



Editorial

Welcome to issue 31 of the ITF Coaching & Sport Science Review – the final issue of 2003.

This issue comes to you on the back of the 13th ITF Worldwide Coaches Workshop – the showpiece of the ITF's coaches' education programme. The Workshop, which some of our readers will have attended, was held in Vilamoura, Portugal from October 20 to October 26. It was staged in conjunction with the Portuguese Tennis Federation and was the first time for ten years that this event had been held in Europe. Two hundred and ninety seven coaches from 91 countries around the world joined the ITF Development Department to celebrate the five day event. The Workshop theme was "Applied Sport Science for High Performance Tennis" and it provided an ideal setting for coaches and other professionals involved in tennis to learn and interact. Speakers included some of the tennis world's most highly respected scientists, coaches and coach educators and we would like to take this opportunity to thank them for their contribution towards making the Workshop such a success.

Following the release of "ITF Strength and Conditioning for Tennis" in May this year, the ITF has worked with Bruce Elliott to produce another new publication entitled "ITF Biomechanics for Advanced Tennis". It is available for purchase on the ITF website, www.itftennis.com, and readers are provided with further information regarding the book's contents and contributors on page 15 of this issue.

In 2002, the ITF Coaches Commission nominated Vic Braden (USA) for an Award for Services to the Game. At the ITF's Annual General Meeting in Rio de Janeiro (Brazil) in September, Braden was honoured with this Award. We would like to extend our congratulations to Vic who adds his name to the long line of excellent coaches to have been recognised for their long and distinguished service to the game of tennis both nationally and internationally.

In producing ITF Coaching & Sport Science Review, we hope that the articles continue to stimulate healthy discussion among coaches. As always, we welcome your comments on any of the information published in the Review. Similarly, if you have any material that you believe would be of interest to our readership, please forward it to us for consideration. Finally we would like to remind all of you that ITF Coaching Sport & Science Review is available in the "Coaches News" section of the ITF website, www.itftennis.com.

We hope you enjoy issue 31.



The speakers and attendees of the 13th ITF Worldwide Coaches Workshop.

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Serving Strategy

By Professor Howard Brody (Physics Department, University of Pennsylvania)



First serve and second serve percentages as well as the percentage of points won on both, need to be considered to formulate the best serving strategy for a player.

Many elite tennis players have the ability to hit their first serve hard, very hard, or really smash the ball – hitting it as hard as they can. There is a small problem when they hit the ball that hard – the ball usually does not go in as often as they would like. This poor first serve percentage is due to two separate effects. With a harder swing there may be some loss of control over the racquet, which will lead to more faults. The second and more important effect is that the laws of physics are working against the server as the serve speed is raised. The higher the ball speed, the smaller is the “acceptance window” for a ball going in. However, balancing all of this, when the hard serve does go in, the server is more likely to win the point.

What strategy should be adopted? What should a tennis coach tell the player? Smash the ball hard? Play it safe and get the serve in as often as is possible? Hit the ball hard, but not as hard as possible? Hit the ball only hard enough to get in 65% of the first serves? The answer is not obvious, and depends on a number of factors.

Let us assume that the chances of winning the point when the first serve

goes in increases with the serve speed, but that the percentage of first serves going in decreases with serve speed – both reasonable assumptions that are confirmed by match charting. Let us take some typical numerical examples and see how this plays out. In Table 1, below, the third column is the product of the first two columns.

On this basis, a coach might advocate the softer serve (which goes in more often) since it would have the highest winning percentage of points on the first serve. A typical TV commentator might claim any first serve percentage less than 60% is bad and the server should “take something off the serve” to raise the percentage. **This could be absolutely the wrong advice.** Under these assumptions, it is possible for the server to hit the first serve as hard as possible and yet win more total points, because there is also a second serve, which has been neglected by the previous analysis.

If the server can get in 95% of the second serves and win 55% of the points when that second serve goes in, then $(100 - \text{first serve in percentage}) \times .95 \times .55$ must be added to the first serve

numbers to get the winning percentage (see Table 2). (The factor $100 - \text{first serve percentage}$ is the percentage of second serves).

In this case, it pays to hit the first serve harder, as that strategy will win a larger percentage of the points. These numbers may not hold for every player (if you never get your first serve in when you really smash it or if your second serve is so weak that you never win a point on it, then the other answer is obvious), but under the assumptions made in Tables 1 and 2, hitting the first serve really hard is the best strategy.

This increase of winning percentages seems very small (67.1% to 71.1%), but it has some effect on the chances of winning a service game and a very big effect on the chances of not being broken during an entire set. Table 3 shows, purely on a predictive statistical basis, how important that additional 4% of service points won is to a player.

As Table 3 shows, if the server “eases-up” on the serve to raise the first serve percentage to 65%, the odds are against holding serve for six consecutive games, which is often what is needed to win a

Table 1. Relationship between percentage of first serves in and percentage of points won when first serve goes in.

| % of first serves in | % of points won if first serve goes in | Total win % on first serves |
|----------------------|--|-----------------------------|
| 50 | 90 | 45 |
| 55 | 85 | 46.75 |
| 60 | 80 | 48 |
| 65 | 75 | 48.75 |

Table 2. Relationship between win percentage on first serves and second serve wins.

| % of first serves in | Won % if goes in | Win % on first serves | Second serve wins | Total % |
|----------------------|------------------|-----------------------|-------------------|---------|
| 50 | 90 | 45 | 26.1 | 71.1 |
| 55 | 85 | 46.75 | 23.5 | 70.3 |
| 60 | 80 | 48 | 20.9 | 68.9 |
| 65 | 75 | 48.75 | 18.3 | 67.1 |

Table 3. The effect of winning percentage when serving on the chances of winning six games in a row.

| % of first serves in | Winning % when serving | % of games won | Chance of winning six games in a row |
|----------------------|------------------------|----------------|--------------------------------------|
| 50 | 71.1 | 91.3 | 58.0 |
| 55 | 70.3 | 90.4 | 54.7 |
| 60 | 68.9 | 88.7 | 48.7 |
| 65 | 67.1 | 86.2 | 41.1 |

set. If, on the other hand, the server hits the ball harder, and we make the same assumptions about the second serve, the odds now favour holding the six consecutive service games needed to win the set.

So what advice should a coach give a player? Getting more first serves to go in

makes sense if it can be done without reducing the player's efficiency of winning the point when the first serve goes in. However, taking something off the serve just to increase the first serve percentage may not be the way to win more total points. By charting matches and applying the methods shown here, a

coach can optimise a player's serving potential.

For further information on this subject see: Brody, H., Cross, R., and Lindsey, C. (2002). *The Physics and Technology of Tennis* (pp. 204-205). Racquet Tech Publishing: Solana Beach.

Ten Ways to Improve Your Sleeping Habits

By Babette Pluim, MD, Ph.D. (Medical Advisor, Royal Netherlands Lawn Tennis Federation), Miguel Crespo, Ph.D. (ITF Development Research Officer) and Machar Reid (ITF Development Assistant Research Officer)

Human beings need to sleep well. It is not a luxury; it is a need. Competitive tennis players need to get the most out of these hours of unconscious evasion in order to recover and be ready and alert during matches, practice, and daily life. This means that they need to provide their bodies, which are required to perform at their maximum most of the time, necessary rest.

Sleep renews and prepares the mind and the body of the player to provide for optimal performance. Research has shown that sleeping is not an inactive state but rather a very active one. When the individual is sleeping there are several changes in the brain waves, eye movements, muscular activity, body temperature, breathing and cardiac rhythm, and even genital stimulation. Furthermore, during sleep the brain regulates the cardiovascular, gastrointestinal and immune functions.

Sleeping also helps the storage, re-organisation and access of information, and consolidates remembrances by favouring the activity of memory. In fact, the "sleeping brain" is often more active than the "awoken" one.

Although some players may suffer from a lack of sleep, few would be aware of how this can impair their performance both on and off court. For example, a lack of sleep can have significant consequences on the function of bodily organs (heart, liver and bladder malfunction), mood states (irritability, lack of sensory alertness and motor capacity, problems of concentration and reaction capacity), tiredness and exhaustion, etc.

The purpose of this article is to present several ways to improve your sleeping habits in order to have a healthier life and better tennis performance.

may create some difficulties in getting to sleep. Practice relaxation techniques before going to bed to reduce stress. Some of the techniques you may use are: listening to relaxing music, follow a muscular relaxation routine (progressive relaxation by tightening and relaxing different muscles), performing breathing exercises (abdominal breathing), using visualisation (trying to visualise something you like), etc. Taking a hot shower or a warm bath, or reading a good book will also help you to relax.

3. Know when you have to lie down to sleep

Sometimes, people lie down to sleep just after a heavy meal, a long match or a very exciting and emotional event. These situations will not help you fall asleep very easily. Try to avoid heavy meals two to four hours before going to bed. However, you should not go to bed on an empty stomach either. A light evening snack may even be helpful. Also, performing some exercise and playing some tennis will help you sleep better if done more than three hours before going to bed. Lie down to sleep only when you really feel sleepy.

4. Know what to do if you don't fall asleep

If you don't fall asleep within 30 minutes after turning out the light, get up and do some relaxation work. Another option is to listen to music with the lights out. Try not to get nervous if you don't sleep. This should not be an obsession. Specialists indicate that in the event of sleeping problems lasting more than three weeks it is advisable to go to the doctor. Ninety percent of cases can be solved. Sleeping pills should generally be avoided, particularly on the eve of a big match because of the risk of a "hang-over effect". There is no need to worry, when on the day of a big match you did



For tennis players to be able to perform at their best day in, day out, sleep is essential.

1. Try to avoid stimulants late at night

If you want to fall asleep quickly and sleep well it is advisable to avoid stimulants such as caffeine (i.e. coffee, tea, coke, chocolate), nicotine, and alcohol. It is also better to avoid high protein or heavy, *fatty* meals that will demand your stomach to work more than usual. Also, the tackling of a difficult and demanding task right before you go to bed is not recommendable, as it will keep your mind spinning in full gear.

2. Relax

Being busy during the day will help you sleep better. However, excess energy accumulated during the day

not sleep as well and as long as you normally do; Olympic records have been set after sleepless nights!

If you would like to use a sleeping pill, i.e. to combat your jetlag, choose a short-acting one and take it immediately before you go to bed, not after four hours of tossing and turning.

5. Reduce thinking and worrying in bed. Learn to switch off

When you lie in bed try to forget any problems and focus on pleasant thoughts that will help you to fall asleep easily and provide for a peaceful night's sleep. Players *are* busy enough during the day with practice, matches, trips, school, etc. when in bed, it is time to rest, relax and enjoy.

6. Rely on the routine: go to bed and get up at the same time each day

If you go to bed and get up at the same time each day, your "internal clock" will be ready to wake up and go to bed following the routine. This is the best way to give your body and mind the necessary hours they need to rest and be ready for the next day.

7. Know how much you have to sleep

Every age has its general parameters. A newly born may sleep between 13 and 20 hours per day. From one month to one year, the average is 15 hours a day. From one year to adolescence, the average decreases from 14 to 8 hours. During adolescence, youngsters start to have their own sleeping patterns that become personal during adult age. If you wake up recovered, that means that you have slept enough.

8. Choose the correct sleeping position

Try to avoid sleeping on your stomach. This is not only bad for your back, but your neck too. Try sleeping on your side with your knees bent upward and a pillow between them.

9. Prepare your room for a nice sleep

Value your sleep! You will sleep better if your room is dark, silent and ventilated. The ideal room temperature is 18° C. If this is difficult to achieve you can always use eye shades and ear plugs, particularly if your partner is prone to

heavy snoring. Certain smells have been proven to induce a deep sense of relaxation, such as a whiff of lavender or the salty air of the sea-shore. Likewise, if you can choose the colour of your room, just remember that blue, green and purple colours evoke serenity and calmness and may help to induce sleep.

10. Use the correct "equipment"

It is important that your pyjamas are comfortable and made of soft fabrics. Clean, fresh linen sheets will also be of help. Linen sheets feel different against the skin and disperse body heat better than other fabrics such as cotton. The covers should be loose, to reduce the risk of cramping. An electric heating blanket may be a good option also, because it helps to relax muscles and increases brain temperature. Use one with a timer, so it will shut off just after you fall asleep. Sleep on a firm mattress to avoid back and neck problems. As per the pillow, choose a soft, low pillow or get a cervical pillow that gives the neck proper support.

So, lights out and *sleep well!*

A General Overview of Contracts in Sport; A Tennis Perspective

By Nick Jones (Trainee Sports Lawyer with Townleys Solicitors and former ITF Development Officer, England)

Introduction

The commercial growth of sport in recent years has been accompanied by the requirement of greater legal and commercial awareness for those involved in the sports industry. The UK Institute for Economic Affairs stated that sport now accounts for nearly 3 % of the UK's gross national product (figures published, 1999/2000). Sports contracts must now cover a wide spectrum of commercial activity, and must be tailored to meet the necessary requirements of new and existing tennis markets. Whether you are involved with a national association seeking to distribute commercial television rights for tennis events, a tennis coach entering into an employment contract with a club, or a player negotiating a racquet and clothing sponsorship agreement with a manufacturer, it is essential to negotiate and secure your rights and economic interests, as well as to understand your obligations when entering a contract.

Sport's commercial partners are often big businesses, well versed in the world of commerce; governing bodies must

exhibit the same expertise if they are to achieve fair deals. If you are an employer of coaching staff, a national coach or hold an administrative role with an organisation involved in tennis, you are likely to encounter management-related contract issues during your career. In most contracts, the process of establishing the terms of the contract should firstly be anticipated, then negotiated, before finally being agreed and formalised. The agreement is preferably converted into a signed document, rather than remaining as an oral agreement, because a contract may become very hard to enforce if its terms are not certain or cannot be properly evidenced. Forming a written document makes proving the existence of the terms much easier and should make it simpler to establish the required certainty in the terms of the contract.

General contractual clauses to consider

A. Who are the parties? State the names of the individuals or companies entering into the

agreement along with other details, including addresses and, if relevant, insert the company details. Although this might seem obvious, if a club employs you, find out if the employer is actually an individual, club (unincorporated association) or a company. This will help to avoid any uncertainty as to the identity of the parties.

B. Define 'key' words of the contract.

Clearly define important, technical, or often repeated terms. Consider such matters as, the rights and obligations of the parties, the length/time of the contract, and options for renewal and payment terms. For example, imagine a typical sponsorship agreement in which you are obliged to wear a certain manufacturer's clothing when competing or coaching in, say, France. You will need to consider and make certain the scope of the agreement, i.e., does the clothing contract relate solely to activities in France, and should 'clothing' be



In agreeing to or negotiating contracts related to things such as apparel, players and coaches should seek professional advice.

defined to also include shoes, wristbands, headbands, scarves, headgear and any future fashion apparel? What will be the 'territory' to which the contract relates, i.e., the political and/or geographic area? Usually 'national' or 'worldwide' based definitions of territory are appropriately chosen. *[Consider the scenario that if you represent a French clothing manufacturer and intend to sign up a player or coach who is based mainly in Reunion Islands, the territorial definition agreed upon may influence the workability of the contract significantly (i.e., The Reunion Islands are politically French, but geographically located off the coast East Africa). So watch out for anomalies, which could change the contract definitions unintentionally or create ambiguities].* Try to anticipate potential problem areas that may be overlooked and issues that could be grounds for future disputes or termination of the contract. Therefore, be precise and forward thinking when defining the words used to structure the terms of a contract.

C. What is the extent of 'rights' being licensed and what obligations are returned? Various rights exist for the benefit of commercial exploitation. 'Broadcasting rights' are a form of rights capable of commercial exploitation, such as televising tennis events i.e., Davis Cup and Fed Cup, which are capable of being sold and distributed to different regional and national territories. There are also 'intellectual property rights' which may include player rights incorporating image and personality

rights, or intellectual property rights to protect brand products i.e., from being copied and misused by other companies (for example, brand manufacturers will want to ensure the appropriate use of their logos by their sponsored players and coaches).

D. The division of rights and corresponding obligations is a highly important legal and economic area for the sport and entertainment industries. Consider carefully all the obligations that you will have to perform and also all those that the other party or parties to the contract will have to perform. These types of activities invariably need well-structured commercial contracts to achieve and secure a fair balance of the benefits and obligations between the parties entering the contract.

E. How long should the agreement be for? Contracts can be for an indefinite period, but often specify a period of time when the contract will finish, possibly with a notice provision, exercisable by either party to end the contract. The contract may also include terms that survive termination, such as restrictive covenants; for example, preventing a tennis coach from working for a rival club within 10 miles (15 kilometres), for a period of 6 - 12 months after the contract has ended. These may or may not be enforceable, depending on the facts (and jurisdiction) of the case.

F. How much and what type of payment? The types of contractual payment methods can vary enormously. Payment can potentially be one or a combination of methods

such as; salary-based income arrangements, commission rates, lump sum payment, advance payment, share of profits, guaranteed minimum payment, royalties and benefits in kind. Payments will often be determined by an industry standard/trade custom and it is advisable to seek out the relevant market values so that you are informed of the issues and are capable of entering into a fair and reasonable contract. It is also important to allocate to one or other party the responsibility for paying tax.

G. Options to renew the contract.

Options are sometimes included in commercial contracts allowing for a time extension of the agreement. An option could include the right of first refusal granted to a tennis coach for the purchase of certain tennis courts from a club, on the basis of having already entered a long-term lease agreement to start a coaching business at the tennis court site. This option may provide the tennis coach/entrepreneur greater security over his immediate investment and future interest when developing a business at a site over which he does not retain full control.

H. Employment rights.

Employment rights in sport have received a great deal of media interest and, at times, led to intense debate; a prime example being equality of pay structures between men and women in professional tennis. But what about the thousands of employment agreements between tennis coaches and clubs? A tennis coach who provides his or her services full-time to his/her local club may be legally prevented from taking alternative work, say, from taking a touring team for six weeks, attending courses or developing separate business interests. Instead, the coach may wish to negotiate periods in the course of employment in which he/she can undertake other work activities, perhaps for particular weeks or months of the year. The motivation for coaches to obtain employment flexibility could be for many reasons, such as to maximise their income levels and to have the chance to do varied work (perhaps with a national or regional association) that will contribute to long-term career development and satisfaction to the benefit of the individual, club and the sport. Alternatively, the club may want the

coach to work exclusively, emphasising the full-time nature and security of the position at the club (and for the sake of argument, the club may be concerned about any touring undertaken by the coach, causing injury/fatigue). Clearly, while both coach and club may be happy with the agreement from the outset, it is important to ensure it will work for both parties in the future. Consequently, each party should carefully consider its rights and obligations in respect of reaching a suitable agreement that best reflects the immediate and future needs of the parties entering the contract.

Other contractual considerations

Potential problem areas when entering into contracts are hard to anticipate, but the following points give you an idea of what issues might arise:

1. Variation and breach of contract - one or more of the parties may want to vary an agreement after it has been entered into (perhaps due to the shift in bargaining position or increase in value of one party in relation to the other). A party that is dissatisfied with the bargain made cannot refuse to perform or vary the obligations agreed to, since this will amount to breach of contract, and will entitle the other party to damages, and in some cases, termination of the contract. Both parties should agree in writing to any variation, as one party cannot

unilaterally vary a contract. So for a variation to be effective, both parties must agree to it.

2. Undue Influence - Undue influence (i.e., unequal pressure by one party over another) is often presumed in contracts relating to minors, i.e., a young tennis player entering a contract with a club. The terms of the contract set out should be 'reasonable'. The minor must have access to independent advice in respect of the terms agreed in the contract. If no independent advice has been received and the terms of the contract are unreasonable, the contract could be considered unfair and deemed unenforceable by the courts.

3. Misunderstandings between parties when entering a contract - while laws differ nationally (parties should take advice from those qualified in the law that governs the contract) a brief summary of the requirements of a binding contract under English law are; an 'offer' by one party; 'acceptance' of that offer by another party; 'consideration' passing between the parties (i.e., 'something of value' passing between the parties in the eyes of the law) and a mutual intention to create legally binding obligations. An awareness of the processes of forming a contract before discussing and agreeing the details should certainly be kept in mind, otherwise you may think you have a legally binding contract when

you have not, or, alternatively, you may think you haven't entered a contract when you actually have. This is why forming a written and signed document helps the process of eliminating misunderstandings and encourages greater certainty.

Conclusion

Contracting parties entering into agreements are capable of omitting or failing to add basic clauses into the contract, perhaps because they do not anticipate the potential changes in circumstances that may affect them (such as failing to have a termination clause, choice of law and jurisdiction). Disputes can therefore easily arise from ill conceived or poorly drafted contracts, and can occur even if the parties have a history of goodwill and fair conduct between one another. The disputes that arise can also be caused by a lack of commercial and legal awareness or insufficient preparation and attention to the detail of an agreement, the consequences of which may result in substantial emotional and financial losses. My own experience is that taking advice before a contract is signed is much cheaper and convenient than after a dispute has arisen. It is also worth a final note that contracts are often formed subject to sports governance rules and regulations and therefore it is highly advisable to consider and understand the relevant rules and regulations of the governing body when entering sports contracts.

Planning and Periodisation for the 12-14 year old Tennis Players

By Piotr Unierzyski, Ph.D. (Faculty of Physical Education, University of Poznan, Poland)

It is an objective rule that every player's career should follow an exact plan and that all coaches have to respect certain rules to provide for optimal development. Unfortunately however, the training of the majority of junior players around the world is not precisely planned. It usually lacks variation or progression, is devoid of any "loading" plan or written periodisation and includes very few hours of all-round training or participation in other sports. If it is planned, it is merely an abbreviated version of that proposed for senior or professional players. This type of development reflects the thought processes of many parents and some coaches who are of the opinion that a player should practice as much as

possible and/or enter the largest number of tournaments to gain experience.

For junior players, a crucial period for future tennis success is between the ages of 12-14. During the months before puberty starts and those immediately following its commencement, many things can be gained or lost. Here, experienced coaches understand that children are not small adults and that the circle of INFORMATION - GOAL SETTING - PLANNING - ACTION should not be organised as such. At the age of 11-12, just before puberty, a gifted tennis player should complete the stage of **versatile all-round basic training** and begin the next stage, **semi-specialised training**. It represents the end of "permanent type" work and the

beginning of periodisation as a means of planning.

During this period a player should learn (develop) versatility, gain experience, raise their level of motor and mental skills and improve their major tennis-specific abilities. As part of this, they need to either practice a lot or play quite a high number of matches, even including international events. Best possible performance should not be the goal and **peaking should not be the aim of planning** at this age. The training ought to be directed more toward improving all of the factors limiting optimal performance. It should be remembered that the age of 12 is the best age to develop the two most important motor abilities in tennis: agility and speed.



Appropriate periodisation of training for players aged 12-14 is a must.

Before puberty starts, a player should have learned all advanced strokes (i.e. topspin lob, drive volley); these shots however, do not need to have been perfected. A greater number of semi-specific and specific exercises should be used to further develop a player's tennis-specific abilities. While methods of work should be differentiated, a higher percentage of training time can be of the "strict type" (i.e. drills). It should be remembered that there is no need to prescribe intensive training methods (i.e. interval training) in an effort to accelerate improvement. If these methods are introduced too early in a player's development, it may limit their potential effectiveness. Also of note is that players of these ages will develop biologically at different rates, therefore reinforcing the need for individualised training programmes and not mere "reduced versions" of those which are used for professional players. In summary, the difficulty in periodising programmes for 12-14 year olds lies in the coordination and planning of the appropriate balance between learning, training and competing. Nonetheless the only way for this to be achieved to best benefit future performance is through periodisation.

The primary principles of periodisation for players of this age are to:

1. Plan different types of training;
2. Coordinate these different types of training with competitions such that experience and other practical skills can be gained.

The volumes of these types of training may differ depending on meso- or microcycle, but not as much as they do for the professional players.

General Rules:

Fitness: from general to tennis-specific and complex training.

Tennis: from basic training to competitive training (from close arrangements to open arrangements).

The main goals for players of this age are:

- harmonious, all-round development of tennis-specific fitness directed toward the needs of the game;
- profiling the needs of future performance and developing tennis-specific abilities;
- gaining experience and tennis-specific skill through participating in a certain number of "equal" (i.e. both competitors are of a similar level) matches (50-70 singles and 30-40 doubles) per year.

An Example Of Periodisation With A 12 Year Old Male Player (Table 1)

Annual plan: "DOUBLED" with two preparations and two competitive phases; **no peak!** (13 year old players: one peak is scheduled, for a 14 year old: typically one or two and sometimes three peaks).

FIRST PREPARATORY PHASE

The task: develop an all-round base to provide for optimal progress. In general, the volume of basic training should comprise 50% to 75% of total training time, while a further 20-40% should be made up of semi-specific and tennis-specific practices/exercises (i.e. fitness specific to the game or tactical training).

Sub-phases:

- General preparation sub-phase: all-round training ≤ 70%, semi-specific training ≤ 20%, and tennis drills from 10%;
- Specific preparation sub-phase: down to 30% for all-round exercises, up to 30% semi-specific training, and

tennis-specific training and matches between 40-60%.

FIRST COMPETITIVE PHASE

The task: progress tennis-specific abilities (i.e. technique, tactics, mental preparation, motivation and feedback for future training, using new skills in competitions, especially on fast courts) Volume: 40-60% matches, 20-30% training on court, and 30-40% fitness work. **No peaking!!!**

SECOND PREPARATORY PHASE

(players begin from a higher level)

The task: develop tennis-specific fitness and skills, further development of all-round abilities.

- Sub-phases: I (with recovery mesocycles), II and III (training more complex and more specific to the game than in sub-phases I and II. Combine with regional and team competitions) comprises of 20-25% matches, 45-50% all-round training and special conditioning, and 30% fitness work.

SECOND COMPETITIVE PHASE (main competitive phase)

The task: develop tennis-specific abilities and gain experience while maintaining the all-round base. Several different mesocycles and microcycles: 50-60% matches, 20-40% tennis training, and 20-40% fitness work.

TRANSITION PHASE

The task: active rest (other sports) and injury prevention (70-80%), learning new skills and new techniques (20-30%). On average, the combined duration of all of the activities should not exceed 12-16 hours per week.

PROVIDING FOR THE BEST POSSIBLE PERFORMANCE IS NOT A GOAL AT THE AGE OF 12-14!

Peaking should not be the aim of planning at these ages. Peaking for the first time should occur at the age of 13 but the goal needs to be "to peak to learn how to peak" (and not how to win). Two peaks can be scheduled for gifted 14 years old players, and for exceptional talents maybe three.

The goal of competitions for players under 13 years of age should be to test the skills and abilities practiced during training. This provides the coach feedback as to the player's progress and will help establish goals and plan future work. Tournaments should be treated as an exercise, a kind of 'progress test' and a chance to identify the most talented players.

TABLE 1: EXAMPLE OF A SIX MONTH PLAN FOR THE 12/13 YEAR OLD TENNIS PLAYER

| PHASES, SUB-PHASES | MESOCYCLES | MICROCYCLE | EXERCISE PRE-SCRIPTION | CONTENTS |
|--|--|---|--|--|
| FIRST PREPARATORY PHASE 28/09 – 04/01 | | | | |
| GENERAL PREPARATION SUB-PHASE 28/09 – 1/11 | INITIAL MESOCYCLE 28/09 – 18/10 | Three initial microcycles (8-10 hours/week) | G: 70% SS: 20% S: 10% C: 0% | G) creation of the aerobic endurance base (continuous method, <i>two-three units/microcycle</i>) and overall strength (repetitive method, <i>two-three units/microcycle</i>), improvement in flexibility, lots of ball games; SS) exercises to develop coordination, agility and footwork (<i>two units in a microcycle</i>); S) exercises to improve the technique of selected (“new”) shots (<i>two-three on-court practices per week</i>); C) no competitions or practice matches. |
| | GENERAL PREPARATION 19/10 – 1/11 | Two preparatory I microcycles (14-16 hours/week) | G: 60% SS: 20-30% S: 10-20% C: 0% | G) further improvement of aerobic endurance (continuous method, fartlek <i>three-four units/microcycle</i>), strength (method of moderate load, <i>two units/microcycle</i>) and basic speed (repetitive method, <i>two-three units/microcycle</i>), lots of ball games; SS) drills to develop coordination and agility (<i>during each practice</i>); S) further improvement of the technique of selected shots (<i>two-three units/microcycle with more open drills i.e. situational drills</i>); C) no competitions. |
| SPECIFIC PREPARATION SUB-PHASE 2/11- 4/1 | SPECIFIC PREPARATION 2/11 – 29/11 | Four preparatory II microcycles (12 – 16 hours/week) | G: 30-40% SS: 20-30% S: 30-40% C: 10% | Heavy loads: G) & SS) improvement of aerobic endurance training, development of dynamic power, agility and speed (<i>three-four units /microcycle</i>); S) formation of individual game style technical-tactical and tactical practices (<i>eight hours/week</i>); C) friendly matches or small, local events (<i>two-three matches per week</i>). |
| | CONTROL-PREPARATION (POLISHING) 30/11 – 4/01 | Two-three preparatory microcycles; two-three competitive microcycles (up to 18 hours/week) | G: 25% SS: 25% S: 30- 40% C: 15- 20% | Heavy loads and “control” matches or tournaments: G) & SS) improve dynamic power and speed (mainly on-court: <i>one hour during each tennis practice and two separate units</i>); S) improvement of the individual patterns of playing - mainly situational training, tactical training and “simplified” games (<i>10 hours per week</i>); C) sparring matches and participation in tournaments (connected with training) to control progress. |
| FIRST COMPETITIVE PHASE 4/01 – 22/03 | | | | |
| | FIRST COMPETITIVE MESOCYCLE 4/01 – 14/02 (SIX MICROCYCLES) | Four competitive microcycles (up to 16-20 hours/week) Tro recovery microcycles (12-14 hours/week) | G & SS: 20% S: 15-30% C: 50-60% G: 30% SS: 20-30% S: 40% C: 0-10% | G) & SS) seek further improvements in specific coordination, anaerobic-alactacid endurance, dynamic strength and speed; S) and C) continued development of individual game style and fast court play during competitions and practices. Two weeks of tournaments followed by one recovery microcycle. At least six fitness units per week. |
| | RECOVERY AND SPECIFIC PREPARATION 15/02 - 7/03 (THREE MICROCYCLES) | 1-2 recovery microcycles (12-14 hours/week) 1-2 specific preparation II microcycles (18-20 hours/week) | G: 30-40% SS: 20-30% S: 40% C: 0-10% G: 30-40% SS: 20-30% S: 40% C: 0-10% | In the recovery microcycles G) and SS) compensate for any “lack” in physical preparation; S) improve selected technical skills; C) only training and simplified games. In the tennis-specific preparation G) and SS) improve tennis-specific coordination, dynamic power, agility and speed; S) & C) improve tactical-technical skills, especially fast court game (i.e. the use of serve, volley, passing shot, return in match situations). |
| | SECOND COMPETITIVE MESOCYCLE 8/03 – 22/03 | Two competitive microcycles (up to 25 hours/week) | G & SS: 20% S: 15-30% C: 50-60% | Like the first competitive mesocycle, but the training tasks and goals should be different. Fitness should be worked almost every day. |

Abbreviations in Table 1: G – General (i.e. other sport disciplines, all-round sports, versatile exercises); SS – Semi-specific (directed to the specific needs of “serious” tennis, off-court (i.e. strength training with medicine balls) and on-court (i.e. speed and agility training with raquets and balls); S – Specific tennis drills (i.e. on-court technical, tactical, ... drills) and C – Competition.

Progressive Tennis, Cool-ourful Tennis

By Olivier Letort (France)

That which makes our sport unique, ensuring its success all over the world, is also the cause of some difficulties. Asking children aged 8 or 9 or adult beginners to play in the same conditions as the world's best players is something extremely difficult, if not impossible. And yet, in order to make quick progress in tennis, learning and playing the game (taking part in competitions) appears to be an absolute necessity. At the instigation of Jean-Pierre Darteville (President of the Tennis Association of Franche-Comté and then Vice-President of the French Tennis Federation in charge of National Technical Direction), both concepts were investigated on court over the course of several years.

Progressive Tennis, a learning concept

Progressive Tennis is today recognised as method of teaching in its own right. It allows for better and faster learning by guiding players to play the game in a manner that is easier, more fun and more enjoyable.

This concept is based on four principles. A learning principle: **Precision first, speed second**. Studies carried out by Knapp have shown that *'when learning a skill which demands speed as well as precision (which is the case in tennis), it is better to limit the speed of the movements during the first stages of practice until a high degree of precision is reached; speed is then gradually increased'*.

It is certainly easier to speed up precise movements than to correct movements, which are quick and inaccurate.

A principle related to the organisation of the play area: **Width**

According to experts in the field of motor activity, the human eye analyses the speed of an object moving right-left more easily than it does of one moving a forward-backward. Field studies carried out with young children have confirmed that width is not a hindrance, but rather a dimension that facilitates their learning (easy judging of a ball's flight path, accurate rather than powerful shot-making, basic tactics highlighted, and so on).

A principle related to how the player operates: **Eye**

To play tennis, three elements are essential to the player: the hand that holds the racquet, the legs that move the body, and the eyes that see the ball. In match play, the eye is always activated first (all the more so as the level of play increases), then the legs are put into action for movement and positioning on the court and finally the hand drives the racquet. The learning of the first two phases must be a priority as they help provide for efficient arm motion.

A technical principle: **The three winners**

The highlight of the action is when the player strikes the ball. Considering the laws of biomechanics and anatomical

line with the teaching methodology put forward in the Franche-Comté region, namely Progressive Tennis, and should be open to all;

the competitive component on the other hand, since competition should also be a means through which the elite can be identified and nurtured, whether that is at the club or regional level.

A single competition format cannot fully meet these requirements. By taking into account formats that have been tested (in France and especially in the Franche-Comté region and then in Belgium) and following the example of skiing, which provides various pistes for different levels, Cool-ourful Tennis offers a variety of options to play the game.

The four game formats, and their colour codes, are the following:

| Colour | Difficulty | Ball | Court | Net | Remarks |
|---------------------|------------|-------------|-----------|---------|---|
| GREEN tennis | Very easy | Foam | 18 metres | 0.80 m | Specific ball to play the game |
| BLUE | Easy | Mini-tennis | 18 metres | 0.80 m | Ranked players serve from 24 m and the others can choose to serve from between 18 and 24 m. |
| RED tennis | Medium | Cool | 24 metres | 0.914 m | |
| BLACK tennis | Difficult | Standard | 24 metres | 0.914 m | Corresponds to standard tennis. |

reality, racquet-ball impact always occurs in front of the body. The 'three winners' principle refers to the fact that the ball must always be ahead (in the direction of the game), that the racquet is behind the ball and that the body ('energy') stays behind the ball and the racquet.

The learning of the movement is therefore strongly related to the impact, which is consistent with the search for maximum accuracy.

Cool-ourful Tennis, a competition concept designed for Progressive Tennis

At all levels of the game, the ultimate goal of learning tennis is to compete. Therefore, competition must take into account its two components:

the educational component on the one hand, since competition should be the natural extension of the learning stage. As such, competition should be in

After a few hours of practice, an adult beginner can become a competitive tennis player at the green or blue level and enjoy our sport. On the educational level, it is a pity that children who play an offensive game, attacking the net and taking initiative, often **stand little chance of winning** against opponents who adopt a more wait-and-see attitude and are less willing to take risks. Explaining to a child who has just lost that he played tactically very well is often small consolation. And if the experience repeats itself several times...

Progressive Tennis and Cool-ourful Tennis focus on playing tennis in an easy and fun way that ensures the player's success. The ambition of this new approach to the game and its teaching is to modernise and develop that which already exists!

2 ONE HOUR LESSONS FOR CHILDREN 5 - 8 YRS OLD

| | |
|---------------------|---|
| LESSON 19 | Theme: RECEIVING AND PROPELLING WITH COOPERATION AND MOBILITY |
| Objective | To pass the ball around a group using only one racket. |
| Warm up | <u>Racket round:</u> Pupils stand round in big circle, each pupil stands their racket up on the floor by holding the tip of the handle with one finger. Teacher shouts "LEFT!" and each pupil moves one position to the left trying to place a finger on the next racket before it falls to the floor, leaving their own racket standing for the next pupil. The teacher can shout "LEFT" or "RIGHT". |
| Games/ Exercises | <u>One racket circle:</u> Students form a circle of 3-6 members facing inward. Using only one racket per circle, students must pass the ball around the circle. Students must pass the racket from student to student. Ball can bounce. Team with the most continuous hits wins. |
| Variations | Students bounce the ball using both faces of the racket, as many times as possible, hitting the ball against the wall, changing the feeder's or hitter's positions, etc. |



| | |
|---------------------|---|
| LESSON 20 | Theme: HANDLING THE BALL AND THE RACKET |
| Objective | To pick up the ball on the floor with the racket. |
| Warm up | <u>Hit the fence:</u> Students are divided into teams. They are positioned far from the fence. At signal, each team starts to throw balls to the fence with their hands. Team with most hits wins. |
| Games/ Exercises | <u>Picking up balls contest:</u> Students have to pick up balls from the ground using the racket strings or by pressing the ball between the racket and the foot. Student with the most balls in his pocket wins. |
| Variations | Picking up the ball on the ground with the racket by rolling it or by pressing it between the racket and the foot, etc. |

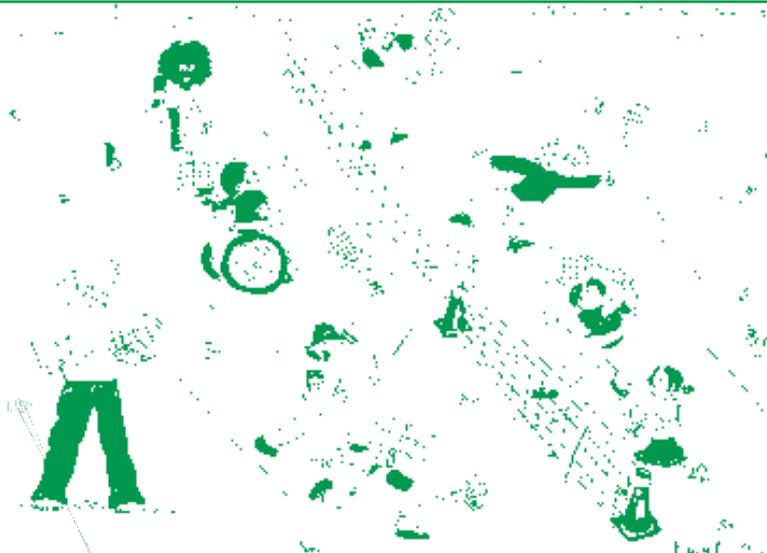


2 ONE HOUR LESSONS FOR CHILDREN 8 – 10 YRS OLD

| | |
|------------------|---|
| LESSON 19 | Theme: PROPELLING, RECEIVING AND CO-OPERATING: VARYING HEIGHT |
| Objective | To provide the students with the skills required to defend by varying the height of balls received after a bounce (groundstrokes). |
| Warm up | <u>Squat down tag</u> : One student is “it” and chases the others to catch them. Each student who is caught squats down. Those who are not caught can squat down for few moments and pretend to be out. |
| Games/ Exercises | <u>HI-LO</u> : Students rally in pairs. One student at the net and the other on the baseline. The baseline student feeds lobs to the net student who has to hit an overhead smash back. The pair who hits more balls in a row is the winner. Students rotate positions. |
| Variations | Rallying groundstroke to groundstroke. Defending with height, etc. |



| | |
|------------------|--|
| LESSON 20 | Theme: PROPELLING, RECEIVING AND CO-OPERATING: VARYING DISTANCE (DEPTH), DIRECTION AND HEIGHT |
| Objective | To further promote the relationship of learnt ball control skills through their integration in various drills. |
| Warm up | <u>Back to back racket pass</u> : Students in pairs with their backs to each other. They have to pass a racket around both of them, moving a little further apart each time. Then pass through legs, over head, etc. |
| Games/ Exercises | <u>Anything goes</u> : Students rally in pairs. They have to rally varying distance, direction and height. The pair who hits the most number of balls in a row is the winner. Students rotate positions |
| Variations | Rallying groundstroke to groundstroke, groundstroke to volley or volley to volley; 2 on 1 drills; vary distance, direction and height on groundstrokes etc. |



How to Become a Model

By E. Paul Roetert, Ph.D., (Managing Director USA Tennis High Performance Program), Miguel Crespo, Ph.D. (ITF) and Machar Reid (ITF)

OK, so we just came up with a title to make you curious enough to read this article. And yes, it does relate to tennis. We will attempt to outline in this article some key coaching cues to help you communicate successfully with your players. The modelling theory is based on research by famed Stanford University Psychologist, Albert Bandura. The components of being a good “model” for your players hold true for tennis as well as many other sports. Let’s take a closer look at these components:

A. Attention

Of course you expect your players to pay attention to you when you are coaching them. But do you really know what they are paying attention to? You may be showing them the latest and greatest in stroke technique; meanwhile your students are thinking how funny your outfit looks today. Characteristics of the coach-player relationship such as how much players like or identify with you as a coach as well as the players’ expectations and levels of emotional arousal will influence the extent to which the players attend any modelled behaviour you may present. It follows

that players are more likely to adopt a modelled behaviour, if the model is similar to, or admired by the player and has functional value.

So, in presenting a model or teaching a tennis skill, try to make sure that your players pay attention to the critical components of that skill. Show it visually, reinforce it verbally and if necessary guide them through it kinaesthetically.

B. Retention

How can you best help your players retain the skills they have learned? In most cases this depends on the players’ ability to code or structure information in an easily remembered form, or more commonly in tennis, to mentally or physically rehearse the model’s actions. In this way, one of the most overlooked areas of coaching is the repetition of a previously learned skill. When working with a player, don’t forget to spend some time, usually early in the session, on the important skills you worked on the last time you practiced.

C. Motor Reproduction

Suppose your player has a continental

grip on the forehand, and has some trouble with high forehand groundstrokes. If you, as a coach, just show how to hit that forehand with a semi-western grip, make sure your player can actually imitate and execute that stroke. That is, it is one thing for the player to watch you but it is quite another for him to hit the practice courts and repeat your acts. As coaches we sometimes forget the limitations of our players. Players should be able to execute the swing patterns with appropriate grips based on what we show them. If not, we need to modify our coaching to the needs of the player.

D. Motivation

Does the player truly have the motivation to learn or make a change in stroke technique? Does the coach create the right type of working/learning environment so that a lack of motivation doesn’t become an issue? If the motivation is not there, your job as a coach becomes a lot more difficult. If the player is motivated however, making changes and learning new skills becomes a whole lot easier. By providing incentive as well as a supportive environment during practice, coaches can assist players sustain their motivation.

Conclusion

The component processes of attention, retention, motor reproduction, and motivation underline the modelling theory based on Bandura’s work. As coaches we need to understand that a distinction exists between players “acquiring” a skill and players “performing” a skill. In this way, we need to be able to adapt our coaching to optimally provide for attention and retention (the acquisition or learning of a skill), as well as motor reproduction and motivation (the control of the performance).

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- Bandura, A. & Walters, R. (1963). *Social Learning and Personality Development*. Hilton, Rinehart & Winston: New York.
- Bandura, A. (1986). *Social Foundations of Thought and Action*. Prentice-Hall: Engelwood Cliffs.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28, 2, 117-148.



Coaches need to provide players with sufficient repetition of previously learned skills.

Circuit Training for Tennis

By Richard González (Tennis Coach and Physical Trainer, Uruguayan Tennis Association, Uruguay)

Introduction

For many years, I have been developing circuit training for tennis players that has been based on two parameters:

- A) a fixed number of repetitions or sets for each exercise;
- B) a fixed duration for each exercise or set (or station).

The circuit presented here-within includes a series of exercises that will help to improve the physical fitness of the tennis player. For the previously mentioned parameters to be best prescribed such that two of the most important capacities in high performance tennis, anaerobic alactic endurance and anaerobic lactic endurance, can be developed, we need to consider that:

- 1) In a tennis match, points are of varying lengths and a player's anaerobic alactic endurance is not necessarily always challenged. Clay court tennis however, is characterised by point play that does place demands on both the alactic and lactic energy systems.
- 2) The player always knows when the point (his effort) will start but can never foretell its end.
- 3) Each point begins with a serve and return.

Characteristics

- A) The circuit consists of 12 stations.
- B) The first four stations start with players performing the serve motion. As variations, other stations may require players to start by simulating a return of serve or alternate starting with serve and return of serve



A player performing the exercise of station 7.

- motions.
- C) The coach prescribes a different duration to each of the 12 stations (12 seconds ("); 8"; 4"; 21"; 10"; etc.).
- D) The rest time between stations will be the same as that allowed between points in a match: 20" (i.e. it will be used to move from one station to the next). Following the completion of the first six stations, players will be given a rest of 90", the same as that provided between the change of ends during a match.

Equipment Needed

- 1 skipping rope.
- 1 weight (350g) for a racquet or 1 medicine ball (2 kg).
- 1 bench
- 12 cones.
- 1 elastic band.
- Tennis balls.
- 2 mats.
- 2 sticks.

Stations

- 1) Place a stick on top of two cones to form a hurdle. Four metres ahead and to the right, place a skipping rope on the ground. The player simulates a serve, then runs, jumps over the hurdle, moves quickly to pick up the skipping rope and jumps five times, before dropping the rope and running back to smash a lob that is played over his head.
- 2) The player simulates a serve and then runs back and forth across the baseline. He runs to cone 1 to simulate a forehand, recovers, performs a "split step" and runs to cone 2 where he simulates hitting a backhand. The coach then throws a ball up in the air and the player has to run forward to contact it.
- 3) The player shadows a serve, then somersaults forward on to a mat and finishes the motion with a vertical jump.
- 4) The player simulates a serve, runs to the net, performs a "split step" and then plays a volley in front of a cone that is placed on the ground.
- 5) The player, seated (on a bench) with his racquet, has to patter or tap his feet rapidly and alternately on the ground. Then, when the coach throws a ball into the air, the player should sprint forward three or four

- 6) metres as quickly as possible.
- 6) Place a stick on top of two cones that are 30-40 centimetres high. The player performs lateral jumps to the right and left over the stick. On each side, he should land on one foot and push off with that foot to the other side. Here, we are developing the player's explosiveness and his ability to quickly transfer his bodyweight laterally.
- 7) According to the types of movements the coach wants the player to work, he places three cones (with a ball on top) at specific locations on the court. The player, with a ball in hand, moves back and forth between cones changing the ball in his hand with that which is on the cone.
- 8) Abdominals (exercises working rectus abdominis and the obliques).
- 9) Lay a 50-60cm elastic band or rope on the ground. The player jumps to one side, lands and simulates a low volley; he does the same to the other side.
- 10) Exercise for the inside-out forehand. From the centre mark, the (right-handed) player moves to a cone three metres to his left to play an inside-out forehand. He then recovers to the centre mark and repeats this once more. After playing the second inside-out forehand he recovers once again but will this time continue moving to his right to play a forehand down-the-line.
- 11) With a medicine ball (or a racquet with a weight), the player simulates forehands and backhands either side of some short preparatory footwork.
- 12) Flexibility exercise for hamstrings and calves. The player bends down from the waist and picks up balls from racquets placed on the ground.

Suggestions

- * In some stations, an assistant (i.e. another coach or player) can throw an additional ball into the air (to further stimulate visual-motor coordination).
- * To determine the stations' work and rest times, we should consider that tennis is characterised by activities that are 70% anaerobic alactic and 20% anaerobic lactic. Work and rest protocols should be assigned accordingly.

Recommended Books

U S T A Publications. USA Tennis 1-2-3 for Adults Program Guide. Year: 2002. Pages: 84. Language: English. Level: Beginner and Intermediate. This book is designed to



give coaches and other instructors the tools to get adults and seniors (from 19 to 90 years of age) on the tennis court and playing tennis in a short period of time. It includes the fundamentals of the "Free 90-minute lesson" as well as six one and a half hour lessons for skill development and six one and a half hour lessons for practice and play. It also presents information on how to combine wheelchair and able-bodied athletes in an adult programme. **Learn to Rally and Play: A Coaches' Guide.** Year: 2002. Pages: 67. Language: English. Level: Beginner and Intermediate. This book is designed to give coaches the necessary tools to get children playing the game at their first practice. It provides ample exercises and games for children to perform with a partner. Primarily intended for children 6 to 14, this book also provides suggestions for pre-tennis activities for younger children. For more information contact: www.usta.com

LTA Publications. Nutrition Cards. Year: 2000. Cards: 7. Language: English. Level: All levels.



This collection of seven cards includes all that coaches and players need to know about nutrition and fluid ingestion in tennis. The cards include information on: a tournament guide to eating and drinking, fluids for tennis, nutrition for peak performance, high energy menu suggestions, eating for competition, what to eat and drink between matches, and high energy snacks. **Stretching Warm Up.** Year: 2002. Pages: 23. Language: English. Level: All levels. This book includes exercises geared for warm up and stretching before tennis or other exercise and for warming down afterwards. It includes specific exercises

for the neck, shoulders, arms, trunk and legs. For more information contact: www.lta.org.uk

ITF Science and Technology 2.

Stuart Miller Ph.D. (Editor). Year: 2003. Pages: 414.

Language: English. Level: All levels. This book presents the second in a series of the best papers on the science and technology of tennis from around the world. It provides a comprehensive overview of innovative research in tennis and is an invaluable tennis science and technology resource for coaches, players and students alike. For more information contact: www.itftennis.com/technical



Tennis évolutif: tennis cooleurs (Tennis evolution: colourful tennis).

By Olivier Letort with Marc Durand and Philippe Debat. Year: 2002. Pages: 166. Language: French. Level: Beginners. This book presents new teaching



methodology for children and adult beginners, which allows them to learn better and faster. It also focuses in on several tennis practices, which are fun and enjoyable for all those being introduced to tennis for the first time. For more information contact: olivier.letort@fft.fr

Tennis : apprendere ragionando (Tennis : learning by thinking).

By the Italian Tennis Federation. Year: 2002. Pages: 150. Language: Italian.

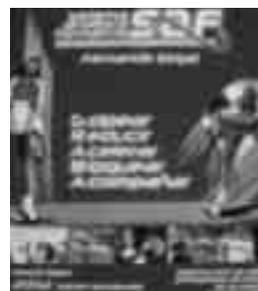


Level: Intermediate and advanced. A follow up to a previous volume produced for beginner players, this book includes chapters on stroke production, technical analysis and correction, technology and equipment, training systems, teaching methodology, physical training components and psychological skills for the game. For more information contact: www.fit.it

Tennis : sistema analítico formativo (Tennis : formative analytic system).

By Fernando Segal. Year: 2003. Pages: 233. Language: Spanish. Level: All levels.

Digital version: CD Rom. This book presents the fundamentals of the "Formative Analytic System" developed by the author and used in the Development Programme of the Argentine Tennis Association. The basic elements of this system include the four phases of stroke production: to hit, to decelerate, to accelerate, and to follow-through. For more information contact: fsegal@sinectis.com.ar



Talentforderung im Tennis (Talent development in tennis).

By Hans-Peter Born, Herbert Fuchs and Thomas Tasch from the German Tennis Federation. Year: 2002. Pages: 34. Language: German. Level: Beginner and intermediate.

This book presents the structure and methods of talent identification and development used by the German Tennis Federation. It discusses the motor and psychological implications of talent development as well as the training methods that should be used with talented players aged 6-11 years old. Issues surrounding competition and ranking of players in these age groups are also discussed. For more information contact: www.dtb-tennis.de





ITF BIOMECHANICS OF ADVANCED TENNIS

Edited by Bruce Elliott, Machar Reid and Miguel Crespo

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ISBN 1-903013-23-2 Pages: 224 Language: English

ITF BIOMECHANICS OF ADVANCED TENNIS is comprised of chapters by some of the tennis world's foremost biomechanists and coach educators. By combining their research efforts in the game with their coaching experience, these experts provide practical information on the biomechanics of stroke production and movement that can be applied to the coaching of both beginner and professional players.

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Babette Pluim, MD, Ph.D., President Society for Tennis Medicine and Science and member of the ITF Sports Medical Commission.

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