next best thing—provide you with the names of some of the biggest publishers of books on tennis and athletics. The largest publisher of books on sport and fitness is Human Kinetics (www.humankinetics.com). The International Tennis Federation (www.itftennis.com) also offers a large number of books on tennis. Log onto these sites and you will find many books in addition to the ones profiled here.

Biomechanics of Advanced Tennis

Edited by Dr. Bruce Elliott, and published by the ITF, *Biomechanics of Advanced Tennis* is perhaps the best biomechanics resource available to coaches. This book covers topics that range from the fundamentals of biomechanics to understanding momentum in tennis to understanding how equipment affects performance. What makes this book unique is that it bridges the gap between science and application. Each chapter not only presents scientific explanations and theories of biomechanics, but also discusses the application when it comes time for a coach to integrate this information into his or her program. This book can be purchased through the ITF (ISBN# 1-903013-23-2).

Strength and Conditioning for Tennis

Strength and conditioning is an area of tennis that is receiving more and more attention, especially as the game becomes faster and more powerful. Published by the ITF, *Strength and Conditioning for Tennis* is one of the most comprehensive resources currently available on the topic of training players to be able to meet the demands of today's tennis game. The book begins with arguably the two most important chapters on "Screening and Testing" and "Athlete Development." The remainder of the book focuses on the different components of a player's game, such as coordination, power and agility, and addresses how they can be developed. Finally, the book concludes with several chapters that deal with considerations to take into account when dealing with female, elderly or professional players. This book presents views from a wide range of experts and can serve as a comprehensive resource to assist any coach in developing a strength and conditioning program for the players they work with. This book can be purchased through the ITF (ISBN# 1-903013-19-4).



Resources for the USTA Sport Science Exams

The USTA recommends certain texts to use when preparing for the Level I and Level II Sport Science exams. These are provided below.

Level I: Foundations of Coaching

- *Successful Coaching, Third Edition*
ISBN # 0-7360-4012-9

Level IIA: Motor Learning & Sport Psychology

- *Coaches Guide to Teaching Sport Skills*
ISBN # 0-87322-020-X
- *Coaches Guide to Sport Psychology*
ISBN # 0-87322-022-6

Level IIB: Sport Physiology & Nutrition

- *Complete Conditioning for Tennis*
ISBN # 0-88011-734-6
- *Nancy Clark's Sports Nutrition Guidebook*
ISBN # 0-87322-730-1
- *IOC Handbook of Sports Medicine and Science: Tennis*
ISBN # 0-632-05034-9

Level IIC: Sports Medicine & Biomechanics

- *Sport First Aid, 3rd Edition*
ISBN # 0-7360-3786-1
- *World Class Tennis Technique*
ISBN # 0-7360-3747-0

All of these books can be purchased through Human Kinetics with the exception of the *IOC Handbook of Sports Medicine and Science: Tennis*, which can be purchased from Blackwell Publishing at 1-781-388-8250.

Coaching Resources

Other Books

General Coaching and Sport Science

ITF Advanced Coaches Manual

(Crespo and Miley—ITF, ISBN: 0-9514175-1-7)

ITF Developing Young Tennis Players

(Crespo, Granitto and Miley—ITF, ISBN: 1-903013-05-4)

Competitive Tennis for Young Players

(Grosser/Schonborn—ITF, ISBN: 1-841226-075-4)

Coaching Tennis Successfully, 2nd Edition

(USTA—Human Kinetics, ISBN: 0736048294)

Applied Sport Science for High Performance Tennis

(Crespo, Reid, Miley—ITF, ISBN: 1-903013-27-5)

Total Tennis: The Ultimate Tennis Encyclopedia

(Collins—SportClassic Books, ISBN: 0973144343)

Coaching Youth Tennis

(ASEP—Human Kinetics, ISBN: 0873229665)

Learn to Rally and Play

(USTA—USTA Publishing, 888-832-8291)

Maximum Tennis: 10 Keys to Releasing Your

On-Court Potential

(Saviano—Human Kinetics, ISBN: 0736042008)

Sport Psychology

In Pursuit of Excellence, 3rd Edition

(Orlick—Human Kinetics, ISBN: 0736031863)

Mental Toughness Training for Sports

(Loehr—Stephen Green Press, ISBN: 0-8289-0574-6)

Psyching for Sport: Mental Training for Athletes

(Orlick—Human Kinetics, ISBN: 0880112735)

Winning Ugly: Mental Warfare in Tennis

(Gilbert and Jamison—Fireside, ISBN: 067188400X)

Visual Tennis

(Yandell—Human Kinetics, ISBN: 0880118032)

Foundations of Sport and Exercise Psychology, 3rd Edition

(Weinberg and Gould—Human Kinetics ISBN: 0736044191)

Enhancing Recovery: Preventing Underperformance in Athletes

(Kellerman—Human Kinetics, ISBN: 0736034005)

Emotions in Sport

(Hanin—Human Kinetics, ISBN: 0880118792)

Strength and Conditioning

Designing Resistance Training Programs

(Fleck and Kraemer—Human Kinetics, ISBN: 0736042571)

Power Tennis Training

(Chu—Human Kinetics, ISBN: 087322616X)

Core Performance

(Veretegen—Rodale Books, ISBN: 157954908X)

Strength Training Anatomy

(Delavier—Human Kinetics, ISBN: 0-7360-4185-0)

Strength Training for Young Athletes, 2nd Edition

(Kraemer—Human Kinetics, ISBN: 0736051031)

Speed Training for Tennis

(Grosser/Kraft/Schonborn—ITF, ISBN: 1-84126-030-4)

The Scientific and Clinical Application of Elastic Resistance

(Ellenbecker—Human Kinetics, ISBN: 0736036881)

Physiology/ Growth and Development/ Nutrition

Physiology of Sport and Exercise, 3rd Edition

(Willmore and Costill, Human Kinetics, ISBN: 0736044892)

Exertional Heat Illnesses

(Armstrong—Human Kinetics, ISBN: 0736037713)

Physiological Tests for Elite Athletes

(Australian Sports Commission—Human Kinetics, ISBN: 0736003266)

Growth, Maturation and Physical Activity

(Malina—Human Kinetics, ISBN: 0880118822)

Biomechanics/ Sports Medicine/ Motor Control

Advanced Techniques for Competitive Tennis

(Schonborn—Meyer & Meyer Sport, ISBN: 3-89124-534-3)

Biodynamic Tennis System

(Segal—Tennis Club Argentino, ISBN: 987-43-5191-8)

Clinics in Sports Medicine

(Harcourt Brace & Co, ISBN: 0278-5919)

Motor Learning and Performance, 3rd Edition

(Schmidt and Wrisberg—Human Kinetics, ISBN: 073604566X)

American Red Cross for First Aid and CPR Training

(www.redcross.org/services/hss/)

Nutrition

Nutrition for Serious Athletes

(Bernadot—Human Kinetics, ISBN: 0880118334)

The Complete Guide to Food for Sport Performance: A Guide to Peak Performance for Your Sport

(Burke—Independent Publishing Group, ISBN: 1863739165)

Clinical Sports Nutrition, 2nd Edition

(Burke and Deakin—McGraw-Hill, ISBN: 0-074-70828-7)

Technology in Tennis

The Physics and Technology of Tennis

(Brody, Cross and Lindsey—USRSA, ISBN: 0972275908)

Tennis Science for Tennis Players

(Brody—University of Pennsylvania Press, ISBN: 081221238X)

Coaching Resources

Sport Science and Coaching Education DVDs and Videos

Dynamic Tennis Warm-Ups DVD

Dynamic Tennis Warm-Ups is a new DVD produced by the USTA that focuses on dynamic warm-up and flexibility training. More and more research is showing that dynamic warm-up is important to sport performance and it is quickly replacing static stretching as the preferred method of warming-up. *Dynamic Tennis Warm-Ups* presents three 10-minute dynamic warm-up routines that have been designed specifically for tennis. Each of these routines can be used “right out of the box” or it shows you how you can use these exercises to develop your own routines that target the individual needs of your players. Warming up properly with a dynamic movement routine, like those presented in this DVD, will help your players prepare to play their best whenever they step on the court. *Dynamic Tennis Warm-Ups* DVD from Human Kinetics can be purchased at www.humankinetics.com.

Other DVDs and Videos

USTA's High Performance Tennis: The Serve
(USTA—Human Kinetics, ISBN: 0736032967)

Games Approach to Coaching Tennis
(USTA—Human Kinetics, ISBN: 0736044027)

USTA's Teaching Group Tennis
(USTA—Human Kinetics, ISBN: 073600050X)

USTA's Backboard Tennis
(USTA—Human Kinetics, ISBN: 0736000410)

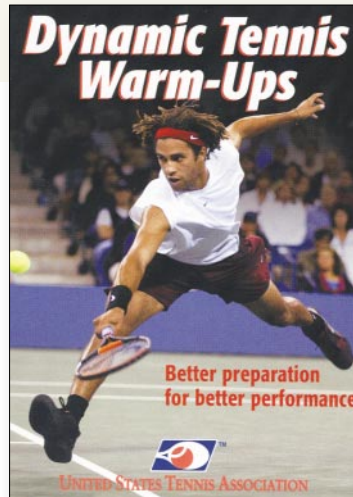
Drug Education Resources

Tennis Anti-Doping Program

Drug control and testing can be a confusing topic for players and coaches, as there are a number of different organizations around the world that conduct these in-competition and out-of-competition tests. The primary testing organization is International Drug Tests & Management (IDTM) and they oversee the Tennis Anti-Doping Program. On their website, www.idtm.com, you will find information on banned substances, find out how to file an exemption form, and download a wallet-sized pamphlet that contains important drug control information and phone numbers. Additional information on the Tennis Anti-Doping Program can be found on the ITF website, www.itftennis.com/abouttheitf/rulesregs/antidoping.asp.

Other Sources of Information

Many drug-related questions also can be answered by contacting:



- The U.S. Anti-Doping Agency (USADA)
www.usantidoping.org, 1-800-233-0393 (within the U.S.),
or 1-719-785-2020 (outside the United States)
- The WTA Tour (www.wtatour.com).
- The ATP tour (www.atptennis.com/en/antidoping/).
- Additional information on testing and banned substances can also be obtained from the World Anti-Doping Agency (WADA) website, www.wada-ama.org.

Video and Technology

Dartfish

How many times have you wished you could compare a player's technique today to what they were doing two months ago or even two years ago? Or compare their technique side-by-side with another player? This is now possible using the Dartfish Video Analysis software (www.dartfish.com) to analyze player technique. To use this program you will need a digital video camera and a computer that has the Dartfish software installed on it. Video clips are stored on the computer's hard drive and can be pulled up to perform a detailed slow motion analysis. The program also lets you pull up multiple video clips simultaneously, allowing you to look at different views of the same player or compare one player's technique to another's. Dartfish is a powerful tool that can really help a coach who is trying to teach or correct a player's technique.

Advanced Tennis Research Project

The Advanced Tennis Research Project (ATRP) is a non-profit organization that has a mission to help coaches learn more about the mechanics of tennis strokes and the trajectory of ball flight. As part of their work, the ATRP has collected super slow motion video clips of many top players and has put these images onto 14 videos and DVDs. The clips have been organized into themes like “The Serve” or “The Modern Forehand.” You can purchase these from the ATRP website (www.advancedtennis.com/) and see which players are featured on each of the videos/DVDs.



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USA Tennis High Performance Coaching Program Dates

Program Dates for 2005

Date	Location	Application Deadline
January 11-16, 2005	USTA Training Center, Key Biscayne, Florida	Full
May 10-15, 2005	USTA Training Center, Carson, California	February 18, 2005

Applications for the above program dates are available
by contacting 305-365-USTA or e-mailing us at
Coaching@USTA.com. We encourage all interested
coaches to apply as soon as possible.