

Editorial

Welcome to issue 46 of the ITF Coaching and Sport Science Review, which is the last edition for 2008. This issue includes a variety of articles on subjects ranging from nutrition, history of tennis, anti-doping, biomechanics of the serve and tennis participation.

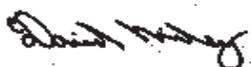
The last few months have seen 5 ITF regional coaches' conferences taking place showcasing presentations from world renowned experts and coaches. The first of the year was the ITF Central American & Caribbean Workshop which was held in El Salvador from 14th to the 20th of September with 85 participants and 13 countries represented. The second of the year was the 6th ITF Southern African conference that was held from the 24th to the 27th of September in the High Performance Centre, Pretoria where 94 coaches attended from 12 countries. In North Africa the conference was held in Sousse Tunisia, from the 8th to the 13th of October and 95 participants attended from 13 countries. The 14th Asian Conference was held from the 27th of October to the 3rd of November in Shenzhen, China. One hundred and forty coaches attended from 17 nations. Finally and most recently, the South American Conference was hosted in Foz do Iguaçu (Brazil), between the 3rd and the 9th of November and saw the largest attendance of any regional conference this year with 360 coaches from 9 nations attending. In addition to these Conferences the European Symposium organised by Tennis Europe but partly funded by the ITF took place from the 22nd till the 25th of October in Roehampton, London with a record 130 delegates from 33 nations.

In 2008, the ITF saw an increase in the overall Regional Coaches' Conference participation from 750 in 2006 to 900 in 2008. These biennial events provided the platform for coaches to receive the most up to date information which can then help them to further develop tennis in their respective regions. All of the presentations at the conferences were filmed and will be shortly available to view on the tennis i-coach website. We would like to thank the speakers, the host national and regional associations, and Olympic Solidarity helped to fund the 5 workshops.

On November 28th to December 1st the ITF Tennis Play and Stay Seminar 2008, organised by the ITF Development Department, was held at the LTA's National Tennis Centre in London. During the seminar, experts from around the world presented topics related to the Play and Stay Campaign. The Campaign aimed to improve the way starter players are introduced to the sport and to position tennis as easy fun and healthy and fundamental to the campaign is ensuring that all starter players "Serve, Rally and Score" from the first lesson by using slower balls on smaller courts. Presentations were followed by discussions, with the objective being to share experiences and ideas related to Play and Stay from the different nations and organisations and to look at how the project can be further improved in 2009 and 2010. Approximately 160 people from over 55 nations attended, including the major federations, regional associations, coaching organisations, tennis industry and the ATP and Sony Ericsson WTA Tours.

In recent months the membership of the Tennis Icoach website has increased with more Federations taking advantage of this great continual education learning tool. November will see the launch of the website in Spanish. Tennis Icoach Español will boast articles, videos, e-learning presentations, lecture room presentations and expert interviews all with Spanish speaking experts or professional translation. The ITF believe that this will enable more coaches worldwide to access and benefit from the quality information and educational resources available through the i-coach.

We hope that you enjoy and benefit from the 46th edition of the ITF Coaching and Sport Science Review and continue to take advantage of this and other resources provided on the weblet (<http://www.itftennis.com/coaching/>).



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ITF Tennis Anti-Doping Programme 2009 Athlete Whereabouts Requirements

Stuart Miller (ITF Technical Department)

ITF Coaching and Sport Science Review 2008; 15 (46): 2 - 3

ABSTRACT

The ITF administers the Tennis Anti-Doping Programme on behalf of all professional tennis. Changes to the World Anti-Doping Agency (WADA) Code in 2009 require a year-round out-of-competition testing programme to be established, and players in the Registered Testing Pool to provide 'whereabouts' information throughout the year. This information, which is stored in WADA's on-line database, must be current and accurate at all times. Players may be sanctioned for failing to provide whereabouts information, and/or not being available for testing.

Key Words: Anti Doping, World Anti-Doping Agency, Drug Testing Programme.
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INTRODUCTION

The International Tennis Federation has operated a comprehensive and internationally-recognised drug-testing programme for over 20 years, the goals of which are to ensure equal and fair competition on the field of play and to protect the health of professional tennis players.



As a signatory to the WADA (World Anti-Doping Agency) Code, the ITF is bound to comply with the Code's provisions. It is recognised and accepted that (a) No Advance Notice Out-of-Competition Testing is at the core of effective Doping Control, and; (b) without accurate information as to a player's whereabouts, such testing can be inefficient and often impossible. For 2009, all International Federations and Anti-Doping Organisations (ADOs) that are signatories to the Code will be required to establish a Registered Testing Pool (RTP) of players, each member of which must provide whereabouts information for every day of the year.

An Out-of-Competition whereabouts programme has been in operation under the Tennis Anti-Doping Programme (TADP) for several years, but this has been confined to the final weeks of the year at the end of the tennis calendar.

This article describes the basic aspects of the mandatory whereabouts requirements, which will be implemented in tennis from 1 January 2009.

NO ADVANCE NOTICE OUT-OF-COMPETITION TESTING

The professional tennis calendar includes tournaments on most weeks of the year, and players often play in the majority of those weeks. The In-Competition period begins at midnight on the first day of the Competition in which a player is participating and ends when

he/she exits the Event for the final time. Testing which takes place during this period is referred to as 'In-Competition'. Out-of-Competition testing is that which takes place at all other times. Thus a player who competes in events on successive weeks, but loses in the first round of the first event may be Out-of-Competition for up to a week (two in the case of Grand Slams).

To maximise the effectiveness of testing, players are not given any warning that they will be tested. This is called 'No Advance Notice', and all testing conducted under the TADP is conducted in this way.

To provide the tennis player and the sport with the optimum protection from unfair competition, whereabouts information is required for all players in a RTP for every day of the year beginning on 1 January 2009. This information will be used to facilitate Out-of-Competition Testing.

SELECTION

Players who have been selected for inclusion in a RTP will be notified by an Anti-Doping Organisation (ADO) of their inclusion - which will be based on one or more criteria (e.g. rankings) - and will be sent detailed instructions as to what information is required from them, and how to submit and update this information.

SUBMITTING INFORMATION

The ITF and many ADOs use the WADA on-line database to administer and update Whereabouts information. This system, known as ADAMS (Anti Doping Administration and Management System), provides a secure and convenient method for entering and storing data, and offers flexibility for the ADO to monitor that information and plan tests as appropriate.



Players in the RTP are required to provide, every 3 months, whereabouts information on where they will be for every day of the year from 1 January until 31 December. By 1 January, 1 April, 1 July and 1 September, these players must provide the ITF/ADO with the full address of the place where they will be residing (e.g. home, temporary lodgings, hotel, etc.) as well as the name and address of each location where they will train, compete, work or conduct any other regular activity (e.g. school) as well as the usual time-frames for such regular activities for the forthcoming 3 months. Whereabouts filing also requires one specific 60-minute time slot between 6 a.m. and 11 p.m. every day where the player will be available and accessible for testing if required. All information must be sufficiently detailed and accurate to enable a Doping Control Officer to locate the tennis player for testing. The provision of whereabouts information is also required for periods when the player is competing.

Although players in a RTP are subject to testing by more than one ADO, they will only be required to submit whereabouts information to one such organisation (either their National ADO or the International Federation). That information will be made available to all organisations with jurisdiction to conduct testing on that player.

Players may authorise third parties (e.g. coaches, agents) to submit (and/or update - see below) whereabouts information on their behalf. Players, however, remain personally responsible for all such information - it would not be an acceptable excuse if the information submitted by a third party proved to be inaccurate or insufficiently detailed.

UPDATING WHEREABOUTS INFORMATION

It is recognised that players may not know exactly what their movements will be three months in advance, and that plans made previously may change (e.g. if a player loses at an early stage of an event). As and when whereabouts information becomes inaccurate, it must be updated. This can be done directly in ADAMS or by sending an SMS to a number linked to ADAMS. Nevertheless, it is important all tennis players try to provide the most accurate information possible at the time of submission.

WHEREABOUTS FAILURES

Failure to (a) submit whereabouts information by the appropriate deadline, or (b) provide inaccurate or insufficient information will constitute a 'Filing Failure'. If a player was not at his or her nominated location at the specified time in his or her whereabouts filing, then this will be a 'Missed Test'. Any combination of three Filing Failures and/or Missed Tests (which may be declared by any combination of ADOs with jurisdiction to test the player) within an 18-month period will result in a Doping Offence, for which the sanction is a period of ineligibility of 1 year (first offence) up to a life ban (for a second and/or subsequent offences).

ADDITIONAL INFORMATION

Further details and information can be found on the Whereabouts page on www.itftennis.com/antidoping. Alternatively, please contact Charlotte Elton on +44 208 392 4658 or anti-doping@itftennis.com.



Playing Tennis After 50

Kathy and Ron Woods (USA)

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ABSTRACT

This article describes some factors that effect the 50+ population who seek healthy activity, social experiences, intellectual stimulation and want to have fun by playing a sport rather than "working out" in a gym. Specific sections provide helpful advice for new players, lapsed players (those who played previously but stopped) and of course continuing players who must adjust their play to accommodate their aging bodies. With a heavy emphasis on doubles and mixed doubles, strategy is presented first followed by the technical skills to achieve the strategic objectives. With growing 50+ populations, increasing health concerns, alarming trends toward overweight and obesity, coaches would be wise to reach out to a segment of the population that is ripe for more tennis play, has the time and financial ability to enjoy a great sport.

Key Words: Adult physical activity, health, participation.

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INTRODUCTION

Part of the formula for promoting the growth of the game of tennis must include reaching out to the population over the age of 50. In the United States and many other developed countries, the surging number of people 50 years and older presents unique social problems and also opportunities. In the U.S., we expect the 50+ population to increase to 100 million by 2011, out of a total population of 300 million.

In our view, there are three distinct groups within the 50+ population who are existing or potential customers of tennis. The first group is continuing players who would like to keep playing. They have the interest, skills, time and money and are key members of tennis facilities. Many are our best consumers; frequent players, team members, equipment purchasers and fans of tennis who watch or attend tennis events. Our obligation to them is to keep them healthy and enthusiastic about playing several more decades.

The second group is lapsed players, those who have played sometime in their life but stopped. They can be enticed back into the game with smart marketing, strategic programming and good customer care. As they approach age 50 and beyond, their health takes on added importance and they crave the social-physical-mental stimulation that tennis can provide. Because they played at some time, their re-entry into the game is less daunting than that of brand new players.

The third group, those who have never played tennis may be at the point of life where they are looking for a new recreational activity. If they have reasonable eye-hand coordination, a competent coach and join a group with other people who they enjoy, their chances for success are pretty good. We've seen new players at age 50 become enthusiastic, competent skilled players within a year or two.

GENERAL PROFILE OF THE 50+ PLAYER

Each of the groups described above has some unique characteristics, but they share some general traits. Typically, 50+ players are savvy consumers who expect a safe, pleasant tennis environment at a reasonable cost. They gravitate toward doubles play because they enjoy the sociability, variety of strategy and shots and reduced court area to cover. Group sessions for learning are popular because they are affordable and meeting new friends and practice partners occurs naturally.

Social contacts are critically important to 50+ players. Their families are grown so they crave adult companionship, drinks and conversation after play and other social occasions that naturally develop among tennis friends. Taking in a movie or play, celebrating special occasions, organizing a book club, card club or attending a professional sports event happen regularly at our tennis club just because people enjoy each other's company. A good tennis program promotes and provides these social outlets deliberately to match these needs.



We've found that players enjoy learning about the strategic principles of the game first, followed by stroke technique and practice to achieve the tactical objectives. This approach makes logical sense, is more fun and emphasizes "playing the game" as opposed to "working on skills" which is less enticing to most players.

A final characteristic of this group is concern about their physical health as they age. Injuries occur but often can be prevented or recovery time minimized with proper care. Building knowledge of warm-up and dynamic stretching before play and cool-down and static stretching after play will help keep people on the court. If injuries do occur, appropriate advice and references to the right health care professionals can be a terrific service and reduce recovery time significantly.

Feeling younger and looking good are important as we age and tennis can contribute mightily. You rarely see overweight tennis players and we see players every day in their 80s covering the court expertly. However, all tennis players need to spend some time off the court working on their overall flexibility and maintaining muscular strength and endurance. Unless those two areas are given attention, the chances of injury are high and tennis skills will eventually suffer as well.

CLASSIFYING BY PLAYING EXPERIENCE AND SKILL

Our experience is that most 50+ players fall into two main categories according to skill and playing experience. In the U.S. we classify these groups according to our National Tennis Rating program as up to 3.0 or ITN 7 and a more highly skilled group of NTRP of 3.5 to 4.5 or ITN 4-6. The needs of these two groups are similar enough that the strategic principles they need to acquire are similar although their skill differences suggest they are best separated for learning and play.



Groups based on the two levels described above are generally compatible within their group for learning and casual play but they may need to be refined for more serious competitive play into categories separated by .5 points. While we use the rating systems for all adult players, in competitive team play we offer leagues for seniors, age 50 and over and also super seniors, age 60 and over. Of course, typical tournament play further refines age group in five year increments to insure better competition.

SPECIAL CHALLENGES FOR 50+ PLAYERS

For most players over age 50, the thrill of learning and implementing new strategies or tactics is a great motivator that keeps the game fresh and exciting. So too is adding a new skill to their repertoire and then using it in a match.

The game of tennis simply offers so many challenges that people of any age can be fascinated with play and never run out of options. We believe that presenting simple, clear strategies based on science should underlie all instruction and coaching for people of any age. There are however, some adjustments for older players based on the effects of age.

Covering lobs

As people age, loss of explosiveness to jump, start quickly or loss of balance complicates efforts to adjust to lobs. Moving backward is typically more difficult than moving forward so net players usually adjust by playing further from the net. The server's partner in doubles may even play near the service line rather than in the middle of the service box. During play, a player who is moving toward the net after an approach shot will also need to be more cautious about closing in too far.

Shrinking the court

The overall effect of players backing off the net position is that they will need to learn or improve their skills at playing low volleys, half-volleys and approach shots out of the air. Coaches need to assure players that playing from the mid-court is actually a smart move as it helps players shrink the court, defend against deep and short balls and cover lobs. Learning the new shots required can be exciting and challenging but worth it. We've watched senior players cover virtually every shot from a $\frac{3}{4}$ court position and enjoy terrific rallies and exciting points.

Serve and volley

Higher skilled players who have followed their serve to the net in doubles play typically adjust that strategy during their 50s and 60s. Many of us have found that playing on softer court surfaces is kinder to our bodies than hard courts and thus our serves are less effective in producing weak returns. When you combine slower serves with slow court surfaces the advantage often shifts to the receiver.

The speed, balance and effort required to serve and volley also becomes problematic so players will typically mix it up and only rush the net at selected times. Effective serves must be well-placed to a weakness, to the inside of the service box, or at the body and deep in the box. Even more important is disguise and variety in type of serve and placement. Players may find a combination that works well and allows them to serve and volley on certain points. By varying their tactic, the server can outsmart an opposing receiver who is unsure whether they will come in or not.

Instead of using a serve and volley strategy, senior players often move a few steps into the court anticipating a short return and if they get it, hit an approach shot and close in a few more steps. Although they may rarely get close to the net, the opportunities to give their opponents less time to react, to hit down on the ball or play an angled shot makes it worthwhile to move forward when they can.

THE OPPORTUNITY

We believe that reaching out to players over 50 is essential to preserve avid existing players and a ripe market for attracting new players to our sport. The exciting thing about this audience is that other things in life begin to fade in importance and having fun, being with people they enjoy, getting good exercise and challenging their mental and physical skills assume more importance. And we can tell you that every day on the tennis court is a blessing and as we age we begin to realize that and appreciate it.

Fixing The Brakes!

Deceleration: The Forgotten Factor in Tennis Specific Training

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ABSTRACT

Training tennis movement is more complex than just working on an athlete's initial acceleration. Many times a coach is so focused on "first-step quickness", that they sometimes forget to focus on deceleration. This article highlights the importance of both lower and upper-body deceleration for the tennis player and provides some practical training ideas to help the athlete improve their deceleration abilities.

Key words: Movement, acceleration, deceleration.

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INTRODUCTION

For competitive tennis players, exceptional movement is one of the major physical components that determines success. Training for tennis specific movement takes many forms. Coaches, trainers and players are often focused on improving initial speed (acceleration) and may not focus as much on the other aspects of tennis specific movement. The forgotten factor in effective tennis specific movement is deceleration. Similarly in the upper body, particularly the muscles in the upper back and back of the shoulder play a major role in decelerating the tennis strokes after contact is made. Deceleration needs to be considered a vital component of a competitive tennis player's training routine for the athlete to achieve top-level tennis performance.

In the tennis specific movement equation there are two distinct, yet related parts.

Equation

Acceleration + Deceleration = Effective Tennis Specific Movement

This equation is equally valid for upper and lower body movements in tennis. The first part of the equation typically receives the greatest focus. For the lower body we typically relate this to first step speed, also known as acceleration. This type of training works on how quickly an athlete can break inertia and move from point A to point B. In the upper body, acceleration is achieved by the muscles of the upper arm and chest (concentrically). This article, however, will focus mainly on the deceleration component of tennis specific training.

LOWER BODY DECELERATION

Although training acceleration is vital to help an athlete become faster, the second portion of the tennis specific speed equation is often an undertrained component. Deceleration allows the athlete to slow down before they get to point B. The ability to effectively slow down results in the athlete being in a balanced position at point of racket and ball contact; therefore producing effective and efficient bodyweight transfer into the groundstrokes and volleys. Below is a series of photographs (Figure 1) showing James Blake hitting a wide forehand. The photos demonstrate the need for fast acceleration to the ball and the need for rapid deceleration after the stroke to aid recovery for the next stroke.

An athlete's ability to decelerate is a trainable biomotor skill, and as such needs to be included in a well-rounded tennis-specific training program. An athlete who can decelerate fast, in a short distance while properly balanced is an athlete who is not only faster, but will also have great body control during the tennis stroke. This greater

body control allows the athlete to maintain a dynamically balanced body position that directly translates into greater power of the strokes, and more solid racket and ball contact. A major influence on a tennis player's ability to decelerate is momentum (quantity of movement). Momentum is the product of the mass of moving athlete and its velocity. As an athlete's velocity increases, momentum is amplified requiring greater forces to decelerate the fast moving tennis player.



Figure 1. *Runing Forehand Showing Deceleration Requirements.*

A larger tennis player (i.e. greater mass) has a more difficult time decelerating and if the coach or trainer focuses the majority of movement training on acceleration without focusing ample time on deceleration, it will result in an athlete who has a faster first step, but who will not be able to control the body to slow down fast enough before making contact with the ball. This will result in reduced on-court performance and may result in the increased likelihood of injury, as the majority of athletic injuries are the result of inappropriate deceleration abilities of athletes and an overemphasis of acceleration focused exercises both on and off-court.

UPPER BODY DECELERATION

In the upper extremity, the body uses eccentric contractions following ball impact in virtually all strokes to decelerate the upper extremity kinetic chain. These contractions are of vital importance around the shoulder and scapular area as they help to maintain the critically important stability that is needed to both prevent injury and enhance performance. For example, during the serve, the shoulder is elevated approximately 90 degrees relative to the body. In this position, large forces are generated by the internal rotator muscles such as the latissimus dorsi and pectoralis major to accelerate the arm and racquet

head forward toward an explosive ball impact. Immediately following ball impact, the muscles in the back of the shoulder have to work eccentrically to decelerate the arm as it continues to internally rotate. This deceleration is critical for injury prevention as the inability to dissipate these large forces by the muscles in the back of the shoulder and scapular area can lead to injury.

In addition to the high levels of activity identified during the serve, the same rotator cuff and scapular muscles work to decelerate the arm on the forehand during the follow-through phase. Training these important muscles provides important muscle balance to the tennis player. Many players are deficient in these important muscles and do not understand the importance of training these muscles by incorporating deceleration type training programs into their normal training regimens.

TRAINING SPECIFICITY

It has been shown in the scientific literature that straight line sprinting (linear acceleration/maximum velocity) is a separate quality from multi-directional movements that require a change of direction and/or a deceleration of movement (Young, McDowell et al. 2001). Young et al (2001), found that straight ahead sprinting such as a 100m sprint in track and field does not transfer directly to the movements typically seen on a tennis court. This result is due to the differences in movement mechanics, muscle firing patterns and motor learning skills required to perform straight line sprinting versus tennis movements that require start and stop movements and numerous changes of direction in every point.

What factors improve a tennis player's deceleration ability?

Dynamic balance, eccentric strength, power and reactive strength are four major qualities that have a significant influence on an athlete's ability to decelerate, while maintaining appropriate body position to execute the necessary tennis stroke and then recover for the next stroke (Figure 2).

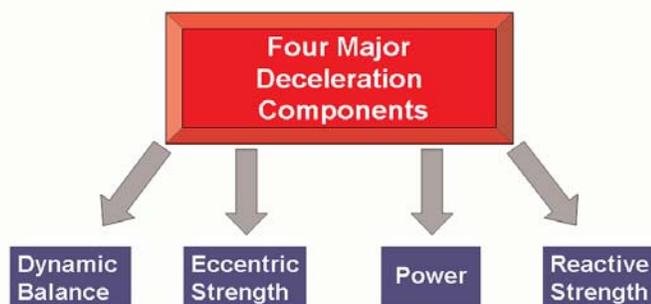


Figure 2. The Four Major Deceleration Components.

Dynamic Balance

Dynamic balance is paramount in tennis, specifically during the deceleration movement phase before the player makes contact with the ball. Dynamic balance is the ability of the athlete to maintain a controlled center of gravity while the athlete is moving. This ability to maintain balance in a dynamic environment allows the athlete to successfully use the segmental summation of muscular forces and movements through the kinetic chain (Kibler, 1994). This efficient energy transfer from the ground and up through the entire kinetic chain will result into a more efficient and powerful tennis stroke, faster racket head speeds and ball velocities. Additionally, dynamic balance can refer to the ability during movements of opposing muscles to work optimally together to produce optimal uncompensated movement patterns. This is particularly important in the upper extremity when proper muscle balance must be maintained to improve shoulder joint stability.

Eccentric Strength

Eccentric strength requires training of the muscles during the lengthening phase of the muscle action. An example would be during the step before and the landing of a wide backhand as is demonstrated by Serena Williams (Figure 3).



Figure 3. Wide Backhand Deceleration Requirements.

Eccentric strengthening exercises need to be performed both bilaterally and unilaterally. Nearly all tennis movements require the athlete to load one side of the body more than the other, and it is paramount that these uneven loading patterns are trained eccentrically as well as concentrically. It is known that physically trained humans can support approximately 30% more weight eccentrically than concentrically (Ellenbecker, Davies et al. 1988; Wilson, Murphy et al. 1994; Lindstedt, LaStayo et al. 2001). Therefore eccentric focused strength training needs to be incorporated into an athlete's periodized program to successfully maximize their strength gains. A second major benefit of training eccentric strength is to aid in the prevention of injuries. A large portion of injuries to tennis players are due to insufficient eccentric strength both in the upper body during the deceleration of the racket after serves, groundstrokes and volleys, as well as in the lower body during the deceleration of the body before planting the feet to establish a stable base for effective stroke production.

Power

Power for the tennis player is what directly translates into greater racket head speed and ball velocity. The power equation is {Force X Distance / Time}. In simple terms, a powerful athlete produces high forces, over the greatest distance, in the shortest period of time. The importance of power training for tennis is well understood by most coaches and trainers; however, power is typically trained with the major focus on the concentric phase of the muscle movements. Most medicine ball drills and plyometric movements focus on developing power. However, rarely is the training focus on the landing aspect of the plyometric movement or the catching (instead of throwing) aspect of the medicine ball workout.

Reactive Strength

Reactive strength has been defined as the ability to quickly change during the muscle contraction sequence from the eccentric to the concentric phase in the stretch-shortening cycle (SSC), and is a specific form of muscle power (Young, Wilson et al. 1999). A plyometric training program which utilizes lateral and multidirectional movements while limiting time on the ground will develop reactive strength and subsequent power outputs in the muscles and movements that are seen during tennis play. This type of training directly relates to a tennis athlete in their recovery

sequences between shots and also during the times in a point when they are "wrong-footed" and are in need of rapid change of direction.

PRACTICAL APPLICATION TO THE TENNIS ATHLETES

Deceleration is a biomotor skill that is closely linked to agility and multi-direction movement training. As such, it needs to be trained in a multi-focused training program with appropriate rest periods and loads that are progressed based on the tennis player's growth, maturation and training stages. From a training perspective the posterior muscles of the tennis athlete needs to be a focus if the athlete is to become a successful player who has great deceleration ability. In the lower body the hip extensors, including the gluteus muscles and hamstrings need to be trained specifically in an eccentric manner with progressive increases in resistance. In the upper body, a major focus needs to be on the posterior aspect of the shoulder region which will assist in the deceleration of the arm during the tennis serve, ground strokes and volley's. Training athletes to accelerate and be fast is only half the equation, deceleration before setting up for racket and ball contact is a major link in the chain for successful performance, and if the deceleration link is not trained optimally the athlete will never reach their fullest potential.

Upper body deceleration exercises using a small hand sized medicine ball.

Figure 4 shows the 90/90 prone plyometric exercise that places the shoulder and upper arm in a functional position inherent in the serving motion. 90/90 refers to the angles at the shoulder and the elbow. In this exercise, the player rapidly drops and catches the ball as quickly as they can with the ball moving only a few centimeters as it leaves the grasp of the player temporarily before being re-caught and dropped from the reference position as pictured. Typically, multiple sets of 30 seconds are used in training to foster local muscular endurance.



Figure 4. 90/90 Prone Plyometric Exercise.



Figure 5. Reverse Catch Deceleration Exercise.

Figure 5 shows a reverse catch type deceleration training exercise. In this exercise, the arm is again positioned in 90 degrees of elevation (abduction) and 90 degrees of elbow bend as pictured. A partner stands just behind the player and throws a small 0.5 to 1 KG medicine ball toward the players hand. Upon catching the ball, the arm moves into internal rotation until the forearm is nearly parallel to the ground, just as it is decelerated during the serving motion functionally. The player after decelerating the ball, rapidly fires the ball backwards toward the partner performing a concentric contraction of the rotator cuff and scapular muscles. Recent research has demonstrated significant increases in eccentric strength in the shoulder of subjects

using these types of exercises in a performance enhancement training program (Carter, Kaminski et al. 2007).

Lower body deceleration exercises.

Figure 6 shows a Romanian Deadlift (RDL) strength exercises which works on the muscular development of the hamstrings, gluteus muscles and lower back muscles as force is applied during eccentric muscle actions.

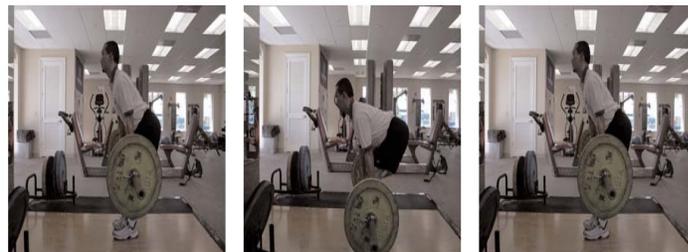


Figure 6. RDL Exercise.

Figure 7 shows a traditional box jump with specific emphasis on the landing phase. It is important to have the athlete land in a strong squat position which develops eccentric strength and rapid deceleration abilities. A more advanced athlete who has developed appropriate lower body strength could be progressed to performing a similar movement, by jumping down from the box and working on a strong squat position during the landing. This would increase the eccentric loading and should be considered an advanced exercise.



Figure 7. Box Jump Exercise.

As limited data is currently available on deceleration training guidelines, it is important to monitor training closely as eccentric loading can cause more delayed onset of muscle soreness (DOMS) than similar concentric exercise. As multiple sets of exercises have shown greater results than single sets (Kraemer and Ratamess, 2004), these exercises and movements should be trained using multiple sets with varied repetition ranges based on the age, maturation and training status of the athletes.

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Gender and Surface Effect on Elite Tennis Strategy

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ABSTRACT

In 2006 the International Tennis Federation (ITF) began to formally grade surfaces and use different ball types to compensate for the surface effect of the court. The purpose of the current investigation was to describe the nature of Grand Slam tennis play since the introduction of the new balls. Matches from 144 men's and women's singles matches from all 4 Grand Slam tournaments in 2007 were analysed using a computerised match analysis system for tennis. Men won a significantly greater percentage of points on first ($p < 0.001$) and second serve ($p = 0.001$) than women, serving significantly more aces ($p < 0.001$) and serve winners ($p = 0.005$) and significantly fewer double faults ($p < 0.001$). Women played significantly more baseline rallies than men ($p = 0.003$) while men went to the net significantly more than women when serving ($p = 0.001$). Despite the introduction of Type 1 balls at the French Open and Type 3 balls at Wimbledon, there was still a significant tournament effect on rally duration ($p < 0.001$) with significantly more serve winners being played at Wimbledon than any other tournament ($p < 0.008$) and significantly more baseline rallies being played at the French and Australian Opens than at Wimbledon ($p < 0.008$). These results show that the nature of tennis still varies between the 4 Grand Slam tournaments and, therefore, players should prepare for the specific conditions of each tournament.

Key Words: Tennis, Performance Analysis, Strategy, Gender, Surface.

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INTRODUCTION

In 2007, all 4 Grand Slam tournaments were played on different court surfaces. This has been found to effect the strategy of elite players (O'Donoghue and Ingram, 2001; Unierzyski and Wieczorek, 2004). Previous research has found that court surface has effected serve strategy (O'Donoghue and Ballantyne, 2004) and rally durations (O'Donoghue and Ingram, 2001). The International Tennis Federation (ITF) has stated that engineering the game of tennis is necessary to protect the nature of the sport, encourage innovations that improve the sport, follow technological advances and strengthen the appeal of the game (Coe, 1999). In 2006, the ITF formally introduced the use of Type 1 and Type 3 tennis balls in addition to the Type 2 balls previously used. A formal classification of court surface pace was also introduced at this time to decide on which type of ball to use on each surface. This was done because the increasing dominance of serve was felt to have reduced the number of entertaining rallies played (Miah, 2000). The Type 1 tennis ball is harder and more resistant to compression upon impact than the standard Type 2 ball meaning a reduced contact time with the surface and a faster game. This ball has been designed to be used on the slower court surfaces such as clay. The Type 3 ball is 6-8% bigger than the standard Type 2 ball and generates greater air resistance, resulting in greater deceleration as it flies through the air. This ball is used on fast surfaces such as grass. The introduction of new balls was an attempt by the ITF to reduce the variation in the game between different surfaces. This means that there is a need to replicate previous research, such as that of O'Donoghue and Ingram (2001), applying their methods to matches played since the new balls were introduced. Therefore, the purpose of the current investigation was to investigate differences in the nature of Grand Slam singles tennis between different tournaments during 2007.

METHOD

Sections of at least 25 points from 144 men's and women's singles matches from the four Grand Slam tournaments in 2007 were recorded from either terrestrial or satellite television coverage. The volume of data gathered was 201 hours of on-court time containing 17,856 points.

Table 1 summarises the data that was included in the analysis.

Table 1. Data gathered and analysed from the 2007 Grand Slam tournaments.

Tournament	Singles Event	Matches	Hours	Players
Australian Open	Women's	17	21	20
	Men's	15	23	22
French Open	Women's	13	12	19
	Men's	16	24	22
Wimbledon	Women's	22	24	23
	Men's	22	30	25
US Open	Women's	17	24	21
	Men's	22	43	23

The computerised data collection system developed by O'Donoghue and Ingram (2001) was used to record details of video recorded match sections. The time of impact of each first serve and second serve was recorded using function keys as was the time at which the point ended as a result of a ball landing out, in the net or bouncing twice without being returned. During the time between points, a menu system allowed the user to enter the type of point (ace, double fault, serve winner, return winner, net point where server went to net first, net point where receiver went to net first, baseline rally or let). The rally time and whether the point emanated from a first or second serve were determined from the function keys used during observation of rallies. There were guidelines used by the observers to classify points. A serve winner was any rally of 2 shots won by the server without the server having to play a second shot. A point was classified as a net point where a player crossed the service line and there were still shots to be played in the rally by either player. The reliability of the method was investigated using an inter-operator reliability study which involved sections of 12 matches including at least one men's match and at least one women's match from each of the four tournaments. The two authors independently analysed

these matches which included a total of 1356 rallies. Mean absolute error for rally length was 0.26s which was an acceptable level of reliability. There was a very good strength of agreement for service (= 0.951) and point type (= 0.888).

RESULTS

Table 2 shows that there was a similar percentage of points where the first serve was in between the 8 games. However, the server won a greater percentage of points overall at Wimbledon than at all other tournaments and a lower percentage of points at the French Open than at all other tournaments.

Table 2. Summary of analysis of service effectiveness.

Game	Tournament			
	Australian	French	Wimbledon	US
%1st Serves in				
Women	61.9	61.5	65.1	61.0
Men	61.2	65.0	62.8	62.9
%Points won when 1st serve in				
Women	62.2	59.9	65.7	60.8
Men	70.8	68.3	75.8	69.1
%Points won when 2nd serve needed				
Women	46.3	45.8	45.6	47.1
Men	49.6	47.1	57.3	53.3

Figure 1 shows the mean rally length in each of the 8 types of match. Men's and women's matches had similar durations with the longest rallies being played at the French Open and the shortest rallies being played at Wimbledon.

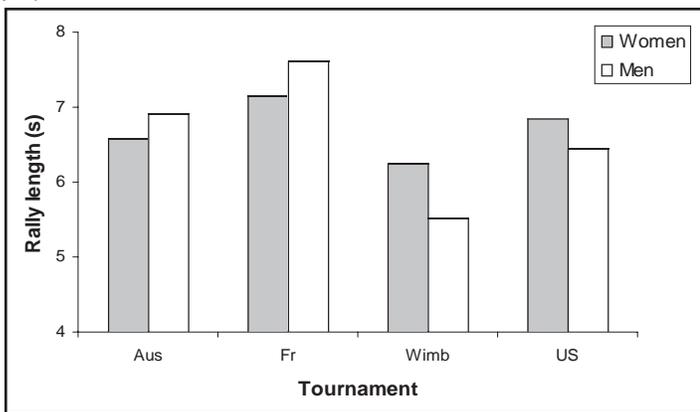


Figure 1. Rally duration.

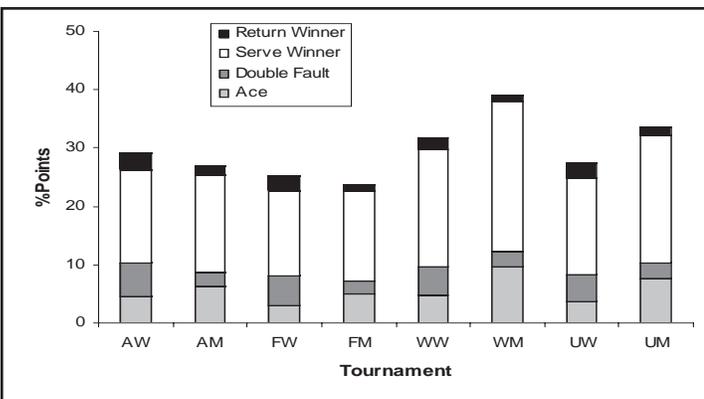


Figure 2. Service Points.

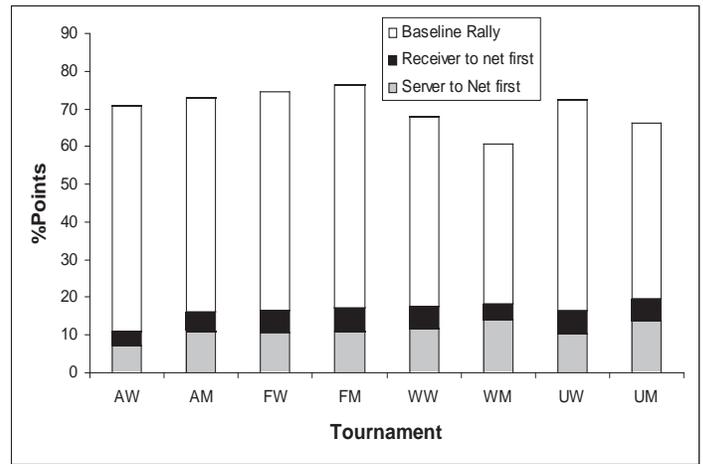


Figure 3. Percentage of non-service points.

Figure 2 shows that service points (where there were 1 or 2 shots in the rally) accounted for less than 40% of all points in all 8 types of game. In women's singles, there were more serve winners played at Wimbledon than at any other tournament. Men served more aces and serve winners at Wimbledon than at any other tournament. Figure 3 shows that women went to the net first during a greater percentage of points at Wimbledon than any other tournament. Women played a lower percentage of baseline rallies at Wimbledon than at any other tournament. Men played a greater percentage of baseline rallies at the French and Australian Opens than at Wimbledon and the US Open.

DISCUSSION

The current results will be compared with the results found for Grand Slam singles tennis in 1997 to 1999 using the same method (O'Donoghue and Ingram, 2001). This will allow differences between Grand Slam tennis before and after the introduction of Type 1 and 3 balls and surface pace classification to be explored. The ITF's decision to formally classify court surface pace and use Type 1 balls on the slowest surfaces and Type 3 balls on the fastest surfaces has reduced the variability in tennis between the Grand Slam tournaments. In women's singles, the difference between rally durations at the French Open (9.0s) and Wimbledon (6.1s) in 1997 to 1999 (O'Donoghue and Ingram, 2001) has decreased in 2007 (7.2s and 6.2s respectively). Similarly in men's singles, the difference between rally durations at the French Open (7.3s) and Wimbledon (3.8s) in 1997 to 1999 has decreased in 2007 (7.6s and 5.4s respectively). However, there are still differences between the tournaments in terms of rally duration. Rallies in men's singles have increased in duration at all four tournaments since 1999 while the duration of rallies in women's singles has decreased at all tournaments except Wimbledon. The result in men's singles is in contrast to the trend observed in Kovak's (2007) review that rally lengths were decreasing in duration. The longer rallies in men's singles at the French Open could indicate that players are fitter and have better technical ability than in the 1990s. Such improvements allow players to retrieve more balls, prolonging rallies before making errors or not being able to reach a ball played by the opponent.

There was a lower percentage of service points (aces, double faults, serve winners and return winners) in men's singles at each tournament in 2007 than reported by O'Donoghue and Ingram (2001). The reduced dominance of the serve at Wimbledon can be explained by the introduction of the Type 3 ball. With the new Type 3 ball being 6-8% bigger than the standard Type 2, it generates more air resistance slowing the ball down before it bounces (Miller, 2006). The larger surface area of the ball means it maintains contact with the surface for longer and increases the frictional force on the

surface so the ball may start to roll rather than slide across the surface therefore reducing the horizontal velocity further (Brody, 2003). First and second serves played at 120 and 90 miles per hour respectively give the receiving player an extra 10ms and 16ms to play the ball when a Type 3 ball is used (Haake et al., 2000). In contrast, service is least dominant in women's singles at the French Open but the number of service points has increased in this game since O'Donoghue and Ingram's (2001) study. The new more pressurised Type 1 ball is more resistant to compression than a Type 2 ball and, therefore, reduces the time the surface is in contact with the ball. The increased rally lengths at Wimbledon may be explained by the use of the Type 3 balls. The slower flight velocity of the Type 3 ball gives players more time to play the ball, thus reducing the risk of errors being played and prolonging rally durations. The fact that differences still exist between tennis play at the four Grand Slam tournaments has its advantages for the sport. According to Miah (2000), the variation in surface provides excitement in tennis.

In conclusion, the current investigation has shown that while there is a reduced variability in tennis performance between the four Grand Slam tournaments, there are still differences between the tournaments. The most striking result is that rally durations have increased in men's singles at all 4 tournaments while they have decreased in women's singles at all of the tournaments except Wimbledon. This has been observed despite men and women using the same balls on the same surfaces. Service is still more important in the men's game than the women's game and still more important at Wimbledon than at the other Grand Slam tournaments.

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The Role of a Coach in Combating Doping

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ABSTRACT

This article reviews the complex challenge facing tennis today to reduce, and ultimately, eliminate doping. Key terms are defined and reasons why doping is a problem and players might abuse drugs are highlighted. A number of strategies for coaches to play a vital role in combating doping are discussed.

Key Words: Drugs doping, Media, Combating doping.

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INTRODUCTION

While the International Tennis Federation (ITF) reports "relatively few" new doping offenses (5 to date at the time of writing) since assuming exclusive management of the Tennis Anti-Doping Programme 2007 on 1 January 2007 (Overend, 2007), a number of high profile doping cases continue to attract considerable media attention. These include:

- (a) Martina Hingis's suspension from the game effective 1 October 2007 for doping.
- (b) Sesil Karantantcheva, a promising talent from Bulgaria with a win over Venus Williams at Roland Garros in 2005, returned to the circuit earlier this year after serving a 2-year suspension for doping.
- (c) Guillermo Coria's recent settlement of a lawsuit with an American Nutrition company which the player blamed for a positive drug doping test.
- (d) Guillermo Canas's successful return to competition from a 15-month suspension for doping last year with two wins over World Number 1 ranked player, Roger Federer.

Such media attention reflects a widespread concern for the integrity of the game and highlights a complex challenge facing the tennis community to reduce, and ultimately, eliminate doping. While the responsibility to combat doping falls on many shoulders, there is an opportunity here for coaches to take a lead, indeed a proactive, role given the influence they have in shaping, and guiding, a player's values and behaviour (Bloom, 1985). This vital role for coaches will be examined in this article but, before doing so, it is important to define key terms and highlight why doping is a problem. Why players might risk their careers, reputations and health to indulge in illegal drug taking and indicators of drug abuse will also be addressed.

Definitions: Drug, Drug Abuse and Doping

While the word drug may mean different things to different individuals, it is defined as "any substance or product that is used or intended to be use to modify or explore physiological systems or pathological states for the benefit of the recipient" (World Health Organisation, 2007). As such, all drugs share the common characteristic of altering a physiological process, usually to diagnose, prevent or treat disease. However, a drug that is classified as 'performance enhancing' does not fit this definition and is considered a form of drug abuse or doping.

Drug abuse is defined as "the deliberate use of a substance for other than its intended purpose, in a manner that can damage health or ability to function" (Anshel, 2005, p.259).

Doping refers to the act of ingesting banned drugs and is defined by the International Olympic Committee as "the use or distribution of substances that could artificially improve an athlete's physical or mental condition, and thus his or her athletic performance" (World Health Organisation, 2007). The five doping categories that are

banned from international tennis competition are: (a) anabolic androgenic steroids; (b) beta-adrenergic blockers; (c) narcotics analgesics; (d) diuretics; and (e) stimulants (including 'recreational drugs' such as marijuana and ecstasy). Readers interested in a detailed list of prohibited substances and methods may wish to refer to the Tennis Anti-Doping Programme 2007 [Appendix 2] (International Tennis Federation, 2007).

WHY DOPING IS A PROBLEM

There are a number of reasons why doping is considered a serious issue in sport today, including tennis (Table 1).

Table 1. Key Reasons Why Doping is a Major Concern.

Why Doping is a Problem
<ul style="list-style-type: none">• Illegal under the rules• Unethical to seek unfair advantage (cheat)• Addictive properties of many drugs• Potential health risks to players• Discredits a sport and its players• Erases credibility of a player's achievements• Player may never know his/her real full potential or talents

In brief, the first problem with doping is one of ethics and legality - very simply, doping is illegal under the provisions of the Tennis Anti-Doping Programme 2007. To take performance-enhancing drugs is also unethical, as it alters the 'even playing field' (fairness) for all players. Further, the credibility of a player's performances is greatly diminished should that player subsequently be found guilty of doping - indeed, a player who engages in drugs may never truly know his/her full capabilities.

Another problem with doping is the addictive properties of many drugs. This addiction may present itself as a physical and/or psychological need, such that an individual may require the drug to function normally on a daily basis.

Perhaps the most dangerous problem with doping is its potential to have lethal effects on an individual's well-being and general health. In the extreme there is anecdotal evidence that athletes, in sports other than tennis, have died from taking performance-enhancing drugs. Tennis players are not immune from this risk if they indulge in drug abuse.

MOTIVES FOR DOPING

Why would a player risk everything, including his/her career, health and reputation to take illegal drugs? The answer to this question is a complex one, with Anshel (1993, 2001, 2005) proposing an array of possible explanations indicating that an individual's motive is thought to be multidimensional (i.e., a number of factors influence an individual's decision). A list of possible motives, many of them psychologically based, is presented in Table 2.

Table 2. Possible Motives for Doping (adapted from Anshel, 1993, 2001, 2005).

Why Players Might Abuse Drugs
<ul style="list-style-type: none"> • Inadvertently consume without establishing substance ingredients • Lack of information of dangers/risks • Pressures to excel/win and meet exceptionally high expectations of significant others (e.g., coach, parents, peers, sponsors, media) - desperate to 'win at any cost' • Lure of prize money, computer points and status, believing 'means justify the end' • Avoid failure and protect self-esteem • Peer pressure and attempt to gain acceptance • Believe drugs will compensate for a lack of self-confidence • Believe themselves to be invincible to the dangers/risks • Boredom • Anxious about future prospects • Response to personal problems and perceived lack of social support • Availability of drugs and lack of willpower

Let's explore two key motives of a player's response to competitive pressure and threat to his/her self-esteem in a little more detail.

Player's Perception of Pressure to Succeed

Anecdotal evidence supports many players feel under considerable pressure to excel, meet expectations (e.g. from national tennis associations, coaches, family members), improve their rankings and 'get results'. It is therefore not surprising that some players might be tempted to explore any avenue to be successful (i.e., 'win at any cost'), when so much appears to be on offer at the pinnacle of their sport. It is in this context that drug taking might be seen as simply taking advantage of a means or 'tool' to gain a competitive advantage over opponents.

Threat to Player's Self-Esteem

Related to the pressures to succeed is the motive to maintain a player's self-esteem (how a player evaluates or thinks of him/herself). For some players, their self-esteem, to a large extent, comes from winning matches and tournament performances. Failure to win can be devastating, demoralising and/or humiliating. In such circumstances, a player may be desperate to avoid defeat in order to maintain his/her self-image, even if it means cheating by taking performance-enhancing drugs.

INDICATORS OF DRUG USE

While the formal assessment should be conducted by a qualified physician or medical practitioner, warning signs of drug use cover a range of possible physical, behavioural, emotional and/or cognitive indicators (Table 3).

COACH'S ROLE IN COMBATING DOPING

The identification of possible motives for doping (Table 2) provides clues at to what strategies a coach might adopt to provide 'hands-on' support for the International Tennis Federation's Tennis Anti-Doping Programme 2007. While strategies need to be tailored to the needs of individual coaches, some suggestions are listed in Table 4.

Table 3. Physical, Behavioural, Emotional and Cognitive Signs of Drug Use (adapted from Anshel, 2001).

Physical	Behavioural	Emotional	Cognitive
Bloodshot eyes	Unusually secretive behaviour	Extreme mood swings	Inability to concentrate; confused
Dark circles under eyes	Often late to lessons & training	Irritability	More forgetful
Profuse sweating	Keep to him/herself	Highly emotional & reactive	Thinks others are against him/her
Heightened sensitivity to touch, smell & sound	Often financially 'broke'	Increased aggressiveness or hostility	Denies problems
Chronic fatigue	Irresponsible	Lack enthusiasm	Suicidal thoughts
Trouble maintaining normal body temperature (always feeling too hot or cold)	High risk-taking conduct		
	Change in dress style		
	New circle of friends		
	Marked change in usual conduct (e.g., more argumentative)		
	Chronic physical fatigue		

Table 4. Strategies for Coaches to Combat Doping.

Suggestions for Coaches
<p>1. Integrate drug education and targeted skill development sessions into lesson plans Use variety of 'tools' and communicators</p> <p>2. Provide supportive, fun and safe (drug-free) learning environment Clarify philosophy of 'winning' Develop and publicise Player Code of Conduct policy Be an active/caring listener Identify support professionals and provide referral details when warranted. Encourage peer support group.</p> <p>3. Lead by example Act as responsible role model and mentor. Keep abreast of developments to eliminate doping.</p>

Let's explore some of the suggestions in Table 4, which are predominantly 'preventative' measures, in more detail.

1. Integrate drug education and related skill development topics into lesson plans

Use variety of 'tools' and communicators

A coach has a range of options to facilitate:

- Educating players about drugs - with topics including testing procedures, disciplinary outcomes if a player is tested positive and the medical and psychological effects of drug abuse
- Developing targeted qualities - e.g., self-belief and resilience - conducive to excellence and enjoyment in competing (versus doping)

There is an enormous amount of material available on doping, whether it is on the internet or in publications, newspaper articles or videos. Two excellent websites coaches can access are the International Tennis Federation (<http://www.itftennis.com/antidoping/>) and World Anti-

doping Agency (<http://www.wada-ama.org/en>) sites. In terms of delivering salient information, there is again a variety of options available to allow for interesting and interactive sessions. For example, a coach may select a Q&A format, talk or case study approach. Specifically, a coach might consider discussing with players reported accounts of doping cases (e.g., Tour de France cyclists). Players can be greatly influenced by such accounts, and accordingly, to see how elite performers have had their reputations irreparably tarnished, their careers terminated and/or their health impaired as a result of indulging in drugs may well act as deterrents.

In terms of communicators, a coach can invite guest speakers to address players on, for example, assertiveness (how to deal with peer pressure to experiment with drugs), stress management (coping with competitive pressures) or building self-belief (to alleviate perceived need for drugs). In addition, the benefit of inviting a former top ranked player to address players should not be underestimated. Given they are often role models for aspiring players, former players can deliver a powerful and credible message for a 'zero-tolerance' drug approach to the game.

The key here is for a coach not to necessarily wait for rain or a power surge (to cause cancellation of lessons on the court) to deliver drug education and targeted skill development sessions! Rather, these educational and training sessions are best integrated as integral components in a coach's set of lesson plans.

2. Provide supportive, fun and safe (drug-free) learning environment Clarify Philosophy of 'Winning'

Having a coach put 'winning' in perspective can greatly enhance a player's love of competition, self-esteem and confidence (and help alleviate a player's perceived need for drugs arising from an excessive concern with match results and competitive pressures). In this context, a coach may couch 'winning' in terms of giving 100% effort in practice, training and matches, learning from mistakes and setbacks and enjoying the challenge of fully developing one's abilities. Adopting this 'winning' approach can also help to alleviate a player's 'fear of failure', as 'failure' in this sense only occurs if a player does not try to give his/her best.

Develop a Player Code of Conduct

In addition to the umbrella International Tennis Federation's Tennis Anti-Doping Programme 2007, a coach may wish to develop his/her own Player Code of Conduct policy. Such a policy would detail the boundaries of acceptable conduct for players (and strictly forbid doping). To gain acceptance from players, coaches should personally discuss the policy with them, gain their feedback and inform them of the consequences of non-compliance. Players should be asked to indicate their willingness to comply by signing a written copy of the policy. The Player Code of Conduct should be publicized and available (e.g., posted on a notice board at the coaching venue, a copy sent to players and parents, published in a coach's newsletters etc).

Be a Willing Listener

A willing listener in a coach can be a great comfort and support to a player who may be experiencing some difficulties in tennis or life. Often a coach is the first person a player will confide in with such concerns. As noted above, coaching is not all about hitting tennis balls - sometimes players need a coach to just listen and show they care!

Identify, and Help Players Access, Qualified Support Personnel

While it helps if a coach is a good listener, it is important that a coach understands the ethical boundaries of his/her qualifications. Coaches are generally not qualified medical practitioners, psychologists or counsellors for example. Accordingly, if a coach suspects a player is using drugs (or requires specialist assistance), then the coach should discuss concerns with the player's parents (if player is under 18 years of age) or provide that player with contact details of relevant qualified professionals and encourage (and support) the player to seek professional help. In this context, a well-prepared coach has already

identified a group of key professionals for various potential scenarios and has their contact details on file.

Encourage Peer Support Group

A support group consisting of peers/teammates (and perhaps athletes from other sports) can be an effective forum at which players discuss doping and other general issues of concern. The key here is for the coach to facilitate the formation of a support group which is accepted by players as non-threatening and judgmental and where they feel comfortable to ask questions and listen. Such a group is often most effective if 'informal', with a coach encouraging players, for example, to break at the end of a lesson, gym or training session for a chat and refreshment.

3. Lead by Example

Act as a Positive Role Model and Mentor

A coach can act as a positive role model and/or mentor in leading a balanced and healthy life-style, free of drug abuse. This 'sets the scene' for a coach to further reinforce valued standards in voicing his/her own opinions to players of the importance of sportsmanship, 'fair play' and commitment to training to achieving excellence in tennis. The impact of a respected coach simply stating to players that 'taking drugs is cheating' and 'taking drugs will not be tolerated' cannot be underestimated.

Keep Abreast of Developments to Eliminate Doping

A well-informed coach, who is abreast with the latest information and research findings about doping, provides a respected and creditable source of information for players. Players are much more likely to seek, and accept, a coach's advice if they perceive that coach to be 'current and up-to-date' on the latest developments on doping.

CONCLUSION

Coaches have been under-rated, and under-utilised, resources in combating doping in tennis. It is irrational to believe that tennis players are immune from the temptation or opportunities to take performance-enhancing drugs, especially if it is thought that doing so might provide that elusive competitive edge to reach 'the top'. Accordingly, coaches have a duty to keep themselves abreast of developments in drug education and to assume a proactive role to combat doping. It is hoped that some of the suggestions offered above may be of assistance to coaches who are committed to optimising the health and well-being of both their sport and its players. The saying, 'prevention is better than the cure' is never as valid as the present call for coaches to take advantage of their unique relationship with players to help in the 'crusade' to reduce, and eventually eliminate, doping. There is much that can, and should, be done by coaches to help develop players' skills in the true spirit of the game - one abundant with a sense of fun and achievement but free of doping.

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Increasing Appropriate Fluid Intake for Tennis

Page Love (Nutrfit)

ITF Coaching and Sport Science Review 2008; 15 (46): 15

ABSTRACT

This article highlights the importance in consuming the correct amount and type of fluid for effective hydration and thermoregulation. Identifies 10 top tips to appropriately hydrate during tennis.

Key Words: Hydration, Thermoregulation, Electrolytes.

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IMPROVING YOUR HYDRATION STATUS

At some point, we have all heard, "Drink lots of water!" As the weather gets warmer and on the tennis court it can get downright sweltering-competitive tennis players encounter a high heat index and hot court surfaces. These conditions make tennis players targets for dehydration and heat illness. Water is good for us, but too much actually dilutes your body's sodium levels low enough to increase other medical problems including muscle cramping. So, what is adequate hydration? Target a 10- 12 cup (3-4 liter) training diet base daily either of water or equivalent hydrating beverages. Which beverages are best, and how do they fit into our overall eating plan? Here are some answers.

BEVERAGES AND FOODS THAT COUNT TOWARD DAILY HYDRATION NEEDS



BEST: water, fitness waters, sport beverages, seltzer, club soda, mineral water, flavored waters (As above with Serena Williams)

Very good: 100% fruit juices, lemonade, tomato and vegetable juices low-fat milk

Good: raw fruits and vegetables

So-so: soft drinks (diet soft drinks in moderation), decaffeinated coffee, yogurt

Not so good: caffeinated beverages and alcohol are diuretics and do not count toward water intake (As below with Janette Husárová)



TOP TEN WAYS TO INCREASE YOUR FLUID INTAKE ON AND OFF THE COURT

1. Drink 8 to 16 ounces water-based beverage (water, juice, milk) with every meal and snack

2. Limit caffeinated beverage intake after a certain time of day (for example, 1 pm) and set a reasonable limit on coffee or soda intake (for instance, 1 to 2 cups per day)

3. Substitute decaffeinated tea, soda, or coffee for some of your caffeinated drinks

4. Increase your vegetable juice and milk consumption (2 cups of vegetable juice = minimum 4 vegetable servings per day; 2 cups milk = minimum dairy intake per day)



5. Try carbonated calorie-free fruit flavored waters to enhance your fluid intake

6. Don't be afraid to drink sport beverages on the court; these help to meet both electrolyte and energy needs on the court

7. Keep a water bottle or jug with you at all times (freeze overnight so it stays cool during the day at practices)

8. Pre-hydrate before you go on the court at least 2-3 cups the hour before; Drink until your urine is a pale yellow color

9. Drink at least ½ cup to 1 cup of fluids every 15-20 minutes on the court; drink at every changeover during matches!

10. For recovery, grab a 24 ounce bottle of water or sport beverage as you leave the court to replenish water, energy, and electrolyte needs. If you are a heavy sweater, getting salt in a beverage or food at this time is highly recommended.

Tennis History

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ABSTRACT

In this article, an attempt is made to outline the history of tennis from its beginnings in the early Middle Ages until the 1920s by which time most of the important lawn tennis events such as the Grand Slam tournaments and the Davis Cup had been established. Tennis can be conceived of as having originally been a relative of medieval football, played with similar rules by the clergy in the cloisters of their monasteries. It became a worldly game when young noblemen, who had received their education in these houses of religion, transported it to their castles and there had courts of their own built after a model of the cloisters. By the sixteenth century, commercial tennis venues had come into being catering to the sporting enthusiasm of the bourgeoisie. An offspring of this Renaissance game is modern Real Tennis which continues to be played in Great Britain, France, Australia and the USA. Lawn tennis, invented by an Englishman, Major Walter Clopton Wingfield, can also be said to be a variant of the medieval game is. Its characteristics are much simplified rules and its emphasis on athleticism.

Key Words: Tennis history, Real Tennis, Tennis origins.

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ORIGINS AND EARLY MIGRATIONS

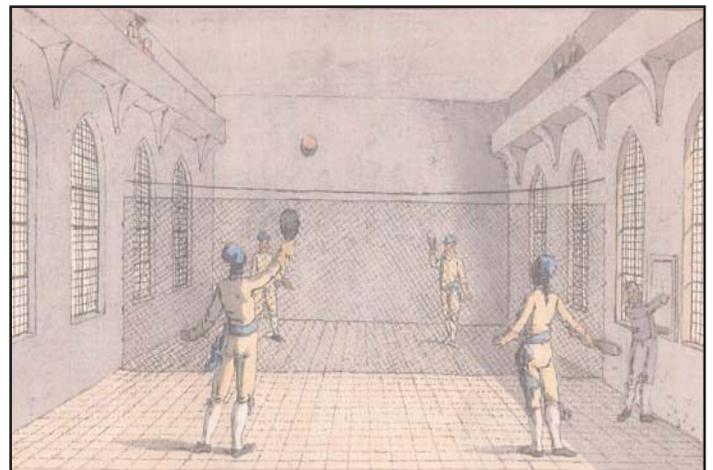
In the absence of other evidence, the origins of European competitive ball games can be hypothesized on the basis of linguistic analysis and by means of early pictorial representations. From a linguistic analysis of sporting terms it appears that the medieval chivalric tournament traditionally staged in front of a castle gate first served as a model for the ancestor of European ball games, football. Tennis, in turn, can be conceived of as a variety of football played by the medieval clergy in the cloisters of their monasteries. Here the openings in the colonnaded walks took over the role of the makeshift wooden gates that can be viewed on early pictorial representations of football in Italy (Padua, Venice) whereas the slanting roofs were indispensable for the service, a feature still characteristic of modern Real Tennis.

The influence of the tournament is conspicuous in particular in sporting terms shared by both medieval football and tennis. The chivalric expression chase, for example, which denoted the attack on the gate reappears in the Italian football of Florence where it came to mean 'goal' (caccia), and in all varieties of traditional tennis the word over where it refers to a disputed point. It eventually even yielded the name for the game itself in Flanders (kaatsen), Friesland (keatsen), 15th and 16th-century Scotland (caich) and the Andean countries Ecuador and Colombia (juego de la chaza).

Medieval tennis was a three (or more)-a-side game in which the ball was struck either on the volley or on the rebound with the palm of the hand (hence its ancient French name jeu de la paume). The racket (replacing an earlier hand protection, the glove) was introduced around the turn of the 16th-century (first mentioned in 1505; first pictorial representation on the frontispiece of a moralizing treatise in French, *Le Cymetière des malheureux*, 1511). Strangely enough, the invention of the net (at first in the form of a line dividing the court) antedated that of the racket as is evidenced in a political poem by the Burgundian court historiographer Jean Molinet (*Le Jeu de Palme*, 1492). Points could be scored by hitting openings in the gallery (the *dedans*), or the winning gallery, the last on the side of the returning party) or the wall (the *grill*), or by winning a chase. Whereas in modern Lawn Tennis the ball is dead after it bounced a second time, in medieval tennis it had to be stopped, after which the spot where it had come to a halt was marked. (From the 16th century, the spot of its second impact was marked.) This was called a chase. Whenever the score was within a point of winning the game (40, originally 45) or

whenever two chases had occurred, players had to change ends to contend the chase or chases. In order to do this, the player who had laid a chase in his opponents' court had to defend it, by preventing the ball of his opponents from being stopped (or, in later times, landing) closer to the rear wall than in the case of his own chase.

According to the testimony of a German monk, Caesarius of Heisterbach, tennis seems to have been known in Paris as early as around the middle of the 12th century. On linguistic grounds, it originated in Picardy in the north of France from where it soon found its way to Frisian settlements further north. That is why in modern times the games of Dutch Friesland (keatsen), of the Swedish island of Gotland (pärkspele) and of Germany's Saterland (played until about 1900, now extinct) constitute the oldest layer of traditional tennis. Of these, the Saterlandic game can be considered the prototype, and the great age of all can be estimated by the absence from them of the traditional scoring method by 15's (possibly based on a French coin used as a wager, the *gros denier*, at first worth 12, then 15 pence; the number sixty being a boundary in the French numerical system). The scoring method is first instanced in the English political poem *The Battle of Agincourt* (soon after 1415).



From France, the game progressed south where in a first wave it reached Italy, Catalonia, the Basque Provinces and Spain. On its way south, and after taking roots in the French Provence (*jo de paumo*), its popular variety must have arrived in Italy by 1610 at the latest when it

was described by Italian-born physician Hippolytus Guarinonius. This type has survived in form of street tennis in Tuscan places such as Vetulonia (palla) and in the village of Tavole in the Ligurian Alps (balun). Of its existence in Catalonia in 1539 we learn from a dialogue in the work of educationalist Juan Luis Vives, and a magnificent illustration of how el joc de pilota valenciana was played in former times in Vives's place of birth has survived in a painting by José Brun Albiñana (1881). The modern game of Valencia goes by the name of les llargues. The pelota games of the Basque Provinces such as bote luzea and lachoa are clearly off-springs of traditional French tennis games whereas the spectacular Basque game of pelota (whence the jai alai of the Americas) is a mixture of these and the French jeu de la courte paume played in covered courts.

From central Spain, no doubt, although there no trace of the traditional game seems to be left, tennis was in a second wave and in the wake of the conquistadores taken to the Americas. After making, like Columbus, an intermediary stop in the Canaries, where it has in recent times been revived on the island of Lanzarote (pelota mano), it has been kept alive by indigenous players in Mexico (Oaxaca; pelota mixteca) and in Ecuador and Colombia (juego de la chaza).

REAL TENNIS - COURT TENNIS (UNITED STATES) - ROYAL TENNIS (AUSTRALIA)

At an early time and, presumably, as a result of the education their sons had received in monasteries, medieval rulers derived the inspiration of having designed tennis courts of their own after the traditional venue in the cloisters. Again the French were in the vanguard. As early as 1316, Louis X died an untimely death as a result of excessive tennis-play. In the Avis aus Roys (Advice for Kings; 1360) tennis was recommended as a suitable pastime for the royal offspring, and the usefulness of the game for peers was emphasized in numerous educational treatises of the Middle Ages and the Renaissance.



Henry VI of Scotland (afterwards James I of England) in his Basilicon Doron (1599) still recommended it to his little son Henry and apparently so whetted his appetite for it that the future Prince of Wales despite tokens of a serious illness in 1612 played an exacting match against Prince Maurice of Nassau, stadholder of the Dutch provinces and champion of the protestant cause, and shortly afterwards died at the age of only 18. The German emperor Ferdinand I had his first court built in Vienna in 1525, and in Italy Milan's notorious duke Galeazzo Maria Sforza (1444-1476) and the d'Este family in 16th-century Ferrara were passionate devotees of the game. A member of the latter commissioned Antonio Scaino to write the first treatise on ball-games including tennis, the Trattato del giuoco della palla (Venice 1555). It is plausible that as time went on not only the

ruling classes but also the second best, courtiers and the nouveau riches should have striven to master the game. It was the universities and entrepreneurs who ran commercial tennis courts (covered from the 17th century onwards) who catered to such ambitions. A special feature of Germany was the so-called Ritterakademie (Knights' Academy) which trained the future courtier after the model of the French galant homme and for this purpose not only employed professors who taught languages and social sciences, but also a tennis instructor. Although the game of the peerage and rich bourgeoisie began to decline towards the end of the seventeenth century and many courts were put to other uses (not infrequently they were converted into theatres) it nevertheless survived in the form of Real Tennis in France (3 courts in 1997), Britain (20 courts), the United States (10 courts) and Australia (4 courts).

The somewhat precarious situation of the game in England at the end of the 19th century is best illustrated by the term Real Tennis itself. This is known to have been used in the 1890's by the Irish lawn tennis-player Harold Sigurson Mahony and reflected the fact that, under the threat of being edged out by the new-fangled lawn tennis, its followers asserted that they were playing the "real" game. After the inauguration of the Irish Real Tennis Association in 2000 (its first championships were held at Bristol and Bath Tennis Club in 2003), the modern sport has now seven national governing bodies. These are, in addition to the Irish association, the Tennis and Rackets Association (United Kingdom; founded in 1907; headquarters at The Queen's Club, London); the Australian Royal Tennis Association (Richmond, Victoria); the Canadian Real Tennis Association (Toronto, Ontario); the Comité Français du Jeu de Courte Paume (Fédération Française de Tennis) (Merignac); the United States Court Tennis Association (Bedminster, New Jersey); and the Dutch Real Tennis Association (The Hague, Netherlands).

There have been world championship games since ca. 1750 (when the championship was held by a certain Clerge of France). From 1928-1955 the title was held by the legendary Pierre Etchebaster of France. The Real Tennis championship is maintained on a challenge basis - the champion retains the title until losing a challenge or retiring. Originally, several years could go by between challenge matches. Today the title must be defended every even-numbered year. The top four ranked players in the world (excluding the champion) play off for the right to challenge. The champion and challenger then play a match of up to 13 sets over multiple days. In theory this is the only match the champion has to play in the two years since winning the last one. The most recent men's singles world championship was competed on May 20, May 22, and May 24, 2008 at the Château de Fontainebleau in Fontainebleau, France (it was the first time a world challenge had been played in France, the country of the game's origin) where forty-year-old Australian Robert "Rob" Fahey won a record ninth consecutive title match, thus surpassing Pierre Etchebaster's record of 8 wins. The next challenge is scheduled for April or May 2010. Real Tennis achieved Olympic status once, in 1908 (winner Jay Gould, USA).

LAWN TENNIS

It is clear from the very title of his outlet, the London based Court Journal, that Walter Clopton Wingfield, a retired major and a personal acquaintance of the Prince of Wales, was familiar with traditional Real Tennis when he announced in the spring of 1874 his new invention, lawn tennis. From the old game its successor retained the basic rules (strokes on the volley and the rebound) and equipment (the net, lopsided rackets) and the obligation of serving from one side only (from a "service crease"), but did away with the too complicated chase rule, walls and galleries and their hazards and, for the stuffed balls of old, substituted air-filled rubber balls. These could of late be manufactured as a result of Goodyear's discovery of vulcanization and bounced sufficiently even on the short-trimmed croquet lawns

adjacent to the English manor, the favourite venue for the new society pastime for a couple of decades.



Wingfield's innovation reached the United States in the year of its invention, 1874, France before 1875 and Germany in 1876 when English visitors experimented with it on the lawns of the Royal Victoria Hotel in Bad Homburg. As from 1875, the Marylebone Cricket Club assumed responsibility for the new game, and by 1877, the first year of The Championship (Wimbledon), its experts had basically given it its present shape which included a return to the original scoring by 15's. In 1888, the English Lawn Tennis Association took over as the governing body. (Its American counterpart, the United States National Lawn Tennis Association, had been founded as early as 1881.) The International Lawn Tennis Federation (ILTF) was set up after the turn of the century only, in 1913, with the US abstaining from joining it because they denied the Wimbledon tournament the title of World Championships. The USA became a member in 1923 when all parties were eventually reconciled by the introduction of the four major events in the game which since the 1930's have become known as the Grand Slam tournaments. Germany, one of the founding members of the ILTF, but at the time banned from the umbrella organisation as a result of the Great War, came away empty-handed in the process.

The world team championships, the Davis Cup, was first contended between the British Isles and the United States in 1900, but contrary to what its inventor Dwight Filley Davis in retrospect told in the 1930's it now seems to have first been suggested by a once famous, but now forgotten lawn tennis pioneer, the American Charles Adolph Voigt in 1896. Lawn tennis was an Olympic sport from the beginning (Athens, 1896), but was as such discontinued for 64 years after 1924. Olympic tennis was reinstated in 1988 (Seoul) after professional players had at last been admitted.



Rafael Nadal winning Olympic Tennis Gold Beijing 2008.

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The psychodynamic approach: An asset for understanding the emotional side of the coach-player relationship?

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ABSTRACT

This paper aims at providing some knowledge for coaches to understand the concept of transference and counter-transference in their relationship with players. It provides some information to deal with emotional aspects of the relationship and analyse what their position implies in terms of relationship. It also aims at bringing a reflexive approach in their coaching and their own implications in the practice.

Key Words: Coach-player relationship, Psychodynamic, Transference.

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INTRODUCTION

Being a coach does not simply imply teaching skills or tactics and providing daily guidance to players. As an educator, a coach often plays an important role within the player environment.

A coach-player relationship is not static in its shape, it evolves with time and often a primary idealisation leads to a more balanced relationship, depending on the role ascribed to the coach in relation with previous identification of the player (mostly parental identifications). Therefore the emotional and affective involvement is the result of an interaction of two personalities and life experiences whose outcomes are unpredictable.

Psychodynamic in sport is a relatively unexplored approach in sport psychology (Conroy & Benjamin, 2001), although it gives an insight of dynamics in interpersonal relationships that could be valuable for coaches to reflect on their own past experience as tennis players and separate their inner wishes from what they expect from the player. In the psychodynamic approach, transference seems to be a valuable knowledge to understand how previous player's relationships with significant others (mostly parents) have an impact on the emotional and affective involvement towards their coaches.

DEFINITION OF TRANSFERENCE AND COUNTER-TRANSFERENCE

The psychodynamic approach encompasses an idea of the human mind based on three elements (id, ego and superego) in constant interaction in thoughts and actions, which has no direct access through consciousness. The ego and the id exist in a state of continuous conflict resulting in unpleasant instinctual impulses, such as anxiety or guilt which seek to find expression via the ego and its various function (Freud, 1923). Conflicts can be observed in repetitions where an individual unconsciously re-enacts aspects of experiences which have occurred in the past with significant figures such as parents and siblings (Strean & Strean, 1998, 2005).

Transference has been formerly defined in the analytical practice as a phenomenon by which a patient displaces on to the analyst feelings and ideas that originate from previous figure in life (Moore & Fine, 1990). However transference arises in a wide range of situations of which the coach-athlete relationship could be one example.

On the other side, counter-transference was defined as the unconscious reaction to a client's transference in the therapy process (Kernberg, 1986). Therefore, counter-transference in coaching can be seen as the coach's behavior and emotional involvement towards the player. These reactions can have both beneficial and harmful

consequences depending on how much knowledge and training on these aspects has been provided (Strean & Strean, 1998, 2005). Without sufficient information on this phenomenon a coach might ignore or deny emotions he/she has for a particular player and fail to establish a necessary working alliance. Strean & Strean (1998) explained that the player's reaction towards the coach is the result of individual life history, fantasy and dream-life, self-image, superego mandates, transferences toward the coach and peers.

WHAT ARE THE CHARACTERISTICS OF THE COACH'S TRANSFERENCE

However transference and countertransference are not utterly similar in the coaching environment and in the therapy context as the coach tend not to be neutral and this increases the likeliness of power imbalances. Andersen (in press) described the "guru" status of the ballet instructor in dance for example, which informs of the power and control that a coach might have over pupils and all the possible excess. Ogilvie and colleagues (1993) stated that these processes might lead to violations of boundaries due to some early emotional deprivation coming from parents and thus leading to explain this "transferential hunger". They added that coaches with "serious emotional or social deprivations in their own lives" were proposed to be at the greatest risk for committing relationship violations with athletes as well. In addition, this is also important in a context that implies a physical closeness due to the nature of sport practice and daily training. Henschen (1991) described how many sports have a normalized physical contact between coaches and athletes (e.g., young female gymnasts hugging adult male coaches) and thus entailing a potential ambiguous closeness with players if the coach struggles to manage these aspects in a positive manner.



HOW CAN A COACH ACKNOWLEDGE AND COPE WITH TRANSFERENCE AND COUNTER-TRANSFERENCE EFFECTS?

Transference produces an idealisation from the player which leads to being called to question when bad performance arrives and too often the player blames the coach's responsibility in his/her failures despite the fact that he/she was praising the same person before.

Therefore the major difficulty for the coach is not to confound the ego-ideal position (which allows a necessary identification) with an object position that requires a reflection on his own history and unconscious drives that lead her/him to the coaching profession.

A beginning of collaboration with a player sometimes revives a personal history of having been him/herself a player. The coach confronts his own success and failures through his/her conscious and unconscious filters. Undoubtedly, being a coach is sometimes a mean to live again the same kind of emotions through somebody else or even sometimes to experience some unravelled emotions when the coach did not fulfil his own goals in the past. It requires a necessary distance over the past to be able to separate his/her own drives and expectations from the player's ones.

The coach's position is quite difficult to handle emotionally for that he/she is not the one on the court, and has to deal with gratification and lack of recognition from the player sometimes. While discussing with a French national coach, he reflected on his relationships with players: "Players are never your objects. We must believe that we played no part in their success. To be able to do that, one should not say that the player succeeded thanks to me, but one should give back to the player the freedom without being sad about that. Sometimes it is hard when I have a player who becomes the world junior champion. My pride would certainly lead me to be in the picture next to him, take the microphone and talk and explain how I trained him for hours but I refused to do that, I leave him alone on the court and stand back because I have no right to steal what belongs to him. What I am interested in, is the relationship we have together; it is the respect, friendship and even some kind of tenderness, but I know that it is all down to him; It has nothing to do with me. We are never disappointed when the relationship comes to an end. When I stop working with a player, we still keep good relations; I put him in a situation where I don't want to be part of his training anymore" (in Huguet, 2006).

The psychodynamic approach gives an insight on how conflicts might occur between a coach and a player. There is sometimes a difficulty for the player to express his desire to train for example with a new coach, and often lead to a sudden break-up that can be misinterpreted by the coach. Lévêque (2005) explained how some coaches see that as ungrateful from the player whereas it is a process of emancipation and a positive move forward in their autonomy.

Managing the transference of the player and his/her own counter-transference is a delicate aspect of the work as the coach needs to possess enough knowledge of it to detect tangible signs and manage his/her own reactions as well. For example, transference can be in a form of a player who constantly looks for trouble and disrupts a training session. Managing transference can be both beneficial and harmful; because establishing a good relationship is favourable to a positive transference and might be ideal to build a necessary trust between them. However, it is problematic if the coach becomes too important, he can ideally replace a parent's role and lead to a certain dependence from the player, which he/she might enjoy as well as it involves a power over the player. Therefore it is necessary that the coach develops awareness of his/her own boundaries, contradictions and inner conflicts to distance him/herself from his/her emotions towards the player.

WHAT ARE THE NEGATIVE OUTCOMES OF IT?

Transference might bring about feelings of love for a coach as a consequence of transference and this can be detrimental if the coach interprets love as a real feeling towards him/her. Transference and counter-transference creates an illusion of being loved whereas it is only an effect of previous identifications and attachments. The obvious outcome is that the coach, in turn, may fall in love without knowing the possible confusion due to transference effects. There are many examples of coaches who broke the boundaries, and it is even more detrimental in younger players.

Another risk might also be that the coach uses too much of his/her charisma and enjoys being in this situation as it satisfies his/her own desire of empowerment on somebody' else (this is called alienation). There is sometimes a desire to make the player in the image of him/herself, to keep him/her in a dependent relationship.

What might also be confusing is to be on an extreme position, while not acknowledging the transference, a coach would eradicate any emotions and closeness to be an authoritarian coach with reluctance to establish a close relationship with his/her player or show any types of emotions. Some coaches might fear this emotional attachment too much and deal with this in a negative manner, thus leading the player to misunderstand this lack of empathy and distant relationship.

CONCLUSION

The use of sport psychology for coaches should not only include awareness of mental skills that one does apply on court with a player. It is important for coaches to have knowledge on the emotional side of managing a relationship with a player and all its consequences. There should be more training provided to coaches to deal with emotional aspects of the relationship and also allowing them to discuss this, rather than feeling guilty about being attached to a particular player. Therefore an acknowledgment of psychodynamic approach could be useful for coaches to reflect on his/her role, involvement and expectations towards a player.

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Key Differences in Beginner and Advanced Tennis Serves

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ABSTRACT

The tennis serve is a complex skill that requires precise control over many movements throughout the body. Tennis coaches that qualitatively analyze serve technique should focus attention on three issues that differentiate between beginning and advanced service technique: how the grip and serve success affect the stroke, overarm coordination, and how consistency of the toss affects the stroke.

Key Words: Biomechanics, Service, Technique.

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INTRODUCTION

The tennis serve is a complex skill where players have to learn to consistently and precisely control numerous joint movements throughout the body. Notice the server below must control seven major anatomical rotations just to hit a serve using arm action alone (Figure 1). Coaches have the difficult task of observing and qualitatively analyzing the serve (Knudson & Morrison, 2002). This observation, evaluation and diagnosis of technique are difficult because of the speed and complexity of the serve. Over 25 years of experience teaching and doing research on the biomechanics of tennis has lead me to conclude that there are three important issues that differentiate the serve of a beginner and the advanced tennis player. More detail on the biomechanics of serve technique is available (Knudson, 2006; Knudson & Elliott, 2004).



Figure 1. The seven major upper extremity joint rotations to control in a tennis serve.

CONSTRAINTS OF SUCCESS AND THE GRIP

Beginning players acutely feel pressure to get the serve in the service box. Most players will use an eastern forehand grip to more easily hit the ball on the strings. In early practice this grip encourages a push or pat technique that is not like the advance, throw-like technique (see next section). Another common problem occurs with extended practice using this grip and relatively poor striking coordination. Over time the natural axial rotation of the trunk and need for spin on the ball encourages the player to use a more sideward racket path through impact. Note how this indirect path through the ball ineffectively creates slice spin at a great cost of lost racket speed, and consequently ball speed, down the middle of the court (Figure 2).

Coaches working with developing players should help athletes quickly transition to a continental grip. They can also help by focusing their attention on the feel of correct service technique and racket paths through the ball. If dedicated practice can be focused on these issues and less on how many balls are going in or hit the target, the player will likely improve more quickly and reach higher levels of service performance. Many players of all skill levels attempt to self-diagnose and can incorrectly attribute ball placement or other serve outcome to one technique factor. Technique and coordination issues in tennis are rarely that easy.

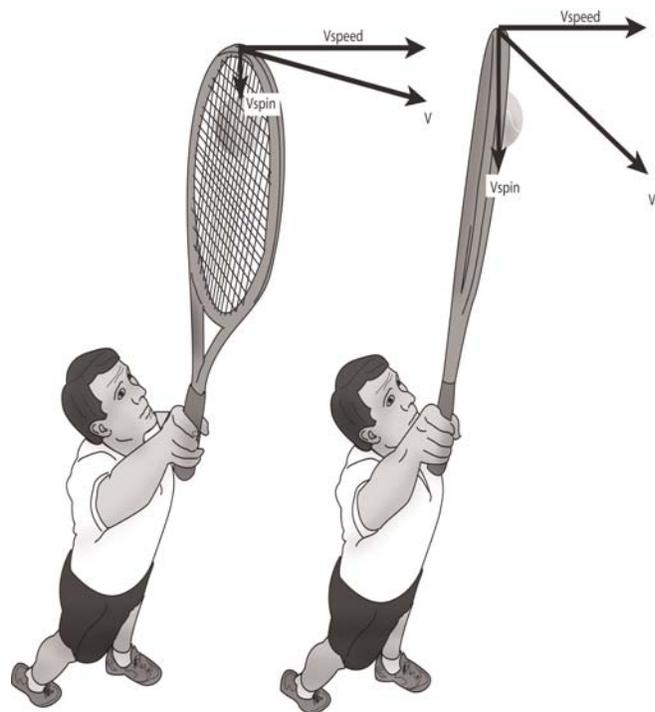


Figure 2. A skilled server (left) uses an angled racket at impact to create spin and a direct racket path through the ball to maximize ball speed, while the beginner tends to swing sideward to create spin, reducing the ball speed into the court.

CONTINUUM OF COORDINATION

Controllable racket speed depends on a mature or skilled overarm fundamental movement pattern. The development of this coordination pattern progresses from a simultaneous/push-like pattern to a sequential/throw-like pattern. Early Kinesiology research reported that many young people and adults essentially stop in their coordination development before the mature or skilled level. This was quite common in young girls when they were discouraged from participating in vigorous overarm sports.

Tennis coaches should know that advanced serve technique will depend on the player's ability to create a sequentially coordinated overarm pattern. The sequential movement from the ground up transfers energy from the large muscles and segments of the lower extremity and trunk to the arm and racket. Controlled high racket head speeds are not possible without this kind of coordination and precisely timed long axis rotations of the trunk and arm. Since many of movements are very fast it is recommended that coaches use video replay to extend their ability to observe the subtle coordination of the trunk and arm in the serve. See Knudson (2006) for more details because there is individual variation in the subtle combinations of joint rotations in advanced servers. It would not be true to assume that all advanced players have a perfectly sequential of axial rotation of the hip, upper trunk, arm, and forearm.

CONSISTENCY

All tennis players struggle with consistency, but in general the amount of inconsistency in serve technique decreases with increasing skill. One of the great challenges of the serve is to create a consistent toss that allows the ball to be intercepted by the racket at a high point in its trajectory and speed. While advanced players work on refining consistency to disguise different spin serves, the beginner must focus on height and general placement relative to the body.

All players tend to have the toss drift away from the target area over the hitting shoulder because of the rotations of the tossing arm about the opposite shoulder. Few tennis authors have bothered to note how difficult it is to rotate so many body joints early in the serve and create essentially a vertical ball toss. Most beginners have an inconsistent toss that is too low. Low points of impact can limit the striking action of the racket arm, decrease margin for error, and speed that the ball can be hit. Low impact points also encourage beginners to use an open racket face at impact to get the ball in the service box. This also adds to the problem of learning a good throw-like sequential coordination of the arm, often described in tennis as a vigorous forearm and wrist action. Advanced serving technique results in near horizontal projection of the ball (Figure 3).

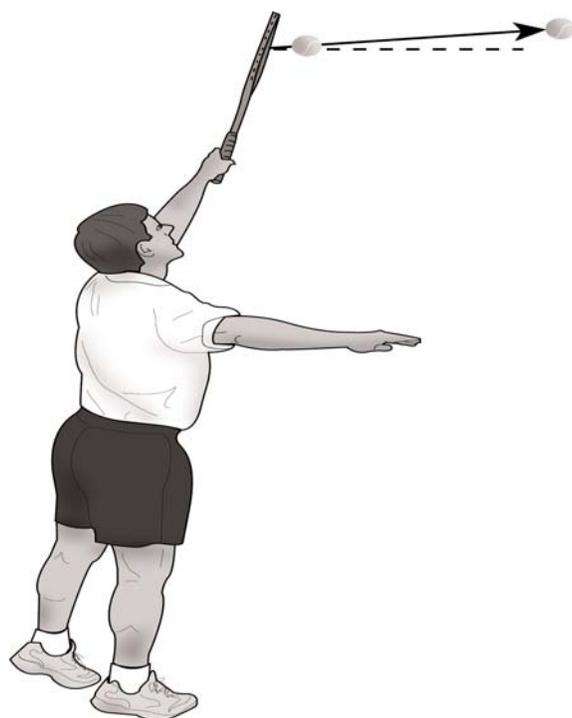


Figure 3. Advanced serves are hit aggressively and close to horizontal (as illustrated), but beginners have to hit the ball upward because of low impact points and slow racket speeds.

CONCLUSION

In summary, there is considerable biomechanical and developmental research that indicates that sequential coordination of the whole body is necessary for peak overarm throwing and striking. Research supports the theory that the forward and axial (twisting) rotations of the trunk and upper arm are most important in creating hand/racket speed (Bahamonde, 2000; Hirashima et al., 2008; Naito & Maruyama, 2008). Tennis coaches can help players improve their serve by using their knowledge of the skill, but also focusing getting players to use the right grip, develop more skilled sequential coordination, and focus on consistency of technique rather than the immediate result.

NOTE

Figures from Biomechanical Principles of Tennis Techniques with permission from Racquet Tech Publishing.

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Play and Stay or Play and Go?

James Newman (International Tennis Federation)

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ABSTRACT

This article uses the Sport Commitment Model (Scanlon et al., 1993) to investigate what factors affect the retention of recreational tennis players in programmes and the sport in general. A special emphasis is put on defining Sport Enjoyment, it's sources and it's role in increasing Sport Commitment.

Key Words: Sport commitment, Enjoyment, Participation, Retention

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"When you're a kid, you're a little bit of everything: artist, scientist, athlete, scholar...sometimes it seems like growing up is a process of giving those things up, one by one" - Kevin Arnold, The Wonder Years

INTRODUCTION

Whilst overall tennis worldwide continues to grow, especially in regions like Asia and Latin America, research done in 2003 in a major tennis nation showed that, 70 million people nationwide had tried tennis and over 97% had 'no interest' in playing again (TIA, 2003). This statistic is indicative of the challenge facing many mature tennis nations who, whilst continuing to attract reasonable numbers of players to the game, are struggling to retain them, and in some cases are losing as many, if not more.

Last year saw the launch of the ITF's Tennis...Play and Stay campaign, which aims to improve the first experiences of starter players in order to retain more players in the sport.

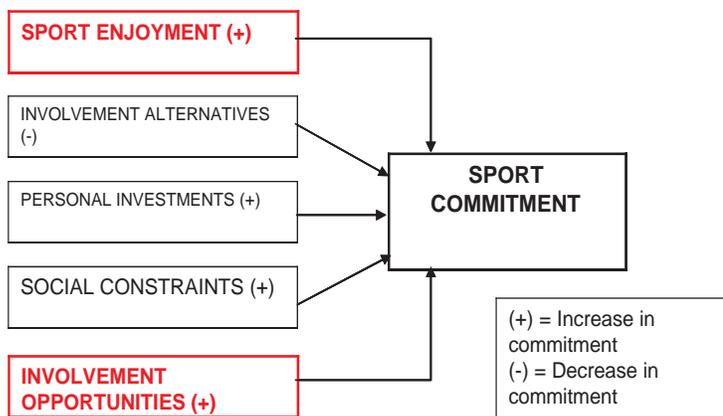
This article describes the sources of sport commitment and enjoyment, to offer readers insight into why players Play and Stay or Play and Go.

WHAT IS SPORT COMMITMENT?

Sport commitment has been defined as "a psychological construct representing the desire and resolve to continue sport participation" (Scanlon et al., 1993; Scanlon & Lewthwaite, 1986). Sport Commitment is a strong predictor of participation.

THE SPORT COMMITMENT MODEL (CARPENTER & SCANLAN, 1998; SCANLAN ET AL., 1993B)

The Sport Commitment Model highlights factors that influence how committed an individual is to their sport or programme.



INVOLVEMENT ALTERNATIVES

Examples: Other sports, non-sport recreational activities

Brief Description: The strength of alternative activities, instead of participating in tennis

More: Higher (or more) involvement alternatives leads to lower Sport

Commitment. Children often have very high involvement alternatives (football, basketball, hockey etc). Adults generally have less alternatives but also have less free time.

How can this factor be affected: It is not possible to directly affect this factor, however coaches can make the alternatives less attractive by growing 'Involvement Opportunities' (below).

PERSONAL INVESTMENTS

Examples: Time, effort, money

Description: The 'personal resources' put into the sport, which cannot be retrieved if participation ends. The greater the personal resources invested - the greater the Sport Commitment. Starter players are the most fragile under this factor as they are most likely to have low personal investments (ie they have not put much time, effort or money into the sport).

How this factor can be affected: Key for coaches is to maximise personal investment by improving mastery and social opportunities. Those who have committed time and effort and gain a group of friends and ability to rally - will have greater Sport Commitment than those who invest the same time and effort but do not experience a positive social environment or develop skills to play the game.

SOCIAL CONSTRAINTS

Examples: Perceived parental or peer pressure, only way to see friends

Description: External pressure on an individual to continue performance. The greater the pressure the higher the Sport Commitment. This factor can be negative to the individual (e.g. parental pressure) or non-harming (e.g. attending to see friends).

How this factor can be affected: Coaches should identify players under negative pressure to participate and, where appropriate, address the source of the pressure.

INVOLVEMENT OPPORTUNITIES (IMPORTANT)

Examples: Mastery, socialising, health benefits

Description: Opportunities available only through participation in the sport/coaching programme. The greater the perceived opportunities by the individual, the higher their Sport Commitment.

How this factor can be affected: Recreational players want to play tennis. Coaches who use a game-based approach and, where necessary slower balls, smaller courts and shorter rackets, give players more chance to play the game and be more physically active, rather than more technical-directive approaches focused on closed execution (form) rather than ability to play (function). Clubs should also be friendly, active and comfortable environments that promote social interaction as a major factor of playing tennis.

SPORT ENJOYMENT

Sport enjoyment is the biggest determinant of Sport Commitment and continued participation. Those higher in Sport Enjoyment have higher Sport Commitment, and vice-versa.

A recent presentation discussed the 'fundamentals', and reflected

that many lessons could provide the 'fun' but not 'damentals'! An important point is that fun alone may not be sufficient to improve or retain players. It is important to recognise that whilst enjoyment can be defined as "a positive affective response to the sport experience that reflects generalized feelings such as pleasure, liking, and fun" (Scanlan et al, 1993; Scanlan & Lewthwaite, 1986), it also encompasses feelings of mastery (McCarthy et al, 2007).

SOURCES OF SPORT ENJOYMENT

(Carpenter & Scanlan, 1998; Casper, et al., 2007; McCarthy & Jones, 2007; Scanlan et al., 1993; Scanlan & Lewthwaite, 1986)

Intrinsic

Source	For	How to affect
Demonstrating mastery (attempting and performing skills)	Children and Adults	Increase player's feelings of mastery by assisting in the learning of many skills and by creating situations for starter players to play the game from early on (i.e. serve, rally, score from the first lesson). When starter players experience success playing the game, they may feel a strong sense of mastery.
Demonstrating superiority (showing higher ability than others)	Children (age 4/5 and above) and some adults	Coaches can try to ensure all players get a chance to succeed in some element or exercise in the session.
Excitement and challenge	Important for all ages	4 ways coaches can provide excitement and challenge are: <ul style="list-style-type: none"> - Set goals/targets in practice - Create dynamic but relevant activity - Vary exercises - Provide optimal challenge
Physical sensations and exertion	Very important for all ages	Young children need lots of activity (with appropriate rest). Coaches should avoid lines and include off-court activity stations when rotating players on and off court. Adults are also motivated by being active for significant periods.

Extrinsic

Source	For	How to affect
Encouragement and social recognition of competence/achievement	Strong for children and some adults	Coaches should provide players, especially starters, with lots of appropriate praise and encouragement to build confidence and enjoyment.
Instruction, Direction, Organised Activity	Older Children and Adults	Tennis coaches can provide a logical, structured but flexible programme aimed at enjoyable progression – not aimless fun or strict teaching
Social interactions (friendships)	Important for all	Coaches and clubs should provide opportunities for players (especially adults) to make friends and socialise. Ideas such as: assigning a 'buddy' to new members, providing a free drink in the café after each lesson and organised excursions will add to the social bonds that increase enjoyment
Positive coach behaviour	Very significant to all	Coach behaviour that is positive, encouraging, and instruction that is clear but not dictatorial, is a major source of Sport Enjoyment

SOURCES OF SPORT NON-ENJOYMENT (MCCARTHY & JONES, 2007)

Intrinsic

Source	For	How to affect
Demonstrating low competence	Very significant to children and adults	Optimal Challenge is when players succeed around 75% of the time, non-optimal is where they succeed/fail all of the time. Coaches must adapt the activity to suit the player to ensure they can achieve sufficient success

Extrinsic

Source	For	How to affect
Over-involved parents or negative parental feedback	Children only	Download and give out this guide to parents
Low informational and emotional support	Significant to children and some adults	Provide clear instructions or descriptions of what you expect players to do and provide encouragement and support

Over-emphasis on competition	Mainly children	Coaches should emphasise performance and not results in competition. Provide awards for best effort, sportsmanship etc and set process and performance goals to provide achievement outside of match results
High standards	All ages	Optimal challenge and differentiation are tools to ensure players enjoy playing and learning. If the activity is too hard or coaches get frustrated at a player's inability – players will not enjoy playing
Negative feedback or low reinforcement	All ages	Starter players need regular, positive reinforcement and feedback. Generally, the amount of feedback reduces with the experience and ability of the players. Coaches should give constructive/corrective feedback, rather than negative
Opponent standard is too different to own	All ages	All players should have an International Tennis Number (ITN) that rates their ability. When all players at the club have an ITN, it is simple to group players of a similar ability. See www.oncourassessment.com

A NOTE ON AGE

Though the Sport Commitment model is relevant to both adults and juniors; children (especially those in the sampling phase of 7-12 years) have limited control over sport participation, and an extra factor of 'parental influence' exists.

CONCLUSION

Sport Commitment is directly related to retaining players in sport. Coaches and administrators aware of the factors that affect sport commitment can manipulate their programmes to increase player commitment and retention. Sport Enjoyment is the most significant source of Sport Commitment. Often 'fun' and 'enjoyment' are used as throwaway terms. Research has shown that 'mastery', 'effort', and 'competence' (Scanlan et al., 1993; Scanlan & Lewthwaite, 1986) are strong predictors of enjoyment. This lends some support to campaigns such as the ITF's Tennis...Play and Stay, which promotes the use of slower balls with starter players to enable them to play (begin mastering) the game from the first lesson.

Action Points

1. Write down 3 ways you can increase 'Involvement Opportunities' in your club, programme or coaching
2. Choose 3 sources of sport enjoyment and non-enjoyment. How can you maximise enjoyment and counter non-enjoyment in your coaching?
3. Commit the ideas to paper then to your coaching programme

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ITF LESSON PLANS FOR BEGINNER PLAYERS: LESSON 5

Level of player: Beginner (ITN 10.3 to ITN 8).

Game situation: Rally from the baseline

Tactical theme: Keeping the opponent at the baseline by hitting the ball with depth.

1. Tactical theme 1: 1. Hitting the ball, 2. Placing it over the net, 3. Inside the singles court

2. Tactical theme 2: 4. Directing to the left side deep, 5. Directing to the right side deep. 6. Directing to the middle deep

Technical themes:

1. Preparation
2. Generally low to high forward swing
3. Contact point
4. Usually long and smooth follow through

Number of players: 8

Equipment: Red, orange, green (transition) and regular balls and 23 in. and 25 in. racquets according to the level of the players (ITN 10.3 to ITN 8). **Courts:** Recommended to set up red, orange, and regular (green) courts.



DRILL 1-OPEN SITUATION

Goal: Players to play points with ground strokes from the baseline with the intention of keeping your opponent on the baseline by hitting the ball with depth.

Methodology: Point play.

Player organisation/positioning:

- ITN 10-10.3: Create 4 mini-courts (red 'play tennis' courts and balls) using the court width. 2 mini-courts in each side of the net, Have 2 players playing in each mini-court.
- ITN 8-9: Use the full court with orange or green 'play tennis' balls. Have 4 players on each side of the court. They play in pairs down the line. 2 pairs play close to the doubles tramlines and the other 2 closer to the centre of the court. Depending on their level, they start serving from closer to or further away from the net.
- Other options: 12 metre or 18 metre courts can also be set up (orange 'play tennis' court).

Player rotation: Set a zone in which the ball should bounce to be considered a deep ball. After 5 baseline points or according to a given time (for e.g. 2 minutes), winners move up one court and losers move down one court. When using a full court winners can play winners and losers play losers. Try to make sure that everyone gets a chance to play against each other.

Coach analysis and diagnosis points: Check players' overall attitude (mental), consistency and ball depth (tactics of keeping the opponent at the baseline), movement around the court and around the ball (condition), and racquet skills (technique).

DRILL 2-CLOSED SITUATION WITH BASKET FEEDING

Progression 1a (Technical themes):

Goal: Players to practice the fundamental technique of the groundstrokes to hit the ball with depth.

Methodology: Use self-feed, partner hand or racquet feed, or coach feed.

Create stations: Use self-feed, partner hand or racquet feed, or coach feed. Create stations adapted to the players' level: Station 1, Place racquet with correct contact point and make contact with fed ball, Station 2, Start with the racquet in the same position as station 1 but make contact with fed ball and perform a smooth and long follow through, Station 3, Start the racquet already in the preparation phase and then make low to high forward swing, contact, and smooth and long follow through, Station 4, Start from ready position and impact with fed ball into the court. Station 5, Impact the ball and direct it deep to the left and the right side.

Player organisation/positioning:

- ITN 10-10.3: Use 4 mini courts (red 'play tennis' courts), having each mini court have one station, the rotation is completed per court ensuring each player gets to practice at each station.
- ITN 8-9: Use full court but with two mini courts (half court down the line), starting with the two first progressions, and then progressing to the next two progressions once everyone has completed the same number of repetitions (orange or green 'play tennis' balls can be used). The players start in the court relative to their level of play. They can start on the service line and then move back.

Player rotation: The possible rotations include the following:

- 1, Certain amount of time
- 2, Certain number of repetitions
- 3, Number of successful ground strokes, technical or tactical
- 4, Certain amount of points played

Coach analysis and diagnosis points: Ensure the players practice both the forehand and the backhand strokes at the same time and in the same quantity and that they direct the strokes deep to both the right, left sides and middle of the court using zones, targets or cones previously decided by both the players and the coach.



ITF LESSON PLANS FOR BEGINNER PLAYERS: LESSON 5

Progression 1b (Tactical theme):

Goal: Players to practice the fundamental tactics of the baseline game emphasising the tactics of keeping the opponent at the baseline by using ball depth.

Methodology: Use self-feed, partner hand or racquet feed, or coach feed. Create stations adapted to the players' level: Station 1, Hitting the ball (consistency), Station 2, Placing it over the net (height), and Station 3, Inside the court (direction), Station 4, Hitting the ball with depth.

Player organisation/positioning: Same as above.

Player rotation: Same as above.

Coach analysis and diagnosis points: Make sure the players begin to understand how to use the tactical concept of ball depth from the baseline and how they relate to the groundstrokes (i.e. direction and racquet face position, height and racquet path trajectory, etc.).

DRILL 3-RALLY WITH COACH

Goal: Players to practice the fundamental tactics of the baseline game using their groundstrokes in a rally situation with their coach to apply the tactics of keeping the opponent at the baseline by hitting the ball with depth.

Methodology: Players rally with the coach.

Player organisation/positioning:

- For ITN 10-10.3 using 4 mini-courts (red 'play tennis' courts), players serve or start the rally with an underarm serve with the coach playing on one of the courts, and with the extra player possibly picking up balls, or doing a physical activity, keeping the score, creating a station that they will be able to practice their ground stroke consistency (i.e. against the fence/wall or hit into a target). After 5 points, they get together to discuss theme of the lesson. The side of the coach should start the rally/point.

- ITN 8-9 using 2 mini-courts, coach and players rally down the line (using orange or green 'play tennis' balls). Putting the players into two groups of 4, (with the coach making the 4th member in one of the groups). The 8th player or spare player could be doing a physical exercise or picking up balls, or an activity that relates to the theme of the lesson.

Player rotation: Same as above.

Coach analysis and diagnosis points: Make sure the players begin to apply the basic tactics of keeping the opponent at the baseline by hitting the ball with depth from the baseline using their groundstrokes.

DRILL 4-OPEN SITUATION WITH POINTS

Goal: Players to practice the fundamental tactics of keeping the opponent at the baseline by hitting the ball with depth using their groundstrokes in a rally situation with their peers.

Methodology: Players rally among themselves.

Player organisation/positioning: Players play points relative to their playing level and court size i.e.

- ITF 10-10.3: 3-4 mini-tennis courts

- ITF 8-9: Using half court. They could progress to using full court but having good rotation and using either orange or green 'play tennis' ball.

Player rotation: Same as above.

Point/scoring system: The following formats can be used:

- Individual scoring: Number of ground strokes in the 'deep zone'.
- Team/pair scoring: Number of ground strokes patterns in the 'deep zone'
- Other options: Number of times players adopt a correct preparation, contact point, and impact the ball with the strings.
- Individual points
- Extra points given for tactical (keeping the opponent in the baseline by hitting the ball with depth) or technical proficiency
- King of the court

Coach analysis and diagnosis points: Make sure the players begin to apply basic tactics (keeping the opponent at the baseline by hitting the ball with depth) from the baseline using their groundstrokes.



A Global Look At Top Player Development

Doug MacCurdy (ITF expert, USA)

ITF Coaching and Sport Science Review 2008; 15 (46): 27- 29

ABSTRACT

This article looks into worldwide player development and provides case studies and examples of nations programmes and structures. Countries are assessed according to particular performance criteria and from this a judgement can be made into how successful countries are at developing players.

Key Words: Development, national association.

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AN INTRODUCTION

The first thing a player needs to succeed in the world of professional tennis is a lot of talent. You need to be a fine athlete that is in good physical condition. You also have to be a phenomenal tennis player, which means that you have good technique, superb timing, split-second decision making abilities, tactical awareness, and mental toughness and control. Relatively few players possess this entire package that a potential top player needs to bring to the table.

Athletes with the potential to become top professionals can be born almost anywhere.

A nation's success in international tennis is, at best, difficult to define. Among the measurements that could be considered are:

- Numbers of top ranked players
- Success in Davis Cup and Fed Cup
- Players winning major championships
- Numbers of top players, taking into account the tennis population and the total population in a country
- Good juniors in the pipeline
- A trend of moving upwards rather than downwards in all of the areas mentioned above

EUROPE

Looking at the current tennis landscape, some pieces in the top player development puzzle are fairly clear, while the pathways that successful players follow can be quite variable. Approximately 80% of the top 100 male and female players are from Europe.

In men's tennis, the other 20% come primarily from South America and the USA. In women's tennis, about 20% are from the USA and Asia. Obviously, there are a few top players that do not fall into these national and regional categories.

The success of European tennis should be viewed from a continental perspective, as well as in individual countries. If a country has one top player, but very little depth, it can be largely a matter of good fortune. It is even better fortune if there are two top players. A nation can win the Davis or Fed Cup, and appear to be a dominant force in tennis with just two top players. However, taken collectively, there is little doubt that European countries are producing the vast majority of top players.

Some visionary planning helped European tennis achieve its current status in the world game. In the 1970s, the European Tennis Association was formed. There were a number of reasons that 17 national associations felt that a body representing European tennis interests would be helpful. Some of the reasons were of a political nature and others related directly to excellence in the game. Throughout the 50s, 60s and into the 70s, the game had been more or less dominated by Australia and the United States. The first US Open was played in 1968. Half of the men's draw consisted of American players, and a whopping 80% of the women's draw were American players.

A desire to change the status quo was certainly a wish of the ETA. The concept of developing a "nursery" for young European players in the form of tournaments was embraced. The annual ETA coaches' symposium was created for national technical directors to exchange ideas on best practices. These beginnings have helped shape today's situation. Tennis Europe (formerly ETA) now has 49 member nations.

Some of the elements currently in place in Europe are:

- A huge number of competitive opportunities at all levels.
- Extensive clay court training and competition. Most countries have found ways to have many of their best players training and/or competing with each other on a regular basis.
- The average level of coaching is very good.
- The system of clubs is very good. Many encourage serious junior excellence programs.
- In Eastern Europe, many see tennis as the road to a possibly better life and are willing to uproot and take risks. The environment in Eastern European tennis clubs is usually very competitive. Winning matches is the main goal. Talent identification is used extensively. The emphasis tends to be on quality rather than quantity.
- Tennis is attracting very good athletes.

Later in this article we will examine some of the factors in individual countries that are currently experiencing considerable success.

PATHWAYS AND FINANCING

There are numerous pathways that a player might follow to reach the top. All of them require an infusion of money. The question of who pays the bills needs a multi-faceted answer. Listed below are a series of possibilities. It should be noted that there is frequently a combination of these funding sources in play:

- The national association may have a national training center, and, possibly, regional training centers where players can develop. Selected players are generally trained for free or at low cost. Most, but not all, European countries have some sort of national training center. Overall, around 80% of European players have spent at least part of their formative years in a system run by their national associations. Nearly all national associations provide some funding for top prospects to compete internationally.
- The family is often the primary source of funding. The problem with this system is that only a low percentage of families can afford to cover all the bills. In effect, the economics of this situation make the pursuit of excellence out of reach for the vast majority of the population, so international tennis is not a very viable option. Furthermore, if the talent pool is based on the low percentage of the population that can afford to pay, a country will be missing out on most of the best athletes.
- Management companies and some equipment companies will sign particularly good prospects. In at least one case, a management company represents players, runs training academies, owns tournaments and controls some aspects of the tennis media. A substantial contract can give the player the financial peace of mind to concentrate on getting better.

- An individual or a group of backers may advance the required funds as an act of goodwill, an investment, or as a loan (high risk).
- Commercial academies may offer scholarships to outstanding young players.
- Individual coaches may offer coaching at little or no cost in return for a contract based on a percentage of future earnings of the player.
- A small group of players may hire a coach making the training more affordable.
- A parent may serve as the coach.
- Some players will play American college tennis for one to four years rather than try to play professional tennis at age 18. Recent examples of players that have competed in college and then launched highly successful professional careers are James Blake, and Bob and Mike Bryan.

Clearly, cost plays a major role in top player development. However, it should be noted that there is a fairly fine line between offering hungry players reasonable opportunities and providing so much that opportunities are taken for granted.

INDIVIDUAL COUNTRIES

What follows is a list of some of the countries that are currently producing a good supply of top players. Information has been obtained through a variety of sources, some that work directly with national associations and others working independently. While there is no attempt to make an in depth analysis of the systems in each country, a few factors are listed for each one.

Spain (ESP) - Population c.40 million

- One of the very best countries for depth and excellence in men's tennis. Women's tennis is also of a high standard (Fed Cup finalists in 2008).
- There is a National Training Center (NTC) for player development. The number of players at the NTC is usually around 8-15. It is a live-in center.
- There are 17 regional centers.
- Medical support provided by the national association (NA) is excellent.
- There are a lot of private tennis academies. Some are quite big and others are small. Many of them have mostly foreign players, particularly from Russia and other Eastern European countries.
- Very often, players organize themselves in teams of three or four and hire a coach to work with them. It is also common that the group may hire a fitness coach as well.
- It is difficult to say what percentage of players are direct products of the NA. The number of players in the NTC is fairly low. Nearly all players are "under the umbrella" of the NA through grants, training camps, tournaments etc.

Spain has created an excellent environment for player development. The level of coaches' education is very good. There are many, many competitive opportunities. The vast majority of tournaments are held on clay courts, although players frequently train on hard courts to provide a balance. The weather conditions are nearly ideal. The NA is not particularly wealthy, but it is effective.



Spain Davis Cup Champions 2008.

Czech Republic (CZE) and Slovakia (SVK) - Population c.10 million in CZE; c. 5 million in SVK

- Formerly CZE and SVK formed one country - Czechoslovakia
- Both have a strong history of excellence in tennis,
- The Czech/Slovak system served as the model for the former Soviet Union programs. Czech/Slovak coaches were hired as national coaches in many European countries.
- Two NTC's in CZE - one in SVK. Some players live at NTC, others do not.
- 14 regional training centers in CZE; 5 in SVK. About 85% of the top players are developed through NA programs.
- Private sponsorship for individual promising players is fairly common and becoming more so.
- Clay is the predominant outdoor surface.

Serbia (SCG) - Population c.10 million

- There is not a NTC at this time. NA uses some courts at clubs on a rental basis for training. The NA has recently acquired land to build an NTC and is working on trying to find funding for it.
- The NA does not give grants for private coaching. Nearly all of the players develop privately.
- There are many tournaments in or nearby to Serbia. A developing player could compete in tournaments 30 weeks a year within six hours drive from home. One could reach the top 150 ATP/WTA playing only in tournaments that are within this driving distance.
- Sponsorship of good prospects by companies or individuals is very rare.
- Clay is the predominant surface.

Tennis is currently attracting many of the best sports talents in the country. The sport is attractive and appeals to a slightly higher socio-economic group than soccer.

Coaches are extremely motivated to produce results. Quite a few of the players train in academies outside of Serbia.

Croatia (CRO) - Population c. 4.4 million

- There is a NTC that both juniors and adults can use. The NA program is very small. Private coaches can use the NTC on a rental basis and do so often. They use it to have court time and to get practice matches for their players.
- The NTC is also used for almost continuous tournaments during the winter months. Like Serbia, there is a massive number of competitive opportunities at all levels within easy reach.
- Some clubs, most notably one in Split, have a great tradition of developing top players.
- Clay is the predominant outdoor surface.
- Coaches are extremely motivated to produce results. Quite a few of the players train in academies outside of Croatia.

France (FRA) - Population c.63 million

- Probably has the most sophisticated system of player development in the world.
- There are five NTC's for both junior and professional players.
- In recent years, private coaches can work with players at the NTC's.
- There are 30 regional centers. Each one usually has a head coach, assistant coach and a physical trainer.
- Until age 12, virtually 100% are developed through the NA system that reaches down to club level. For boys around age 16, 90% are directly in the NA program. For girls of the same age, about 50% are in the NA program. Most of the training is in small groups or teams.

France has an excellent system of coaches' education. The facilities are very good throughout the country and the tournament structure is superb at all levels.

Russia (RUS) - Population c. 140 million

- Russian tennis players have become among the most successful in the world.
- Once tennis became an Olympic Sport in 1988, things began to develop quite rapidly. There were many government-supported tennis centers where players would train. From the beginning, talent identification and elimination for lack of talent has been a cornerstone of the system. The coaches in the centers were well educated in the sports sciences and quite adept in teaching technique.
- Today most of these tennis clubs still exist. Players are selected at a very young age, around five or six. Coordination, reaction speed and agility are stressed. Technique is emphasized in the early stages.
- The number of tennis courts and tournaments has grown a great deal in recent years. Some young players stay in Russia once they begin to show real promise. Due to much greater competitive opportunities, far better weather and practice conditions elsewhere, many leave the country to try to launch a tennis career. Western Europe, particularly Spain, and the USA. Private sponsorships by wealthy individuals are common.
- Clay is the predominant outdoor surface in Russia.
- Several of the now independent former Soviet republics have also produced world-class players, generally following the same system.



Russia Fed Cup Champions 2008

Due to space limitations it is not possible to go into detail about more European nations. However, it would be a huge omission not to mention several other European countries that have been extremely successful. Countries such as Sweden, Germany, Switzerland, Italy, Belgium and Holland have had players at or near the top of the game over the past 25 years. Again, when Europe is taken as whole, it is the dominant region in the production of top players.

Argentina (ARG) - Population c. 40 million

- NA has a significant junior development system based primarily on providing competition. There is a huge amount of domestic junior competition.
- NTC offers only a part-time live-in situation for a limited number of players. Approximately 80% of the successful players train with private coaches and academies.
- NA pays for junior travel for circuits in South America (COSAT), Europe and the USA.
- There is a group of private investors that are sponsoring 8-10 promising players.
- Clay is the predominant surface.

GRAND SLAM COUNTRIES

Along with France, the other Grand Slam nations, Australia, the United States and Great Britain, have storied histories and have produced many of the very best players. For years Australia and the USA more or

less owned the world game. Great Britain has also had top players but has been somewhat overshadowed by the success of other European nations.

The United States remains a power in the game, winning the Davis Cup in 2007 and the Williams' sisters winning two of the Grand Slams in 2008. The 14 and 16 & under boys' and girls' also swept the ITF junior team competitions for the first time in history. The concern, frequently voiced by officials, the media, and former players is a much lower number of marquee players in the pipeline than there was in the past.

Australia is in the same boat. There are a lot of good Australian players, but not the stars that the public is so used to having.

Great Britain has yearned for a Grand Slam champion since Virginia Wade won Wimbledon in 1977 and a few players come fairly close to doing so.

CONCLUSIONS: NOW AND TOMORROW

I think that there are some simple points to be taken from these countries:

- Past success and tradition are helpful but player development systems must anticipate what will be necessary to succeed in the future. An illustrious past, and extremely high expectations, can combine to create a negative atmosphere that can affect upcoming players.
- Good athletes that hunger for success are a must. Some struggle often makes them stronger. If they receive opportunities to become better players, they must take full advantage of them.
- There seems to be a relationship between early training on clay and eventual success. Obviously, there are many exceptions to this concept, especially in the women's game. The predominant outdoor surface in Europe is red clay. This is not the case in the US, Australia or Great Britain. Extensive clay court experience promotes mental endurance (the ability to hit many balls in the court). In addition, the player must learn to produce his own power and construct points effectively.

Asian countries continue to feature strongly in women's tennis and are likely to become even stronger. Half a dozen Chinese players have come forward in the last few years alone.

In summary, top players can come from just about anywhere. Europe seems to have assembled the most successful pathway for its players at this point in time. However, history shows us that nothing is forever in the world's most intriguing individual game. I look forward to seeing what unfolds in the years to come.

Sports activities and Progressive tennis

William Bothorel (French Tennis Federation)

ITF Coaching and Sport Science Review 2008; 15 (46): 30

ABSTRACT

The article describes a combination of projects and resources for clubs in the areas of tennis leisure, participation and community life. It describes some of the main aims for the French Federation such as the organisation and promotion of sporting activities and to secure the loyalty of the club members whilst encouraging new adults to join.

Key Words: Programmes, tennis resources, adapted equipment.

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Sports activities have always been part of the life of the tennis clubs and season. Besides tennis schools, practice sessions, group and individual lessons and competitions, numerous clubs organise tennis and sports activities for their members. In France, these activities were for a long time essentially club tournaments exclusively organised for members in singles or doubles (men's, women's, mixed, surprise events, etc.). Today, society is changing fast. People and their habits have changed and so have teaching methodology and tennis instruction thanks to new equipment (introduction of foam and soft balls, for example) and programmes (mini-tennis, Club Junior and Adult Tennis programmes). All this is part of what is called "progressive tennis".

To support these changes, the French Tennis Federation (FFT) introduced an innovative sports activity programme in 2006 called "Rendez-vous tennis" (Tennis Rendez-vous). This programme includes numerous activities and games that tennis clubs can organise to welcome a variety of new players (male and female adult beginners, advanced players, children, teenagers, senior players, etc.) to the tennis experience and retain them by making them play and enjoy the game.



"Fitness and health"



"A tennis match for everyone!"



"Group games"



"Tennis activities and games"

All these activities can be set up on one, two or more tennis courts depending on the resources available, circumstances and goals.

The various experiments and tests conducted by tennis clubs and the FFT show that the game of tennis has to offer "innovative products" and opportunities available to all to remain attractive.

Recommended Books and DVDs

PLAYING TENNIS AFTER 50

Author: Kathy and Ron Woods **Year:** 2008 **Language:** English **Type:** 217 page book **Level:** All levels

Playing Tennis after 50 aims to improve your play and enhance your on and off court experience. It describes tactics and technique ranging from basic to advance. In addition it includes tips to adapt court positioning and tweak shot selection for singles, doubles and mixed doubles play. Special features include how to use practice games and stroke improvement that can correct common errors and enhance skills while you play the game. It provides information on how to help you avoid aches and injury with appropriate stretching and strengthening exercises. In addition benefit from expert information on the latest equipment, tips on finding the right club and playing partner, and ways to make tennis fun.

For more information visit: www.humankinetics.com

FROM BONN TO ATHENS, SINGLE AND RETURN

Editor: Heiner Gillmeister **Year:** 2008 **Language:** English **Type:** 322 page book **Level:** All levels

This book is the Diary of John Pius Boland. Boland was a student at Christ Church, Oxford, after continuing his studies at the University of Bonn in the winter term 1895-1896, set out on his journey to Athens. Having been invited to compete in the Olympic lawn tennis event, he became Olympic Champion in the men's singles and, partnered by Friedrich Adolf Traun, also the doubles. The book aims to shed light on the first Olympics of the modern era and the first tennis champion

For more information visit: www.academia-verlag.de

SCIENCE AND RACKET SPORTS IV

Editors: A. Lees, D. Cabello and G. Torres **Year:** 2008 **Language:** English **Type:** 310 page book **Level:** All Levels

Science and Racket Sports IV presents a selection of important contemporary research into four core racket sport disciplines of tennis, badminton, squash and table tennis. It showcases the best of the peer-reviewed papers and keynote addresses presented at the fourth World Congress of Science and Racket Sports, Madrid. The book contains six key areas Physiology, Biomechanics, Sports Medicine, Psychology, Performance Analysis, Pedagogy, Sociology and Coach education

For more information visit: www.routledge.com

LES RENDEZ-VOUS TENNIS

Author: French Tennis Federation **Year:** 2008 **Language:** French **Resource Type:** DVD **Level:** Beginner

The DVD focuses on development by the French Tennis Federation, and about a combination of projects for clubs in the area of tennis leisure, of participation and community life. All clubs can adapt their objectives to their means. The DVD shows that the initial concept is the organisation of promoting sporting activities and conveys the key times in a season for adults and members of any levels to join in and enjoy tennis. The objectives are to secure the loyalty of the club members and encourage new adults to join. Contents of the DVD include tennis activities and games for Sports people of all levels, from the beginner to the competitive player.

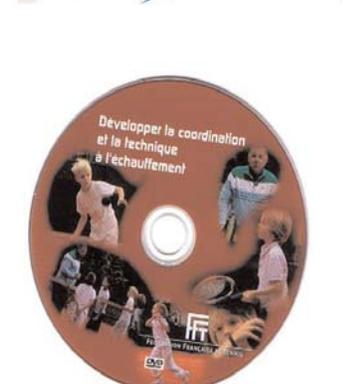
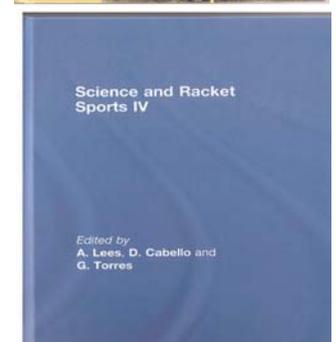
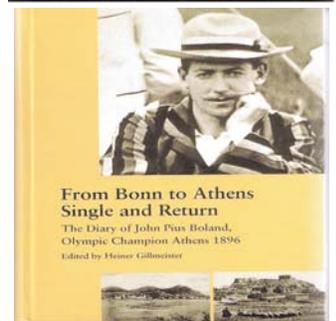
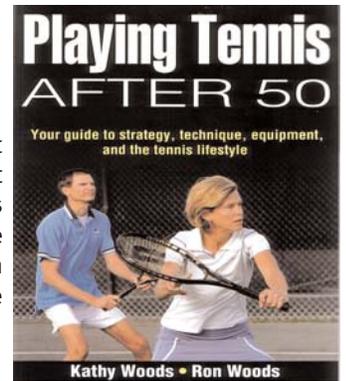
For more information visit www.fft.fr

DÉVELOPPER LA COORDINATION ET LA TECHNIQUE A L'ÉCHAUFFEMENT

Authors: French Tennis Federation **Year:** 2008 **Language:** French **Resource Type:** DVD **Level:** Beginner

This is another great DVD produced by the French tennis federation and describes drills and games to develop basic skills, coordination and technique. It focuses on the first critical area of the session, the warm up and devises ways to bring together effective preparation of the body with skill acquisition and development for junior players.

For more information visit www.fft.fr



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FORMAT

Articles should be word-processed preferably using Microsoft Word, but other Microsoft compatible formats are accepted. The length of the article should be no more than 1,500 words, with a maximum of 4 photographs to be attached. Manuscripts should be typed, double spaced with wide margins for A4-size paper. All pages should be numbered.

Papers should usually follow the conventional form: abstract, introduction, main part (methods and procedures, results, discussion / review of the literature, proposals-drills-exercises), conclusions and references. Diagrams should be done using Microsoft Power Point or any other Microsoft compatible software. Tables, figures and photos should be relevant to the paper and should have self explanatory captions. They should be inserted in the text. Papers should include between 5 and 15 references that should be included (author/s, year) where they occur in the text. At the end of the paper the whole reference should be listed alphabetically under the heading 'References' using the APA citation norms. Headings should be typed in bold and upper case. Acknowledgement should be made of any research grant source. Up to four keywords should also be given and the corresponding author contact details.

STYLE AND LANGUAGES OF SUBMISSION

Clarity of expression should be an objective of all authors. The whole emphasis of the paper should be on communication with a wide international coaching readership. Papers can be submitted in English, French and Spanish.

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When submitting articles authors should indicate their name(s), nationality, academic qualification(s) and representation of an institution or organisation that they wish to appear in the paper.

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