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EDITORIAL

Welcome to Issue 60 of the ITF Coaching & Sport Science Review. In this special monographic issue of CSSR, the main topic of focus is modern teaching methodology. This edition features articles from various authors all boasting years coaching experience.

Sub-sections of our main topic includes coaching methodology for adults, for children and for Tennis10s, implicit motor learning/training, performance tips, game-based teaching, beginner net play, technical training, and new trends in teaching methodology.

The 2012 launch of, 'Biomechanics for Advanced Tennis' as an e-book has proven to be very successful in new electronic format and the book is now available in Spanish and French in eBook format. Please click on the below link for more information.

http://www.amazon.com/Biomec%C3%A1nica-Avanzado-Spanish-Edition-ebook/dp/BooEVP2RYM/ref=pd_rhf_se_p_imgnr_1

http://www.amazon.com/Biomecanique-Tennis-Niveau-Edition-ebook/dp/BooEWOJPC/ref=pd_rhf_dp_p_imgnr_2

The ITF Tennis iCoach website remains at the forefront of online coach education, with up to date and current research available to coaches across the world. For just \$30 per year you can keep up to date with the most current tennis specific coaching information. Please click on the following link for a tour of the site.

<http://www.tennisicoach.com>

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 Federación Mexicana de Tenis (FMT) and COTECC at the Iberostar Cancun resort. The Iberostar Cancun is a luxurious 5-star all-inclusive complex located on one of the finest beaches in Cancun, Mexico. 600 coaches are already signed up and we are expecting the limit of 1000 to be reached shortly.

The theme of this year's Conference is 'The Long-term Development of a High Performance Player'. The Conference will have presentations related to four distinct ages of player development:

[10 & under \(Building phase\)](#)

[11 - 14 years \(Development phase\)](#)

[15 - 18 years \(Junior phase\)](#)

[19 - 23 years \(Transition to Professional phase\).](#)

Speakers include Nick Bollettieri, Mary Pierce, Emilio Sanchez, Jim Loehr, Sven Groeneveld and Rohan Goetzke. For more information on how to register for this exciting conference, please click on the following link;

<http://en.coaching.itftennis.com/conferences/worldwide/2013-conference.aspx>

The ITF Coaches Commission met at Roland Garros on Sunday 2nd June and the meeting was chaired by Ismail El Shafei (Egypt / ITF Board of Directors) and former top professional player. A photo of the commission is shown below.

Finally, the ITF would like to wish a happy 100th birthday to Jean Brechbuhl of Switzerland. Jean was one of the top coach educators in tennis and is considered the creator of the game based approach to teaching tennis. Jean worked for the University of Geneva for many years as the first ever sports director and was instrumental in organising tennis at the World University Games. He received an ITF award for services to the game in 2001.



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Implicit motor learning: Designing practice for performance

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ABSTRACT

The purpose of this paper is to review the concept of implicit motor learning in sport and to discuss the practical application of current techniques designed to induce implicit learning within tennis. Implicit learning refers to the acquisition of information without conscious awareness of what is being learnt. Research shows that skills acquired implicitly sometimes have advantages over skills learnt via explicit methods. Whilst some practice techniques that have been used in a laboratory setting to cause implicit learning may be impractical for coaches to adopt, there are several methods that coaches can (and should) consider using. These include the reduction of errors during practice, the provision of analogies as instructions, the concept of 'marginal perception' and the use of indirect instructional techniques.

Key words: Implicit learning, skill acquisition, talent development, tennis

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IMPLICIT MOTOR LEARNING: DESIGNING PRACTICE FOR PERFORMANCE

The concept of implicit motor learning, as first proposed by Masters (1992), is attractive and its proposed advantages have been discussed extensively in the literature. Despite this, it is not easy for coaches to apply practice methods to encourage an implicit mode of learning.

Learning is implicit when new information is acquired without explicit awareness of the details of the information itself. Sometimes the information is even acquired without intention, and the associated knowledge tends to be difficult to express (Reber, 1967). For example, a professional tennis player may be able to hit a hard, cross-court forehand, with an insuperable amount of topspin, yet they may have difficulty verbalizing how they hit such a difficult shot. As such, the skill has been learnt implicitly. Information learnt implicitly does not rely on (conscious) working memory, which culminates in more efficient performance (for a recent review of implicit motor learning, see Masters & Poolton, 2012). Substantial research has shown that skills learnt implicitly are resilient to the effects of psychological stress (Liao & Masters, 2001), physiological fatigue (Poolton, Masters, & Maxwell, 2007) and secondary task loading (Maxwell, Masters, Kerr, & Weedon, 2001), and has greater resistance to decay over time (Maxwell, Masters, & Eves, 2000). Thus, the benefits associated with implicit motor learning are desirable for all athletes, particularly in sports such as tennis where psychological stress and physiological fatigue are commonplace. The opposite of implicit learning is explicit learning, which is typically how we learn sport skills (e.g., receiving explicit instructions from a coach). This learning style is a highly conscious process and relies heavily on working memory. The downfall to explicit learning occurs when the athlete consciously re-engages information about the skill to control their movements. This can disrupt the 'automaticity' of the skill execution and, consequently, lead to a 'breakdown' in performance during highly stressful situations (Masters, Polman, & Hammond, 1993).

IMPLICIT PRACTICE APPROACHES

Dual Tasking

To allow skills to be learnt implicitly, practice needs to be designed so that the learner performs the skill without consciously thinking about the technique(s). Initial studies demonstrated that the 'dual-task practice' paradigm (Masters, 1992) resulted in skills being learnt implicitly.

This required participants to perform a secondary task (e.g., counting backwards in 3's from 150) while practicing the skill. While this type of practice was shown to create implicit learning benefits, the practicality of the method has been questioned. All studies that have utilized the 'dual-task practice' paradigm have reported considerably poorer performance compared to normal learning. It should be noted, however, that these studies have all used novice performers as participants and from the authors practical experience the method can be recommended with higher skilled players.



Errorless Practice

Errorless practice (Maxwell et al., 2001; Poolton, Masters, & Maxwell, 2005) involves guiding the performer during practice to ensure that errors are minimized. Such an approach also reduces the tendency to think consciously about performance, so explicit hypothesis testing is discouraged. For example, a child learning a tennis forehand may practice hitting a ball at a target on a wall. Gradually, the child would hit to smaller targets as the skills improve. Errorless learners have no

need to test hypotheses since no errors are made, so learning is more likely to be implicit. Studies have shown that errorless learners are unaffected by the imposition of a secondary task, suggesting that such learning confers more efficient performance. This method of practice also may have possible psychological benefits as a consequence of increased confidence from consistently experiencing success (Masters, Poolton, Omuru, & ASARG, 2013).

Task Simplification

Another method to achieve a relatively errorless environment is to simplify the task. For example, it is common to see tennis coaches employ modified equipment with children learning the game to increase the probability of successful outcomes. When children play tennis with lighter racquets and lower bouncing balls, hitting accuracy and technique are better (Farrow & Reid, 2010; Larson & Joshua, 2013). Although achieving a 'true' errorless environment through equipment modification is improbable (given that some errors are still likely to occur), recent research has shown that modified equipment promotes less conscious processing than full size equipment in young children (Buszard, Farrow, Reid & Masters, in preparation). Specifically, the results showed that children had most difficulty coping with a secondary task (counting backwards from 150 in one's whilst hitting the ball) when using full size equipment, but not modified equipment. The authors therefore speculated that the use of modified equipment might promote implicit motor learning.



Such an example is when the coach's instruction directs the player's visual attention towards key information, such as the anticipatory cue being provided by an opponent; but without directly telling the player what those cues are. Farrow & Abernethy (2002) showed that an 'implicit' training of this kind, which required players to adopt the perspective of a receiver and to predict the speed of each serve presented in a video training package, was more effective at improving return of serve anticipation than training that involved the provision of explicit instructions regarding the relationship between specific advanced cues in the opponents service action and the direction of the serve.

Marginal Perception

Another potentially useful training technique for a coach is the concept of 'marginal perception'. Marginal perception refers to a gradual change to stimuli without conscious recognition of the change (Masters, Maxwell, & Eves, 2009). For example, imagine this scenario: a tennis player is continually serving the ball into the net. The traditional approach to resolve such a failing would be to explicitly inform the player about the biomechanics of the serve. The player would most likely improve, but would also be consciously aware of the changes in technique. An alternative approach would be to begin practicing with the net at a lower height, thereby allowing the performer to serve the ball over the net with greater ease. Each training session the coach might increase the net height by the smallest of margins so that the player is not consciously aware of the change. Consequently, the player's movement patterns should subtly adapt to the change, even though they are not consciously aware of the adaptations that are taking place. Of course, eventually the player will become consciously aware of the net height changes, but by that stage, they have already learnt the skill unconsciously.

CONCLUSION

In summary, there is a range of benefits when skills are learnt implicitly and coaches should therefore be encouraged to consider how they could employ such practice techniques in their coaching. Importantly, coaches are urged to persist with implicit practice methods, even if short-term results from with explicit techniques are tempting. Implicit motor learning takes time, but the rewards are worth it!

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Analogies and Indirect Instructions

It has been demonstrated that the provision of instructions in the form of analogies evokes implicit learning (Liao & Masters, 2001). This involves providing a performer with one simple heuristic or a biomechanical metaphor that 'chunks' the task relevant declarative knowledge (i.e., rules) into an individually processed unit of information. For example, a tennis coach may instruct a player to "create a C shape with the racquet when hitting a forehand." Such an instruction captures the notion of swinging the racquet from low-to-high. Whilst providing a performer with an analogy is explicit in nature, it is cognitively efficient – meaning it demands few attention resources. The idea extends the argument that simple rules or heuristics are as effective as complex rules or algorithms for delivering technical instruction.

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How tennis players learn motor skills: Some considerations

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ABSTRACT

Tennis coaches teach technique and movement skills to players from a young age. Frequently, their emphasis is on 'what' to coach and not 'how' to do so. Current research offers challenges to conventional coaching and suggests that the 'how' of learning motor skills is more important. This article describes a number of coaching behaviours that could increase and improve motor learning with a greater focus on tennis specific practice.

Key words: coaching, motor learning, open skill, types of practice

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INTRODUCTION

We know that a motor skill is a physical skill that involves movement and therefore includes all the technical and movement skills that tennis players use. We also know that players acquire and develop these skills through motor (skill) learning during practice. We also know that the skills need to become relatively permanent to be effective (Schmidt, 1991).

The issue for coaches therefore is to know how to teach the skills that players will need as they develop and mature. Tennis is an open skill game, so when coaches teach motor skills they must also be sure that how they teach relates closely to what actually happens in the game itself. In effect, the requirements of the game should influence and even dictate best coaching practice and the ways in which the coach develops a player's technique and movement.

It is essential that coaches understand the impact of the open skill nature of tennis on motor learning. Open skill means that the player cannot decide which skill to use until the ball is hit by the opponent (Gentile, 2000). This requires the player first to make a decision and then to use a relevant skill. In addition, in tennis, no skill (other than perhaps the serve) is ever repeated in exactly the same way or circumstances. Furthermore, during a game, skills are used in different sequences, with the result that the player is continually changing the motor skill pattern. In effect, while the biomechanics and shape of each skill will be similar, the skill must always be adapted in some way because of the different characteristics of the incoming ball, the court positions of the player and the opponent and the score. All of

this should impact how coaches teach motor skills.

The key issues for the player are decision making, problem solving and the adaptation of skills and motor patterns to deal with the unpredictable nature of tennis. This means the player must learn and develop adaptable/open skills, rather than the fixed/repeatable/closed skills needed in a sport like gymnastics or swimming (where it is essential to repeat the same skill in the same way every time).



Since the player needs to continually adapt skills, coaches must know how they should coach the basic technical and movement skills for each stroke first and then know how they help players adapt them in the game.

The clue for the coach lies in what we have already established about motor learning: for a motor skill to be learned it must be practiced. Thus the type of practice used is key. Some examples of different practices link to the development of motor skills used in an open environment.

INITIAL MOTOR LEARNING

Whole-part-whole practice

When teaching the basics of a skill, many coaches first break the whole skill down into what appear to be its component parts (for example, different parts of the serve). They teach each and then try to create the whole action from a series of 'linked' parts. Properly used, this type of practice is known as whole-part-whole and can be useful if an element of the skill needs more development. However, many coaches misunderstood the practice and begin teaching every skill by breaking it into parts (i.e. part-whole). Beginning with the whole is more realistic and helpful to the players who get a 'rough' action very quickly and who simply needs time to develop it. The player will make mistakes, but these are known to be an effective and necessary motor learning tool!

Game based practice

This is very appropriate to learning tennis skills because the player understands the context of the skill immediately and can develop it to 'problem solve' in the game.

DEVELOPING MOTOR LEARNING

Varied, variable and random practice

Once the basic parameters of the skill (footwork, grip, shape of shot, contact point and follow through) are in place, coaches need to use principles of practice that develop game related skills: decision making, anticipation and adaptability. In reality, this is often not the case: instead coaches use blocked or massed practice (hitting the same ball from the same place over and over). But if tennis is not played like that, why learn the skills like that! Varied, variable and random practice (Schmidt, 1991) would be far more relevant to what the player will need in the game.

'Effective practice (of skills) should mimic the range of variations experienced during competition' (Williams & Hodges, 2005).

Variable practice means that a specific skill (such as a forehand) will be practiced differently each time because the incoming ball is different every time.



Varied practice (practicing similar, but different strokes such as both groundstrokes from the baseline) is particularly relevant to tennis.

Random practice is when a number of different skills are practiced in an unpredictable order: it is thus the form of practice that most closely mirrors the game.

All three types of practice require players had to make decisions, problem solve, and anticipate and thus develop game specific skills. Coaches must however ensure that the time frames between strokes reflect the game itself and that the incoming ball is always played from a realistic court position. Practicing motor skills in the context of the open nature of the game enables players to learn the adaptive skills they need. Further, there is evidence that players taught in this way are more robust in dealing with difficult situations in the competitive situation (Vickers, 2011).

Other considerations that impact motor learning

In terms of motor learning practice, coaches must consider other issue when working with young players. The stage of athletic development of young players has an impact on their ability to learn and develop motor skills, as does the trainability and individual readiness of each young player (Malina, 2013). This is because athletic skill development contributes to the ability to develop motor skills (Beunen & Malina, 2008). Coaches who monitor players' growth and maturation know that young players of the same age can be very different and so are more able to develop relevant skills.

How coaches behave as they coach also links to the competitive aspect. Young players who continually react negatively to mistakes in a match (frequently blaming technical errors) may simply be responding to a coaching environment that continually tells them what they are doing wrong when they are learning skills. Increasingly researchers are suggesting that a positive environment where the coach re-inforces what the player does well, would be more likely to create positive behaviour on court. Further, Dweck's research (2008) indicates that praise, particularly of effort can result in young players trying to improve their skills whereas praise of ability is linked to players being afraid to make mistakes.

CONCLUSION

Coaches often assume that unless they control the practice environment, young players in particular will not improve. However, research on different methods of structuring practice for skill leaning and development (from player led to coach led) suggests that different methods of structuring practice have beneficial effects (Côté, Erickson & Abernethy, 2013)).

In another open skill game (soccer) there is much evidence that giving players time, space and opportunity to practice on their own indicates that they become more proficient. Further the evidence is that successful soccer players who practised independently for several hours a week on their own are better players than those who did not (Williams & Hodges, 2005).

Related to this point, research by MacNamara, Button & Collins (2010) into the specific psychological skills necessary to become a performance athlete, suggests that coach behaviour in the practice environment will contribute (or not!) to the long term success of that athlete. This is important information for coaches who could reflect on how in the motor learning environment they could also positively influence the development of skills such as commitment, focus, dealing with pressure and quality practice performance, simply by modifying their own behaviour.

Finally, coaches should of course monitor trends and changes in the game to ensure that players are developing the technical and movement skills needed to play at the highest level in the foreseeable years. Different motor skills will become more important as the game changes and coaches need to be both perceptive and prepared.

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Principles of modern coaching methodology: An evolution

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ABSTRACT

Coaches have access to multiple methods however their coaching methodology is a much larger framework that can be used to connect everything they know as a coach. This article explores some key principles on which many of the coaching methodologies of the world are evolving towards.

Key words: methodology, principles, learner-centred, open skill, game-based, performance factors

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INTRODUCTION

The older and more experienced I get as a coach, the more ‘big picture’ concepts have become important to me. As I young coach, it was all about the new drill or the latest technique. Now, it is more about my coaching philosophy, my methodology, the values and principles I have as a coach. These provide a foundation on which all of my coaching rests. Every coach will use multiple methods when they coach. However, their overall methodology is a constructive framework of connected elements. It is about the principles of coaching you use as opposed to the multiple processes (methods) employed.

“As to methods there may be a million and then some, but principles are few. The man who grasps principles can successfully select his own methods. The man who tries methods, ignoring principles, is sure to have trouble“

Ralph Waldo Emerson

THE ANALOGY

Imagine you are leader of a race team and have a garage to build your winning car. In this analogy, the car represents tennis technique. For many coaches, their methodology is like a messy garage. Some of the tools needed may be missing or, even if they are there, they may not be found very easily because of the disorganization.

The advantage of a structured methodology is that everything is easy to find. All your coaching information is at your fingertips. You can take the right information out easily and at the right time. You can also see how everything relates to everything else, and be more systematic. It also typically provides a terminology framework as well. If multiple coaches use the same methodology, they tend to speak the same ‘coaching language’. I have found that, in most cases, a coach with a defined methodology is a more effective coach (Lyle, 2002).

In Canada, we have a defined methodology that was pioneered by top international coach, Louis Cayer. It was called the, “Actions Method” and has evolved continuously since its inception in 1988 (Cayer, 1987).

PRINCIPLES OF MODERN COACHING

We have identified four principles that we feel are the “pillars” which hold the methodology up. Even though these are listed separately, there is plenty of synergy and overlap between them as well. I believe that coaching in every country is evolving towards these principles.

Learner-centred

In our analogy, what do you think is the most important element about your car needed to win the race? It is the driver. To have the best chance of winning, the car needs to be adapted to the driver. One wouldn’t expect your 182 cm tall driver to have to deal with a car made for only a 152cm tall person. The driver is the ‘brain’ of the car (technique) we build.

The typical coach comes into a lesson asking the question, “What do I need to teach?” If the question is re-framed to, “What do they need to learn?” it takes the coach on a completely different path. So often, we impose a lesson onto a player as opposed to drawing out their lesson, one that is centred on their needs. In other words, we squeeze the driver into a pre-set car. Almost 100% of coaches I talk to world-wide believe they should individualize for the needs of their players yet, they have a methodology that basically stamps out molds. They teach everyone the same forehand technique or serve style, etc.

Self-reflection Question: [Do I focus on what I need to teach or, do I identify what they need to learn and apply my tools accordingly?](#)

Game-based

Imagine the car you need to win a race. Picture in your mind the body, the wheels, etc. Now, if I told you that the race will be a cross-country off-road race, would the car you imagined have won? Was it the right car for the race?

The Game-based approach (GBA) is a relatively ‘new’ evolution in tennis coaching. The concept is simple, get players to play tennis and help them to learn to play better (Elderton, 2001). This is in contrast to the traditional approach of teaching strokes first and then having players try to apply the strokes to play. The typical criticism is that the approach poorly handles technique. In a GBA, technique is second (after tactics) but never secondary. Coaches who allow students to use ineffective and inefficient technique don’t understand the full picture of the approach. The Game-based Approach is really an alternative way to impart technique not a method that ignores technique. GBA is simply about putting what you are trying to do before how you do it. It is based around the principle that tactics drive technique.



For example, it is not effective to teach a player a ‘one size fits all’ forehand when the tactics they are trying to perform change. A forcing topspin angled forehand has very different technique than a neutral deep arc down-the-line which in turn is different from a shoulder height ¾ court attacking forehand. In a GBA, the task you are trying to achieve dictates the technique you use. Rather than teaching a ‘model’ forehand, and trying to apply it to different situations, players are exposed to the situations and the technique is shaped accordingly. The technique used also has to allow future improvement and success at higher levels.

Self-reflection Question: Do I determine the task (tactic) that needs to be performed before teaching technique or, do I just launch into technique to fix how players ‘look’?

Open skill

Different races will place different demands on our car. For example, what decisions need to be made by the driver in a drag race? In contrast, formula 1 racing requires the driver to be aware of where the other cars are, when to make the right moves, etc. The nature of the race determines the skills required to properly use the car.

In a closed skill sport, the demands of perception (e.g. seeing what is going on with the opponent and the ball, etc.) are minimal. In tennis, they are huge. Even if a player performs technique in the right way, a shot doesn’t work if it is not done at the right time, and in the right place. This impacts coaching as players are not being fully equipped if they are being taught tennis like it was a closed skill sport (decision-less technical repetition). Teaching tennis as an open skill means improving a player’s perception (being able to read the ball and opponent’s location) and decision-making.

Self-reflection Question: Do I include perception and decision-making with all the shots I teach? Do my players know the right time to perform the technique I help them learn?

INTEGRATED PERFORMANCE FACTORS

What is the relationship between the parts of the car? Is the engine useful if the tires are flat? The 4 key factors needed for successful tennis performance are:

- Psychological
- Tactical
- Technical
- Physical

None of the factors are new; the key in our modern methodology however is the integration of the factors. For most coaches, the factors live in separate ‘silos’. The trend now is to harmonize them. For example, in ‘complex’ training, a player does physical work and then immediately applies the muscle movements directly to shots. When a coach does integrated training for a shot, (e.g. return of serve), it should start tactical and include, perceptual training, decision-making, technical work, the psychological mind-set required, and the physical capacities required for successful execution. They ALL should be combined in a training session to really learn a shot.

Understanding the whole mix of factors allows a coach to really see where a player’s performance can improve (Vickers et al., 1999). For example, traditional training tended to be technically focused and included physical work (the coach made them run a lot).



The ‘technical’ approach was also reinforced in the coach’s mind when watching players compete because, every mistake is technical (e.g. the ball went wide because the racquet angle at impact was incorrect).

The trap however is to think that technical errors are just technical. Their root can be any of the other factors. E.g. the missed down-the-line may have been rooted in a poor tactical choice (they shouldn’t have even tried a high risk down-the-line in that situation). It may have been physical (they were tired and were not able to maintain good relationship to the ball).

It may have been psychological (they were over-anxious and tightened up). It is the root that the coach should work on.

Self-reflection Question: Do I tend to gravitate towards technical only solutions or, do I integrate all the factors when coaching shots?

CONCLUSION

When we build the car (technique) it needs to be suited for the player, built for the appropriate race and have all the parts working together. In my role as Head of Coaching Development & Certification for BC, I have trained hundreds and hundreds of coaches. I have constantly asked the question, “What has made the biggest impact on you as a coach?” Interestingly enough, these 4 principles keep on being listed as things that have totally transformed their coaching. It is a great exercise to reflect on your coaching and see how it relates to these 4 principles? You may find that by employing these principles, your coaching becomes more effective than you ever realized.

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A constraints-led approach to skill enhancement in tennis

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ABSTRACT

We propose a methodological approach that addresses game-based teaching to enhance skills in tennis. This is based on a diagnostic of decisional behaviour on performance contexts, intervention results from manipulation of key constraints either at task, performer or environment level. The purpose is to guide players' attention to relevant informational sources based on their own actions. In this way, intervention helps players to detect better information to guide more effective actions. Learning occurs based on situations that allow players to autonomously detect and use better information highlighted in the task, and that allows them to discover unique solutions, based on each player's unique characteristics.

Key words: constraints; learning; tennis performance; ecology; dynamics; decision-making

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INTRODUCTION

The constantly changing game conditions imply that decision-making and action be defined in a moment-to-moment basis. The perception of key informational sources reflects the existing adjustment between the unique player's characteristics and the properties of the task (Davids, Araújo, Hristovski, Passos, & Chow, 2012). During a rally, the opportunities to act offered by the context emerge from the continuous relation between the player and his/her opponent.

A player must be perceptually attuned to the match characteristics that inform how and when to act to achieve a goal. He/she does not passively receive information but actively obtains it. Improving the ability to act successfully results essentially from increasing the perceptual attunement to relevant properties of the environment that guide action to achieve a goal.

TRAINING: A PROCESS OF MANIPULATING RELEVANT CONSTRAINTS

Training, in our view, is a process centered on the manipulation of the key constraints that amplifies information sources that help guide players to achieve their goals (Carvalho, Araújo, García-González, & Iglesias, 2011). The term "constraints" refers to the demands that are placed on action that can be of a very diverse nature: instructions and augmented feedback given by the coach, displacements of the players, type of ball or racquet that is used or the movement amplitude of a certain joint. These constraints, that simultaneously interact to channel behaviour, are conceptually organized in three main categories: 1) the task, 2) the player, and 3) the environment (Figure 1).

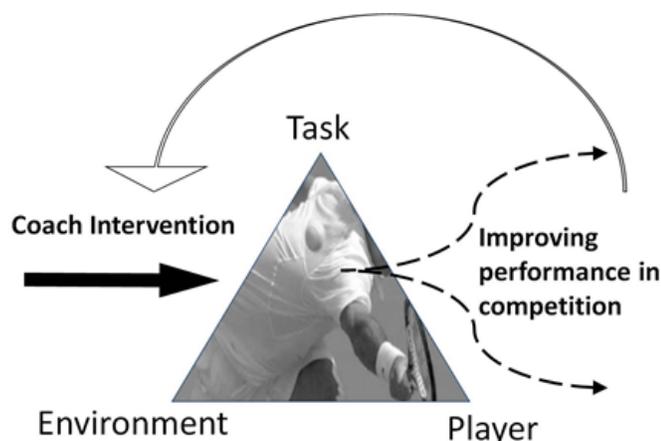


Figure 1 – Constraint categories that influence performance and training.

Task constraints are related with the characteristics of the task such as goals, rules, and implements. The way players explore the action possibilities available in the context will differ if, for instance, the task goal is to create "rupture" situations based on the lateral displacement of the opponent (i.e., angle opening) or by means of an amortie. The way of attaining a given goal is constrained by the conditions in which the task is performed. Players' behaviour is also influenced if, for instance, he/she is asked to maintain five "neutral" balls from the baseline of the court before forcing a "rupture" situation, or if he/she can only score when the "rupture" is created with the forehand.

Therefore the coach can use different strategies (manipulations) to emphasize task constraints, knowing that all the categories of constraints are always interacting. For example: i) Amplifying the information sources: change the dimensions and the court format, rise the net, outline zones in the court, or the arm with the racquet of the player that serves so that the receiver focuses his/her attention on it (this would aid to better anticipate the direction of the ball); ii) Performing gestures and non-verbal actions when the player is playing: signals combined with the players and the coach to indicate which side of the opponent to explore, the height or the depth that might be placed on the ball or if he/she might move in or out of the court.

The effect of manipulating the different task constraints changes according to the skill level of the players. The constraints of the player concerns mainly those that are: 1) structural, that is, those that are relatively constant over time: the morphology, the body composition or, even, the skill level in a given task; and those that are 2) functional, referring to the thoughts, emotions, motivation, fatigue, speed, concentration, etc. Structural constraints cannot be manipulated, but can be attended when choosing training opponents. Considering these constraints, practice situations can be designed to potentiate or limit the fact of a player being taller, stronger, being more tired, or having a lower level of performance. For example, ask a taller player with an effective serve to play only with one serve, or practice situations under fatigue or under "emotional pressure" (e.g., call out one ball when that ball is in, going against the player's will, and helping the player to regulate psychologically).

Environmental constraints are both physical and social. The training climate that is built by the coach influences players' development. The coach can set two different types of social environment: ego or task oriented training (Roberts, Treasure, & Conroy, 2007).

The first, addresses the potentiation of the competitiveness, and leads the player to compare his/her performance with others' performance. The task oriented training environment, appeals to the intrinsic motivation of the player and incentives to improve his/her performance, having the reference of what he/she previously did. Other factors exist in the environment that may be considered when designing the training tasks. For instance, the presence or behaviour of the audience, the presence of family, the conditions of the court (e.g., to play in a slow paving or in conditions of high humidity increases the demands in terms of opponents' displacement when preparing "rupture" situations, requiring higher "patience" and resistance), or also the level of the opponent.

INTERVENTION EXAMPLES

These categories of constraints are useful both for the diagnostic of what is relevant for training, as well as how it can be trained. The intervention happens when coaches know which key constraints influence players' performance, according to their own characteristics and skill level. Therefore, the manipulation of such constraints should be done in a way that improves player's performance.

The use of different tennis balls, racquets and court dimensions, should be based on the action capabilities of the players and their action goals. When, for instance, the court depth increases, this potentiates the amplitude of movement and the speed that is placed on the ball. Conversely, if the depth of the court is decreased, more accuracy is demanded for placing the ball. If the goal is to invite a player to explore the approach to the net the coach may decrease it in wide, or define court zones where the ball cannot bounce in order to promote exploration of angle opening, the displacement of the opponent in depth or the variation in ball speed.

If a coach wants to influence the player to position appropriately behind the ball and perform the forwardswing from the bottom to the top and to the front, instead of straight forward, the coach may raise the net and establish an area on the court, near the baseline, in which the ball should bounce (see examples on figure 2).

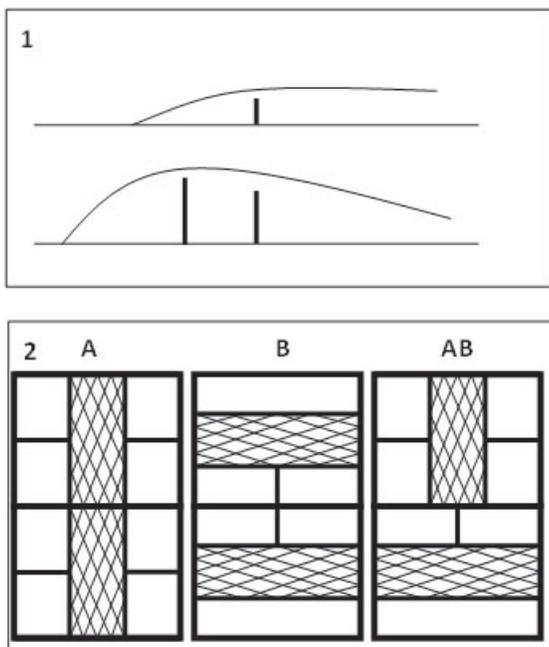


Figure 2. Examples of handling the constraints of the task:
 1. Raising the net promotes the exploration of a ball trajectory rising up to the net, the effect of top-spin and a bounce closer to the bottom line of the court.
 2. Defining forbidden bouncing zones in the court that promote exploration of different solutions: A - opening angles. B - play longer. C - combination of both.



CONCLUSIONS

Different sources of constraints interact to simultaneously influence behaviour. Instead of controlling all the sources of influence on behaviour, the constraints-led approach advocates that players should learn how to perform in face of internal and external variability. The manipulation of constraints intervention is based on the induction of functional variability (not any type of variability) in key constraints to performance. This approach promotes, not the development of better ready-made solutions made in advance, but the development of better perceptual attunement to the on-going match characteristics that inform the player, given his/her characteristics and circumstances, how to achieve a certain goal.

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Introducing the net game to starter players

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ABSTRACT

This article provides practical guidelines for introducing the net game to starter players. Applying modern teaching methodology, scaled down equipment and smaller courts creates the opportunity to develop a successful net game from the very beginning. The feeling of success and competency are important motivating factors, which will encourage players to practice their net game and make it an important part of their game style.

Key words: net game, modern teaching methodology, tactical intentions, implicit learning

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INTRODUCTION

Today's tennis is based on a strong baseline game supported by excellent serving and returning. The traditional way of approaching and playing at the net has almost disappeared from the modern game. What we actually see is that players are coming to the net in order to finish the point or create an element of surprise by using serve and volley tactics. Nevertheless, the net game is still a very important element of the players' repertoire and should be developed from the very beginning.

The traditional way of introducing the net game can be summarized by:

- Catching the ball
- 'Blocking the ball'
- Establishing a rally (player/coach) within a close distance
- Improving the volleys by increasing the rally distance
- Adding approach shots and playing points

Usual consequences of 'traditional way':

1. Bad or no decisions
2. Big backswings
3. Static positioning around service line
4. 'Running away' from the net
5. Developing 'defensive technique'
(Hitting from low to high)

By taking a closer look you can recognize that in a traditional way of introducing the net game follows the same 'logic' as is used for developing the baseline game with the main goal of developing the rally! However, in order to be successful at the net game players usually have one or two shots to finish the point by playing away from the opponent.

Because of the above we need to think about a different way of introducing the net game by taking into account the following elements:

- The main tactical intention of playing at the net is to finish the point.
- Quick reaction and decision-making.
- Simple stroke mechanics, which will be stable under time pressure.
- Quick footwork and optimal positioning on the court.
- The above elements can be achieved if the teaching methodology applies the following principles:
- Create progressive game situations, which will integrate perception, decision making, execution and positioning on the court from the very beginning.

- Developing technical skills in a tactical context (technique should fulfill the tactical intention).
- Using effective questioning to make players understand the consequences of a particular shot.
- Using shot variations in order to learn from differences and develop unpredictability.
- Using the possibilities for implicit learning whenever possible (player is not aware of the teaching point).

6 KEY STAGES IN INTRODUCING THE NET GAME

In the following table you will find the overview of the technical and tactical elements for the 6 key stages in developing the net game for starter players.

	STAGE	KEY TACTICAL ELEMENTS	KEY TECHNICAL ELEMENTS
1	Catching the ball before the bounce.	Perception / reaction.	Hands (contact point) in front of the body.
2	Catching the ball in the air over an obstacle.	Creating advantage by 'hitting away' from the opponent.	Contact point in front of the body.
3	Intercepting the ball	Staying in the point by preventing the ball to pass. Covering the court.	Contact point in front and aside of the body. Convenient grip.
4	Directing the ball	Creating advantage by hitting away from the opponent.	Racket movement from high to low during the hitting phase. Convenient grip.
5	Closing the net	Creating advantage or finishing by hitting away from the opponent. Covering the court.	Timed split-step.
6	Approaching the net by using approach shot or drive volley	When/Where to hit approach shot. Covering the court.	Footwork before the 1st volley.

Table 1. Technical and tactical elements for the 6 key stages

Catching the ball before the bounce

Receiving skills are usually the weakest skills of starter players. The shorter reaction time available when compared to the baseline game creates even higher demands on these skills in the net game.



Photo 1. Vertical toss.

For this reason and in order to provide reasonable levels of success, starter players should develop the ability to catch the ball in the air in very simple situations. The easiest one is after a vertical toss of the ball or after a vertical drop, which is more demanding for starter players (photo 1.).

Already at this stage, it is very important to check for an alert ready position and quick reactions of the hands in front of the body.

Catching the ball in the air over obstacle

At this stage the player is still catching the ball. The major difference is that the ball is moving in the horizontal as well as in the vertical plane, creating new demands on receiving skills.



Photo 2. Throwing ball away from the opponent.

Already at this stage the player should start developing tactical thinking through good court positioning according to various directions of the oncoming ball (photo 2.) as well as by 'throwing' the ball away from the opponent toward the 'left or right' side outside the court.

Mental „readiness“ in the starting position and positioning of the hands that enables meeting the ball in front of the body are important checkpoints for coaches.

Intercepting the ball

In this stage the player should develop the ability to intercept the ball in the air with the racket (photo 3.). In theory if the player is able to prevent all balls from passing him he will at least stay in the point, and probably win it.



Photo 3. Intercept ball.

This approach will foster development of the contact point in front of the body without a big backswing, which is the most common problem for starter players!

Key tactical checkpoints for coaches are consistency and court positioning as well as contact point in front of the body, footwork and reaction to different ball trajectories.

Directing the ball

Quick positioning and decision-making, together with shot accuracy, are crucial for a successful net game at beginner as well as at the professional level.

In the directing the ball stage, the players are using accuracy together



Photo 4. Decision making.

with hitting away from the opponent in order to win the points (photo 4). This approach will enable the development of decision-making for starter players. At the same time creating a target area close to the net, which doesn't require power, will encourage directing the ball instead of early development of a big backswing.

Racket movement from high to low is an important technical checkpoint that will enable players to develop an offensive attitude at an early stage in the development of the net game.

Closing the net

By starting to play points, players will discover the difference between building up and finishing volleys from a tactical point of view.



Photo 5. Moving towards the net.

At this stage it's fundamental that players develop a functional split step through optimal timing followed by moving forward towards the net (photo 5). In addition, at this stage the players' level of receiving skills should enable early recognition of the lob and backward movement, which is crucial for successful smashing.

Approaching the net by using approach shot or drive volley

Increased space in orange court provides the opportunity for discovering different net game tactics by players. First of all, players will add the approach shot to their net game. Understanding the purpose of hitting the first volley into the open court and finishing with a short angled volley is just one example of the high percentage solutions needing to be developed at this stage.

In achieving the above-mentioned tactics coaches should keep in mind the following technical checkpoints:

1. Moving forward before and after the split step.
2. Firm grip in the contact point.
3. Adequate backswing depending on the court position and tactical intention.



Photo 6. Approach shot.

CONCLUSION

By applying the scaled down equipment together with the smaller courts and appropriate methodology young players will have the opportunity to develop a successful net game from a very young age. Success and feeling competent are key motivational factors, which will motivate the kids to come more often to the net and practice this part of the game frequently. In addition, the kids will be able to enjoy and develop their doubles game by interacting with each other and achieving common goals as a team.

The net game will continue to be an important part of the game in the future. The players are becoming more powerful, faster and applying extreme spins in baseline strokes. As a consequence, by developing the net game for the future, we should prepare the players to counter it by developing sound fundamentals at a young age, on which the successful net game can be developed.

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Note

The full presentation together with the video clips of all Key stages can be found on the ITF Tennis iCoach,

http://www.tenniscoach.com/Tennis_play_and_stay_for_rally_development.

Principles of adult learning

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ABSTRACT

The recent launch of the ITF Tennis Xpress programme for adults requires us to consider and perhaps even review the way in which we teach adults to play tennis. In doing so, we must balance the reasons why adults play tennis with the achievement of personal goals, whilst at the same time recognising that they are different to children, and helping them to play and love the game.

Key words: Tennis Xpress, coaching adults, coaching methodology

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INTRODUCTION

Even though we are adults ourselves (and therefore we surely should understand adults better than anyone!), we often struggle to succeed in our adult coaching in the same way we do with children. How are adults different and what does that mean for the way we coach them?

We know that:

- Learning is about a permanent change in behaviour (Delaigue, 2007).
- Learning a technique is about learning an action, but learning a skill is about how to apply the technique at the right time in the right way.
- People learn in different ways.
- Teaching doesn't guarantee learning!

When teaching adults:

- Learning should be active, not passive. In other words, the way to learn tennis is to play tennis, and not just to hear the coach talking about it!

TIP: Adults need to hit lots of balls to learn to play the game, so make sure that a large amount of the instruction is given individually whilst adults are playing.

- Learning is individual and personal (Rogers, 1996). One player might want to learn to serve, whilst another wants a better forehand. When the subject is of little interest or personal relevance to the player, the player is less likely to learn! This is easier to do with smaller groups, so think about coach; player ratios to improve the learning environment.



TIP: individualise your coaching so that everyone leaves every lesson having worked on a personal goal or teaching point related to your group objective for the lesson.

- Learning is voluntary, not compulsory. I bet that at school you were probably best at the subjects which most interested you, or where the teacher made the subject interesting? Adults choose to come to tennis and choose to walk away from your programme if it does not interest them or meet their expectations.

TIP: People like choice and not everyone wants coaching. Offers coaching as one of a range of different options. Organised play, Tennis Xpress, team training, Cardio Tennis and competition are also important aspects of an adult programme (ITF, 2009)-.

CHARACTERISTICS OF ADULT LEARNERS

Adults and children are very different in almost every respect, so we need a different approach to coaching. We know that adult learners:

- Are over 18 (although some tennis programmes start at 16).
- Are continuing a process of personal development, rather than being at the beginning of the process.
- Come with a package of experiences and values, both good and bad.
- Often have expectations and pre-conceptions about the learning process.
- Have competing interests.
- Already have their own set patterns of learning.
- Adults are not on the same upward developmental curve as children. As we get older, we tend to slow down, put on weight and become less mobile!

Now let's look at some of these in more detail. As you read through them, ask yourself how these characteristics vary from what you know about teaching children.

Adults are continuing a process of personal development (Starr, 2003).

- Many, though not all, adults have been through formal education and have learnt through continuing experiences in life and in work.
- Many (but not all) have set ideas about what they like, what they want to do, and even how they want to do it.
- It is important for the coach to discuss goals and objectives with the player, to establish motives, intentions and possible outcomes.
- Fundamental to this is why the adults are there in the first place, and whether they are looking for game improvement, exercise and fitness, competition or a social environment.
- Coaches should help players achieve their personal goals.

Adults come with a package of experiences and values (Starr, 2003).

- Some of these experiences may come from sport, and others from outside sport. Some experiences may be positive and some may be negative. Take two typical scenarios:

1. School lapsed – those who played at school or college, and then stopped playing to pursue a career or to start a family. Such players may be apprehensive because they have not played for so long.



- Adults are more likely to decide which activities they participate in, when, where and how often, on the basis of an interest in, and an enjoyment derived from, their own participation.
- These factors are significant in shaping the relationship between the coach and the player and the approach that the player takes to their own learning.
- TIP: Choice is important but it must also fit with lifestyle, jobs and family. Try to offer flexibility in the adult programme where possible.

Adults have greater experience (Bothorel, 2000).

- Adults have life experience, but don't assume that experience in tennis is proportionate to age; it depends how long the player has been playing. It is possible that a 10-year old child has more tennis experience than a 45-year old man!
- This experience could be physical experience (how long has the player played the game? who with? at what level?). Greater experience of older players may mean that adult learners are better able to pace themselves, displaying greater patience and understanding that learning may take time.
- Learning experience (has that player been taught? if so how? is the player self-taught?)

TIP: use analogies and examples for their experience. Use examples from a squash court to teach slice, or from badminton to teach a serve

Adults are more patient

- Older athletes often display greater patience than do younger ones. They know that learning takes time, and they are more patient in achieving their goals.
- Adults are often more interested in detail. They like to understand what they are learning, so take a little more time to explain things

TIP: encourage adults to set longer term goals for themselves. If you think about it, it happens in other areas of life, for example with career ambitions, quitting smoking or fitness regimes.

Adults communicate better (Bothorel, 2000).

- Better communication helps feedback. Encourage adults to feedback and discuss their own progress
- It is often easier to discuss strategies, goals and a more individualised approach as a result.
- Consequently, a more democratic approach can be taken with adults

TIP: remember that you are teaching a game, and that technical improvement will be limited with many adults. Work on tactics and strategies, and link technical information to those areas.

CONCLUSION

Next time you are on court, think about how you vary your coaching in recognition of the difference between adults and children. It is vital you take into account these differences in order to be a more efficient and better coach. In turn, this will allow the player to enjoy the sport more and also improve as a player.

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2. Expectation of a teaching style – the way we were taught as children has a significant effect on the way we expect to learn as adults. Given that tennis has traditionally been taught from a very technical perspective, this is what many adults will expect, but not necessarily what is best for them.

Expectations – “if I pay for coaching, I expect to improve!”

- They expect (quite rightly!) to play – it is up to the coach to ensure that groups are of sufficiently small numbers to allow everyone to play. Many adults will pay more for a smaller group if they know it will offer them more individual attention and a better learning environment.
- They expect (quite rightly!) to learn, although many do not know what exactly. They will reasonably assume that they will become better tennis players.

Adults have competing interests.

- We know that many adults are busy with work and children.
- Some may play other sports which complement or contradict what they will learn when playing tennis. Just think about teaching a squash player a topspin backhand or teaching a footballer to back away from the bounce of the ball!

Adults already have their own set patterns of learning.

- The job of the coach is to recognise this where possible, and to adapt the teaching approach to suit the learning style of the student.

As adults get older, they tend to slow down, put on weight and become less mobile (Rogers, 1996)!

- Slower balls and smaller courts can help older adults and those who are less mobile to play tennis in a less demanding environment.

ADULT LEARNING AND CHILD LEARNING

Whilst adults may occasionally enjoy behaving like big kids, they are actually adults. This means that they:

- Learn differently
- Move differently
- Think differently
- Act differently

So we need to coach differently! Compared to children:

Adults are more intrinsically motivated.

- Parents tend to organise and pay for children's activities, so they often end up having a key role in deciding which sports a child will play. A significant element of the motivation of a child's learning will therefore be imposed and extrinsic.

Do you get me? Strategies to create learning in Tennis10s!

Mike Barrell (Evolveg, UK)

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ABSTRACT

This article will discuss in detail ways in which learning can be more efficient and improved in Tennis10s. Different types of learning will be highlighted, such as implicit and stimulating, and evaluated as methods for improving the learning of Under 10 children. Useful tips and advice will be given to the reader in order to promote a better learning environment.

Key words: teaching methods, learning, implicit, stimulation, readiness

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INTRODUCTION

There's a great deal of literature available concerning how we teach. Open any tennis magazine around the world and you will see in-depth analyses of the top players technically and tactically. Comparatively, much less is written concerning how people learn, and yet this is perhaps much more important. Fortunately, a step outside the realm of tennis will reveal a wealth of applicable research which we can quickly translate into a more effective approach to coaching, and more importantly to learning!

It is also important to remember that despite the increased levels of tennis skill and competition with the global proliferation of tennis10s, a child is a child, and fundamentally learns like a child (Barrell, 2008).

Working with under 10 players is not so different from the best practice of working with all players. However, there are a few points of distinction which are particularly relevant in creating an environment that maximizes learning for this age group.

THE BASELINE

Before delving deeper into more specific and unique learning concepts here are a few that we all can easily acknowledge and understand.

- 1) Most children are visual learners, so pictures mean so much more than words
- 2) Children learn both through explicit teaching and implicit play (Barrell, 2008)
- 3) A learning environment is one that provides the time and opportunity to gather and assimilate the task or skill to be learnt
- 4) Learning is driven by need, so players must also have the desire to learn the task or skill
- 5) Learning usually involves a process in which a child will face challenges, as well as experience a degree of failure and a degree of success or progress (Hustler, 1998)

What Toys are in the Toy Box? - Implicit Learning

If children learn visually and the world is a myriad of pictures, then we need to accept that learning happens with and without us! This doesn't mean that we have no control over the learning process. Instead, it implies that we can create an environment in which children can play (Hustler, 1998). It's a little like the toys that a child is given to play with, girls may develop fine motor skills as they play with dolls while boys develop gross motor skills as they play with things to throw and hit things with. Of course there is a nature and nurture element to this but it is undeniably influenced by the environment around them.

Channelling learning by harnessing the environment can help us to make a much more effective impact as coaches (Landy & Burrige, 2002). We have to be mindful about what is in the tennis environment.



Players must learn to modify technique based on the intended target area, deal with the existence of an opponent at the other end of the court and link shots together to create effective tactical plans.

In practice, define the court or target area clearly, demonstrate where the ball must come from and go to, include movement in every task and do lots of partner based practice rather than tasks where they hit or move with no response or opposition. This sets up an understanding of what tennis is truly about and provides an implicit feedback loop for players as they perform tasks within this environment.

Ignition – Stimulating Learning

If you were to ask a child to draw two faces, odds are that he or she will create a smiley one and a sad one. As another example of this phenomenon, we have all played the word association game where someone says black and you say white. Although maybe at the time we didn't think much of it, this pattern gives great insight into the way in which we store and process information. We understand left because there is right and hot because there is cold. In short, this association between opposites establishes a framework of understanding (Landy & Burrige, 2002). In motor skill development these contrasts provide more clearly defined sensations, allowing a child to gain a more concrete awareness of the feeling. Schmidt's schema suggests that we can learn motor patterns faster when there are differences involved.

But the idea of using opposites in practice helps us in other ways too!

On the tactical side, Hick's Law suggests that we make decisions more rapidly if we have a limited number of options involved in the process, so short or deep, attack or defend will help players to effectively use decisions at a younger age than using 3 or more options. Opposites and differences may in fact provide the best framework for both learning new skills and repeating existing ones!



Small Batteries

It's also necessary to go a step further in understanding that the child not only also has a shorter attention span, influenced not just by age but also motivation, but a smaller physical engine overall (. Ericsson has identified the major limiting factor in maintaining deliberate practice is the ability to maintain concentration and others have identified lack of sleep as a major inhibitor in new skill development (Barrell, 2008).

We also know that repetition is key to cementing and maintaining a skill once the body has begun to learn it. One of the major challenges is that the physical system of a child is like a small battery, with both a limited physical and mental "engine". It is effective for a shorter period of time but equally recharges quicker. Learning a new skill takes more energy and focus than practicing or maintaining an existing one so the battery is depleted sooner. So during this phase repeated short bursts of 10 minutes or less with rest periods or alternative (or opposite) skills in between meets the physical capacity of children more than mass repetition. This means taking a different structure to lesson planning where rather than sticking to one topic for an extended period of time there is a benefit in leaving that topic and returning to it in small blocks.

Context

If you are a parent then you know that children are learning machines. You may also remember the age of "why?" When every statement, discussion or instruction was followed by "Why is it like that?" Despite the challenge that this posed this was not a deliberate ploy to make life more difficult for you as a parent. It is simply the desire for children to make sense, create order, and develop meaning for the world around them. And while opposites create a framework at a young age, context is key in aiding both effective learning, and eventually decision making. Once a child understands the benefits of learning something their motivation and application to the development of that skill will increase greatly.

Readiness

If you have ever been frustrated by the lack of progress by one child and amazed by the rapid progress of another then you may have questioned a child's readiness to learn.

Readiness is based upon the interaction between the player's cognitive development, their physical development and prerequisite skills, and the demands and opportunities presented by the environment. If any of these is lower than needed then learning may be slowed or not occur at all.

A good example of this is a child's tactical awareness. Look up the court and in a moment you can assess the situation and make decisions. Your mind has been conditioned over years and years to observe more than you realise. But what if your brain was not yet developed enough to consider more than the court and the ball? What if the opponent's strengths and weaknesses were not part of your decision making process, or even the fact that they were left handed?

Piaget, one of the world's foremost child development gurus called this process assimilation and identified different levels of this in a child's development. Importantly for us we should understand that only in his "concrete operational stage" between the ages of 7 and 11 that children may be ready to view scenarios from the perspective of others, thus recognising full both the role and capabilities of the opponent.

Though we will all see different levels of awareness with different aged children it is worth considering that based both on age and competence level a player may be making decisions without integrating the whole picture. On the flip side the increased time that tennis10s allows children should mean that the demands and opportunities presented by the environment should not be slowing progress.

Playing Around

As we said at the start, learning is not constrained by formal teaching situations. Learning through play is a widely accepted principle. A child who is considered talented or highly coordinated is often identified by their ability to be creative and adaptive (Barrell, 2010). Spending time on open creative skills may not seem directly relevant to situational training or technical refinement but it is actually the building block of essential adaptive skills required to adjust to the highly variable ball characteristics that tennis provides. Remember that despite the level, a child is a child, encourage creative play and provide periods of time that ask children to solve missions and invent solutions. This is not only beneficial from a skill development perspective but also aids motivation.

CONCLUSION

We are both fluent, just in different languages!

A famous commercial on UK TV involved the actor Rowan Atkinson in a North African bazaar bartering for a carpet. After being asked if he understood by his assistant his response was, "We are both fluent, just in different languages!" As a coach we are working with an age group that many of us were not trained to. Younger children see the world, make decisions and learn in different ways to adults but that doesn't mean we can abdicate the responsibility that we hold. Creating effective learning environments is not easy, nor is presenting information in a different way than we learnt it, but whose tennis is this anyway? In a different way than we learnt it, but whose tennis is this anyway?

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Improving performance

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ABSTRACT

The ideas presented in this article are applicable to all levels of play. The advice is offered as a result of personal experience and not as a result of a long-term scientific study. The author's views on tennis coaching have been formed as a result of the interaction of several influences but, as a worldwide network of coaches have by definition a worldwide network of different factors affecting them, one coaching viewpoint (the one of the author) cannot be accurate for everybody or even many.

Key words: coaching, matchplay, practice, player responsibility

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INTRODUCTION: SETTING THE SCENE

I have never come across anybody who plays tennis, whether at recreational or tournament level, who does not want to improve their tennis performance. This is the same as saying that the player would want to win more tennis matches or win their tennis matches more easily.

There is one commonality that we all share, and that is the 'game' of tennis. When I write 'game' I am referring to 'matchplay' which has the same rules, scoring systems, tactical, physical and emotional demands worldwide. If we therefore look at the game and understand its challenges, then we can also share common features that are important within our coaching practice and delivery (Reynolds, 2012).

In simple terms

- The game (matchplay) promotes independence because there are very strict rules about what help a player can receive while performing.
- The game (matchplay) is an extraordinarily open skill that is played without a time limit.
- Insert improve your coaching abilities and YOUR performance.

In other words, matchplay is a really difficult task that has to be performed by the player and frequently for very long periods of time.

Understanding this is for me, is the key to great coaching. The title of this article is 'improving performance' and this refers to the tennis player. However the quickest way to improve the tennis player's performance is to improve your coaching abilities and performance.

ACTIONS STEPS FOR IMPROVING OUR TENNIS LESSONS

Matchplay is a demonstration of skills, which is a combination of;

- attitude
- information gathering
- decision-making
- action and execution
- evaluation

Therefore a great tennis lesson is one which helps improve all of those five factors and a poor tennis lesson is one which only focuses on action and execution as dictated and commanded by the coach.

It should always be remembered that the tennis player's relationship to the tennis ball is far more important than their relationship to you, the coach. The ball is a ballistic missile; it can only be programmed at the moment of contact. The player is required to understand the relationship between 'cause and effect'. Wherever the ball is destined to go will be the consequence of the program the player writes onto it at the moment when strings (hopefully!) meet the ball.

This statement is vital for the player to understand in order to be able to take personal responsibility for what happens.



The coach, independent of how much advice they would like to give or how much they are being paid or pressurised by parents or associations, is never the one that actually hits the ball for the player. It is a player's responsibility to be mentally present at the moment of contact so they understand and learn from the rule of 'cause and effect' (Dent, 2012c).

The ball, in flight, may travel 20 or 30 metres. A variation at the moment of contact, too small and happening too quick to be observable can miss the target zone by a wide margin. The coach cannot correct these minuscule contact errors, only the pupil can and then only if they are mentally 'in the present moment' when contact is made (Reynolds, 2012).

The pupil needs to be mentally ready to learn before they start the lesson, as ready as they would like to be before match they are about to play. Educate the pupil about this great mindset and only start coaching when they are committed to learning. Stop the lesson and rest until the pupil mentally re-engages if they lose focus (Dent & Reynolds, 2009). Remember that in circumstances when the pupil 'switches off' you would have substituted them if you had been a football manager because they were no longer of much value on the field.

If you ask your pupil questions about their attitude in matchplay you will get answers that show how keen they are to do everything right, correct, efficiently and first time, commencing at the very beginning of the match. This is the same attitude that they should be carrying on to the practice and training court. If your player wishes to have a 'switched on' attitude in matchplay then don't settle for anything less (switched off) on the training court. For example;



Coach - "what would you love to be able to rely on as soon as the match starts?"

Player- "delivering my first serve consistently."

Coach- "Ok then, before our lesson starts take a few practice serves, by yourself, to warm up and before you call me over, challenge yourself to have a mindset which is primed and ready."

Pupils who have a clear, positive vision of the player they want to become will be much easier people to coach and work with. When coaching, keep asking the player about this motivational, realistic picture. If the vision doesn't make good sense to you it's your job to educate and develop the 'story they wish to become.' Vision statements are most powerful when they are written (Dent, 2012b).

Player - "By the time I get out of the juniors I will be a player who is very fit and can last in three set matches, as well as having a very reliable serve with a lot of topspin on my second. I will enjoy coming to the net, but only after I have hit some good grounds, which have got my opponent in the corner. My volleys will be simple but I will have learned how to play the ball short angled crosscourt with them. I will never lose my temper and always take plenty of time between points."

The best tennis coaching lessons build confidence and belief that the future will be better than the past. Belief and confidence are enhanced when the coach emphasises and trains the player to remember the improvements the player has made or is making. This then allows the coach to challenge the player to do it even a little better. This is how relentless progress is made (Reynolds, 2012).

Poor coaching is when the player is forever being made to focus on what they can't do. Many will give up the game through disappointment and fear of further failure.

To encourage the fastest possible retention and deep learning of the player it is best to have several themes running through the lesson. When the pupil is switching between lesson themes their memory and recall has to work very hard to re-establish how and when to perform the action or tactic. Lessons that just focus on monotonous one theme content do not promote matchplay quality minds efficiently (Dent, 2012a).

Smart coaches will group the themes together for less experienced players. For example;

- Volleys.
- Chipped return serves from fast/wide serves.

- Short angle slices.
- Drop shots.
- Defending from hard hit ground strokes.

Because all the above require the same 'family of coordination movement.'

For more experienced players the grouping would be more demanding and this then begins to replicate matchplay. For example;

- Inside-out forehand (power shot) - Drop shot (control shot).
- Overhead (power shot) - Drop volley (control shot).
- Down line (power shot) - Short angle cross court (control shot).

Whenever you, the coach, are organising drills, actions, activity which is 'closed' make sure the pupils are as fully aware as you are about how it fits into the 'open play' of matches. There have to be (and it is possible) very good reasons why something in the coaching lesson is not serving the purpose of improving matchplay (fun and relaxation after a demanding tournament). Therefore keep referring to Matchplay as much as possible even when doing a closed skill (Dent, 2012d).

Coaches and pupils should write their definitions of what is 'matchplay'. This will reveal the top priorities to be remembered during lessons. If the coach and the player have very different and even worse, conflicting views of matchplay, there is bound to be difficulties during their working relationship. For example;

Player - "matchplay is a physical contest to see who hits the hardest."

Coach- "matchplay is a mental contest to see who the best tactician is."

CONCLUSION

Tennis lessons need to promote independence because players are required by the rules to be independent when playing matches.

Poor quality tennis lessons only focus on technique, which has been taken out of context of the tennis match, and technique is often only a reflection of the coach's personal prejudice in how a ball should be hit and not an application of quality, simple biomechanics personalised for the individual.

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Application of variable practice to technique training in tennis

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ABSTRACT

The human being is interpreted as a complex system with a capacity to adapt, and in continuous interaction with his environment (Kelso, 1995). Any variation around him will create changes in the system to adjust to the surrounding conditions. This capacity to adapt, a characteristic of the biologic system, is an appropriate reference to understand the motor learning processes (Davids, Button & Bennett, 2008). Learning stems from an adaptation process that the learner goes through. If the tasks proposed are repeated, the system tends to aim for a new balance with new features depending on the characteristics of the tasks. That is, the direction of the behavior changes we produce will depend on the conditioning tasks (Moreno 2006). It is at this point that variable practice appears, making the tennis player explore his/her motor-perceptive skills, looking for new coordination patterns or attractors so that the most appropriate technical patterns solve the different game situations.

Key words: coaching, learning, technique, variable practice, dynamic systems

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INTRODUCTION

Recent research has shown different learning and training systems for tennis technique. At the methodological level, Crespo and Reid (2007) have divided them into three main stages:

- From its beginnings until the 40's, very analytical and centered around the coaches direct instruction on the pupil as a model and in individual teaching sessions with a strong emphasis on the technical aspect.
- Between the 50's and 80's, a very analytical phase, centered on the technical execution, group classes begin to emerge using the basket as a didactic resource and the lines to organize practice. The repetition of movement as a basis for the construction of the technical pattern for the different strokes takes place at this time.
- The contemporary stage, as of the 80's and up to the present time when the pupil gets more involved in the activity, becomes more comprehensive and not so analytical and technique orientated. Tactics have an important role in the teaching process and in game situations reproducing the kind of situation the tennis player will face on court.

In this sense, and in this contemporary stage there are different learning methods for tennis specific technical skills, the latest ones present this sport as a complex system (Crespo, 2011), made up of a number of elements in a continuous interaction with the game environment. The methodology of variability practice started from the cognitive perspective through the Motor scheme theory (Schmidt, 1975). This paradigm is still being discussed and developed. Cognitive constructs have been proved useful in motor learning recent literature (Schmidt, 2003; Newell, 2003; Sherwood & Lee, 2003; Ulrich & Reeve, 2005). The General Theory of Dynamic Systems targets a new model for cognitive proposals, considering motor behavior as a whole, and restating the macroscopic study of the person- environment relations as a dynamic and open complex system (Moreno & Ordoño, 2009).

It will be from this paradigm that we will plan technique training and/or learning in conditions other than the ones the tennis player usually faces, linked to the concept of automation and systematic repetition of the movement pattern in the same conditions (Gentile, 1972), reproducing what is considered the ideal movement pattern from the mechanic point of view. Thus, variable practice in learning and

technique training are presented to produce an execution imbalance to make the tennis player spontaneously discover individual movement patterns exploring their perceptive-motor skills (Davids, Button & Bennett, 2008), adapting to the task, and to the environmental and personal conditions while increasing motor efficacy. The disturbances the player is forced to undergo try to reach a new status by auto-organizing the components of this system with the presence of noise. When the task becomes complex, finding those movement chains that provide maximum possible efficacy to the strokes. This characteristic of the complex systems is based on their capacity to operate in unstable- unbalanced conditions- (Wallace, 1997). Thus, practice targets a change in the distribution of the attractors characteristic of the tennis player coordination pattern or the generation of new attraction status trying to consolidate them (Menayo & Fuentes, 2011). This persistence of change, even if the conditions/ stimuli that caused them may not be present, is a characteristic of the "hysteresis" of a system (Wallace, 1997).

It is from these concepts that the coach can design different tasks, taking into account the elements mentioned above like (Menayo & Fuentes, 2011):

1. Disturbances impacting on space and distance orientation, speed and acceleration, movement amplitude or execution times.

For example, playing a 1x1 situation in which both players are showing their back to the net, and when the coach feeds a ball to one of them, they just turn and start the point.



2. Change the environment using different materials and instruments.

For example, raising the net to achieve greater consistency and depth when rallying from the baseline.

3. Modifying the support surfaces (practice in the water or sand, with different degrees or stability, etc.).

For example, serving from a position sitting on the Fit-ball keeping the feet on the ground at all times.

It is important to remember that, when introducing disturbances during execution, key technical aspects must be respected in practice variables modifying the technique, not in an absolute but in an optimal way (Neumaier, 2002), preventing the execution from getting away from the technical movement pattern, to avoid interference in the movement or negative transfers that could be detrimental to performance. This variability load is being researched to adjust the proposals of the performance needs and targets.

In this line of thought, Moreno & Beneroso (2009), propose an interesting similarity with what we call the General Adaptation Syndrome (GAS) (Selye 1956), in sport coaching theory. The GAS explains how a system reacts to an environmental modification changing the behavior of such a system. A training load produces a warning phase which decreases the functional capability of the athlete. The system responds to this situation with a number of resistance mechanisms leading to an adaptation process. In this adaptation or super compensation phase, the system undergoes changes, adjusts its characteristics and gets ready for this load, increasing its capabilities (Stone, O'Bryant, Garhammer, McMillan & Rozenek, 1982). So, when learning or training technique, the load must be adapted to the tennis player, in such a way that it is significant enough to produce an adaptation.

Thus, we could create tasks, evaluating the practice load for the athlete, according to the impact it will have on the tennis player, and therefore, the effect on him/her, trying to avoid those that do not generate enough stimulus or those that, on the contrary, are excessive and could even hinder his/her performance. Figure 1 shows how in the phase of application of the load, performance will initially decrease, with conditioned technical movements not adjusted (warning phase). If this stimulus continues, the player will naturally modify his action repertoire to gradually reduce errors and be more efficient and efficacious in his response, adapting to the situation and modifying his relationship with the environment (endurance phase). Then, the phases of adaptation and super compensation will see the tennis player not only doing well with the practice load but also, without a stimulus, he/she will show a significant change in behavioral patterns (Moreno & Beneroso, 2009).

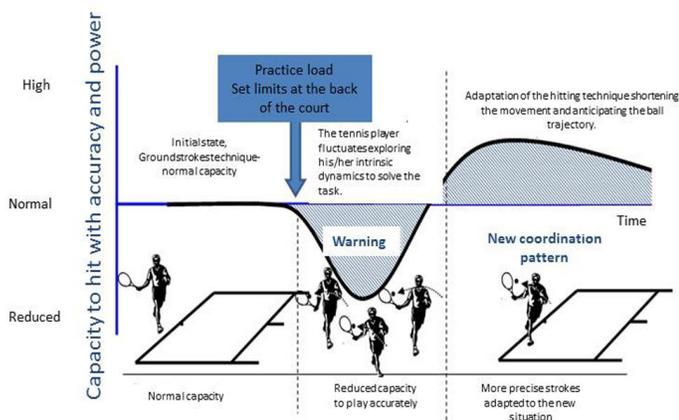


Figure 1. GAS adapted to the application of practice loads.

CONCLUSIONS

New training techniques and learning paradigms are being researched and developed, and somehow, it gets close to those models that respect the essence of a complex sport as tennis, characterized by uncertainty and decision making in each action. Thus, it seems reasonable to propose working models for the tennis player to adapt to the different situations all of the time. Task changes which are characteristic of the variable practice expose the tennis player to a number of disturbances which try to make the technical movement more resistant to unstable conditions in order to make them more stable and permanent in time (Moreno, Ávila, Damas, García, Luis, Reina & Ruiz, 2003).

In tennis, just as Menayo & Fuentes (2011) pointed out, some authors like Benko & Lindinger (2007), use differential learning to work with speed, coordination and footwork. Elliot, Reid & Crespo (2009) suggest using different equipment, like rackets with different characteristics or manipulating the diameter of the ball. On the other hand, Menayo (2010) prefers variable practice with different elements and balls to analyze the impact of differential learning on the variability of movement, accuracy and speed of the ball on the flat service.

In variable practice, the loads should be applied intermittently with different levels of load to observe adaptation and in such a way that modified behavior becomes stable in real practice (Moreno & Beneroso, 2009). Likewise, we must balance the effect of the loads in practice, to avoid hindering the players' progression and performance, making good use of the right time during the season, controlling intensity and being careful not to involve the player during his / her competition period, which can be more critical.

According to (Moreno & Ordoño, 2009) the principles to design training or practice loads are mainly:

- Set concrete execution conditions
- Determine the characteristics of the player
- Adjust practice loads
- Set an evaluation system

In the next issue we will be developing these general principles for the design of technique training tasks, and a number of practical examples for the application of variable practice in tennis.

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Note

The concept of the attractor is used to qualitatively predict the behaviour of a dynamic balance system of freedom involved in a movement, generating a new functional coordination state or attractor in which the system meets the target set before this status. If the attractors in a complex system behave in an orderly and stable way, consistent movement patterns are created for specific tasks (for ex. linear speed of the hip when walking). (Menayo & Fuentes, 2012).

Teacher education on court

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ABSTRACT

Each of you may find yourself in a situation of educating teachers. Whether your structure is called club, academy, team or any other name, you will probably be expected, one day or another, to educate a collaborator or, better still, run a training programme with a group of participants who want to get into the wonderful profession of tennis teaching.

Key words: education, teaching methods, training, technique

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WHICH METHODS OF TRAINING?

You will need to use a wide range of training methods, from the traditional lecture format (the least possible) through to video, online learning and, of course, actual teaching sessions during which your students will be responsible for players under your supervision.

Your goal will be to help future coaches acquire real skills rather than knowledge. These days, the aim of training is usually defined as follows: "At the end of the training course, the trainee will have learned how to...". What skill could be more important than the ability to run practice sessions with one or more players on the court? The act of teaching is the main reason why young adults decide to go into training; it is therefore essential that we allow them, right from the start of the training, to learn through simulation. Throughout their training, we must also give them the opportunity to coach players in their own clubs so that they gain experience. You learn by doing. This principle has been used by craftsmen for centuries. The professional who is in charge of supervising trainees has the most important role to play. Indeed, he is the one who sees trainees on a daily basis and can influence their behaviour.

In this article, I would like to share with you some of the ideas that I have developed over 15 years of experience in this field.

When you supervise a trainee who is conducting a teaching session, keep in mind that he is in a state of vulnerability. When giving feedback, do as you would with your own players: start with telling the trainee what he did right during the session! Give him the opportunity to learn by trial and error. "A child learns to speak by speaking" (Freinet, 1956). By minimizing the significance of errors, trainees will be able to build their confidence and be ready to get involved with players. Tennis players need to build their self-esteem to make progress. The same can be said of trainees.



Unless it is for a certification exam, avoid commenting on the trainee's performance as a whole; instead, focus on a couple of specific points. If you do not follow this rule, chances are that your most important points will be diluted and your feedback inefficient. At the early stages of training, students are usually unable to determine priorities.

Feedback can be given on various aspects such as:

- Communication with students;
- Relevance of the observations made and the goals selected;
- Choice of drills and their set-up;
- Quality of feeding;
- Relevance of technical instructions.

Make sure to inform the candidate in advance of the aspects that you will be reviewing so that he does not feel "trapped". This way, he will have the opportunity to prepare his session and be ready for the area in which he will be assessed.

- If other trainees are to be present, ask them to play a specific role as observers in relation to the teaching area being assessed.
- Some will observe the players in order to compare their observations with those made by the person who is in charge of the assessment.
- Others may suggest exercises or advice different from those that were set up or provided.
- Some will also verify that all the guidelines provided by the coach regarding communication have been followed: attitude, voice projection, language used, appropriate instructions and feedback provided to players, etc.

Beyond these practical tips, the main point that I would like to make is that teachers (or, in the case of the present article, future teachers) should focus first and foremost on helping players improve. This seems obvious, but unfortunately this is not always the case. At the end of every single session, players should be in a position where they can safely say: "I have learned something" or "I have improved something in my game".

It is important to have a systematic and consistent approach to teaching such as the one below:

1. I observe;
2. I make conclusions;
3. I set a goal;
4. I select a drill or exercise;
5. I make use of that drill or exercise to make technical improvements;
6. I adapt the difficulty level of the task based on players' success;
7. I integrate the newly learned skills in real game situations.



Although some students or coaches are good at helping players improve technically, it has to be said that our teachers' primary weakness often lies in their inability to make technical corrections (point 5 above). More often than not, the fun and global aspects of the tennis game take priority over technical improvements. Having set up a practice situation, coaches will simply act as facilitators without looking to achieve a better technical execution. However, what students look for is the feeling that they are better players when they leave the court.

Trainee coaches often have good intentions, but they are also afraid to do the wrong thing and fear that they will give bad advice to their players. In these situations, the trainer needs to be reassuring by emphasizing the fact that everybody makes errors in the beginning, himself included, and that experience is what enables coaches to have better judgement and provide more knowledgeable advice. That being said, if teachers never take any risk, chances are that they will keep acting as "facilitators" rather than as real tennis coaches.

The fact that the technical aspect of the game is a requirement does not mean however that we should go back to a time when technique was taught as a goal without any relation to the game. Let's not go back to that extreme situation: the starting point of each session is indeed the game. Duality is the very essence of tennis and therefore must serve as a guide.

When the child is first introduced to tennis, he will be put in a situation where he has to "play with" his friend. At ages of 5 or 6, this usually means rolling a ball on the ground. Remind your teachers that even at this level, it is essential to provide technical elements to children:

- The ready position: it enables players to start each stroke correctly;
- The holding of the racket at the end of the handle (no need to discuss grips yet);
- The impact point in front of the body: one of the fundamentals of tennis that players must keep in mind all the time.

Regardless of the level of play, there are requirements that the tennis coach must not overlook if he does not want to limit his players' potential.

At the other end of the line, there is the professional player; he too is looking for that "little extra" that will make a difference. It is the role of his coach to find that little something that is missing.

CONCLUSION

We should never separate matchplay and technique: technique serves the purpose of tactics; it is crucial for teachers to understand the importance of this and make players aware of it. The coach needs to take the time to explain to the player which part of his game will be improved and how the proposed correction, however disquieting it may appear, can benefit his game: "your serve will be stronger", "you will be able to play short cross-court shots", etc. Explaining is the key to getting players to fully support technical changes. It is also important to frequently remind players of the benefits that can be expected from the work being done. Players then know what they do and why they do it.

I know many of you already apply these recommendations. Beyond theory – which is also important to learn –, my intention here was to recap the most important aspects, in my mind, of teacher education on the tennis court.

Note

The word "player" in this article refers to both girls and boys, and includes all words related to trainees such as students, pupils, etc.

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