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The Official Coaching and Sport Science Publication of the International Tennis Federation

EDITORIAL

Welcome to Issue 66 of the ITF Coaching & Sport Science Review. The main focus of this edition of CSSR is tennis player development. The articles range from the Australian-based program for vision impaired players, the Italian Tennis Federation modern approach to mini-tennis, learning through movement consciousness, some physical considerations on long-term development of the players, developing a career strategy for tennis talents and the influence of motivation on player development.

Other topics in this issue include carbohydrate intake in professional tennis players, resilience of Down syndrome tennis players and how to establish a game plan.

The launch of the different ITF coaching publications as e-books has proven to be very successful. There are now available e-books in English, Spanish and French. Please [click here](#) to purchase your copy.

The ITF Tennis iCoach website remains at the forefront of online coach education resources, with up to date and current research available to coaches across the world. Some of the latest information produced includes a series of wheelchair training videos. For just \$30 per year you can keep up to date with the most current tennis specific coaching information. Please [click here](#) for a tour of the website.

Preparations for the upcoming ITF Worldwide Coaches Conference are well under way with some high profile coaches already confirmed. The event is being organised by the ITF in conjunction with the Turkish Tennis Federation (Turkiye Tenis Federasyonu) and Tennis Europe and will be held at the Kaya Palazzo Resort and Convention Centre. Please note that the Conference will be held on 24-28 November 2015. Read more by [clicking here](#).

The theme of the Conference will be "A Player Centred Approach to Long-term Development: Participation to Performance". Confirmed speakers so far include Francis Roig, Biljana Veselinovic, Max Merkel, Leon Smith, Beni Linder, Gabriel Jaramillo and Dominik Hrbaty, among others. For more information on how to register for this exciting conference, please visit the official page [clicking here](#).

The ITF Coaches Commission met at Roland Garros on Sunday 30th May 2015 and the meeting was chaired by Tarak Sherif (Tunisia/ ITF Board of Directors). A photo of the commission is shown below.



The ITF is happy to announce that the Coach Education Programme of the Norwegian Tennis Association has been recognised at gold level. Norway joins the group of nations that have reached the highest recognition level which include: Australia, Austria, Belgium, Brazil, Canada, Colombia, Cuba, Finland, France, Great Britain, Germany, Italy, Ireland, Netherlands, Portugal, Spain and Switzerland. The only nation recognised at silver level is India. Many coach education programmes of other nations worldwide are in the process of being recognised by the ITF at one of the different levels (gold, silver or bronze).

Finally, the ITF would like to announce that the ITF Coaches Commission has nominated Professor Bruce Elliott as the winner of the award for services to the game in coaching in 2015. Bruce is one of the top coach educators in tennis and is considered the world expert in tennis biomechanics. He has taken part in many ITF Coaches Conferences as a key note speaker and will be presenting at this year's Worldwide Coaches Conference.

We hope that you will find this 66th edition of the Coaching and Sport Science Review informative and that it will allow coaches across the world to build on and develop their coaching knowledge and to be more effective in their work as coaches. We also hope that you will continue to make use of all the other coaching resources provided by the ITF which can be viewed on the coaching webpage:

www.itftennis.com/coaching.

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Blind Tennis: Coaches' perspectives on an Australian-based program

Janet Young and Ray Fitz-Gerald (AUS)

ITF Coaching and Sport Science Review 2015; 66 (23): 3 -4

ABSTRACT

We generally think of Melbourne Park as the home of the Australian Open. Few would be aware that it is also home throughout the year to a program that attracts a loyal group of blind and vision impaired players. This program joins a growing number of national and international tennis programs that are breaking down long standing barriers for individuals who are blind or vision impaired (Lin, 2004). Reversing what was previously considered impossible, tennis is no longer only played by players with sight. It is now a fully inclusive sport that can also be enjoyed by persons who are blind or vision impaired. This paper reviews the Melbourne Park Blind Tennis program that is truly remarkable in terms of the benefits it affords all participants.

Key words: vision impaired, inclusive sport, coaches

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INTRODUCTION

Background to Blind Tennis

It started with a dream and became a reality for Miyoshi Takei, the founder of Blind Tennis. As recalled by Takei, a 16 year old Japanese teenager who lost his sight at the age of 18 months,

“I have an elder and two younger brothers; we grew up playing soccer, baseball and other sports. I obviously had great difficulty with baseball because I could not see the ball. It was frustrating. I worked on designing a ball that made noise so I could hear it instead of seeing it. But I was attracted to the sound of hitting a ball with a racket, playing tennis. People who play tennis know the pleasant sound ‘Paccoon’. I thought ‘I can play tennis if I can hear the sound of the ball.’ In 1984, I went to a high school for the blind and researched a tennis ball specifically for the blind. I thought ‘I can play tennis if I can hear the sound of the ball’... I wanted to play a sport like able-bodied did. I wanted to play a game WITH able-bodied. I wanted to play tennis on the same court with them. The only thing I needed was a ball which emitted a sound” (Takei, 2007, p.1).

History now records that the first sound-adapted tennis ball was designed by Takei in 1984 and the first Japanese national tournament for the blind was conducted by Takei in 1990 (Matsui, 2014). Takei himself was an outstanding competitor, winning 16 national titles before his death in a train accident at the age of 42 in 2011.

Blind Tennis at Melbourne Park

The Japanese Blind Tennis programs provided the inspiration for Ray Fitz-Gerald (then President of Tennis Seniors Victoria, Australia) to approach Maurice Gleeson (President of Blind Sports Victoria) and Tennis Victoria (a member association of Tennis Australia) in 2008 to develop a program specifically designed to engage people who are blind and vision impaired. Initially the program was conducted on outdoor courts at the Kooyong Lawn Tennis Club. The program subsequently moved to indoor courts at Melbourne Park to eliminate disruptive inclement weather and background traffic and train noises.

From its humble beginnings, the Melbourne Park Blind Tennis program is now conducted weekly with 24 sessions over 4 semesters each year. To date over 60 male and female players (aged 18-70 years) have attended the 2-hour program with approximately 10 players regularly attending each week.

Similar to other Blind Tennis programs (Bullock, 2007), elements of the game are modified depending on the skill level of the player(s). Modifications can include the adoption of :

- A smaller court area
- A lower net
- A variety of sound-adapted foam balls and large coloured soft balls
- A shorter racquet.

Players are allowed up to three bounces, depending on the degree of their visual impairment and the server must say ‘ready’ and the receiver must say ‘yes’ followed by the server saying ‘play’ before a point begins. The format of the sessions includes both singles and doubles with a number of possible combinations of pairings (i.e., coach and a player who is vision impaired hitting against another coach and a player who is blind or vision impaired).

The purpose of the program is to provide a fun and safe opportunity for participants to learn and play the game. The program is supported by a small team of qualified coaches and other volunteers. Volunteers are recruited from the general public and two major universities. They assist in organising and managing the equipment and also collecting stray or missed balls to avoid ‘down-time’ for players. Prior to their involvement in the program, volunteers attend an introductory training session conducted by a staff member from Blind Sports Victoria. This session focuses on ‘best practice’ and effective communication strategies for guiding individuals who are blind or have low vision. No prior coaching experience is required of volunteers but rather a willingness to learn and be passionately engaged in the program!

A short video clip of the program can be found at:

[https://www.vichealth.vic.gov.au/media-and-resources/video-gallery/picsar-friends-for-fitness.](https://www.vichealth.vic.gov.au/media-and-resources/video-gallery/picsar-friends-for-fitness)



COACHES' PERSPECTIVES ON THE MELBOURNE PARK PROGRAM

Recently a number of the coaches were asked to give their thoughts about various aspects of the program. Below is a summary of their key responses.

Critical considerations for coaching players who are blind or vision impaired

- Ensure the venue and court areas are accessible and safe “without clutter and obstacles that could be tripped over”. Providing an appropriate area for players’ guide dogs is essential

- Assist in the recruiting of volunteers for the sessions (one volunteer and one coach per player generally works well)
- No two players are the same so take the time to get to know each player and why he/she wants to learn and play the game
- Focus on a player's abilities, keenness and commitment to learn new skills
- Be respectful in all communications with a player ("treat the players as you would want to be treated" and "speak directly to the player")
- In consultation with a player, set targets to be achieved then monitor the progress as well as giving constructive feedback and encouragement at all times
- Make the session fun and take appropriate breaks for conversation, rest and socialising
- Minimise background noise to enable players to focus on hearing the ball bounce/be hit and on your voice
- Give accurate directions using 'the clock face' from a player's perspective (e.g., "move left or right at 10 o'clock" versus "move over there")
- Seek player feedback, comments and/or suggestions prior to, during and after the sessions
- Oversee the transportation arrangements for players to and from the indoor centre

How to make the sessions fun for players

- Assign player to groups/pairs of similar abilities
- Keep it moving' with a variety of games and activities
- Play tie-breaks or count continuous hits over the net for those who want to compete
- Factor in time to socialise and mix with other players and volunteers over a drink or rest in the adjoining lounge area
- Lead by example and enjoy the coaching

Why the program is important to coaches

- There is tremendous satisfaction in helping people who are blind or vision impaired to be physically active and enjoy their tennis
- It is an opportunity to give something back to the game
- It is great fun to interact socially with the players and other volunteers
- It is a valuable and rewarding learning experience that further develops the teaching skills of the coach

What the players get out of the program

The program provides an opportunity for players to:

- Have fun
- Be physically active and improve their fitness levels
- Learn new skills and improve their game
- Socially interact with other players, coaches and volunteers
- Be part of the tennis community and play at a first class tennis venue
- Build on an interest in tennis and sport
- Gain confidence in their abilities and build self-esteem
- Establish and foster a valuable support network

CONCLUSIONS

Traditionally sport (including tennis) has been the domain of the sighted (Vose et al., 2011). Sight loss or vision impairment was frequently cited as a reason for individuals being physically inactive or unable to play sport. Indeed, tennis was a game many blind or vision impaired individuals thought they would never play. All that has now changed with a new approach/philosophy that espouses tennis as an inclusive sport for all, if modifications to the game are made and individuals are willing 'to have a go'. The Melbourne Park Blind Tennis program is an example of what can be achieved. It also enriches the lives of coaches, players and volunteers. The benefits far extend beyond simply learning the game. As reported by a player in a similar UK based program, "I felt the world opening up to me again" (Battarel, 2014, p.243). In this review coaches provide insight into and clues for providing respectful, engaging and fun tennis sessions for people who are blind and vision impaired – not that these insights and clues are necessarily different when coaching other populations of players. Rather, they remind all coaches of the fundamental principles essential to being an outstanding ambassador of our great game of tennis.

FUNDING

The Blind Tennis program at Melbourne Park is supported by Blind Sports Victoria, VicHealth, Tennis Victoria, Tennis Australia, Tennis Seniors Victoria and donations.

ACKNOWLEDGEMENTS

The first author, Dr Janet A Young is currently the Patron of Blind Sports (Tennis) Victoria. Both authors would like to thank Mr Maurice Gleeson and Mrs Kerin Tullock for their comments on this paper.

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RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

Tennis iCoach

An athlete's long term development “the integral preparation of the developing player”

Fernando Vilches (ARG)

ITF Coaching and Sport Science Review 2015; 66 (24): 5 -6

ABSTRACT

Tennis is a sport that requires the combination of general and specific skills. Traditionally, when talking about the preparation of an athlete, one usually refers to his physical preparation giving an added value to the preparation of the “body or the physical aspect”. This article intends to provide an approach in which the preparation of the player is an integral method. It includes a physical conditioning programme delivered at the tennis schools and will be the foundation for the long term development of an athlete.

Key words: integral preparation, movement, coordination, athlete

Article received: 10 March 2015

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Article accepted: 14 July 2015

INTRODUCTION

It is interesting to see the skills that a tennis player produces for each point: from using his perceptive skills to get as much information as possible from the incoming ball; movement skills to react and to choose a direction (generally variable) towards the bouncing ball, and stopping skills and specific adjustment to impact the ball, to using all his coordination and technical skills to make an accurate shot. All this is governed by a cognitive process of decision making that helps a tennis player hit the ball as quickly as possible to the other side, making it difficult for his opponent to retrieve the ball. The skills above must be practised continuously in milliseconds and must last over approximately 90 minutes, equivalent to the duration of a match.

That is why a coach should propose an integral preparation for the players, in which physical conditioning includes not only the physical-motor aspects, but, at the same time, perceptive aspects and decision making that can include the specific problems of the game.

Research on the player development process states that to reach elite levels it is necessary to train between eight and twelve years (Bloom, 1985; Ericsson et al. 1993; Ericsson and Charness, 1994). This is called the 10 year or 10,000 hour rule. For athletes, coaches and parents, this means training three hours a day, during ten years (Salmela, 1998). On the other hand, in many cases, working targets are set for the short term. However it is my belief that to develop elite athletes in all sports, it is necessary to make a long term training commitment.

Having made a short introduction, I would like to focus on the first stages of a player's development, since many of the above mentioned skills are work-sensitive phases or apparent from an early age. In general, there are no physical-motor programmes in tennis schools, nor do they integrate perception, or visual components or the like.

The new pupil and his/her relationship with movement

Because of the technological advances, kids receive a number of stimuli (most of them visual) that restrict them mostly to sedentary and passive activities, instead of being involved in body movement and dynamic activities. It is for this reason that I consider it key to include motor development related activities at tennis schools. The development of basic motor skills, coordination skills and perceptive - motor adjustments are the ideal complement and the basis for the development of more specific and complex skills, such as sport technique.

PROPOSED METHODOLOGY

The road to the integral preparation of the player is presented by developing 3 axes that are progressively integrated, according to the development stage of the player.

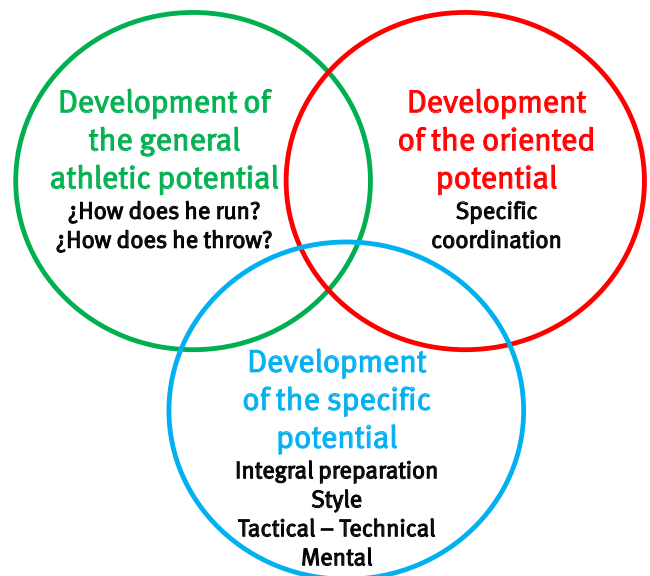


Figure 1. Tennis school model implementation.

DEVELOPMENT OF THE GENERAL ATHLETIC POTENTIAL

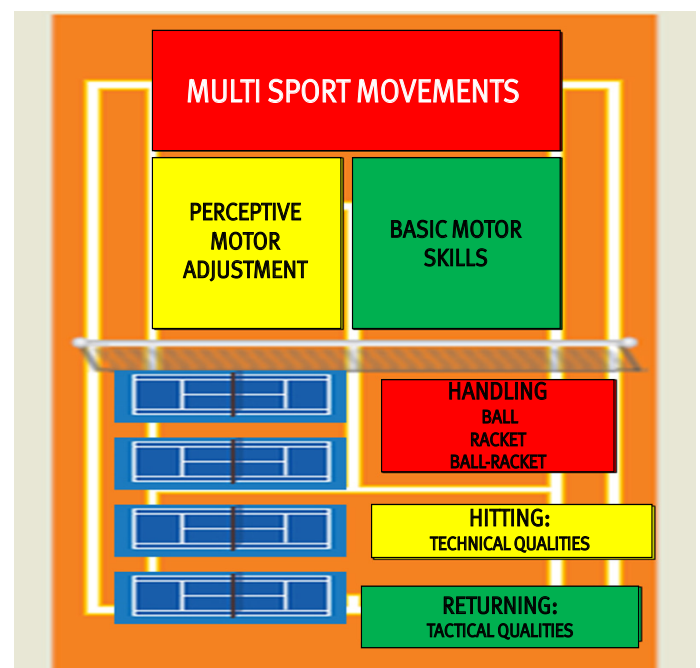


Figure 2. Application of integral development plan during the first stages of tennis school.

Proposed work:

1) The game as the main focus of this stage: All activities are within the structure of the game. Other sports are included in the tennis lessons, adapting the rules to be able to practice them on a tennis court. The inclusion of other sports lets the child work motor development, solve problematic situations and practice decision making (sports like football, hockey, basketball, baseball are included).

2) Development of basic motor skills: The practice and combination of motor skills is a fundamental pillar to learn more complex ones, such as sport techniques (with emphasis on movement, throwing and receiving skills).

3) Motor perceptive adjustment: These tasks are related to the knowledge of one's own body and its relation with time, space, and objects. This contributes greatly to the manipulation of complex elements like the ball and the racket simultaneously.

During this stage everything is adapted to the child through the game and amusing competitions, always respecting the individuality and personal experience of each child.

DEVELOPMENT OF THE ORIENTED POTENTIAL

During this period the work is oriented towards the specificity of the sport, and in line with the athletic potential developed in the previous stage.

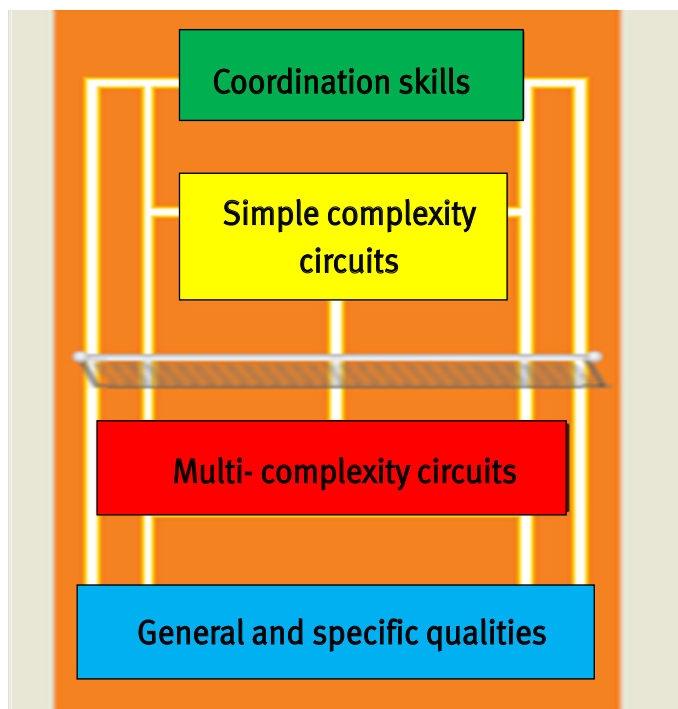


Figure 3. Development of oriented potential.

Proposed work:

1) Development of coordination skills: They are fundamental at this stage and the progression of the activities is the following:

- Development of a specific skill
- Combination of 2 or more skills.
- With a specific orientation (Ex. Service).
- Combining a conditional capacity.

2) Simple complexity circuits: It consists of a series of circuits that combine general and specific skills that include game situations like changing direction, reacting to a stimulus, deceleration, playing accurately, etc.

3) Multi- complexity circuits: They consist of organisation exercises that are similar to the previous ones, but with the added value of decision making and adaptation to a specific game situation.

4) General and specific qualities: Exercises for the integral development of capabilities, including technique of the exercises and proprioception and injury prevention.

DEVELOPMENT OF THE SPECIFIC POTENTIAL

This stage consists of the integration of all working areas (physical-technical-tactical-mental). The work is adapted to the style and individual needs of the players.

- 1) Planning work according to the competition calendar.
- 2) Specificity of each capacity and coordination complexity.
- 3) Decision making, anticipation, peripheral vision exercises.
- 4) Injury prevention work.
- 5) Periodic follow up and evaluation of the player.

CONCLUSION

The methodology of an integral physical conditioning plan is one of the main pillars in the development process of a player. This programme can be deployed from the tennis schools up to top performance levels, considering the characteristics and the work needs of each stage of the player.

This work helps to adjust the traditional contents of physical conditioning to the current needs of the sport by integrating all areas, improving the dynamics, the creativity and the specificity of each coaching session.

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RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

Tennis*i*Coach

Coaching “change” while keeping the coach/player relationship strong

Federico Di Carlo (ITA)

ITF Coaching and Sport Science Review 2015; 66 (23): 7 - 8

ABSTRACT

Modern neuroscience is proposing time models on how changes in brain neuro-patterns change human cognition, emotion and behaviour. Indeed the word “change” is very often used by coaches at any grade and level to elicit different behaviours from athletes and tennis players. However, in an individual sport like tennis in which self-esteem and confidence are paramount, the word, concept and image of “change” may shake the player’s self-esteem and jeopardise the overall coach-player relationship.

Key words: coach, player, change, performance

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INTRODUCTION

The neuro scientific approach is becoming more and more popular in sport coaching. Research has been conducted on the brain via MRI scans displaying results in neural plasticity and related cognitive, emotive and behavioural flexibility (Robertson, 1999). The fact is that the word “change” is becoming increasingly popular in cognitive, emotional and behavioural sport coaching (Lee, 2013). Coaches are aware that working with a tennis player means introducing news was of thinking and/or asking a player to use adapt to alternative coaching methodologies. A coach’s presence on a court more often than not causes additional stresses on a player. However, coaching means introducing changes.

If coaches intuitively know that changes need to be proposed progressively and gradually, very often they miss the impact that “change” may have on the player mentality and how it may affect their relationship too. Change is indeed one of the hardest human tasks to undertake. Changing requires challenging the conceptual assumptions that a person holds for true and established. On the other side, it is widely accepted that trust and self-esteem are paramount to an athlete’s best performance (Weinberg et al, 2011). Any coach requesting change must pass the athlete approval and his/her cognitive, emotive and behavioural system may oppose resistance (Dorfman, 2005). Challenging personal standing points, beliefs and concepts means exposure to unknowns, insecurities, doubt and fear; on the other side players need to rely on what he/she knows, feels comfortable and secure with in order to perform and be competitive (Fox, 2010). So player resistance to change is normal and to be expected. So player resistance to change is normal and to be expected. Operating change without harming the player/coach relationship is a paramount skill and a desire for all coaches.

Any time a coach is asking a player to make a change he is asking him to reduce his immune system (confidence and self-esteem) and making him more vulnerable (doubts and fear). It is not the case that most of athletes respond negatively to change. However, not all athletes respond negatively, many are aware of the fact that by embracing change they are enabling their own development and therefore not undermining the coach’s beliefs.

Never ending improvement (trainability and the capacity to work on changes) is the trademark of a champion’s mentality as much as a player’s strong belief and perception about personal abilities and tennis skills. The risk is that by enhancing a trainable player’s mentality the self-confident competitor may suffer. On the other hand by enhancing a self-confident competitor’s mentality it may result in a player being reluctant to change

Unfortunately one potential outcome is the termination of a coach and player’s relationship. The circuit is full of players that aren’t improving with the turnover of coaches at an all-time high. Relationships between player and coaches often become conflictive (coaches blame players for not implementing the changes the coach believes are required and players blame coaches for not being capable of coach effectively).

PRACTICAL APPLICATION

So how should a coach approach these apparent contradictory aspects of a tennis player’s mentality? How should a coach enhance the desire to change and the necessity to be confident in one player at the same time?



Consciousness.

In my opinion a coach should make clear to the player that a potential problem may exist and that if the process of changing is not clear, the end results of these coaching practices as well as the relationship between coach and player may be jeopardised. The player must be open, flexible and willing to accept and implement new/revised methods, skills, concepts while also maintaining their determination, confidence and trust in the new coaching practices when competing. The coach must be clear to the player that their relationship is based on trust and two-way open communication.

Two steps forward one step back.

I believe a player must be informed that the process of change requires significant time, effort and stress. Introducing change means coming out of your comfort zone. It means challenging previous thoughts and beliefs may cause a player to endure a run of poor results in the short-term. Improvement as a result of change doesn’t occur smoothly or at a steady rate. . Typically it results in a player showing initial signs of improvement before hitting a wall and perhaps faltering before finding their way again. Often the progression may seem as though the player is taking two steps forward and one step back. The process of improvement tends to take less time when a player has a positive mind-set and embraces the change. The coach must make clear that change is paramount enabling a player to achieve their potential and maximise their skill development

Make change friendly through communication.

Furthermore I think that a good communicative coach should avoid (ab) using the word “change” and “changing”. He/she should make themselves clear so that when talking about “change” by no way is he/she criticizing the player’s ability or mentality. Unfortunately, whenever using and hearing the word “change”, our minds unconsciously build the image and the construct of error or mistake. Of course by telling a player that they must change something, it is implied that he/she is not doing something correctly and that they are doing it wrong. You may understand of course that the word “change” in that sense implies that a coach is criticising a player’s actions or ability. It is a judgment on his perceived ability and skilfulness, an attack on his confidence and self-esteem. Moreover, the player may also feel that such criticism is not warranted and it is not consistent with his achievement history and career. For this reason, instead of the word/verb “change” I would highly recommend coaches replace it with “improve/improvement”, “adjust/adjustment” or “upgrade”. These statements imply that the player does not need to refuse and disregard his past acquisitions but that he may use it as a foundation on which to build from in the further and enable them to achieve higher levels of performance. These phrases also maintain a player’s self-esteem and confidence.

You can bring a horse to water but you can’t make him drink.

In my opinion as a coach you can should take time to build a rapport with a tennis player; you can make communication processes straightforward; you can implement communication strategies to facilitate accepting changing on his side; you can schedule change activities in an easier to digest process; you can check and verify the process of changing. However, the action to undertake change

can only be taken from a player. Changing requires player effort and struggle and it is his/her choice to go for it or refuse it. There is not much you can do if the player himself is not willing to accept and undertake actions to change. In those cases, since improvement in the long term is impaired and your work is bound to produce poor or few positive results, it is up to you to decide whether it is worthwhile to continue working with that player.

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RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

Tennis  **iCoach**

The modern approach to mini-tennis

Italian Tennis Federation (ITA)

ITF Coaching and Sport Science Review 2015; 66 (23): 9 - 10

ABSTRACT

This article makes a detailed presentation of the fundamental principles underlying the modern approach to mini-tennis according to the Italian Tennis Federation. The article starts with a consideration on the didactic situation in mini-tennis, followed by a central part which deals with didactic principles that create favourable conditions to structure an optimal learning experience. These fundamental didactic principles are: multi-laterality, multi-form, gradual progression, learning specificity and learn while playing.

Key words: coordination, teaching, learning

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INTRODUCTION

The didactic situation in mini-tennis

Mini-tennis methodology intends to modify the didactic approach of the past concerning the relative importance of the elements that make up what is called the "didactic situation". These elements are: the student, the atmosphere, the teacher and the exercises.

The student, and not the coach (as it used to be), is the central didactic figure and, thus, the real protagonist of the teaching-learning phase. On the other hand, the atmosphere must be adapted to favour learning and, therefore, the climate must be encouraging and agreeable. The typical statement "you get better at school if you feel fine" can also be adapted to a sporting environment. The coach should, in a practical way, adopt the objective of meeting the fundamental needs of the child (i.e. the need to play, to move, the need for simplicity, the need to be loved, etc.). And exercises should be organised in a varied way to meet the demands of the students, modifying the playing practice.

THE DIDACTIC PRINCIPLES OF TENNIS

Some didactic principles have been defined in mini-tennis which, if correctly applied, create favourable conditions to structure an optimal learning experience. These fundamental didactic principles are: multi-laterality, multi-form, gradual progression, learning specificity and learning while playing.



Multi-laterality

This term expresses the didactic proposal which deals with several competency areas at the same time. These are mental, motor, tactical and technical areas. These tasks influence reciprocally, so, the coach should pay special attention to make sure the didactic proposal is not exclusively constrained to the technical aspects, and lays emphasis on the importance of other areas to favour the tennis player balanced growth.

By way of practical example, the introductory phase of the lesson should create the conditions for the students to be available for the learning process (mental area), by means of a good emotional atmosphere. The activation phase will include coordination activities which will state the premises for the optimal progressive learning of the different skills (motor area). In the central phase, the coach will propose activities related to the tactical objectives at the competency level of the students (tactical area), providing relevant indications to guarantee the acquisition of different technical skills (technical area). In the final phase of the lesson, by means of games, and playing activities (Introduction of competitive aspects), it will be possible to guarantee a combination of the different areas considered. It is important to mention that in each of the phases in the lesson it is key to include all areas. For example, in the central part of the tactical activity, part of the activities related to the acquisition of technical skills must be connected to the tactical objectives as well. These activities should be active, fun (to activate a good level of perceived self-efficacy) and must favour the development of the coordination capabilities.

Multi-form

The activities to meet the objectives set for the sessions should always be included in a different way, if possible. Multi-form is two-fold: on the one hand, the idea is to meet the demands of the child who is constantly looking for new experiences, but at the same time, has a limited concentration capability during a long period doing the same exercise over and over again, so, variation is a fundamental requirement for fun. On the other hand, continuous changes of the exercises also aim at experimenting different motor experiences, even trying to reach the same objective, thus, enlarging the motor skills of the person.

The requirement for a multiform proposal is a written plan which the coach can organise the activities with, avoiding stereotyped and repetitive activities. Therefore, the competent coach places the child at the centre of the didactic situation, knowing that there is a contrast between what can be more comfortable for him as an adult (repeating the same exercises), and what the child likes (to vary the activities as much as possible). We must remember that the didactic principle of multi-form should always be integrated with the specificity, the adaptation and the relevance of each exercise. It is worth noting that the variability of the didactic proposal should not only include different exercises, but it should also try to include more technical skills in the lesson, combining everything as much as possible to produce playing actions.

Gradual progression

The degree of difficulty of the exercises must always consider the cognitive and motor level of the students. Adapting contents and consolidating skills are a fundamental premise for the correct application of this didactic principle.

As a practical example, the coach is in front of the student hand-feeding balls, for the latter to make the technical swing adopted before. Then, the coach will move a little further, facing the student and will continue hand feeding, making the execution simpler.

The technical skill may progress in a global way or use the analytic method according to the competency level of the students. Finally, the coach goes to the other side of the court, facing the student, close to the net, and throws the ball with his racket. Then, the coach interacts with the student, working the technical skill in a rally (it is ideal for the coach to adapt the rhythm of his strokes to the playing level of the student, so as to give him the opportunity to visualise the ball, organise temporarily and improve the execution "timing". The students should be able to progressively apply the skills in the dynamic phase, moving correctly towards the direction, trajectory and speed of the incoming ball.

Specificity of learning

This principle states that skills are generally acquired in a global way, and when applied to the real game situations, they favour optimal learning experiences. An important consequence of this principle is skill learning by means of a didactic interactive proposal. In fact, when setting the conditions in which the student will be able to get the skills during the rally phase, it will be possible to make an important impact on the following factors:

- a. Activation of the "positive emotion-positive past images-repetition of the experience" virtuous circle.
- b. Development of coordination capabilities.
- c. Tactical learning of the game strategy.
- d. Technical skill learning of game situations similar to those in which the students will progressively handle the matches.

Learn while playing

Learning and fun should always be considered in a circle. Thus, when the ludic part plays a fundamental role in making the students interested in learning, competency acquisition ("knowing how to do") is guaranteed when there is constant fun during the activity. As to the practical examples, for instance, some students in the training phase, play matches without having the didactic competency to assure a successful experience. These matches are not likely to be fun. On the contrary, if the students learn the different skills in an adapted way, they will understand the relationship between fun and positive results. This is an important condition to activate a level or perceived self-efficacy (including the mental area), indispensable in case you want to continue playing tennis in future years.

CONCLUSION

Figure 1 sums up the contents of the different didactic areas that develop during the mini-tennis stage.



Figure 1. The contents of the different didactic areas that develop in the mini-tennis stage.

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[RECOMMENDED ITF TENNIS COACH CONTENT \(CLICK BELOW\)](#)

Tennis*i*Coach

Developing a career strategy for tennis talents

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ABSTRACT

In the business industry strategic planning is vital in reaching objectives and experiencing success. Tools to create a successful management strategy in the business field can be applied to sports and hence to tennis. This article provides coaches with practical tools to formulate a career strategy for tennis talents.

Key words: strategic planning, SWOT-analysis, SMART-goals

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INTRODUCTION

Strategic planning is a systematic process of envisioning a desired future, and translating this vision into broadly defined goals or objectives and a sequence of steps to achieve them (Business Dictionary, 2015). The process is common practice in the business industry and can be easily translated and applied to the sports industry. Hence, the tools (e.g. SWOT-analysis) entrepreneurs utilise to establish a strategic plan for businesses, are similarly applicable to the career planning of talented athletes.

Why do tennis talents need a strategic plan?

Strategic planning produces a holistic plan for the development of talents. Since long-term success is not exclusively the result of on-court development of technical and tactical skills, one has to assess other catalysts in the development process as well. These catalysts can be intrapersonal (i.e. rate of learning, training and maturation of anthropometric, physiological, technical, tactical and psychological skills) and environmental (i.e. opportunities created by parents, trainers, coaches, talent development programmes and the competition structure) along with a component of chance (Elferink-Gemser, Jordet, Coelho-E-Silva & Visscher, 2011; Mills, Butt, Maynard & Harwood, 2012).

A strategic plan also provides an overview of long-term and short-term objectives. Long-term aims and methods are a key generic feature in the effective development of talent (Martindale, Collins & Daubney, 2005). According to Locke and Latham (1985) goals affect performance by affecting effort, persistence, and direction of attention, and by motivating strategy development. Moreover, goal setting gives an athlete a sense of control and self-direction.

Strategic planning requires identification and evaluation of the player's talent and environment. Ultimately this should provide talents, coaches and other individuals involved with a coherent report of the desired and attainable objectives. Which in turn serves as a guiding principle in reaching the elite or maximum potential. Martindale et al. (2005) point out that given the large number of key influences in our (i.e. athletes) lives, it is extremely important to understand how powerful the effects of coherent messages from these various influences can be.

Furthermore, having a strategic plan in place could prevent overachieving or mishaps. For example, it could stop coaches, players and parents from aiming for the world number one spot, when a careful analysis shows that a top 100 spot is a more realistic objective.

STEPS IN THE STRATEGIC PLANNING PROCESS

In business, strategic management consists of three basic elements: first, the formulation of the strategy; second, the implementation of the strategy; finally, the control and evaluation of the strategy (Houben, Lenie & Vanhoof, 1999). Similarly, coaches can develop a career plan by formulating a plan and consequently implementing it, before ultimately evaluating the process.

The steps in the strategic planning cycle form a continuous process. Foremost, because of the dynamic environment surrounding young tennis talents. Hence, a career plan should simply serve as a guiding principle in a talent's career and will require constant adaptation.

Formulation of a strategy

Formulating a strategy demands a comprehensive analysis of the athlete and its surroundings. Before establishing an ultimate goal, an assessment has to be made of the internal and external environment. Moreover, sub-goals need to be set. Where successful completion of the sub-goals must result in reaching the end-goal.

SWOT-analysis

The first step in the development of a strategic plan is the identification and evaluation of strategic factors, which assist or hinder the company (i.e. the athlete) in reaching its full potential (Houben et al., 1999). A frequently utilized tool in identifying these factors is the SWOT-analysis. Here SWOT stands for 'strengths, weaknesses, opportunities and threats'. The analysis identifies the internal – strengths and weaknesses – and external – opportunities and threats – environment (Houben et al., 1999; Kotler & Keller, 2009).

When analysing the internal environment, and thus formulating the strengths and weaknesses of a player, one should especially look at a player's on-court strengths and weaknesses. For coaches this is probably the easiest step, identifying the weapons of their players (e.g. service) and at the same time game-elements that make their players vulnerable (e.g. fear of failure). However, the internal environment also applies to the athlete's strengths and weaknesses off-court and these should therefore not be overlooked.

When analysing the external environment one has to look beyond the athlete. The literature points out that there are many factors (e.g. parents, peers, resources and culture) involved in the development and eventual success of talented athletes (Martindale, Collins & Abraham, 2007; Martindale et al., 2005). These factors are each capable of driving (opportunities) or limiting (threats) an athletes' progress.

An example of a SWOT-analysis is given in the figure below:

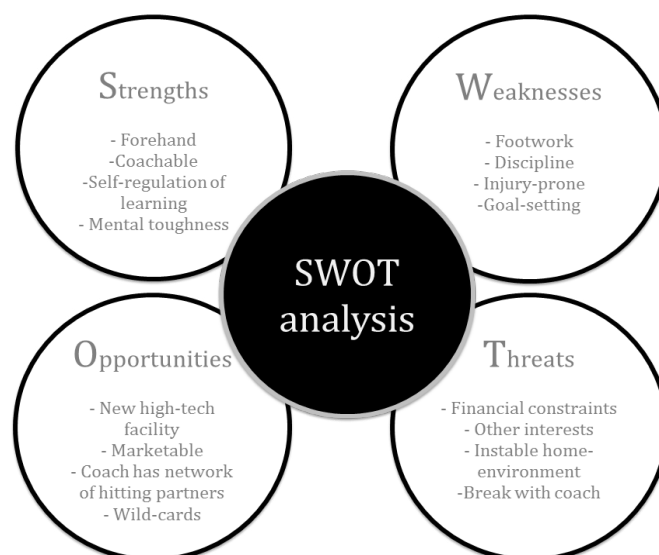


Figure 1. Example of a SWOT-analysis.

SMART-goals

The next step in formulating the strategic plan is defining the (business) mission and formulating goals (Kotler & Keller, 2009). After a SWOT-analysis has identified internal and external factors that might drive or limit an athlete's development, it will be easier to define a realistic final objective(s) (e.g. become a top 50 player, win a Grand Slam).

Long-term aims should subsequently be broken down in sub or short-term goals. Setting short-term goals can facilitate the achievement of long-term objectives. Furthermore, sub-goals prevent viewing the end-goals as beyond one's capability to attain or to take seriously (Locke & Latham, 1985).

Goals are frequently designed and/or tested with the principle of SMART-goals. Here SMART stands for 'specific, measurable, attainable, relevant and time' (Olympic Movement, 2015). This principle requires goals, whether short-term or long-term, to have the following characteristics. First, goals need to be specific and thus clear and well defined. Research findings have repeatedly demonstrated that specific, difficult goals lead to better performance than vague or easy ones (Locke & Latham, 1985; Taylor & Wilson, 2005). Goals also need to be measurable. Adding a quantitative element will make them measurable and specific (Locke & Latham, 1985). This will not only show whether goals were achieved, but also whether they were too easy or too difficult. The latter touches upon the third element of the SMART-principle, that goals need to be attainable. However, since difficult or challenging goals produce better performance than easy ones, goals should be attainable but not too easy. In addition, goals have to be relevant to the ultimate career objective or to other short-term targets. Finally, the SMART-principle requires goals to be time-bound. Having a time frame assists in focus and provides a sense of urgency.

PRACTICAL

SMART-goal:

By the end of next month (time) my first-serve percentage (specific) has to improve from 60% to 65% (measurable).

A 5% higher first-serve percentage should be attainable and it seems a relevant objective to improve one's game.

Another example:

Move into the top 100 (measurable) on the world ranking (specific) by the end of next year (time).

Instead of: the ranking needs to be improved.

Table 1. Practical implementation of SMART.

Implementation of the strategy

The SWOT-analysis and SMART-principle have served as guide through the process of formulating the career strategy. Now it is time to implement the strategy. The strategic plan should be flexible, given that the lives of young individuals are highly susceptible to change. Hence, even after implementation it remains a permanent process to adjust and reformulate the plan.

It is vital that talents themselves play a key role in the whole process. Athletes must take responsibility for their career plan, goal setting and development. Studies have shown that future successful athletes take responsibility for the progress they make and that they score higher on aspects of self-regulation of learning, such as reflection and effort (Elferink-Gemser et al., 2011).

Evaluation of the strategy

The final step in the strategic planning cycle is evaluation of the strategy. Gathering feedback (e.g. from the player or parents) is part of this process (Kotler & Keller, 2009) and can be extremely beneficial when goals need to be adjusted. Due to the application of the SMART-principle, the set goals are measurable. This in turn makes it relatively easy to evaluate whether goals are reached or not. The assessment might suggest the need to redefine goals to make them more appropriate or realistic.

So despite the fact that evaluation forms the last important step of

the strategic management process, it can also serve as a starting point for a new cycle by indicating weaknesses (of the company) in previously implemented strategic plans (Houben et al., 1999).

CONCLUSION

The process of developing a talent into world-class or simply reaching its full potential is an uncertain and no-guarantees one. Strategic planning can assist coaches in creating a coherent message for all parties involved. Moreover, it can serve as a guiding principle along the way.

Similar to managers in the business industry, coaches should utilize the SWOT-analysis and the SMART-principle to assess the environment, and identify and formulate goals. Setting specific goals affect performance by affecting effort and persistence among others.

When the strategic plan is implemented it will then remain a continuous process to adjust the goals and make them SMARTer. The final step, which serves as a starting point as well, is the evaluation of the process and progress.

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RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

Tennis  iCoach

Resilience in tennis players with varying disabilities

María Agustina Viola and Yanina Vicente (ARG)

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ABSTRACT

This paper intends to demonstrate that tennis players with different abilities have high levels of resilience, as well as a great number of other benefits, and, to encourage resilience while keeping this in mind.

Key words: adapted tennis, different abilities, resilience, sports psychology

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INTRODUCTION

The subject of sport for people with different disabilities (wheelchair, amputees, Down syndrome, etc.) has gained increasing importance over the years. Today in Argentina, and all over the world there are associations, foundations, schools, clubs, etc. that include tennis practice for people with different handicaps. Among the most important we can mention, are the International Organisation for Competitive Sport for the Disabled from the IPC (International Paralympic Committee) and the IOSDs which are the five international sport organisations (CPIsRA, IBSA, INAS-FID, ISMWSF, ISOD). For adapted tennis, the ITF (International Tennis Federation) has the WTDF (Wheelchair Tennis Development Fund), which together with the Johan Cruyff Foundation, helps over 39 countries to develop this sport. In Argentina, the Argentine Adapted Tennis Association (AATA) was created in 1997.

THEORETICAL FRAMEWORK

According to the World Health Organisation, disability is a general term that includes deficiencies, constraints to the activity and restrictions to participation. Deficiencies are those problems that affect a body structure or function, constraints to the activity are difficulties to perform actions or tasks and restrictions to participation are problems to participate in vital situations. Therefore, disability is a complex phenomenon that reflects an interaction between the characteristics of the human organism and the characteristics of the society where humans live.

The condition of disability brings about many changes in a person's life, and so, it is necessary for him or her to use different mechanisms to adapt to this new situation and to learn to live with the restrictions these changes entail. There are persons who learn and benefit from the traumatic situations they have experienced. It is at this point where the concept of resilience enters into play (Suriá Martínez, 2012). There are different definitions, but the common factor to all of them is the capacity to face, overcome and benefit from the traumatic fact. It is worth mentioning that resilience is not a static characteristic of the personality, it can vary with the time and circumstances. It is for this reason that it is possible to work on those factors that encourage the resilient process. Sport can be an important tool to reach this target. From the psychological point of view, sport helps disabled persons to forget their barriers for a while, to strengthen their psyche (affection, emotions, control, perception, cognition) and creates room for self improvement in which the individual sets targets and gets better day after day overcoming and readjusting them (Zucchi, 2001).

TARGETS, MATERIALS AND METHOD

This paper intends to demonstrate that tennis players with different abilities have a high degree of resilience. In order to do so, we used the Resilience Scale (Wagnild & Young, 1993) and interviewed tennis players with different abilities between 15 and 45 years old, men and women, and with a motor disability (either acquired or from birth) who practice the sport on a wheelchair or with a prosthesis.

RESULTS

The resilience scale indicates that the level of all players is above 121 points, that is to say, it is either moderate or high. Eight of them got a score of over 145 which shows a high degree of resilience. And it confirms the hypothesis that people with different abilities, who play tennis, have a high degree of resilience. Then they were divided into subgroups (men-women, wheelchair-standing tennis, born-acquired disability, young-adults) and no significant differences were found among them, although adults over 35 got higher scores than the young, and the group of adaptive tennis players in a standing position did better than those who play on a wheelchair.



CONCLUSIONS AND DISCUSSION

Apart from the points that the scale provides, it is important to highlight the information retrieved the interviews: we found that not only does tennis favour resilience, it favours a number of other factors. It is surprising to see the number of players who say that tennis practice has helped them to be more independent, to demonstrate that they can, that they are able to do things by themselves. This can be seen in statements like: "because of my disability, I profited from it, but tennis has taught me I can be myself" (Lucas, 15 years old), "Tennis taught me to be independent, to open my arms and to face life" (Matías, 23 years).

Others emphasise this feeling of "not feeling less than others", to demonstrate that they can do just like others can, like "normal" people, Lucas says. "I felt that normal people, if I may put it that way, those who do not have a physical disability could practice sport, but...why not me?" and he stresses it again when he encourages others to play, "a person with disabilities or different abilities can

do the same things or more than a normal person". So, I would tell a person with a disability to have the courage to do what he aims for, what he wants", and Matias says: "I feel tennis gives me the possibility of doing so, of running. I thought that I couldn't do it with the prosthesis, but I discovered that I can." Another aspect that players consider positive has to do with the physical and the social aspect, they say it helps them to not "to mope around all day", it helps them to meet new people and make friends, "sport helps me a lot, I am in contact with a lot of guys, sometimes you don't realise, but it helps you a lot, they teach you a lot, and you too, you are teaching them a lot of things, it is not just coming here and playing tennis and that's it, you go home there are many things that are brooding over in your head" (Florencia, 25 years). "Me, on my part, I can help other children with my experience, it is exactly what matters most, isn't it? [...] The truth is, it helped me, because I see that there are many people in a situation similar to mine and whether it is an amputation, or being plump, or being white or black, people discriminate against you, and when you feel discriminated against, you withdraw within yourself. I tell those people: "do get together, do create a group of people like you and then you learn" (Jessica, 35).

It is also important not to give up, not to take a passive attitude towards life, as Leonel put it, "I would tell them not to stay home sitting or lying in bed, to live their lives because life goes on. It is important, whatever happens, go on, and find something to do because life passes quickly and lying around is no use".

We believe that tennis can be a source of comfort to persons with different abilities. Our research was carried out only with players with motor disabilities, including wheelchair tennis and adapted standing tennis, but we must say that the research field is far broader. It would be interesting, and it is our purpose to extend this research, not only including other types of disabilities, but also the size of the sample and the benefits. Additional potential avenues for continued research could be to analyse the differences between those persons with different abilities who play sports and those who do not.

This research intends to spread the knowledge, support and favour sport practice in persons with different abilities.

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RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

Tennis  **iCoach**

Establishing a game-plan

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ABSTRACT

This article discusses the importance of a clear game plan when approaching match play. It describes each phase of the game planning process from prioritising game styles to evaluating matches as well as how to put the game plan into action with the ability to be flexible when change occurs.

Key words: game plan, tactics, awareness, flexibility

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INTRODUCTION

A game plan is vitally important to the player's overall success in match play because it provides an initial direction from the start of a match. At the beginning of matches, usually players focus on being competitive and getting off to a good start. A game plan can add more purpose. Players must be careful when establishing a game plan because its success is contingent on the execution of shots, and sometimes what the player thinks will work may not work as well as was hoped.

GAME PLANNING PROCESS

The game planning process is exactly that – a process – and it should be used to help the player formulate the best possible scenario to help the player's competitive level. The following steps can help players and coaches design a basic game plan:

1- Prioritising game styles

The player should list their preferred game styles from favourite to least favourite which will heavily depend on the individual and what they consider achievable and comfortable. Players must have their best game plan in mind, followed by their second, third and fourth best plan of action

2- Assessing strengths and weaknesses for first and second favourite styles

Players assess their strengths and weaknesses in their number one and two playing styles. For example, if a player's top style is serve-and-volley style, the player's strengths might be the serve and first volley, and a weakness may be rallying from the baseline. If the player's number two style is the aggressive baseline style, a strength might be attacking forehand inside out, and a weakness might be the backhand up the line.

3- Prioritising patterns of play within the style

These patterns of play are options within a style. Players should prioritise options for both serving and receiving games. For example, if a player's game style is a serve-and-volley and attacking baseline hybrid, this player might use the following options for service game:

Option 1 – Slice serve out wide on the deuce side, approach the net, and volley into the open court. Kick serve on the ad side, approach the net, and volley in the open court.

Option 2 – Serve up the T, look to move around the next ball, and attack with a forehand.

Option 3 – Jam serve into opponent's body and volley into the open court.

The player might use the following options for return games:

Option 1 – Neutralise the return up the middle of the court, try to apply pressure with the forehand to the opponent's backhand, and come to net.

Option 2 – Take the opponent's second serve and hit it up the line coming to the net behind it.

4- Practicing the options

Players should practice each option two or three times a week by playing games with a friend to 7 points. If the option the player is working on is to return up the line and the player mistakenly hits

crosscourt, then the point must be replayed. The player should practice each option slowly and deliberately.

5- Playing practice sets and recording results

The player should play three to five practice sets a week and keep a journal on performance with different options within the playing style. The player can use practice sets to record emotions, focus, intensity, and any positive or negative strategic adjustments made during the practice sets. Players should rate these categories from 1 to 10. These ratings can be referred to later, and players can analyse their practice sets and how they connect to improved match play.

6- Playing under pressure

The player should enter a tournament or league competition and be diligent playing the options under pressure. Competition will be the test of the player's perseverance and discipline.

7- Evaluating matches

After each match, the player must consider whether any action or lack of action might have helped the player play better. The player should do this for a month after each practice set, practice match, or real match. Doing this helps all players learn about themselves and their game. They effectively create a blueprint for reproducible top performances.

Although having a good, sound strategy against an opponent is important, the game plan should be simple. A few simple points can go a long way toward helping a player in times of need, but more important, it can keep the player from being overloaded with details. Some tennis players like to obtain a lot of information on their next opponents and some like to know less. Regardless of preference, the player should keep the information simple and remember to focus more on things that can be controlled, such as the player's own skills, attitude, and confidence. The following section includes additional tips that can help make the game plan more effective.



GAME PLAN IN ACTION

The following tips for assessing game plans in action are based on a player maintaining flexibility for what is working on a particular day, staying with what is working, and evaluating and making any needed adjustments. Oftentimes during a match, a player's technique can break down, so self-correcting techniques such as triggers can help the player refocus. However, at the end of the day, players need to learn how to compete regardless of how well they are playing or how good they feel. Following are some tips for implementing a game plan:

- Being flexible – one of the best forms of a good game plan is acquired while playing an opponent. Perhaps something the player thought would be effective is not working because the player is not hitting a particular shot well on that day, or maybe it is a bad game style matchup. Regardless of the situation, a game plan is subject to change, and a player must be flexible when change occurs. As a matter of fact, rarely do competitors play a match in which every attempt works perfectly. When playing a match the player should try seeing oneself as an accountant who constantly tries things, notes the reply, and then stores the information for later use.
- Assessing the game plan – Evaluating how well the player can counter an opponent's shots is the beginning of the process of assessing how well the game plan is doing in any given situation. The player should keep in mind the following strategies for countering an opponent's shots to get an idea of how the competitor's game plans match up.
 - » Going toe to toe – Part of a good defensive strategy is to be able to go toe to toe with an opponent. The player must assess this immediately and quickly decide whether to change the game with a variety of shots. Going toe to toe with an opponent either makes the opponent change the game or causes the opponent to make more errors. In this situation, the player is effectively doing what the opponent likes to do and reacting to the opponent's shots. This strategy can be very intimidating and forces the player to reevaluate his or her own methods of winning points.
 - » Defence to Offence – The ability to take an opponent's better shots and create an offense off them is very effective. This can and should be done because it gives players the best chance to win points. When players shift from defence to offence, they take the ball earlier or they reply to a shot with a better shot. Each point vacillates between offence and defence and vice versa, so consciously thinking of it improves footwork and shot selection.
- Making tactical changes when needed – If the player is winning with a game plan, the player should not change it. If the player is losing with a particular plan, then it may be that the chosen game plan is playing into the opponent's strengths. For example, a player has chosen to play like an aggressive baseline player

but now switches to counterattacking. The player's shot pace is feeding into what the opponent likes. It is then imperative that the player makes tactical changes in the game style. For example, a player can try to apply pressure by hitting the ball harder. If that does not work, the player should try switching to a predetermined alternative plan or strategy within his or her chosen game style.

- Being aware of breakdowns in technique – It is important to note that a game plan can fail as a result of a breakdown in technique. Having good technique allows the player to counter an opponent's shots more effectively. When the player has poor technique, a weakness can hinder the player from hitting an effective enough shot to recover offensively.
- Not getting caught up on feel – some players show excessive emotion and frustration at missing shots, including banging their rackets, checking the tension, wondering why it doesn't feel right, and shouting that they don't feel it. When everything a player does on a particular day works and every shot feels good, the player is in the zone and can do no wrong. However, achieving this zone can be elusive, so a better approach is to compete and work hard during every point. Players who allow frustration about their lack of feel on a particular day to overwhelm them have no chance of achieving the zone.

CONCLUSION

When it comes to creating a distinct game plan for each opponent, each player is different. Some may prefer specifics that include a strategy for each phase of the game. For example a player might choose to use mostly kick serves, hit high and heavy balls to the backhand side on returns, go back behind the player on transition shots, or explore the opponent's speed moving forward. Other players prefer to just focus on what they do best, and may use their own game style as the basis for the game plan. When a player uses the preferred game style, it is important to know the opponent's tendencies. Regardless of how specific the game plan is, the ultimate goal is to remain flexible, stay with what the player does best, and be prepared to explore different ways of executing the game plan.

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[RECOMMENDED ITF TENNIS ICOACH CONTENT \(CLICK BELOW\)](#)

Tennis  **iCoach**

Carbohydrate intake for optimal performance in professional male & female tennis players

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ABSTRACT

Many coaches and athletes underestimate the competitive advantage that proper carbohydrate intake can have on athletic performance. The intake and timing of carbohydrates may be the differentiating factor between victory and defeat. Remember there are many variables in the equation of optimal performance. In this article we will review some fundamentals on carbohydrate intake for optimal performance both in professional male and female tennis players.

Key words: nutrition, nutrients, training

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INTRODUCTION

Under the umbrella of sports nutrition, there are factors such as nutrient timing, sex, age, injuries, number of hours training, body composition, etc., that play a contributing role to the performance of professional tennis players (Burke et al, 1989; Burke et al, 1993; Costill et al, 1988; Coyle, 1991). One of the most important nutrients that can affect all the previously mentioned variables is carbohydrate intake.

It has been well documented in the literature that carbohydrate intake affects both physiological and psychological performance (Krieder et al, 1995; Ostojic, 2002). How so? Well, this article aims to explain the mechanisms of how carbohydrates can help with training load, match endurance, and post-match recovery and how they differ between male and female professional tennis players.

Importance of carbohydrates for performance

In the most recent position statement of the International Olympic Committee (IOC) on nutrition for athletes, it was stated: "A high carbohydrate diet in the days before competition will help enhance performance, particularly when exercise lasts longer than about 60 min and athletes should aim to achieve carbohydrate intakes that meet the fuel requirements of their training programs and also adequately replace their carbohydrate stores during recovery between training sessions and competition" (Jeukendrup, 2004). Other research studies have shown that ingesting carbohydrates during prolonged exercise results in a reversal of fatigue (Coggan et al, 1991; Coyle, 1995; Coyle et al, 1983).

In addition, other studies have shown performance improvement is likely to be related to maintenance of high rates of carbohydrate oxidation and the prevention of hypoglycemia (Ivy, 1991; Ivy et al, 2003; Ivy et al, 2004). An analysis of all studies available shows that a carbohydrate ingested during exercise will be oxidised at rates up to about 1 g/min, even when large amounts of carbohydrates have been previously ingested (Jeukendrup, 2004; Wagenmakers et al, 1993). With this in mind, if you measure and weigh your tennis player's food prior to consumption you can estimate how much carbohydrates they are using while training and how much remains post-training.

This improved performance after a high carbohydrate diet was linked with the higher muscle glycogen concentrations observed after such a diet (Wee et al, 2005). A high carbohydrate diet (70% of dietary energy from carbs) and elevated muscle glycogen stores seemed to enhance endurance capacity compared to a normal (50% carbs) and a low (10% carbs) carbohydrate diet (Jeukendrup, 2004; Simonsen et al, 1991). As competitive coaches and players we know that endurance is a major factor in the third set in most tennis matches and definitely a protagonist in men's five set matches.

There is current controversy on the efficacy of liquid vs. solid form of carbohydrates. According to research, it does not seem to affect the ergogenic potential (DiMaggio et al, 2000; Mason et al, 1993; Pan et al, 2011). Hargreaves studied the effects of ingestion of a candy bar (43 g of CHO, 9 g of fat, and 3 g of protein) and observed a 46%

improvement in sprint capacity after 4 h of exercise compared with placebo ingestion. Others studies confirmed that liquid and solid carbohydrates improved exercise performance to a similar degree (Burke et al, 1998; Hargreaves, 1991).

Carbohydrates and exercise physiology

It is well known that carbohydrates are the form of energy that muscles prefer (Mason et al, 1993). As a matter of fact, they are stored in muscles and liver in the form of glycogen (Colye, 1995). It is important that you are aware that your brain also loves carbs, as it survives on glucose (preferably carbs that are broken down to glucose molecules). In fact, the brain uses more glucose than any other organ or tissue in the body at rest (Lienhard et al, 1992; Sokoloff, 1973). However, the brain can alternatively function with an alternate fuel, Ketone bodies (glucose derived from the breakdown of protein and fats), but this is not its preference. This occurs when you deprive your body of carbohydrates for an extended period of time, causing your body to breakdown fats and proteins, resulting in ketone bodies (Lienhard et al, 1992; Sokoloff, 1973).

Carbohydrates breakdown into smaller sugars that ultimately get absorbed and utilised in order to provide you with energy (Askew, 1975; Frery et al, 1983). Any glucose that is not used right away gets stored in the muscles and the liver in the form of glycogen (Cummings et al, 1986). Glycogen is the source of energy most often used while you are training on the tennis court (Peters, 1941). Glycogen stores are needed for short, intense bouts of exercise from sprinting to weight lifting because it is immediately accessible, thus making it essential for the anaerobic sprints during a tennis match. Glycogen also supplies energy during the first few minutes of any sport (Maughan et al, 1981; Maughan, 2002; Gastin, 2001; Cardwell, 2012; Muth, 2014; Manore et al, 2014; McArdle et al, 2010). During long, slow duration exercise, fat can help fuel activity, but glycogen is still needed to help breakdown the fat into something the muscles can use. However, once these glycogen stores are filled up, any additional carbohydrates get stored as fat, hence why most people avoid eating carbohydrates.



Below is a table delineating the physiological processes that occur based on intensity and duration of training. This table provides a better picture of the importance of carbohydrate intake in the sport of tennis.

FACTORS	ATP SYSTEM	PCR - CREATINE PHOSPHATE	ANAEROBIC GLYCOLYSIS	AEROBIC GLYCOLYSIS	FATTY ACID OXIDATION
Amount stored for energy utilisation	5 mmoles /kg	17 mmoles/ kg	350g glycogen stored in muscle	440g glycogen stored muscle/liver	9,000-15,000g
Duration of training	0-3 seconds	4-10 seconds	120 seconds - 4 mins	1-2 hours	Over 2 hours
Physiological limitation	Utilized at the start of sprints	Utilized in short sprints	Limited by hydrogen ion formation	Limited by oxygen and pyruvate transport to mitochondria for energy release	Slow, it takes a while to dip into these stores as FFA release is much more complex

Table 1. The table above denotes the energy utilisation systems in five discrete categories, however, many other texts combine them into three major systems.

Carbohydrate intake for professional tennis players

The appropriate carbohydrate intake depends on whether you are training, competing, or recovering. Tennis players should be consuming carbohydrates before, during, and post competition. In general, research has concluded that elite athletes require 3.1 to 4.5 grams of carbohydrate per day per pound of body weight, while non-athletes need only 1.8 to 2.3 grams per pound per day (Maughan, 2002; Gastin, 2001). It is also recommended to eat a good source of carbohydrate (sweet potato vs. French fries) anywhere from 1 to 4 hours before exercise helps keep plenty of blood glucose available for working muscles (Cardwell, 2012; Muth, 2014; Manore et al, 2014; McArdle et al, 2010).

To find out how many grams of carbohydrates you need, first determine how many hours you train, and then multiply the recommended grams of carbohydrate by your body weight to determine your daily carbohydrate requirement. For example, after running some analyses on body weight on the top 50 professional male tennis players during 2012, the mean weight was 179 lbs. Thus, you would multiply by 5 grams (if they are training at least three hours a day) and that would give you their estimated recommended intake of 895 g of Carbohydrate intake for that particular day (training load of three hours). Remember this means that calorie wise this athlete should be consuming 3,580 calories of carbohydrates (this is not their total daily caloric intake). Usually, carbohydrates are recommended to be 45-70% (this is only for athletes, usual recommendations are between 45-55%) of an athlete's diet. Thus, if we assume this was only 50% of their total caloric intake, this male professional tennis player should be ingesting a total of 7,160 calories for that day!

Below is a quick reference table to give you an idea of the recommended grams of carbohydrates based on training load. It is suggested that females would tend toward the lesser values, while the males aim to consume towards the upper values listed below (not necessarily because of sex, but because of height and weight).

Carbohydrate intake based on training load

Here is a quick reference to calculating nutrient needs!

TRAINING LEVEL	GRAMS OF CARBOHYDRATE PER POUND PER DAY
1 hour per day	2.7 to 3.1 grams
2 hours per day	3.6 grams
3 hours per day	5 grams

Table 2. Guide to calculating nutrient needs.

Differences in Weight, BMI, and Carbohydrate Needs between the Top 50 Male and Female Professional Tennis Players

In addition, to discussing the basics of carbohydrates, I examined a small sample of the top 50 ATP tour male professional tennis players and top 50 WTA tour female professional tennis players from the year 2012. A simple descriptive analysis using R was run in order to obtain mean and ranges for weight and BMI of both the top 50 ATP and WTA tour players for the year 2012. Results are shown on table 3.

2012 TOP 50 PROS	WEIGHT MEAN	WEIGHT RANGE	BMI MEAN	BMI RANGE
Females	141.1	121-165	21	16.99- 24.12
Males	179.3	150-245	23.03	20.62-26.25

Table 3. Mean values and ranges for weight and BMI for the 2012 top 50 ATP and WTA tour players.

So as you can see, the needs for a female professional tennis player are much different than the carbohydrate needs for a male professional tennis player. Let's suppose you wanted to compare what the minimum amount of carbohydrate intake for a top 50 female professional tennis player compared to the maximum according to the two previous tables. A female weighing in at 121 lbs. (121lbs x 5g if training 3 hours) would need 605g of carbohydrates vs. a female tennis pro weighing in at 165 lbs. (165lbs x 5g if training 3 hours), which would need 825g of carbohydrates.

Now let's take a look at the carbohydrate needs of top 50 male professional tennis players. A male weighing at 150 lbs. (150 lbs. x 5g if training 3 hours) = 750 g of carbohydrates vs. a male weighing in at 245 lbs. (245 x 5g if training 3 hours) = 1,225g of carbohydrates. In summary, this is a simple way to help your elite athletes get the proper carbohydrate intake to meet their carbohydrate needs on and off the court.

CONCLUSION

Finally, it is important to understand that carbohydrates can aid in your training, during match performance and also in your recovery. Remember that the key is to know when to take them, which to take, and how much to intake. As with any optimal training plan, breaking down your carbohydrate intake to a science for personalisation can give you the competitive edge you need to win.

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[RECOMMENDED ITF TENNIS COACH CONTENT \(CLICK BELOW\)](#)

Tennis*i*Coach

The impact of the four motivation boosters on tennis player development (part 1)

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ABSTRACT

The development of a tennis player is a long-term process. On average, the development of a high-level player takes ten years, during which time the coach's role is to help the player acquire the required technical, tactical, physical and mental skills. On the psychological level, one particular skill which reflects permanently on the development of all other skills is motivation. Its importance is such that even the slightest change in motivation, or temporary lack of motivation, can have a major impact on a player's entire game, performance on the court and, ultimately, long-term progress. Motivation is thus the fuel that a player needs to progress with consistency and determination on the road to the highest level. However, fuel alone is not enough: what you also need is an engine.

Key words: development, long term, psychology, progress

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INTRODUCTION

The role of the coach is to teach the player how to make good use of his fuel, i.e. motivation, by letting him discover the engine that will allow him to go higher and further. That special engine is made of 4 boosters, i.e. Meaning, Enjoyment, Progress and Performance, all of which need to be activated and combined according to the time and circumstances. The best way for a developing player to understand the subtle mechanics of these boosters is to follow in the footsteps of those who have successfully made the transition to the top level. To this end, each booster will not only be defined and explained in detail but also, and above all, illustrated by many examples of champions who will reveal the secrets of how their motivation has enabled them to get where they are.

THE "MEANING" BOOSTER

The Meaning booster is, without the shadow of a doubt, the most powerful of all four. In the initial stages of the young player's learning process, this booster takes the form of a dream. Dreams are a fantastic source of inspiration and motivation. "All the major achievements began as a dream in someone's head", as Einstein once said. There are different categories of tennis players: first, there are players who don't have any dream, have no particular ambition and are just content with what they have. In general, they stay where they are and are not disappointed with their fate. Then, there are players who dream, but do nothing else. Their bedroom is full of shiny posters of players they admire, but they let their idols train and compete in their place. It's a comfortable way of dreaming. There are also tennis players who have a dream and act upon it to make it a reality. They keep dreaming until they encounter the first difficulties. When the hardships of competitive tennis fall upon them, they stop dreaming. Once they overcome the frustration and discouragement that come with shattered dreams, they move on and put their energy into something else, some other dream maybe. After all, there are other things in life than tennis! And finally, there are incurable dreamers; those players have a dream of tennis in their head, a beautiful image they get up with each morning and that inspires them day after day, no matter what. A dream that is so strong and deep that it enables them to move any mountain. A dream that is stronger than defeats, injuries, criticisms or sarcasms. A dream that is a combination of ambition and humbleness. The ambition to see big, raise their head high, look up and be guided by the light. The humbleness to progress step by step, make mistakes, start again, accept being in the dark before being in the spotlight. Sooner or later, these dreamers will find their way to show courts and magazine covers and lift the most coveted trophies. Their dream finally becomes a reality. And their reality becomes the dream of millions of players (Girod, 2009).

Here's an inspiring story told by Jelena Gencic, who was current world number 1 Novak Djokovic's first coach and also discovered Monica Seles in the late 1970s: "I'll never forget the day that little

boy came to my summer tennis camp in Kopaonik, carrying a gym bag with his belongings well in order, just like the professionals. I asked him who had prepared his bag for him and he replied that he had done it himself. I then asked him what does he want to become when he grows up. Without hesitation, he said: "The No. 1 player in the world", which is also the answer Monica Seles had given me many years before when she was a little girl. That boy was Novak Djokovic." (New York Times, 2013).



When a player becomes an adult, the Meaning booster must act as a complement to the initial dream. In times of doubt, when results are slow to come or routine sets in, it can enable the player to start afresh by allowing him to answer the following questions: What is the purpose of all this? Why? What is the point of hitting a tennis ball for hours? Why spend entire years doing something seemingly absurd like rallying with an opponent standing twenty meters in front of you? It is generally accepted that a tennis match is all about winning. However, there's never been, in the history of tennis, a player who has managed to win all his career matches. Losing is therefore also part of the game. Losing and winning are two sides of the same coin, i.e. competition. Therefore, the true meaning of the game is beyond the unique quest for victory. Otherwise, each defeat (and defeats are bound to happen) would inevitably leave the player feeling deeply frustrated and distraught by the absurdity of it all.

So, what is the basic meaning of the game? First of all, it must be said that tennis can be seen as a metaphor for all the possible situations that a human being may face during his life: a goal (putting the ball in play), an obstacle (the net), opposing forces (gravity, wind), dependence on others (the opponent, the chair

umpire), other people's opinion (spectators), external boundaries (court limits) and internal boundaries (player himself). If the only reason to play is to win, then all these factors are likely to turn the player's life into a nightmare and tennis will eventually bring more suffering than enjoyment. On the mental level, a positive approach is to see the net as an opportunity to develop one's ability to overcome obstacles. Similarly, the wind can be seen as an opportunity to learn how to adapt. The opponent is no longer a dangerous enemy, but a demanding coach that forces you to bring out your best game. The calls, at times questionable, made by the umpire can be seen as an invitation to understand that there can be a point of view different than your own. The presence of spectators teaches you to face other people's opinion on you. The court limits force you to structure your actions and channel your energy. Being aware of your own limits is both an opportunity to determine the areas for improvement and overcome those limits. Whether you're a competitor in the making or a professional player, the ultimate purpose of the game (beyond the rankings, and the fame and money tennis can bring), should be to learn to know yourself and others.

Djokovic's words illustrate this perfectly: *"With all the great players currently involved in the race to the top, it's normal not to win all the time. So you have to stay consistent, keep your self-control and remain confident in your abilities, even when you lose. In sport, you win matches you should lose and lose others you should win. The key is to always have clear goals and to learn from your experiences. If I had not been the number 1 tennis player in the world, I would have liked to work in the field of psychology or philosophy because I am passionate about this aspect of human nature."*

THE "ENJOYMENT" BOOSTER

For a young player in the early stages of his development, the enjoyment of the game is the most immediate booster there can be. Coming from a family of skiers, Djokovic would have followed in the footsteps of his father, but destiny, or more precisely the building of a tennis court just opposite his parents' restaurant in Kopaonik, decided otherwise. While helping the workers build the court, the little boy fell in love with the game and eventually asked his parents to buy him a racket. In the end, he chose to walk in the footsteps of his idol Pete Sampras. It is possible that the Serbian champion's exceptional mental strength comes from the time where the first court he ever walked on was built in the Serbian mountains, near the Kosovo border, a time where he was guided by his childhood dream and his love of the game. That being said, it is important early on to teach children that enjoyment is not always immediate. We must teach them to be patient and make them understand that the initial stages of tennis learning may be void of enjoyment. To overcome the frustration that stems from a lack of immediate enjoyment, it is essential to develop the ability to visualise future enjoyment.

In a famous experiment conducted by American psychologist Walter Mischel that took place at a Stanford nursery school using children aged four as subjects, the children could eat a marshmallow placed in front of them immediately or be rewarded with a second marshmallow if they chose to be patient. The majority of children, unable to wait, ate the marshmallow immediately. The few children who managed to be patient to get two marshmallows covered their eyes with their hands or started playing with their feet and hands not to give in to the temptation. They managed to control their urge and be patient to get the reward. In follow-up studies, Mischel continued to track the evolution of these children and found, more than twelve years later, quite spectacular differences between the subjects who had eaten the marshmallow immediately and those who had managed to delay gratification longer by controlling their emotions. Indeed, the small number of those who had controlled their emotions were more efficient, showed more confidence and demonstrated a greater ability to deal with the difficulties of life. They were less likely to experience doubt, fear of failure, and were able to keep their cool and remain clear-headed when under pressure. They showed confidence and greater resilience by striving to overcome challenges instead of simply giving up. When he was younger and the best player in his age category in Austria, Dominic

Thiem, one of the rising stars of the men's game, had a two-handed backhand and a very defensive style of play. Under the guidance of his coach Gunter Bresnik, he made the transition to a one-handed backhand and adopted a more aggressive style of play. "It was hard because as a result of all the changes to my game, my ranking plummeted. But I had total confidence in my coach and I knew that it would eventually pay off." This ability to not give in to the immediate temptation to preserve one's status in the short term, but instead be patient and work behind the scenes for the delayed gratification of obtaining more significant results in the longer run is very similar to what we learned from Walter Mischel's marshmallow experiment!

The importance of the Enjoyment booster needs to be instilled from a young age. For example, the impact of the education that Rafael Nadal received from his uncle Toni, based on the importance of enjoyment, is evident in this interview given in 1999 by a young Rafael Nadal, then aged 12, after a semi-final loss to Richard Gasquet at the Les Petits As tournament held in Tarbes: *"One very important thing is to have fun. If you play without having fun, it's really not interesting and then, there's no point in playing."*

Another very striking example in relation to this notion of enjoyment is that of Kimiko Date. It should first be noted that the Japanese player took a break from professional tennis for a total of 12 years between 1996 and 2008. Here is how she explains the reasons for her comeback to the game: *"When I retired from tennis at the age of 25, after having been ranked number 4 in the world, I never would have thought that I'd miss the game. And then, for years, I worked as a tennis commentator for television. This outsider's perspective made me realise how beautiful and special this sport is. Over time, my state of mind changed. When I was young, my goal was to be a top 10 player and therefore I was constantly under pressure. Playing tennis was not a lot of fun back then. But when I came back to the game in 2008 is when I really discovered the enjoyment of the game, even when I was losing. I have a lot of passion for the sport. And I love the challenge that I have set for myself, because it is not easy at my age."* What she experienced in the first part of her career is typical of what many male and female players go through when "performance" is their only motivation booster. Obsessed with rankings, wins and glory, they eventually lose sight of the essence of the game, i.e. enjoyment. It's only when she took a step back that she realised the beauty of the sport and that her desire to play came back. Knowing when and how to take a break to step away and get a new perspective allows you to not give too much importance to performance and to refocus on the enjoyment of the game.

CONCLUSION

Motivation is a key part of the development of a young tennis player. It's important to follow in the footsteps of those players that have succeeded in transitioning to the top level and a way of ensuring this is to activate the 4 boosters; meaning, enjoyment, progress and performance.

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RECOMMENDED ITF TENNIS COACH CONTENT (CLICK BELOW)

Tennis*i*Coach

Improving forehand performance through functional core training

Cyril Genevois (FRA)

ITF Coaching and Sport Science Review 2015; 66 (23): 22 - 24

ABSTRACT

This article highlights the importance of functional core strengthening to improve forehand performance. It suggests on-court physical training exercises aimed at improving core rotation power and vertical stability of the body.

Key words: physical training, forehand, performance

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INTRODUCTION

The contribution of sport science, and particularly biomechanics, has made it possible to move from a descriptive analysis (i.e. consequences) to a functional analysis (i.e. causes) of tennis technique. Thanks to a synthesis of the kinematic, kinetic and electromyographic analyses, it has been possible to gain a better understanding of the determinants of post-impact ball speed in the forehand drive (Genevois et al., 2015). Among those determinants, core rotation speed and core stability play an important role. The aim of this article is to suggest the use of some functional training exercises to improve these two factors.

DETERMINANTS OF MAXIMUM RACKET SPEED AT IMPACT

Biomechanical studies have been conducted to analyse the contributions of individual segment rotations to maximum racket head speed at impact in the forehand drive. Based on this maximum speed (i.e., 100%), maximum angular velocities of the various segments studied were expressed as a percentage of maximum speed (Figure 1).

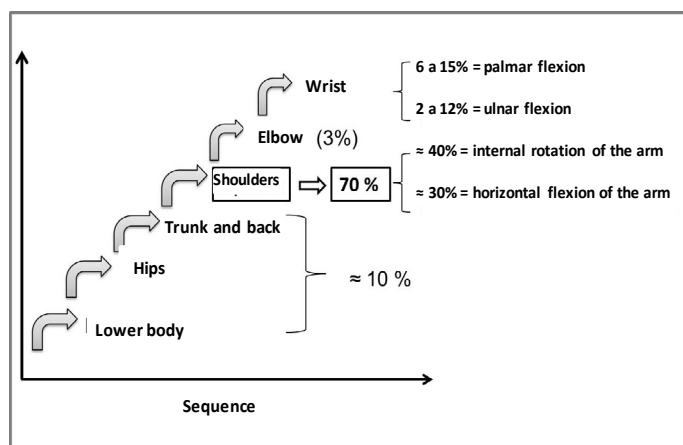


Figure 1. Contributions of individual segment rotations to maximum racket head speed at impact in the forehand (adapted from Elliot et al., 1997).

Although approximately 90% of maximum racket head speed at impact in the forehand comes from the individual anatomical rotations of the arm, it is important to weigh this value against the results of other studies that show that:

- Upper body rotation is strongly correlated to racket speed, regardless of the position type used or level of play (Bahamonde & Knudson, 1998).
- Angular velocities of the shoulders (trunk) at impact are discriminants of ball speed after impact and level of play (Landlinger et al., 2010b).
- Ball speed after impact increases as shoulder angular velocities increase, while internal rotation of the upper arm remains constant (Seeley et al., 2011).

- Forced expiration during the acceleration phase resulting in increased core stiffness can improve ball speed after impact (O'Connell et al., 2014).

Consequently, core rotation can be considered as an accelerator of forehand speed. It provides strength while also providing proximal stability for distal mobility (Kibler et al., 2006). Because of the large forces that are applied over a short period of time during the acceleration phase (<300 ms), development of explosive power is essential.

PRACTICAL IMPLICATIONS

Improving the function of the core during a forehand stroke implies the necessity to develop its ability to generate power during rotation while providing vertical stability to the body.

1. Developing maximum core rotation power

A study using an accelerometer was conducted to assess the maximum power generated during a two-handed side medicine-ball (MB) throw with a rotation movement to the left in a right-handed subject (Genevois, 2013). Results showed that it was positively correlated with maximum ball speed after impact in the forehand and that it was achieved when using a MB mass of 5.7% of the body weight. From a practical point of view, the knowledge of this fact allows the coach to choose the MB mass according to the desired goal (Figure 2).

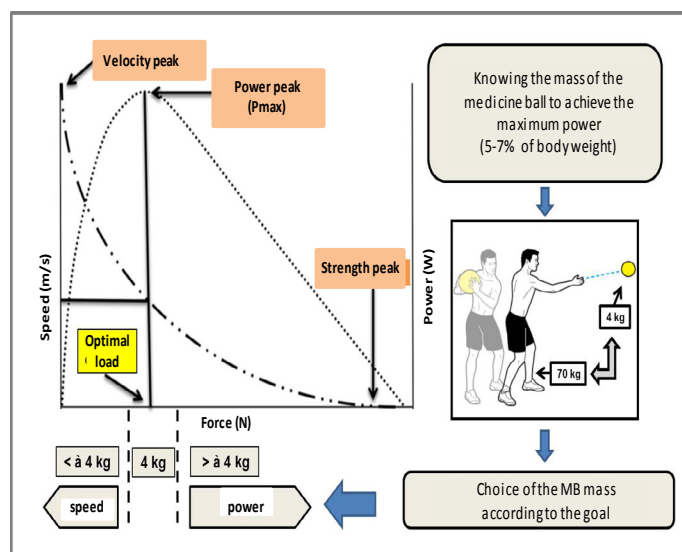


Figure 2. Example of how to adapt MB mass to develop different parts of the strength-speed curve.

A variety of MB masses should be used to ensure complete coverage of the strength/speed curve, progressing from heavier to lighter loads while adapting the number of repetitions per series (Table 1).

Description	Strength	Maximum Power	Speed
MB Mass (% of body weight)	6-8%	5-6%	3-5%
Series x Repetitions (for 1 exercise)	2 x 6	2 x 8	2 x 10

Table 1. Variation of medicine-ball mass and number of repetitions according to targeted goal (adapted from Szymanski et al., 2007).

2. Developing vertical stability

In order for the power generated during core rotation to be transferred efficiently, stiffness of the vertical axis around which rotational movements occur is essential. The “anti-rotation” exercises in standing position, performed in the transverse plane, create long levers and high torques at the spine which are countered through ground reaction forces at the feet. All of the joints between the arms and the feet are called into action in order to stabilize the body. Variations of the basic exercise (Figure 3) can be performed to focus either on front leg stability (Figure 4), as during a square stance position, or on back leg stability (Figure 5), as during an open stance position. This is achieved by adding a stabilization stress in the sagittal plane (forward/backward imbalance). Exercises are performed using alternate tension and relaxation phases in series of 10-15 repetitions. Tension times can then be increased from 2 to 5 seconds by adjusting the number of repetitions.

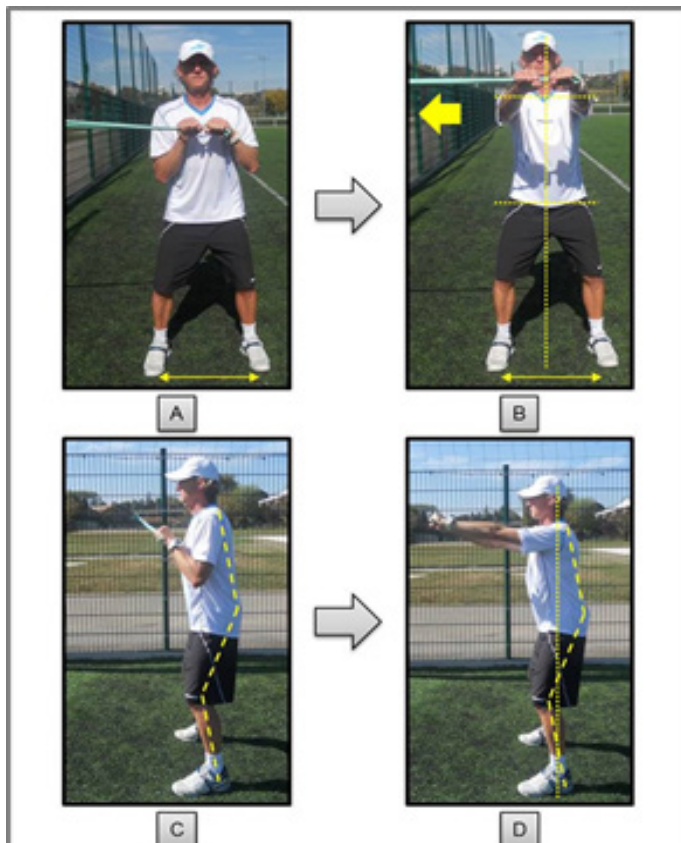


Figure 3. Front (A/B) and side (C/D) views of a stability exercise in the transverse plane. Starting in an athletic stance, the player extends the arms out in front at shoulder height and maintains the position by applying resistance to the elastic band tension which tends to make him rotate.

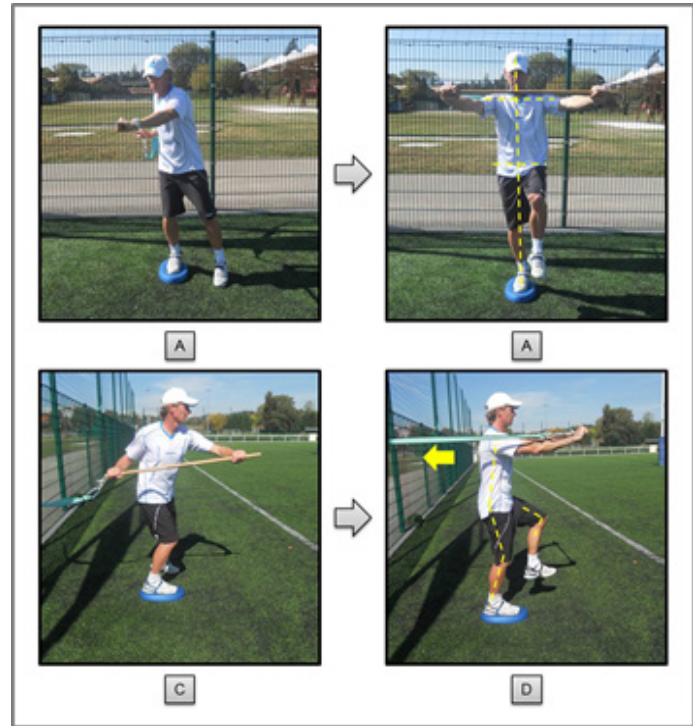


Figure 4. Front (A/B) and side (C/D) views of a stability exercise on the back leg in the transverse and sagittal planes with an unstable base. Starting in a single leg athletic stance, the player extends the arms out in front at shoulder height and maintains the position by applying resistance to the elastic band tension which tends to make him rotate and fall backwards. The left hip and knee flexion ensures body balance as during an open stance stroke.

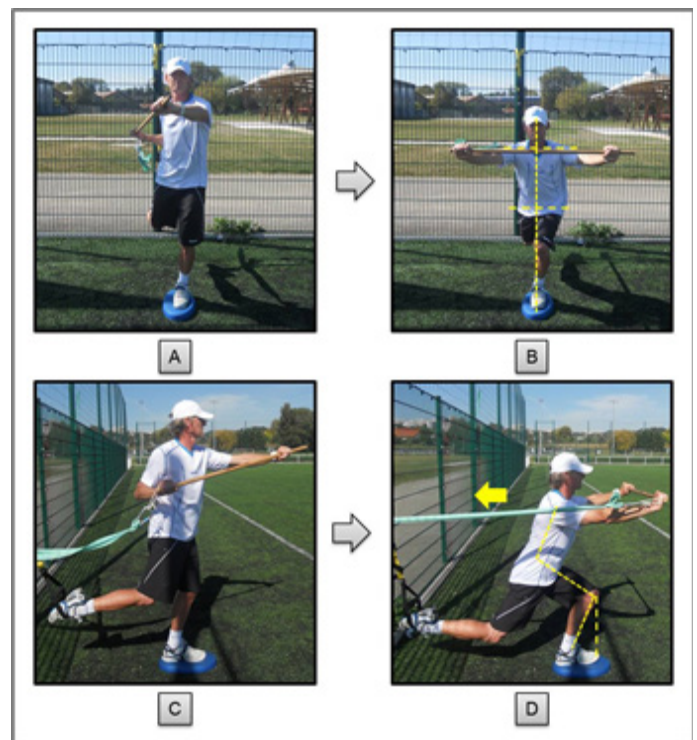


Figure 5. Front (A/B) and side (C/D) views of a stability exercise on the front leg in the transverse and sagittal planes with an unstable base. Starting in a single leg athletic stance, the player extends the arms out in front at shoulder height and maintains the position by applying resistance to the elastic band tension which tends to make him rotate and fall backwards. The left hip and knee are bent as during a square stance stroke.

CONCLUSION

The power generated during core rotation and the vertical stability of the body during the acceleration phase are two key factors of forehand performance. The exercises in this article are designed to achieve this dual goal and can be performed easily on a tennis court without much equipment.

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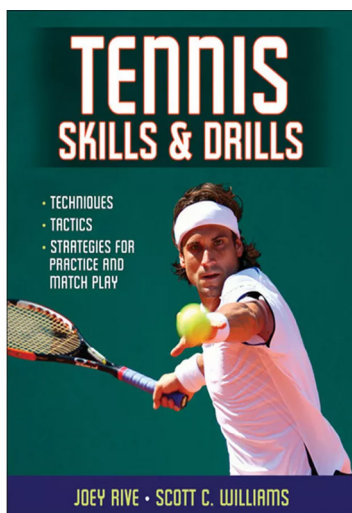
Tennis  **Coach**

Recommended books

MINI-TENNIS MANUAL – MANUALE DEL MINITENNIS

Author: Italian Tennis Federation. Language: Italian. Type: Printed book. Level: Beginners. Year: 2015.

This manual (159 pages) forms part of the Italian Tennis Federation Coach Education Programme syllabus. Designed for coaches working with beginner players in schools and clubs, the manual covers the fundamentals of teaching at the mini-tennis stage. Important areas in the book include: the pedagogical situation in mini-tennis, methodological principles, the structure of the lesson, the content areas: mental, motoric, tactical, technical and competitive, the teaching styles, plus much more. The manual also provides different examples of proposed lesson plans as well a very comprehensive glossary of terms.



TENNIS SKILLS & DRILLS

Authors: Joey Rive and Scott C. Williams. Language: English. Type: Printed book.

Level: Intermediate and advanced. Year: 2012.

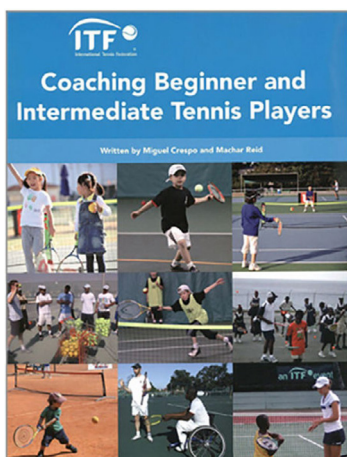
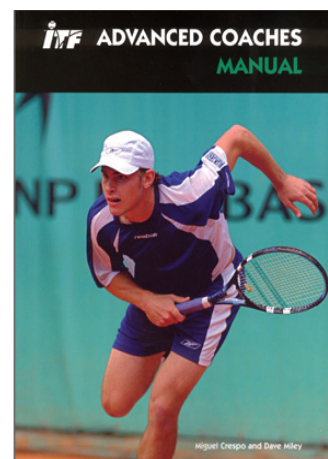
This book (264 pages) is a blueprint for taking the game of a player to a next level. The content is divided into the skills and drills for the different shots and game situations: forehand and backhand, serve and return, net and specialty skills. Besides, it includes two chapters one devoted to singles strategy and skills and another one to the doubles game. The book includes more than 110 practice drills to improve both the technical and tactical skills that are essential for success in today's powerful game. For more information contact: www.humankinetics.com

MANUAL ITF PARA ENTRENADORES AVANZADOS - MANUEL DE L'ENTRAÎNEUR DE HAUT NIVEAU

Authors: Miguel Crespo and Dave Miley. Language: Spanish and French. Type: e-book.

Level: Advanced. Year: 2015.

The book (334 pages) forms part of the ITF Coaching Advanced Players Course (former Level 2) syllabus. Designed for coaches working with players from club level to top national level. It includes practical information on the role of a coach, methodology of teaching tennis, strategy and tactics for tournament players, biomechanics of tennis, advanced stroke techniques, technical diagnosis and correction, mental training for tournament players, movement, physical conditioning for tournament players, doubles for tournament players, awareness of standards and analysis of players, goal setting, planning the tennis training, the training session, travelling with tournament players, coaching female tennis players, nutrition for tennis competition, and injury prevention in competitive tennis. Please [click here](#) to purchase your copy.



COACHING BEGINNER AND INTERMEDIATE TENNIS PLAYERS - ENSEIGNER LE TENNIS AUX JOUEURS DEBUTANTS ET INTERMEDIAIRES

Author: Miguel Crespo and Machar Reid. Language: French and English. Type: e-book.

Level: Beginner to advanced level. Year: 2015

This e-book (320 pages) forms part of the ITF Coaching Beginner and Intermediate Tennis Players (former Level 1) syllabus. Designed for coaches working with beginner and intermediate players in schools and clubs, the manual is one of the few tennis resources that provides comprehensive information, both practical and scientific, on all elements of the game as related to coaching players of these playing levels. It includes practical and theoretical information on coaching knowledge, applied sport science, tactics and technique, biomechanics and movement, physical conditioning, programmes, plus much more. Please [click here](#) to purchase your copy.

Recommended web links

The screenshot shows the WTA and ITF website with a focus on health and wellness. The top navigation bar includes 'Home', 'About Services', 'All Topics', 'Resources', and 'What's New'. A search bar is present. The main content area features a 'SPOTLIGHT' section on 'Bicycle Safety Tips' and a 'FEATURED TOPIC' on 'END-OF-LIFE PLANNING'. There are also buttons for 'FIND SERVICES', 'MANAGE LIFE EVENT', and 'ASSESS CONCERNS'.

The screenshot shows the ITF Junior Tennis School website. The top navigation bar includes 'HOME', 'HOW TO GRADUATE', 'JUNIOR FORUMS', 'HELP', and 'CONTACT US'. The main content area features a large image of a tennis player and a 'Click HERE to START' button. Below this, there are 'eLearning Modules' and a login section with fields for 'Username:', 'Password:', and 'Email:'. The text states: 'The ITF recognises its responsibility towards helping the on and off court development of junior players.'

The screenshot shows the ITF Tennis.com website, specifically the 'COACHING' section. The top navigation bar includes 'NEWS', 'COACH EDUCATION', 'COURSES', 'CONFERENCES', 'COACHING & SPORT SCIENCE REVIEW', and 'RESOURCE CENTRE'. The main content area features a large image of coaches and a 'Regional Coaches Conference by BNP Paribas' section. There are also buttons for 'UPCOMING COACHING COURSE WORKSHOPS' and 'ITF Tennis.com'.

The screenshot shows the Play & Stay Tennis website. The top navigation bar includes 'HOME', 'LIVESTIPS', 'AOL 10-11', 'LIVESTIPS APRILS', 'ITF', 'CLOUDS', 'COMPLETION', 'ITALIA', 'LORDSMITH', 'LORDSMITHS', 'LORDSMITHS', and 'ITF'. The main content area features a large image of tennis players and a 'RULE THE COURT' section. There are also buttons for 'BUY THE BALLS HERE!!!', 'ABOUT PLAY & STAY', and 'RESOURCES'.

The screenshot shows the ITF Tennis.com website, specifically the 'DEVELOPMENT' section. The top navigation bar includes 'NEWS', 'ABOUT DEVELOPMENT', 'DEVELOPMENT OFFICERS', 'PLAYER DEVELOPMENT', and 'NATIONAL ASSOCIATIONS'. The main content area features a large image of tennis players and an 'UPCOMING DEVELOPMENT EVENTS' section. There are also buttons for 'TOURING TEAMS' and 'LATEST NEWS'.

The screenshot shows the TennisCoach website. The top navigation bar includes 'Technical', 'Tactical', 'Physical', 'Mental', 'Medical', 'Player', 'Coach', 'Parent', and 'Tutor'. The main content area features a large image of a tennis player and a 'Co-ordination Exercises' section. There are also buttons for 'Players', 'Parents', 'Coaches', and 'Educators'.

The screenshot shows the ITF Store website. The top navigation bar includes 'Home', 'Publications', 'DVDs - CDs', 'Clothing', 'Gifts & Accessories', and 'My Account'. The main content area features a large image of a tennis trophy and a 'Customer Login' section. There are also buttons for 'Browse', 'Search', and 'Top Buys'.

The screenshot shows the World Anti-Doping Agency website. The top navigation bar includes 'HOME', 'ABOUT WADA', 'WORLD ANTI-DOPING PROGRAM', 'ANTI-DOPING COMMUNITY', 'SCIENCE & MEDICINE', and 'EDUCATION & AWARENESS'. The main content area features a large image of a tennis player and a 'Coach True - Elite' section. There are also buttons for 'Education & Awareness' and 'Tools for Stakeholders'.

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