

Pg.	Title / Author
2	Editorial
3	Motor learning and tennis basic stroke teaching for 3 and 4-year-old boys and girls <a href="#">Carlos Avilés, Sergio Las Heras and Abraham Ávila (ESP)</a>
6	Playing the first or the second bounce in wheelchair tennis <a href="#">Alejandro Sánchez-Pay, David Sanz-Rivas and Gema Torres-Luque (ESP)</a>
9	Applying the concept of chunking to tennis <a href="#">E. Paul Roetert, Ronald B. Woods, Duane Knudson and Scott W. Brown (USA)</a>
13	Mental training at ASC Florida <a href="#">Eva Borrás (ESP)</a>
16	Review of the injuries in junior and university tennis <a href="#">Oriol Amer Orfila and Josep Campos-Rius (ESP)</a>
19	Evaluation of the potential of the 'introduction to tennis' landscape in Brazil <a href="#">Caio Corrêa Cortela, Guy Ginciene, Michel Milistetd, Silvio Pinheiro de Souza and Carlos Adelar Abaide Balbinotti (BRA)</a>
21	Challenges for grassroots tennis development in Brazil <a href="#">Caio Corrêa Cortela, Guy Ginciene, Michel Milistetd, Silvio Pinheiro de Souza and Carlos Adelar Abaide Balbinotti (BRA)</a>
24	Perceptions of coaches of a scaled tennis equipment program <a href="#">Karl Davies (USA)</a>
27	Stereotype threat and performance on sport specific motor tests <a href="#">Jo Ward and Richard M. Buscombe (GBR)</a>
30	Match-fixing, a threat to the integrity of tennis <a href="#">Alejandro Valiño (ESP)</a>
33	Recommended e-books <a href="#">Editors</a>
34	Recommended web links <a href="#">Editors</a>
35	General guidelines for submitting articles to ITF Coaching & Sport Science Review <a href="#">Editors</a>

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

## EDITORIAL

Welcome to issue 77 of the ITF Coaching and Sport Science Review. This issue covers a range of aspects in the game including: motor learning for extremely young players; wheelchair tennis; psychological training in action at a top academy; junior and university tennis injuries; an analysis of grassroots tennis in Brazil; coaches perceptions of scaled equipment; the effect of gender stereotyping on performance; and, match fixing.

Following its success in 2018, the ITF Worldwide Participation Conference has been confirmed for 2019 and will be held on 7-8 July at Chelsea FC's Stamford Bridge Football Stadium in London, United Kingdom. Registration is now open, and you can [register by clicking here](#). The conference, aimed at those making high level decisions on sports participation builds on build on the global conversation that began at the 2018 edition, providing an interactive forum centred around shared practices and discussions with specific attention focused on the retention in sport and physical activity participation. Tennis will be at the heart of the conference topics with experts, from both inside and outside of the sport.

2019 will see the return of the ITF Worldwide Coaches Conference by BNP Paribas which will take place in Bangkok, Thailand from 25-27 October. Full details of how to sign up will be accessible on the conference website, which will be accessible through the [ITF Website](#) from May. From this time we will also be calling for papers for the conference.

Another of the ITFs Key Strategic Objectives for 2019 is the World Tennis Rating which aims to give every player a simple indicator of their standard of play. Being developed worldwide with the assistance and collaboration of different national and regional associations as well as leading sport and university organisations, it will enable players of all abilities from beginners to professionals to access relevant and enjoyable playing opportunities. Work is well underway with a singles and doubles rating algorithm, an information technology system and a mobile application currently in development. ITF will begin launching the World Tennis Rating alongside the nations of world tennis in 2019.

The ITF Academy has now been launched and will replace Tennis



iCoach as the ITF Coaching's online educational platform. The ITF Academy retains all the content of iCoach but builds on its functionality aiming to provide information, education, certification and continuous professional development support to coaches through a blended learning approach. The ITF Academy features two initial online courses on ethics in coaching and an introduction on tennis for users to try out. You will have to sign up for a new account, even if you had an iCoach account. If you had an active iCoach account, your subscription will be credited to your ITF Academy account as long as you use the same email upon signing up. Please [click here](#) to go to the ITF Academy.

Finally, we would like to thank all the authors for their contributions, as well as all of those who sent in proposals. We hope that you enjoy reading the 77th edition of the ITF Coaching and Sport Science Review.

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# Motor learning and tennis basic stroke teaching for 3 and 4-year-old boys and girls

[Carlos Avilés](#), [Sergio Las Heras](#) and [Abraham Ávila \(ESP\)](#)

ITF Coaching and Sport Science Review 2019; 77 (27): 3-5

## ABSTRACT

*This article presents a less prescriptive approach to the teaching. Our didactic proposal is divided into 3 complementary and progressive stages. The first one encourages the child to explore the learning environment and to discover their motor capabilities; the second is an intermediate phase with greater practice variety in which the child experiences different ways of acting and hitting; the last one aims for each child to discover their own preferred movements and strokes in a natural way.*

**Key words:** acquisition, non-prescriptive teaching, non-linear pedagogy

Article received: 24 Sep 2018

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Article accepted: 20 Nov 2018

## INTRODUCTION

Primary school kids are often seen in tennis clubs hitting their first strokes with nets, rackets and balls that are adapted to their stage of development. But what happens if we are given a group of 3 or 4-year-old players at the beginning of the season? This is a great challenge as generally we are not prepared, or we don't know how to stimulate our kids so that they develop their motor skills and learn the basic tennis strokes. This lack of knowledge raises questions which need to be answered. This paper is the product of our practical experience with Kindergarten kids and it is supported by current knowledge of motor learning. It aims to urge club and school teachers to programme their lessons to include playful activities that consider the psychological development of the children.

Acquiring a new movement is a complex process of non-linear and dynamic changes, as the interrelation of several variables or constraints gives rise to a peculiar motor coordination (Newell, 2016). The learning process is not lineal, and it can be affected by many constraints since there is no single cause for change. Therefore, for a child to learn how to hit a ball, the teacher must design learning situations that modify such constraints.

It is key for the teacher to provide positive feedback and make the children understand that making errors is normal in a learning-centred process. Besides, laterality is not yet solid in 3 and 4-year-old kids, and although they may show a natural preference, it is common to see them changing the racket from one hand to the other in order to hit the ball. At first, they reduce the amplitude of their movements and there is a muscular rigidity that helps them to feel safer and in better control.

The traditional method of teaching tennis has, for a long time, consisted of repeating the same stroke in a continuous and mechanical way in order to reproduce the ideal technique in non-contextualised practice situations (Crespo, 2009). On the contrary, we promote an individualised, less directive and less instructive teaching that preserves the need for spontaneity and an exploration of what each child feels. The traditional technique-centred teaching approach and early specialization are not the most appropriate for correct motor learning.

## DIDACTIC PROPOSAL

Our proposal is based on the methodological approach of the Health Pedagogical Advisors of Lower Rhine (2015), which was designed for physical education classes for kids between 2 and 6 years old. We have adapted it to teach motor skills, including basic tennis strokes for 3 and 4-year-old kids (Table 1).

Its main idea is that during the learning process the child goes through three stages in temporary, non-permanent moments. In our model, the experimentation and motor selection processes happen gradually; they are like the shape of a funnel, going from the most varied and divergent to the most specific and convergent. The child experiences many kinds of motor and hitting skills, particularly during the first two stages, until reaching the third stage where they will use the movements that are more natural and efficient for them.

1st Exploration	2nd Diversification	3rd Structuring
The teacher organizes and <i>sets up</i> the different playing zones. The teacher encourages the child to discover spontaneous movements.	The teacher organizes, <i>modifies and resets</i> the learning situations so that the child <i>acts in several ways</i> and has different experiences.	The teacher organizes the activities and guides the child so they acquire the expected or more specific behaviours.
The child explores the environment. The child decides what, how, when and how much to play.	The child adapts, decides how to play and how to solve the motor problems they encounter.	The child naturally selects the most appropriate movements for them.
Games and motor skills: receiving, throwing, racing, turning, hitting with and without an implement, jumping, etc.	Games and motor skills: tennis basic strokes (single or two-handed, with different materials, with and without movement, etc.).	Games and motor skills: tennis basic strokes (preferred or specific to each child).
<i>Example:</i> ten kids play freely in the different learning environments. In the balloon corner, a child discovers they can successfully hit balloons with the palm of their hands.	<i>Example:</i> the teacher prepares several ramps with different inclination angles. The child puts the ball on the ramp to hit it and direct it towards some cones. Thus, the children can hit a forehand in different ways: with a bounce, without a bounce, with a paddle and a single hand, with a racket and both hands, etc.	<i>Example:</i> in a cooperation situation, two kids rally over the mini-net with a slow bouncing ball. One of them always prefers to hit a forehand with one bounce. So does the other one, but he sometimes hits the ball after the second bounce, indicating that his stroke is undergoing a structuring process.

Table 1. Didactic proposal in stages, adapted for clubs and schools.

## METHODOLOGICAL GUIDELINES IN STAGES AND PRACTICAL EXAMPLES

### First - exploration:

For part of the class the teacher creates safe and motivating situations that invite the child to discover the different possibilities available to them. The idea is that the movements of each child emerge spontaneously since the child voluntarily decides what to play. Example: the teacher creates five learning corners or environments with different materials in areas that take up half of the court. In the other half, mini-nets will be set up for the other part of the lesson, or for occasional rotation. The spontaneous practice environments will have the following: 1) soft balls to hit with a paddle, 2) obstacles and skipping elastic tapes, 3) costumes to play pirates, 4) musical instruments to sing and dance with, and 5) mats where the kids can rest or play, so as to not force them to participate.

### Second - diversification:

The teacher changes the situations and gives new instructions so the kids act in different ways. The objective of the task is mentioned, but the solution is not provided beforehand: "the target of the game is to hit the ball over the net and hit the doll, but without telling them how to". The teacher prepares materials for the kids to hit in several ways, for example, for the backhand: using a plastic case, which encourages hitting with one hand, then a paddle and then a racket, which encourages play with both hands.

The teacher can also ask the kids simple questions and use analogies to foster creativity and a linking together of ideas in problem solving: if the objective is differentiating the different heights, ask the children to hit fire balls with paths that "resemble a rainbow" (Atencio, Chow, Tan and Lee, 2014, p.8). It is also useful to rotate; teacher A stimulates the general motor skills of subgroup A in one part of the court with fun activities: corners, learning areas, free play, symbolic games, songs, controlled play, etc.; while teacher B teaches basic strokes to subgroup B in a motor circuit so that the kids have less time to wait after hitting.

### Third - structuring:

The teacher organizes and guides the situations so that the child becomes aware of their preferred or more specific movements. These are the strokes or the hitting forms that the kids themselves have selected after a practice process and they are not imposed in an authoritarian manner. Even if the teacher has an ideal technical model, they should not give specific technical instruction. The point of focus will be the objective of the task, and this will guide the child's actions. We must not over-verbalize instruction, as in traditional teaching, but provide timely and simple instruction in language that is fun for the kids.



Simple sequences can be used on the court: first the backhand, then the forehand from mid-court, finishing with an easy volley close to the net. Rallying and adapted cooperation drills can also be encouraged.

## IMPLEMENTATION GUIDELINES

- 1) The stages can be flexible; for a group of kids, two of the stages could be mixed up in one or several sessions: for younger kids (exploration and diversification) and for the more competent ones (diversification and structuring).
- 2) When teaching larger groups, it would be ideal to have two teachers; in the main part of the class the teachers can feed more balls and increase practice. If the teacher is by themselves, hitting the ball with a hand rather than a racket is recommendable for the freer activities as it is safer.
- 3) At the beginning of the lesson more importance will be given to the development of general movement. Then, the main part of the class will consist of more basic stroke related activities. The final part is the ideal time for the kids to become aware of, and verbalize, the solutions they have found and their achievements.
- 4) We follow Sanz & Fuentes' (2008) learning progression, adapting it to younger kids: a) groundstrokes (forehand, low service and backhand), b) net strokes, and c) overhead service. The later is very difficult for children, though it fosters coordination and segment dissociation since they have to toss the ball with one hand and hit it with the other.
- 5) In order to succeed in individual motor skill teaching such as hitting, the teacher must be innovative and creative. They must also learn how to adapt activities on the go, depending on the level of motivation and concentration of the kids. They will have to modify the constraints (variables), adapting them to the motor skills of each child. For example, using soap bubbles to stimulate the perceptive-motor skills of 3-year-olds.
- 6) In order to develop the child's autonomy and increase hitting frequency, devices that allow hitting without depending on the teacher will be appropriate (frames with a fixed ball, hanging balls, bouncy nets, etc.). The teacher can build several ramps that project the balls without throwing them, or use more sophisticated devices such as a machine that produces air to keep the ball in suspension (Justine Henin Academy Website, 2018).

## CONCLUSIONS

The success of our proposal requires teachers who look at the learning process through different eyes; teachers who let children do, who let them create, discover their motor skills and their own strokes; teachers who guide them without imposing their solutions beforehand, and who are always attentive to the motor and emotional behaviours of each kid.

Acknowledgements: we thank Prof. Nicolás Garrote of UCM for his collaboration.

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RECOMMENDED ITF TENNIS COACH CONTENT (CLICK BELOW)



# Playing the first or the second bounce in wheelchair tennis

[Alejandro Sánchez-Pay, David Sanz-Rivas and Gema Torres-Luque \(ESP\)](#)

ITF Coaching and Sport Science Review; 77 (27): 6-8

## ABSTRACT

*The objective of this article is to analyse the influence of the use of the bounce on the differences between the winner and the loser of a set during a tournament in wheelchair tennis (WT). A total of 16 international matches were recorded and analysed. The type of stroke and the number of bounces before hitting the ball were also studied. The results showed that WT players usually hit the ball after the first bounce (80.95%) and 97.19% of returns are hit after the first bounce. The second bounce is significantly used by the winners of the set. Furthermore, the use of the second bounce by WT players reduces the number of errors and increases the number of winners when compared with hitting the ball off the first bounce.*

**Key words:** Adapted tennis, regulation, tactics

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Article received: 5 Jun 2018

Article accepted: 2 Jul 2018

## INTRODUCTION

Some sports have adapted their rules for persons with some kind of disability. WT has slightly modified its rules to maintain a structure that is similar to that of conventional tennis. In this way, in WT the ball can be hit after it has bounced twice (ITF, 2017). No study has been found that evaluates player performance when playing with either one or two second bounces. Thus, the objective of this study is to investigate the influence of hitting the ball after the first or the second bounce on performance at the top WT level.

## METHODS

A total of 32 sets in 16 men's singles matches from the National Masters, in which the 8 top nationally ranked players played, were played and analysed. Four of the players were outside the top ITF 100, and the others outside the top ITF 200.

All matches were played on hard in-door surfaces. A best of three tie-break sets format was played, with a 10-point super tie-break as the third set. Each match was filmed using a Panasonic HC- Panasonic HC-V700 (Panasonic-Japan) wide angle camera, which was placed in the corner of the court, so as to have a total vision of the court.

An excel sheet was designed to code actions. Each action was coded following the same process: 1) Player, 2) Number of bounces before stroke hit or missed by player, 3) Type of stroke used (return, groundstroke or shot at the net, i.e. volley or overhead), 4) Stroke performance (error, continuity or winner), and 5) winner of the set.



Before coding matches, two observers were trained and inter and intra observer reliability tests were conducted generating values of 0.97 and 0.93 respectively using Cohen's Kappa, which are considered good values ( $>0.80$ ) (Landis & Koch, 1977).

5720 strokes were hit in 32 sets over 16 matches. The study only analysed 4021 strokes, discounting first and second services, as they are hit with no bounce. The data was exported to SPSS 22.0 to calculate percentages, means and standard deviations for each variable. The Chi-squared test was used to compare the differences between the number of bounces (0, 1, or 2) and the performance in the set (winner and loser). The significance level was set at  $p < 0.05$ .

## RESULTS

Table 1 shows the percentage of the number of bounces used by players for each type of stroke. When returning, players hit the ball predominantly after the first bounce (97.19%). The same situation of predominantly hitting after the first bounce also occurred for groundstrokes (75.19%), although there is a greater presence than before in the number of double bounces. (24.81%).

	Number of bounces		
	0	1	2
Returns (%)	.00	97.19	2.81
Groundstrokes (%)	.00	75.19	24.81
Strokes at the net (%)	94.07	5.93	.00

Table 1. Relationship between the number of bounces and the type of stroke.

Table 2 shows the differences in the use of the bounce between the set winner and loser. The percentage of strokes with no bounce is 2.81%, while 81% are after the first bounce and 16% after the second bounce. The winner of the set plays a significantly lower number of strokes with no bounce (39.8% vs. 60.2%) and a greater percentage of strokes using the second bounce (44.6% vs. 55.4%) as compared to the set loser.

Figure 1 shows that WT players make a greater number of errors than winners regardless of whether they play the stroke off 0, 1 or 2 bounces. The greatest differences were found in the strokes played without a bounce before.

	Number of bounces before stroke	Set performance		Total % of total/column
		Loser	Winner	
	Shots	68	45	113
0 bounces	% of shots with 0 bounces	60.2%*	39.8%	2.81%
	Adjusted residuals	2.2	-2.2	
	Shots	1657	1598	3255
1 bounce	% of shots with 1 bounce	50.9%*	49.1%	80.95%
	Adjusted residuals	2.0	-2.0	
	Shots	291	362	653
2 bounces	% of shots with 2 bounces	44.6%	55.4%*	16.24%
	Adjusted residuals	-3.1	3.1	
Total	Shots	2016	2005	4021
	% of all shots	50.1%	49.9%	100.0%

\* Significant difference ( $p < 0.05$ )

Table 2. Differences in the use of the bounce between the set winner and loser.

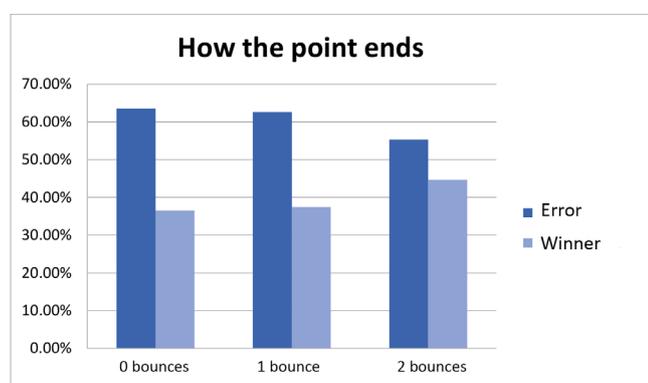


Figure 2. Percentages of how the point ends (winners and errors) for each bounce category of stroke (0, 1 or 2 bounces).

## COMMENTS AND CONCLUSIONS

This study aimed to investigate the effect of using the first and second bounce in wheelchair tennis and observe the possible differences between the set winner and loser. As far as we know this is the first study that highlights the variables concerning the use of the bounce in WT.

WT players predominantly hit the ball after the first bounce (Table 1) and over 97% of returns are hit after the first bounce. This way, the receiver shortens the time the server has to react after they serve. This is very important in WT as after serving the player is in a more static position, so it is more difficult for them to move the chair quickly since the most effective propulsion strategy is to get to the maximum speed in the least amount of thrusts possible (Goosey-Tolfrey & Moss, 2005). This is easier from a dynamic position, similar to the split step in conventional tennis. Hitting the ball after the first bounce when returning could explain why WT players play a greater number of winners when returning than conventional tennis players (Sánchez-Pay, Torres-Luque, Cabello Manrique, Sanz-Rivas, & Palao, 2015).

25% of groundstrokes are hit after the second bounce (Table 1). The second bounce is normally used to play further behind the baseline in a more defensive style (Sanz, 2003); this is where players spend the most amount of time during points (Filipčič & Filipčič, 2009). However, data from Table 2 shows that the winners of the set play more strokes after the second bounce



than the losers do (55% vs 44%). On the one hand, this could be due to better space management, or even to the playing level of the players. In this sense, one could think that lower level players hit the ball with less power, so their opponent will need to return after the second bounce as this is when the ball will reach them at the baseline. Likewise, higher level players will hit the ball with greater power which means that their opponent will have to return after the first bounce, even if they are further back behind the baseline. Even though the stroke percentage after the second bounce is only 16%, the difference in the way the point ends (error or winner) is greater in the first bounce than in the second (30% vs. 10%), with the point more likely to end with a winner when the stroke is made after the second bounce (Figure 1).

Strokes at the net area do not seem to be very common in WT matches, as they only occur more or less 3 times per set (Table 2), a value which is similar to that of other studies (Sánchez-Pay, Torres-Luque, Fernández-García, Sanz-Rivas, & Palao, 2017). Besides, players do not seem to perform well using net strokes, as they are more commonly used by set losers (60%) than set winners (40%). Moreover, net strokes give a proportionally greater number of errors and smaller number of winners than strokes played after one or two bounces (Figure 1). As well as being uncommon, net strokes provide players with a lower success rate. This could be due to the fact that WT players take longer to get to the net than conventional players, as well as that they are in a lower position in comparison to players who are standing, so they can be more easily passed with a lob or passing shot.

This study provides values that can be used to help understand the use of the bounce by WT players. Although the ball is mainly hit after the first bounce, winners seem to make better use of the second bounce from a tactical point of view. Future research may investigate the relationship between the use of the bounce and the area of the court where shots are hit from, and then relate this to the level of the player. It would be necessary to analyse the use of the bounce in relation to the different levels of the players since the hitting power could influence whether the opponent hits the ball after the first or second bounce. Likewise, female, quad and doubles categories must be studied so as to be more specific when designing training plans.

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



# Applying the concept of chunking to tennis

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ITF Coaching and Sport Science Review; 77 (27): 9-13

## ABSTRACT

*The goal of this article is to address how three accepted and researched motor learning stages, as well as the concept of mentally chunking information, relate to acquiring and accelerating the learning process in tennis. Stages of learning, the role of playing vs. practicing tennis, and the interaction between biomechanics and motor learning are discussed. Specific coaching tips are provided.*

**Key words:** Chunking, stages of learning, motor skill performance

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Article received: 15 Jan 2019

Article accepted: 7 Feb 2019

## INTRODUCTION

When we review the Grand Slam tournament results of the past decade, we see some exciting new players having excellent results. However, what stands out from the past is the exceptional longevity and continued success of several 'older' players. Players such as Serena and Venus Williams, Roger Federer, Rafael Nadal, Novak Djokovic and the Bryan brothers, each have been at, or near the top, for well over a decade. We know that all of them have exceptional talent, skills, and drive to achieve and maintain success. However, so have many other players who have not been able to win one or more major titles. So, what sets these players apart from other professional tennis players as well as athletes in other sports who often retire by age 30?

One reason for these top players' consistent success over time and physical ability might be related to their greater ability to mentally integrate and "chunk" the vast amounts of information in their performance. Chunking involves taking individual pieces of information and grouping them into a smaller number of meaningful (meaningful to the user and therefore, individual chunks will vary among individuals, dependent upon previous experience and current use of chunking processes) larger units (Schmidt & Lee, 1999). By integrating numerous tactical and stroke technique elements into larger blocks of information, the grouped information becomes easier to retain, recall, and execute in motor skills. Expert tennis players have figured out how to create and access these larger blocks of information in the most effective and efficient manner so that their on-court movement and strokes can look effortless and adapt to emergency situations (Roetert, et al, 2009b). Motor learning scholars note that effective chunking is an important characteristic of high-level motor skill performance (autonomous stage), such as driving a car, reading a book or preparing a dinner for guests. Fitts and Posner (1967) proposed that motor skill acquisition follows three stages: a cognitive stage, associative stage, and autonomous stage. Considerable research in kinesiology/exercise science and psychology has confirmed these stages and the importance of chunking in coping with the vast amounts of information in high-level performance in dynamic sports like tennis and even medical practice (Cohen & Sekuler, 2010; Renshaw et al, 2010; Wulf et al, 2010; Taylor & Ivry, 2012, Wulf, 2013. Tenison & Anderson, 2016; Whitehead et al, 2016).

Unfortunately, even though this science of learning knowledge is readily available in the literature, the translation of that knowledge to teaching and coaching related to all stages of motor learning in tennis is lacking except for a few instances, such as tennis book chapters (Groppe et al., 1989; Woods & Fernandez, 2001). Therefore, it may be instructive to address how each of these motor learning stages and mental chunking relate to tennis skill acquisition with the goal of understanding, guiding,

and accelerating learning and high-level performance in tennis. The first step is to analyze each of the stages in more detail. The second step is to understand the relationship between playing and practicing tennis and finally recognizing the interaction between technique modifications (biomechanics) and motor learning.

## STAGES OF LEARNING TENNIS SKILLS

An important key to keep people coming back to the sport of tennis is to help them learn to play the game rapidly from the beginning. One of the critical roles of a tennis coach is to help players acquire the skills and strategy relatively fast and apply those skills in competitive play situations. Tennis coaches should not overemphasize elaborate cues and instruction and resist the tendency to share 'all they know' with beginners, even though this first stage of learning is called the cognitive state. Instead, coaches should focus on a few key instructional cues and design practice sessions that promote success in small steps.

**Coaching Tip:** Introduce skills in a way that promotes rapid learning, builds player confidence and increases motivation to continue to play.

When people learn the basic tennis skills rapidly, they find the time spent more enjoyable and have greater self-confidence, which often leads to better performance and additional play. Learning tennis skills quickly however is of limited value unless they are retained over time and they can be executed under the pressure of match play. With this premise in mind, the International Tennis Federation launched a worldwide campaign advocating the use of equipment scaling for children learning to play tennis. This included a modification of tennis courts, rackets and balls. Results from several research studies have indicated that these efforts have had a positive impact on learning tennis skills for children relative to traditional instruction with full-scale tennis equipment (Buszard et al., 2014a, 2014b, 2016; Farrow & Reid, 2010; Kachel et al, 2014).



**Coaching Tip:** Start children with properly sized equipment, reduced court size and lower compression tennis balls to encourage proper technique, earlier success, enhanced enjoyment and a greater chance of continued participation.

Many tennis coaches use some motor learning principles to accelerate the learning of tennis skills such as ground strokes, serves and volleys. For example, it is common for tennis instructional programs to introduce simple stroke movements first, before moving on to more complicated movements. Another approach is to introduce an entire skill, then break it down for practice into simpler parts of the stroke and then put all the parts together. When using this method of teaching a skill, Martens (2012) cautions us to consider how many parts there are to the specific task as well as how mentally demanding the task is. For example, it may be fairly easy to separate the toss from the swing in the serve however, we would not recommend separating the preparation and forward swing from the follow through, since there is much more interdependence.

**Coaching Tip:** When learning a new skill, consider introducing the complete tennis skill first to show what the result will/should look like (whole), if necessary, follow this by breaking down the skill into parts based on the need for change or complexity (part). Finally put it all back together in a competition format (whole).

The concept of chunking can be used in instruction to help players integrate the entire motor pattern of groundstrokes. For example, combining all the necessary groundstroke elements into three distinct sub-units such as: preparation, forward swing, and follow-through/recovery allows players to focus on fewer well-learned sub-units to be incorporated into a complex, effective groundstroke. The preparation phase includes anticipating the oncoming shot, judging the trajectory, speed and spin of the ball, and moving into an appropriate position to initiate a unit turn and stroke of the moving ball. The complete stroke involves using an appropriate grip, adjusting the backswing and executing a forward swing to contact the ball. Finally, the player finishes the stroke with a follow-through and begins court recovery for the return shot. The player must be attentive to their body balance throughout the process, keep muscle tension at an appropriate level and their head still throughout the stroke.

Perfecting a motor program just to hit one groundstroke may seem like a daunting task, but by grouping these numerous technique factors into three main chunks, it is much easier for players to remember them during the cognitive or first stage of learning. From the player's point of view, her job is simply to focus on preparation, swing/stroke, and recovery.

Once the initial stage of motor learning is achieved, players move into the associative or motor stage where they practice the learned movements repetitively, smooth out the execution, and aim for repeatability of the desired motor pattern. At this stage, the repetition also insures retention of the learning which of course is crucial to establish before moving on to the next stage which is the autonomous stage typically reached by elite athletes only after many hours of practice.

During the associative and autonomous stages of learning, information that is "chunked" is more easily retained, repeated and eventually performed without conscious thought. This is very much in line with the concept of implicit learning whereby the player acquires new information without explicit awareness of the details of the information itself (Buszard, et al, 2013). Fitts and Posner's model, explains this as an emphasis shift in control in which initial, explicit control gives way to more routinized forms of control. In fact, when elite performers are asked in post-match interviews how they performed a specific shot in what appeared to be a turning point in a match, they often respond, "I don't know, I just hit it like I do in practice, which is consistent with the research on the nature of expertise (Chi, Glasser & Farr, 1988).



**Coaching Tip:** In practice sessions with advanced players, focus on strengths as well as weaknesses. Reinforcing strengths helps a player's confidence and provides support for the automaticity of the stroke.

### PLAYING VS. PRACTICING TENNIS

Playing tennis games and matches is quite different from simply learning movement and stroke skills. Most players learn groundstrokes first and learn to rally the ball back and forth with a partner to gain consistency and limit errors of execution. When they decide to play a complete point however, the serve and return of serve begin every point thus requiring two additional skills followed by the strokes' tactical skills in each rally. If a point lasts long enough, other skills such as approach shots, volleys, overhead smash or lobs may become necessary. Once again, players are faced with a new learning challenge of playing a point rather than simply performing isolated skills. A variety of skills must be linked together quickly and automatically at elite levels during every point. Making it more complicated is that every point has its own pattern and sequence of shots based on the opponent and the environment. Once again, the concept of "chunking" large amounts of data into smaller more manageable parts can be very helpful to coaches and players.

Players often learn tennis skills by performing the same skill repetitively in what are called "blocked trials." Often the coach feeds balls and the players are expected to perform the same shot repeatedly until a certain level of success is reached. Both the coach and the player feel pleased with his performance and believe the shot has been well learned through greater repetition in a short amount of time. However, when the player tries to play a match, the stroke often is ineffective because in fact it was practiced/learned in stable conditions, not in the more dynamic and unpredictable situations encountered in match play.

To properly learn to play points, players must use "random trials" (instead of blocked) where the next shot is unpredictable, and players may be required to make a series of rapid adjustments and choices before returning the ball. An additional complication is that it is much more difficult to return an unpredictable shot from an opponent than more consistent machine projected or hand-fed ball from a coach. Tennis players should spend most of their practice time once they reach the associative/motor and autonomous stages performing "live ball" drills or playing points rather than "dead ball" (coach fed) drills.

**Coaching Tip:** During the associative and autonomous stages of learning, the majority of practice time should be focused on live ball drills to mimic match play situations.

Chunking the information during live ball drills allows higher level tennis players to make quick decisions as to which shot they should choose and how much speed, spin and depth they should aim for. They can also estimate the margin for error they are willing to accept depending on the score and the point in the match.

Playing the game also introduces the concepts of overall strategy and specific tactics executing that strategy in a match. Although these terms are often used interchangeably, there is a difference between the two. Strategy is an overall game plan based the laws of physics and the relative strengths/skills of the player and their opponent. Generally, hitting ground strokes crosscourt is typically the best choice because the net is lower in the middle and the length of the court is longer to the baseline on the diagonal line (85 feet) vs. down the line (78 feet). These factors normally help reduce the incidence of errors. Tactics, on the other hand is an adjustment of a strategy based on numerous situational factors. For example, your opponent's strengths and weaknesses, court conditions, the score of the match, and weather conditions can all influence if the predominant target in lateral strokes should be crosscourt.

To make strategic and tactical decisions during a match or within a point, a player's recall of possible options must be rapid and accurate. Again, the chunking of information during the learning process will support the execution phase by helping players remember all the available strategic options and then consider any tactical adjustments within a few seconds. For example, a player who approaches the net may find the opponent lobs the next shot. The response typically would be to play the ball out of the air with an overhead smash to end the point. But if the lob is very high, into the sun or it is a windy day, it would be a good tactical decision to let the ball land and smash it after the bounce to reduce the difficulty of the shot. Learning to make split-second decision such as this example can be enhanced and retained by chunking the possible tactical choices so that an automatic decision can be made.

**Coaching Tip:** During practice matches, point out errors of shot execution versus errors of strategy or tactics. Help players differentiate between the types of errors and choose the best shot at the right time.

## INTERACTION OF BIOMECHANICS AND MOTOR LEARNING

At each of the stages of motor skill acquisition, coaches observe and evaluate stroke technique, and after diagnosis, can intervene in the practice to help players improve their strokes. This important professional skill is called qualitative movement diagnosis (Knudson, 2013) and should go beyond just the traditional error detection and feedback. This prescription of practice, conditioning, or technique should be made with considerable



care. While the general consensus of biomechanical research on skilled performance of tennis skills is known (see Knudson, 2006), what is optimal, or best at specific stages of development, has not yet been explored by research. For example, recent research findings have shown that common practice tasks are often not representative of the shot and movement characteristics typical of match play. Therefore, more careful design of practice sessions should be considered (Krause et al., 2018). In general, the level of player should be considered so coaches can carefully instruct or modify practice, continually observe, evaluate, and diagnose the player's performance. Expert tennis players are more efficient at handling large amounts of information (larger chunks because they are meaningful) in match play, than less skilled/experienced players, so communication and intervention are different than with beginning or intermediate level players.

**Coaching Tip:** With advanced players, collaboratively decide on the best time to intervene and make technique changes and when to allow for player self-diagnosis/adjustment. Technique adjustments in well-learned skills will be difficult to relearn and can, initially, decrease performance. Determine when tactical, conditioning, or psychological intervention might be most appropriate.

Differences with lower ranked players may be that the very top players chunk information, encode more efficiently and retrieve information faster (Knudson, 2013). For example, the tennis serve requires a timed sequence of individual body part forces to optimize racket velocity at contact. A well-coordinated timing of the body segments, in a largely proximal to distal (legs, trunk, and arm/racket) fashion, as well as sequencing of these forces needs to be carefully timed within thousands of a second for optimal success (Roetert, et al. 2009a). Timing the biomechanical variables of the groundstrokes may be even more difficult as they are mostly not hit from a stationary position and various stances may be used (Roetert et al, 2009b). In fact, advanced players more efficiently anticipate, react, and move in response to game situations. Vernon et al. (2018) attribute this to anticipatory information, in the form of kinematic and contextual information sources, becoming available to a performer at various times prior to an opponent making contact with the ball in time-stressed game situations.

Keep in mind that in addition to skill differences within certain groups, junior players for instance, there are also differences between groups such as junior players and professional players. Often these differences between the competitive performance characteristics of junior and professional tennis players are not well understood. Research by Kovalchik and Reid (2017) indicates that understanding how competitiveness, play demands, and the physical characteristics of shots differ between junior and professional tennis players can help set realistic expectations and developmentally appropriate training for players transitioning from one level to the next. In this specific example, although both groups have reached the autonomous stage of learning, corrections and refinements should be made based on experience, maturity and need.

## SUMMARY COMMENTS

From a coaching perspective, it is clear professional tennis players have reached the autonomous stage of skilled performance. Elite level tennis requires outstanding agility and skill, but the best professionals often chunk the myriad of tactical, movement, and stroke decisions demonstrating efficient performance and making the seemingly impossible shot. Since the sub-units of the swing are organized in chunks of information which are largely automatic at this stage, movement execution requires little or no direct cognitive attention. As Wulfe (2007) has pointed out, more attention can be directed at other (tactical, motivational, etc.) parts of the performance. Developing tennis players in the associative stage may not have reached the complete fluency of a

skill yet may have mastered a level of fluency and consistency with their strokes. This allows for subtle adjustments as the “chunks” of information are being developed. During the cognitive stage, players still pay attention to a step by step execution of the strokes while trying to figure out the best way to improve their performance. This clearly requires more cognitive attention with few, if any, of the movements being automatic.

Coaches should focus on these different stages of learning and pay close attention to improvements in this learning process. As a skill, stroke, or components of a swing become more automatic, chunks are being assembled into larger logical units. This allows for these skills to increase in accuracy, efficiency and overall performance with less need for attention. In other words, greater flow of performance. Keep in mind that, even though motor skills vary widely in type and complexity, the learning process that individuals go through when acquiring various motor skills is similar (Wulfe, 2007). Skilled tennis coaches will be effective guides on the court, knowing when and how to intervene in practice.

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RECOMMENDED ITF TENNIS COACH CONTENT (CLICK BELOW)



# Mental training at ASC Florida

[Eva Borrás \(ESP\)](#)

ITF Coaching and Sport Science Review; 77 (27): 14-16

## ABSTRACT

*At the Sánchez-Casal Tennis Academy in Naples, Florida, mental training is one of the four pillars of the training system, along with technical, tactical and physical training. The way in which all of the pillars are interrelated is one of the strengths of the system. We work as a team and give comprehensive attention to each area.*

**Key words:** Mental training, comprehensive training, team, communication, objectives/goals, process

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Article received: 1 Feb 2019

Article accepted: 6 Mar 2019

## INTRODUCTION

The Sánchez-Casal Tennis Academy (ASC) in Naples (Florida) is a tennis training centre which also has its own school, ESIS (Emilio Sánchez International School), within the same facilities. It currently has 65 players working year-round who come from all over the world. They mainly have two objectives: for some this is to play at an American university, whilst others aim to play on the professional tennis circuit. Each one of these players receives comprehensive training, working on the four pillars of the system: technical, tactical, physical and mental. In order to provide this training, the Academy possesses a team of professionals for each area of the system. Tennis coaches, physical trainers and sports psychologists. All of them are led by the Director of the centre: Emilio Sánchez.

The players at the Academy are mainly between the ages of 12 and 18 and they are from different parts of the world. The schedule is as follows:

- At 6:00am the players get up, have breakfast and get ready to go on court
- 7:00am the warm-up begins
- 7:15am until 10:15am the players train on court
- 10:50am until 12:30pm the players go to school
- 12:30pm until 1:00pm lunch
- 1:00pm until 4.30pm the players go to school again
- 4:45 until 6:15 physical training

Tennis psychology is at the heart of the training system in place at the Academy as it underpins development in all the other training areas, having a direct relationship with tactical, tactical and physiological aspects of training through various mental skills and aspects such as motivation, concentration, emotional control and confidence, to name a few (Crespo et al., 2006). The mental training occurs every day during the 3 hours on court, as well as on Wednesday afternoons for two hours after school. It is a comprehensive operation, directed by the sports psychologist but also supported and followed by the rest of the sports team. The main objective is to create a motivational environment with an ethic of hard work focused on the task. It is based on the teaching and learning of a series of habits, strategies and values. It is focused not only on when the players are training and competing, but also on their day to day lives where they get up, eat, prepare and recover, in school or at home.

The main intention is to create a mental structure and promote stable self-confidence and independence, not only as tennis players but also as people. From a tennis point of view, effective mental skills training in aspects such as motivation, emotional control, goal-setting, focus, and confidence can lead to the

creation of the ideal performance state or the 'zone', a surreal and positive feeling of flow from which action comes naturally, fluently and successfully (Young, 2000; Crespo et al., 2006; Jackson and Csikszentmihalyi, 1999).

## THE ASC MENTAL TRAINING SYSTEM

The mental training in the Academy is structured in such a way that it looks at the player from different points of view, starting with the most structured aspects, down of the group to the individual needs of each player.

1. One of the main pillars of the mental system consists of the **Rules** and standards that are in place on and off the court. The fact that the player has limits in which they can operate, and that they know the **Consequences**, not only helps with the running of the group but also helps to boost the player's confidence.

This written information is part of the material that is given to the player when they arrive at the academy. The explanation behind these words is very important to ensure no misinterpretation. Whilst tennis is an individual sport, team and group norms exert an influence which can allow for an increase in performance as the norms, set either formally or informally, exert social pressure to increase productivity (Weinberg and Gould, 2014).

2. **Psychological evaluation.** Each player who comes to the Academy undergoes an evaluation which consists of taking their personal details and giving them different sports psychology questionnaires. This is merely data and is only used as a reference to begin to get to know the person and start the phase of establishing each player's competence in different mental skills.

This process of getting to know each player continues every



day on and off the court as they train, compete, socialise, manage situations, find solutions, communicate and prepare.

3. Each time a pupil arrives at the Academy, in one of the first mental sessions they are given a worksheet to set out their **Individual Goals** for the season. This means each player has to reflect and think about which aspects they think they need to improve. They have to include technical, tactical, physical and mental points. Individual goals are prepared using the data received from each player and all of the professionals in the sports team, all with different time scales of task and outcome, and encompassing the four training areas: technical, tactical, physical and mental.

This worksheet will be given to each player and it will be their guide to follow. This process of setting goals can greatly improve self-confidence can greatly improve self-confidence (Girod, 2011; Quinn, 2003).

4. The players at the Academy are divided according to age and playing ability in order to maximise self-esteem development through a sense of accomplishment (Dent, 2002). Self-efficacy theory (Bandura, 1977) would also suggest that a player feeling capable in their training and groups would directly affect their motivation (Crespo et al., 2006) which is why setting players in groups that they feel capable but challenged is important. Each group of players, together with the coach/tutor, physical trainer and sports psychologist, establishes a series of **Group Goals** focused on improving the performance of the group.

These group objectives are centred on the players' needs due to their age and characteristics. This job is done together with the tutor/coach of the group in question.

5. The mental training is based on the **Academy Group Goals**. These are divided into different time periods depending on the time of the season the players are in. In preseason, pre-competition or competition they have some group objectives which the general Academy training is based on.

6. **Communication**. An important tool to ensure that everything functions in an orderly manner. It is based on:

- Communication with the parents: daily, through an app which highlights aspects that depend on them; and, monthly through a report which assesses the pillars of training (technical, tactical, physical and mental).

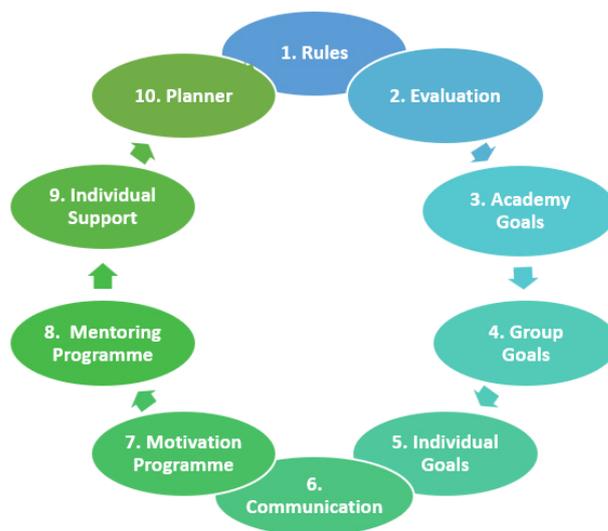


Figure 1. Steps of the ASC mental training programme.

- Communication with the coaches through two meetings every day. Before and after training and continuously in order to prepare and monitor the players in the group.

7. A **Motivational programme** which reinforces aspects dependent on the players themselves. In other words, the main objectives that the players are aiming for are reinforced with this programme, i.e. 'Player of the Month', 'Player of the Year'. This is important from a motivational theory point of view in order to meet the need for extrinsic motivation (Crespo et al., 2006).

8. **Mentoring Programme: Student Ambassador**. This programme aims to help players new to the Academy adapt through the help of existing players. From the group of professionals at the Academy, this is something that is done every day. But this programme has an impact on the socialization of the new players in the peer group. In other words, the players help and are mentors to the players who have just arrived. Things like lunch and dinner times, going out to do activities at the weekends, group games in the house etc. Players are chosen based on characteristics which make them best-suited and they are given a series of guidelines so the new player's period of adaptation is more bearable.

9. **Individual support** for players who need one-on-one support for a particular sporting, academic or personal difficulty.

The mental training that is offered is broad and complete but there are special or situational moments in which some players require personalised support from the sports psychologist.

10. As a final point, the most important tool of the mental training system of the Academy is the **Planner** or Work Diary. This tool structures and encapsulates all of the mental training of each player at the Academy. It includes all of each player's material:

- Their work and outcome objectives for different times of the season
- The routines of each player: before, during and after being on court
- The game plan of each player according to their strengths



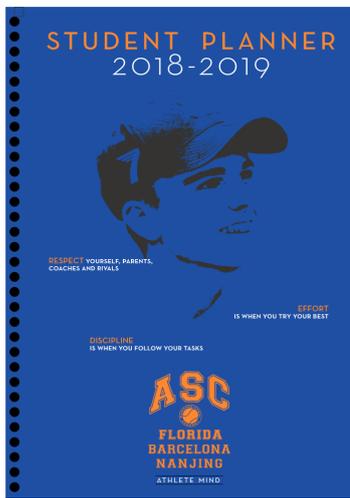


Figure 2. Student planner for ASC players.

and weaknesses: from the back of the court, with the serve and return

- The daily objectives they set out before going on to the court, whether for training or a match
- Daily recognition of emotions and feelings before going on court
- Learning of daily performance analysis with an evaluation made based on the objectives set previously
- Learning of match performance analysis through the Tournament Report
- Control System and communication with every tutor of each group

One of the main objectives of this tool is for the players to learn to be autonomous and consequently less uncertain and more stable and confident, teaching them and making them play daily in order to create a habit of a good routine before, during and after they are on court, and working on it and analysing it every day. Another objective is to create the habit of each player knowing how to recognize how they are, and based on this set out objectives. Another important point is knowing how to self-analyse and self-evaluate in terms of how they have been working on what has been set out beforehand, not whether the match result has been positive or negative. The final benefits are the players knowing that they have a plan prepared by people who they trust and can turn to whenever they need to, as well as working based on a plan and a structure, with monitoring and daily communication.

## CONCLUSIONS

Ultimately, the players who go through the Academy and the Mental Training System are given psychological training in which they acquire a series of habits, strategies and a mental structure which will be beneficial not only in facing their future sporting challenges but also the following stages of their lives.

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RECOMMENDED ITF TENNIS COACH CONTENT (CLICK BELOW)



# Review of the injuries in junior and university tennis

[Oriol Amer Orfila and Josep Campos-Rius \(ESP\)](#)

ITF Coaching and Sport Science Review; 77 (27): 17-19

## ABSTRACT

*This article will carry out a review of the current state of injuries in adolescent tennis with the aim of determining what the most common injuries are. Various review and intervention articles will be analysed, finding that the ankle, shoulder, back and knee are the most common injuries in junior and university tennis.*

**Key words:** injury incidence, injury classification, adolescent tennis

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Article received: 17 Jan 2019

Article accepted: 20 Jan 2019

## INTRODUCTION

Tennis is one of the most popular sports in the world and attracts people of all age groups, with participation in the 200 countries affiliated with the International Tennis Federation (ITF, 2017) and even more. In recent years the evolution of tennis, characterized by the increased power and speed of the game, has provoked the appearance of new pathologies, and in many cases at a younger age where they have never existed before (Clínica MAPFRE de Medicina del Tenis & Fundación MAPFRE, 2015). For this reason, coaches and physical trainers need a good knowledge of the current state of tennis injuries in the youth categories up to the university stage.

The aim of this article is to analyse the existing scientific bibliography regarding the injuries of junior and university tennis players and to determine which injuries are most common.

## METHOD

This article carries out a review of the existing literature regarding the injuries of youth tennis players (10-22 years old). Experimental scientific research articles as well as other systematic review articles have been included. The parts which have been included and analysed are: injuries, classification of injuries, anatomical location of injuries.

## OCCURRENCE OF INJURIES

Currently, the available statistics regarding the injuries of junior tennis players are very disparate mainly due to two factors. Many of the statistical data collection studies of the junior level date from between 1989 and 2015 (Lanese et al., 1990; Weijermans et al., 1998; Spinks et al., 2006; Hjelm et al., 2010; Colberg et al., 2015; Pluim et al., 2016), which gives great discrepancy in the results due to the generality of the data in the earlier years and the specificity of the data in the most recent studies. Secondly, a

criteria does not exist amongst the authors to determine what is considered an injury, so therefore the criteria of which injuries to include is disparate between the studies as can be seen in Figure 1.

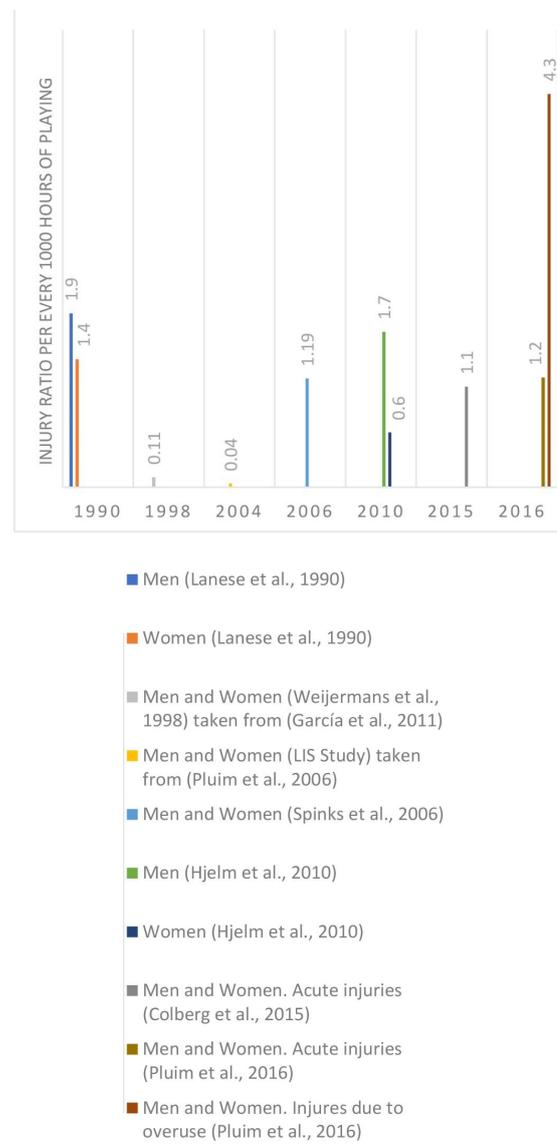


Figure 1. Injuries per every 1000 hours of playing junior and university tennis. Source: Prepared by authors.



	(Hutchinson et al., 1995)	(Silva et al., 2003)	(Hjelm et al., 2010)	(Lynall et al., 2015)	(Pluim et al., 2016)	(Sluis et al., 2017)
Acute (not specifying the type)				Male	Female	25/187 (13.3%)
Chronic (due to overuse)	84/143 (58.6%)		54/100 (54%)		88/187 (47%)	88/113 (77%)
Traumatic injuries			46/100 (46%)			
Sprains		12/280 (4.28%)		26/181 (14.4%)	34/227 (15%)	
Muscle tears	18/143 (12.55%)	35/280 (12.52%)		56/181 (30.9%)	66/227 (29.1%)	
Muscles contractures		76/280 (27.14%)				
Fractures				5/181 (2.8%)	5/227 (2.2%)	
Head Traumas				2/181 (1.1%)	4/227 (1.8%)	
Dislocations	1.32/143 (1%)			6/181 (3.3%)	1/227 (0.4%)	
Lumbar Pains				4/181 (2.2%)	4/227 (1.8%)	
Other	10/143 (7%)			33/181 (18.2%)	52/227 (22.9%)	

Table 1. Classification of the injuries in junior and university tennis between the years 1995 and 2017. Source: Prepared by authors.



- 20.5% of injuries are acute injuries whilst 59.15% are chronic and the remaining 20% of injuries are not specified or are of less interest.
- Within the acute injuries we can establish that the most frequent in tennis are muscular injuries such as strained, pulled and torn muscles (12.52-30.9%) followed by sprains (4.28-17%).
- Fractures (2-2.8%), dislocations (0.4-3.3%) and trauma (1.1-1.8%) are very rare in this sport.

## ANATOMICAL LOCATION OF INJURIES

In recent years various studies have been published about junior and university tennis players (Hutchinson et al., 1995; Silva et al., 2003; Hjelm et al., 2010; Lynal et al., 2015; MAPFRE et al., 2015; Colberg et al., 2015; Pluim et al., 2016; Sluis et al., 2017) where they have recorded injuries according to their anatomical location. In Table 2 we can see a summary of the data recorded between 1989 and 2016, from which the following results have been found:

- The lower extremity sees a greater range of injuries (2-42.7%, followed by the upper extremity (1.1-33.7%) and finally the core (3-17.6%).
- The areas in which we can find the highest amount of injuries are the ankle ( $21.6 \pm 10.04\%$ ), shoulder ( $16.2 \pm 6.97\%$ ), back ( $13.8 \pm 4.84\%$ ) and knee ( $12.7 \pm 7.55\%$ ).

This review demonstrates that:

- We cannot establish a trend regarding the occurrence of injuries over the years
- Chronic injuries (59.1%) are more frequent than acute injuries (20.5%). Within the acute injuries the most common are muscle tears (12.52-30.9%) followed by sprains (4.28-17%). Fractures, bruising and trauma are very rare due to the nature of the game.
- The lower extremity sees a greater range of injuries (2-42.7%, followed by the upper extremity (1.1-33.7%) and finally the core (3-17.6%). The ankle ( $21.6 \pm 10.04\%$ ), shoulder ( $16.2 \pm 6.97\%$ ), back ( $13.8 \pm 4.84\%$ ) and knee ( $12.7 \pm 7.55\%$ ) are the areas most often injured in the sample analysed.

	(Hutchinson et al., 1995)	(Hjelm et al., 2010)		(Clínica MAPFRE de Medicina del Tenis & Fundación MAPFRE, 2015)		(Colberg et al., 2015)	(Lynall et al., 2015)		(Pluim et al., 2016)	
		Male	Female	Beginners	High competition		Male	Female	Acute Injury	Chronic Injury
Ankle and foot	26/143 (18%)	16/73 (22%)	3/27 (11%)	17.40%	42.70%	7/39 (18%)	22/181 (17.7%)	47/227 (20.8%)	9/25 (36%)	11/88 (12.5%)
Hip and groin	15/143 (10%)			5.60%	15.50%	1/39 (3%)	16/181 (8.8%)	15/227 (6.6%)	5/25 (25%)	4/88 (4.5%)
Knee	3/143 (2%)	9/73 (12.3%)	5/27 (18.5%)	9.40%	28.50%	5/39 (13%)	14/181 (7.7%)	13/227 (5.7%)	3/25 (12%)	16/88 (18.2%)
Wrist and hand	14/143 (9.8%)			13.20%	33.70%	1/39 (3%)	17/181 (9.4%)	14/227 (6.2%)	2/25 (8%)	8/88 (9%)
Shoulder	13/143 (9%)	15/73 (20.5%)	6/27 (22%)	15.10%	29.80%	7/39 (18%)	26/181 (14.4%)	27/227 (12%)		14/88 (16%)
Back	17/143 (12%)			3.70%	14.20%	6/39 (15.4%)	30/181 (16.6%)	40/227 (17.6%)		15/88 (17%)
Elbow	11/143 (7.7%)			7.30%	22%	2/39 (5%)	17/181 (9.4%)	13/227 (5.7%)		7/88 (8%)
Leg	3/143 (2%)									7/88 (8%)
Upper extremity		19/73 (26%)	6/27 (22%)							
Thigh	27/143 (19%)					3/39 (8%)	11/181 (6.1%)	18/227 (8%)		
Lower leg (not specified)							12/181 (6.6%)	26/227 (11.5%)		
Forearm							1/39 (3%)			
Abdominals							1/39 (3%)			
Unidentified	4/143 (3%)						1/39 (3%)			
Other							3/181 (1.7%)	7/227 (3.1%)	4/25 (16%)	6/88 (6.8%)

Table 2. Anatomical location of the injuries in junior and university tennis between the years 1995 and 2017. Source: Prepared by authors.

## CLASSIFICATION OF INJURIES

The differences between the different types of injuries analysed may come from various factors such as: the year in which the study was carried out, the physical characteristics of the players analysed, the different surfaces on which the study was carried out, and each author's criteria for recording data.

Table 1 shows the data extracted from each of the articles from which statistical analysis has been carried out and from which the following results have been found:

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RECOMMENDED ITF TENNIS COACH CONTENT (CLICK BELOW)



# Evaluation of the potential of the 'introduction to tennis' landscape in Brazil

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ITF Coaching and Sport Science Review; 77 (27): 20-22

## ABSTRACT

*The introduction to tennis is an extremely important in the development of children and young people. Actions at this stage can determine whether a child continues in the sport or not. A job well done can, in addition to perhaps developing high-performance players, also determine the continuity of beginner level children in more recreational activity.*

**Key words:** tennis, sport initiation, Tennis10s

Article received: 3 Dec 2018

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Article accepted: 8 Jan 2019

## INTRODUCTION

Just over 10 years ago the ITF launched the Play and Stay campaign. The main goal of this action was to promote tennis around the world, increasing participation and the retention rate. Within the campaign itself, working with children of up to 10 years of age – which later came to be known as Tennis10s – became the best-known element. The proposal of Red, Orange and Green stages, as well as equipment modifications for different age groups, was widely disseminated, and key messages such as "tennis is fun", "tennis is easy", "tennis competition is fun", "tennis is healthy" and "tennis is a sport for all" began to reach coaches (Buszard et al., 2018).

Given the evidence that a positive experience when being introduced to a new sport can positively influence sports participation, or even personal development through the development of life skills, it seems fundamental to get to know the reality of the situation in one's own nation, in this case Brazil, in order to motivate future proposals, research, tutor training and other interventions in the coaching field (Coté et al., 2014). To this end, this article seeks to describe the potential of the introduction to tennis structure in Brazil, as pointed out by the professionals responsible for the introductory programmes directed at children.

## METHODS

This research, which is of qualitative character (Sparkes and Smith, 2014), sought to study the perceptions of tennis coordinators responsible for introductory tennis programmes. For this, 14 coordinators from clubs traditionally recognised in the area of grassroots or introductory tennis, as nominated by the Brazilian Tennis Confederation, were interviewed.



## Evaluation of potential of introductory tennis in Brazil

Coordinators	Categories
(S1; S2; S3; S6; S11; S12)	Use of adapted materials and the Tennis 10s program
(S1; S4; S5; S6)	Training of national coaches
(S1; S2; S9)	Greater access to information

Figure 1. Categories of analysis.

In order to analyse the results, a "thematic analysis" (Sparkes and Smith, 2014), which coded the interview responses into similar themes, was used so the results could be presented and discussed. The items cited by at least three coordinators have been included for discussion. Three categories emerged from the analysis, as seen in figure 1.

## RESULTS AND DISCUSSION

The use of modified equipment and ideas central to the Tennis10s programme are highlighted as major points in the tennis coordinators' interview responses.

[...] I think that the big change in recent years was the use of adapted material. It's something that came little by little, but with a lot of resistance in traditional clubs like ours. (S12 - 13'20")

[...] I think that we've come a long way, [for instance] in the use of the different stages: the red stage, the orange stage, the green ball, and then the move to the big court. There are a lot of people using this. This is good; it's a positive point. (S11 - 12'30")

Despite the limited number of studies investigating the impact of the use of modified equipment on the acquisition/development of technical and tactical fundamentals related to the sport, the results so far give evidence towards the positive effects of modified equipment, promoting faster learning and an adoption of technical and tactical patterns that are more advanced and representative of the game to be played in the future (Buszard et al., 2016).

In addition to the use of adapted materials, the use of different teaching progressions between stages and different methodological adaptations, such as the game-based approach, the understanding of tactical aspects and the contextualization of technical teaching, were other elements of the Tennis10s programme mentioned by the coordinators. The fact that the central ideas of the Tennis10s programme were present in the



coordinators responses is a positive point and one that signals towards the adoption of minimum criteria that characterises the grassroots or introductory sports landscape in Brazil, as well as the establishment of national guidelines on which the first stages of the programme can be based.

The pedagogical principles present in Tennis10s are aligned with the contemporary proposals of teaching sports games, such as Teaching Games for Understanding (TGfU) (Cortela et al., 2012; Thorpe, Bunker, & Almond, 1986), for example, and their variations (Harvey & Jarrett, 2013). These act as a general model, capable of serving as the central axis for the "standardization" of the teaching modality in the country.

The second key point highlighted in the responses of the coordinators concerns the training of coaches involved in the process:

[...] I think the training of the professionals who are working in this area is a lot more developed now than it was five or ten years ago. This element within professional training is a very positive point because today you get a teacher who takes care of that [grassroots tennis] area, who takes care of the introductory tennis programme at a club. He/she is focused on it and very good at it. We never used to have that. (S1 – 18'30").

In fact, learning opportunities in formal and non-formal contexts have increased over the past two decades. In the formal context, the requirement of having initial training in Physical Education to act as a tennis coach in Brazil (a requirement since 1998) has had an impact on the number of graduated professionals, causing a change in the profile of the coaches who work within the area (Cortela et al., 2013) and a change in the self-perception of competence related to the knowledge and skills required for professional performance (Cortela et al., 2017).

In the non-formal context, the learning opportunities are associated with the operations of the Coaches Education department of the Brazilian Tennis Confederation (CBT). Currently, the program offered by the CBT involves more than 300 hours of training, ranging from introductory tennis to high performance, with continued training being more frequent among Brazilian coaches (Cortela, et al., 2013).

The third point considered by the coordinators was the greater ease in accessing information. According to the coordinators, the access to studies, and particularly to the internet, has widened the range of information available to them and reduced the time in which they can get up to speed with the professionals in the job:

[...] the other key point is that the internet, with YouTube, is enabling everyone to see what is being done elsewhere. And you can, depending on your interest, put such things into practice. I think that this is a key point. (S2 – 8'04").

Using the internet to find supporting materials is one of the main sources of informal learning used by coaches. When searching

for information on the internet, trainers often look for solutions to problems they encounter in daily professional practice, which supports a meaningful learning process (Walker et al., 2018)

In the specific case of Brazilian coaches, the internet has not only reduced the time gap, but also the accessibility gap since it is less costly to access information. Platforms such as Tennis iCoach allow national coaches to follow, almost simultaneously, the main training events and trends occurring in other countries.

## CONCLUSION

The thoughts of the coordinators signal that there is a lot of potential in the introduction to tennis landscape in Brazil. Moreover, it has been observed that some of the actions carried out in recent years – such as the promotion of the Tennis10s programme and the training courses – seem to be contributing directly to the pedagogical practice of the coaches. This information is relevant to the evaluation of the actions taken so far, and it may contribute to future interventions.

Note: The authors would like to thank the Brazilian Tennis Confederation for their financial and logistical support in the development of this study.

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RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)



# Challenges for grassroots tennis development in Brazil

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ITF Coaching and Sport Science Review; 77 (27): 23-25

## ABSTRACT

*Success at the very beginner level of tennis is very important for increasing and maintaining the number of children involved in sports practice. To ensure success, it is imperative that the programs are structured in the right way to provide a positive environment of practice, and that the coaches involved are qualified and aware of their role working with children. Well organised programs offer quality access points and pathways to continued tennis practice, and effectively contribute to the growth and development of tennis in general.*

**Key words:** tennis, sport initiation, Tennis10s

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Article received: 13 Jan 2019

Article accepted: 22 Feb 2019

## INTRODUCTION

As described in the article "Assessing the potential of the 'introduction to tennis' landscape in Brazil", the situation in Brazil displays several strengths in the development of the practice, such as the use of suitable materials, the use of the Tennis10s program, training of national coaches, and greater access to information. On the other hand, it is necessary to overcome some challenges in order for the introduction to tennis process to advance. In this sense, this article aims to describe the challenges to, and opportunities for, the advancement of Brazil's 'introduction to tennis' level.

## METHODS

The methods applied are the same ones described in the previous article, and they are presented here again in summary form. We interviewed 14 coordinators of Brazilian clubs in which grassroots tennis (introductory tennis) makes up a significant amount of the capacity. A thematic analysis was conducted (Sparkes and Smith, 2014), which culminated in three main categories, divided into two axis: (I) Challenges of (a) coaches and (b) getting more children to lay tennis; and, (II) How to move forward (c) by getting support for clubs and foundation-level projects.

### AXIS I - Challenges: Brazilian grassroots tennis

Coordinators	Category
(S2; S5; S9; S12; S13)	Coaches
(S2; S4; S13)	Getting more children to play tennis

Figure 1. Challenges encountered in the national initiation process.

### AXIS II - How to move forward: Brazilian grassroots tennis

Coordinators	Category
(S4; S5; S9; S12; S14)	Support for clubs and base projects

Figure 2. Proposal to advance the national initiation process.

## RESULTS AND DISCUSSION

### Challenges

Whilst the training of coaches appeared in the previous article as one of the strengths of the Brazilian introductory/grassroots tennis, other aspects related to coaches are presented as



challenges for its advancement. The shortage of qualified coaches was cited as a point of focus that could impact the growth of the sport.

[...] we do not have a very large number of teachers here in Rio Grande do Sul and I don't know exactly why. I think it has several explanations. For example, the ball boy who can no longer be a coach, he needs to (not completed...). There used to be many people [Ball boys] who were perhaps better trained than [coaches] now, that didn't have the physiological knowledge but had good technical knowledge because they were on court with a professional since then age of 10. As time went on they absorbed the knowledge and eventually became teachers or player. This type of coach no longer exists, so now we have many academic teachers, who come with very strong academic knowledge but a lower level of practical experience. So, regarding the coaches, that's what has happened, there aren't a lot of coaches. (S12-15'03").

This problem seems to be associated with the pre-professional socialization of a significant portion of Brazilian coaches, linked to the ball boy job, which is declining in the country. As well as this aspect, the difficulties in incorporating tennis into Brazilian universities, and the requirement of a basic training in Physical Education in order to act legally as a coach in Brazil, contribute to this situation.

One of the coordinators (S2) cited another two points related to coaches that deserve to be highlighted. The first refers to the secondary role often given to the introductory sport or the early stages of long-term sports development. In these cases, it can clearly be seen that the coaches with greater experience train the elite players, whilst those with less experience work with the younger age groups at the foundational level (RAMA, 2016):

[...] I think we need to put our best coaches to work with the foundational level. What I see a lot is that our best coaches are never actually working at the foundation level of development, they are always working a little further along. Hence, I think there is something to be desired at the foundational level. (S2 – 7'14").

The second point raised by the same coordinator can be seen as either a result of the situation described beforehand, or as one of the factors responsible for its occurrence:

[...] the coaches who work at the beginner level do not have a good income (financially). At least from what I know. (S2 – 8'33").

In this case, the question that arises is: Do experienced coaches not coach at the foundation level because they would be paid less? Or, are coaches of beginner sports programs paid less since the most experienced professionals do not coach at this level? These two highlighted points seem relevant and deserve attention in future projects.

The second category of analysis regarding the challenges observed in the introduction to sport concerns the need to make more children play tennis. In this specific case, the elitist character of the sport and the cost of participating appear to be the main limiting factors to be overcome:

[...] I still think that tennis in Brazil is very expensive. Unless you have a structure within a club that enables you to play it. If you don't have this in a club it's difficult to go to a gym or somewhere else due to the cost. This is a challenge. Another challenge is to popularize tennis a bit more. Our tennis is still an elite sport. (S6 – 9'18").

Another factor that may have a negative impact on the increase in the number of children involved in tennis is related to the amount of activities they do and the ever-declining status that sports practice has in relation to them.

[...] I think that schools nowadays are taking up a lot of the child's time. So that's a very negative point for us. In the old days we could have activities starting at 2:00pm, but today this wouldn't work. The exceptions that we have are rare. (S1 – 16'21").

Finally, the motor difficulties demonstrated by children were cited by two coordinators (S1, S12) as a point to consider. The decline in outdoor play, purposeful games and the offer of motor experiences, resulting from the changes in the lifestyle of children in recent decades (Côté et al., 2007), point to a trend of reduction in the indices of motor performance demonstrated by Brazilian children and young people, which demands great reflection on the part of professionals involved in the work with this area (Ré et al., 2018).



## How to move forward

When asked how the introduction to tennis element could advance, the coordinators expressed the need for greater support for clubs and foundation level projects. This is the only category found for this factor.

In this way, it is possible to identify the search for a close relationship with the Brazilian Tennis Confederation (CBT), where it can assist the clubs in this introductory work. This contribution ranges from the establishment of general guidelines for the introductory work to specific actions such as visits and trainings, carried out on site for the coaches of these clubs.

[...] it is fundamental that we have this work (referring to the visits), that there is someone, that the Brazilian Tennis Confederation is looking at the foundation level. Because in reality federations watched, the CBT watched, but never went deep into it. [...] what we need to know is exactly what the CBT is seeking now, referring to that training. (S4 – 13'25").

## CONCLUSION

Based on the results observed in the study, it has been established that the scarcity of coaches and the number of children playing tennis are the main challenges to be overcome in the introduction to tennis work. In the first case, the university context approach seems to be inevitable considering the need for initial training in order to act as a coach in the country. In this sense, the promotion of internships and practical activities in clubs or gyms seems an important and feasible way for new professionals to gain access to the job market. To increase the number of people playing, and contribute to the development of children who are already playing, new development strategies must be implemented.

Note: The authors would like to thank Brazilian Tennis Confederation for their financial and logistical support in the development of this study.

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RECOMMENDED ITF TENNIS COACH CONTENT (CLICK BELOW)



# Perceptions of coaches of a scaled tennis equipment program

[Karl Davies \(USA\)](#)

ITF Coaching and Sport Science Review; 77 (27): 26-29

## ABSTRACT

*Coaches have an instrumental role to play in attracting and retaining more people of all ages in the sport of tennis. The tools that they use can enhance that objective. Over the past decade the research in scaled tennis equipment has intensified along with the use by coaches. It is appropriate at this juncture to understand what the perceptions of coaches using scaled tennis equipment. With this insight, best practices can be developed to be shared with other coaches to maximize the growth of our sport.*

**Key words:** coaches, modified tennis equipment, constraints based approach, perceptions.

Article received: 5 Mar 2019

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Article accepted: 1 Apr 2019

## INTRODUCTION

The need to develop the whole athlete should be a consideration for all coaching objectives and actions. Coaching for the athletes' holistic development and well-being requires taking into account the emotional, personal, cultural and social identity of each athlete and how this identity influences sports development and performance. This applies to athlete development spectrum from young children to masters' athletes. A common framework for setting comprehensive athlete outcomes is the Four C's model (USOC, 2017).

Athlete Outcome	Description
Competence	Sport-specific technical, tactical and performance skills: overall health, fitness, and physical wellbeing.
Confidence	Self-belief, resilience, mental toughness and sense of positive self-worth.
Connection	Interpersonal skills, ability to build and sustain meaningful and positive relationships.
Character	Respect for the sport and others, integrity, self-discipline and ethical and moral well-being.

Table 1. The Four C's Model of Comprehensive Athlete Outcomes (USOC, 2017).

## CONTEXTUAL FIT

In this day in age of the internet there are numerous coaching training activities available to search. These prescriptive coaching sources although very assessable should not be implemented without attention to context. Quality coaching entails the ability to adjust one's coaching knowledge to the specific requirements of the athlete, and suite the specific environment in which the coach is in (USOC, 2017).

## CONSTRAINTS-BASED APPROACH

The ever-changing game conditions suggest that decision-making and action be defined in a moment-to-moment basis. The perception of key informational sources reveals the real adjustments between the properties of the task and the individual player's characteristics (Davids, Araujo, Hristovski, Passos, & Chow, 2012).

During a tennis rally, the opportunities to act offered by the situations that arise from the continuous relationship between



the player and his/her opponent. A player must be perceptually in tune with the match characteristics that inform how and when to act to achieve a goal.

The player does not passively receive information but seeks it. Improving the ability to act successfully results primarily 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 is a method centered on the manipulation of the key constraints that magnifies information sources that assist players to achieve their goal (Carvalho, Araújo, García-González, & Iglesias, 2011). Constraints refer to the demands that are placed on the action that can be of a varied nature; instruction and augmented feedback given by the coach, movements of the players, type of ball or racquet that is used, or the movement amplitude of a certain joint (Carvalho, Correia, & Araujo, 2013).

These constraints, which concurrently interact to channel behaviour, are conceptually organized in three main categories: 1) the task, 2) the player, and 3) the environment. These three constraints influence training and performance.

Task constraints speak to the characteristics of the task such as goals, rules, and implements. The way players interpret that action depends on the context it is received. The ability to reach a given goal is constrained by the condition in which the task is executed. For example, the players' behaviour is influenced if the player is asked to keep five rally balls from the baseline before forcing an aggressive shot. If that aggressive shot is created with a forehand, they score a point. The coach can utilize different

strategies to enforce task constraints, knowing that all the categories of constraints are always interacting (Carvalho et al., 2013).

The result of manipulating the different task constraints changes according to the playing level of the players. The constraints for the player are mainly concerned with:

- 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.
- 2) Functional, referring to the thoughts, emotions, motivation, fatigue, speed, and concentration.

Constraints that are structural cannot be changed but can be present when choosing training opponents. When working with these constraints, practice situations can be designed to limit the fact of a player being taller, stronger, being more tired, or having a lower level of performance. For example, as a tall player with a good serve to engage in point play using only one serve as opposed to two serves that are allowed according to the rules of the game (Carvalho et al., 2013).

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

Ego oriented looks at competition environment and how the player compares his/her performance with others performance. Task-oriented training environment calls to the intrinsic motivation of the player and incentives to improve his/her performance, having the reference of what he/she previously did.

Different sources of constraints work together at the same time to influence behaviour. The constraints-led approach supports that players should learn how to perform in the face of internal and external variability. The ability to manipulate constraints intervention allows for the induction of functional variability in key situations. This method promotes the development of better perceptual attunement to the on-going match characteristics that the player receives, and is also dependent on the characteristics and circumstances surrounding how to achieve a specific goal (Carvalho et al., 2013). Within the realms of scaled tennis equipment programming the constraints of the ball, racquet, and courts are available to the coach to manipulate and achieve success. Additionally, the task that the coach presents to his/her students is also available in the constraints-based approach to adapt and refine to achieve success. The non-scaled equipment has limited ability to achieve this degree of success for young beginner tennis players.



Large proportions of 10-and-under players learn the game of tennis from a coach in an individual or group format. The purpose of early involvement of a coach is primarily because parents have not played tennis themselves (Pankhurst & Collins, 2015). Changes in modified tennis equipment is relatively a new concept to most parents. Nations that have adopted scaled tennis equipment recently in their programming have received resistance because coaches who played did not use scaled equipment (Pankhurst, 2016). This attitude of resistance instigated this researcher's motivation and related to this study's problem statement and aims to investigate coaches' perceptions of scaled equipment in tennis.

Further to this resistance, large numbers of coach education programs have been slow to adopt new teaching strategies to their courses, resulting in a lack of information for coaches to follow in their daily programming involving 10-and-under players (Pankhurst, 2016). Additionally, the information related to 10-and-under children's physical, physiological, mental, and social development has only recently been incorporated into coach education opportunities. Lastly, Malina (2008a) stated that the learning and teaching of skills are influenced by the selection and introduction of a strategy and technique of instruction to athletes.

Taking this concept further, coach behaviour and working practices with 10-and-under children, teenagers, or adults should adopt different teaching strategies as they have different needs and abilities. Therefore, it becomes essential for coaches to install appropriate and different environments (Vickers, 2008) to 10-and-under children for the following reasons:

- It is known that children like to have fun and be in the presence of adults;
- Coaches need to make frequent changes in activities to keep children engaged;
- Children learn predominantly through copying visually; and
- Children like to be around their friends, even though their friends might be differently skilled than them.

Therefore, coaches need to create a fun, non-threatening environment and have a range and variety of ideas that use visual stimuli. It is recommended that coaches teach their children to be active and limit the amount of verbal information that they provide (Kluka, 1999). For many coaches who have trained older children and adults, creating these different learning environments where 10-and-under children also learn skills through play by trial and error is challenging but not impossible. Many coaches still organize children in lines and feeding them balls to hit. Children like to move, and tennis is a game of movement while using a variety of different skills in a dynamic environment. Standing in lines and hitting a ball occasionally is not enjoyable or relevant for a 10-and-under child (Pankhurst, 2016).

From a coach education perspective, coaches need to know how to organize and develop programs, lesson content and lesson frequency are specific to 10-and-under children. Studies (Bompa, 2000; Balyi et al., 2013) recommended that the amount of physical activity done by 10-and-under children should be proportionately less than it is for older children and adults. Additionally, studies (Cote, Baker, & Abernethy, 2007; Balyi et al., 2013), emphasized the need for young athletes to play a variety of sports and not to focus on just one sport. The purpose behind this stems from a perspective that basic motor skills and experiences could be developed to serve as a foundation for tennis-specific skills. Some children by the age of eight or nine show some interest in specializing in sport (Balyi et al., 2013).

National Federations Age recommendations per stage			
National Federation	Red Stage	Orange Stage	Green Stage
Tennis Canada	5-7	7-9	9-10
Tennis Australia	5-7	8-10	9-10
ITF	5-7	8-10	9-10
USTA	6-8	7-10	9-10
British LTA	5-8	8-9	9-10

Table 2. Summary of age recommendations for scaled tennis equipment stages (ITF, 2012b).

From a tennis perspective, using modified equipment can help children advance skills at a younger age and become successful, equally, due to these initial successes coaches encourage more training and competition (Farrow & Reid, 2010). All stakeholders (coaches, parents, and sports organizations) need to be aware and cognizant of ramifications specializing in tennis at an early age (Farrow & Reid, 2010).

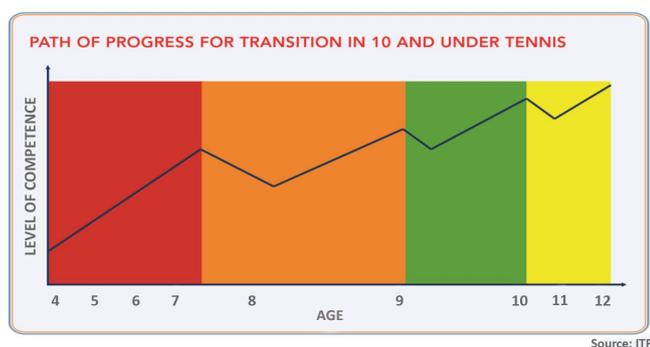


Figure 1. Path of progress for transition in 10 and Under Tennis.

## METHOD

The underlying design of this research is descriptive. The research was approached from a qualitative perspective as the perceptions of coaches in tennis about the use of scaled equipment has been evaluated.

Coaches were identified from their experience in scaled tennis equipment delivery. Coaches can provide excellent data as they can coach players of all three stages of red, orange, and green at the same time. They can also give appropriate feedback on certain aspects that they have seen contribute to the players being successful or unsuccessful for each stage.

Twenty coaches were invited to take part in personal interviews and answer a set number of questions and their data collected and analyzed. An almost even distribution of male and female was obtained with twelve males and eight females' coaches taking part. The coaches chosen to be interviewed proved to be phenomenal samples as the average years of experience in coaching was 23 years and in scaled tennis equipment was 11.9 years.

## RESULTS

The main data gleaned from coaches on how to navigate the three stages to arrive at non-scaled tennis equipment points towards making sure the right skill development is acquired before making the next step. Also, feedback was given that this transition should not be done by age but by skill development. The reason behind this was that players develop at differing rates. As figure 1 shows, when players make transitions from one stage to the next, there is a dip in playing level. Should that skill

development or competency not be attained, that dip could be exaggerated and, therefore, put players at risk of success.

Through the process of interviewing all coaches and asking them a set number of questions with follow up questions to gather further insight the following reoccurring perceptions were identified and are listed in a hierarchical order:

- Perception 1: Coaches like to coach using the constraints-based coach to promote success with their players;
- Perception 2: Scaled tennis equipment competition should conform to skill development, and not age;
- Perception 3: Coaches like to demonstrate their activities to their players when introducing training activities;
- Perception 4: Coaches approaches in scaled tennis equipment are the same as non-scaled tennis equipment coaching;
- Perception 5: Coaches are very positive in their perception of a scaled tennis equipment program;
- Perception 6: Coaches like to use the cooperative teaching style when coaching their players using scaled tennis equipment;
- Perception 7: Coaches like to change the activities to keep their players engaged in practices; and
- Perception 8: More team play is required for players participating in scaled tennis equipment program;

## DISCUSSION

Coaches, as one of the stakeholder groups, have a crucial role in how they utilize scaled tennis equipment programming. In trying to attract and retain players in their program, they have adopted some best practices that other facilities and coaches could learn from.

To summarize, they included:

- Adoption of a cooperative teaching style;
- Constraints-based approach to promote success;
- Demonstration of their activities;
- Adaptation of their activities to keep players engaged;
- Competition to promote more team play; and
- Skill development over age when moving up a stage.

These above perceptions are positive findings that refers to the multiple facets of how to teach, engage players, transition between stages, and provide competitive formats.

## CONCLUSION

Through the lens of the coach using scaled tennis equipment is a valuable tool to engage and facilitate skill development. Using the teach methodologies of cooperative teaching style, demonstrating of activities, and constraints based approach are in line with recommended strategies teaching youth. Using scaled tennis equipment however, seems to promote these coaching behaviours. Interesting comments are made by the coaches when it comes to moving between the stages of a scaled tennis equipment program. They suggest using skill development as a guidance and not age. This is contradictory on how nations have positioned their competitive pathway. In order to assist the coach in making sure their players are moving up a stage according to a skill development competence and not a competitive competence National Tennis Federations should consider an evaluation of their competitive pathway involved the red, orange, and green stages of a modified equipment program.

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



# Stereotype threat and performance on sport specific motor tests

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ITF Coaching and Sport Science Review; 77 (27): 30-32

## ABSTRACT

*Female tennis worldwide has a participation problem, with severe gender disparity at competitive and older age groups despite a fairly even split amongst the much younger age groups. It seems logical to suggest that gender stereotype threat could contribute to an underperformance, and eventual demotivation, of girls in tennis. Twenty-six girls aged 9-14 were split into equal sized control and experimental groups and underwent a battery of common tennis tests, including forehand accuracy, standing broad jump, and agility 'T' testing. In the case of the experimental group, the participants read a short statement which suggested that females would produce inferior results relative to males. The results showed increases in performance in the experimental group, contrary to the hypothesis; however, the increase still highlights the effect of stereotyping on performance.*

**Key words:** stereotype threat, gender bias, female tennis, performance

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Article received: 7 Mar 2019

Article accepted: 19 Mar 2019

## INTRODUCTION

Tennis in the UK has a participation problem, with women and girls comprising just 25% of the competitive player base. In fact, the UK is not alone in this regard, with three out of the four Grand Slam nations reporting similar figures (US data not attained). However, the problem worsens upon closer inspection. Mini tennis entry figures show that 45% of new players are female, so in fact the problem is one of retention more than attraction. In short, we can attract girls into tennis, but some aspect(s) of their early coaching, club membership, or competition experiences are turning girls away from our sport. Evidently, greater measures to understand and remediate the underlying causes of this problem are necessary.

## LITERATURE REVIEW

Stereotype threat was first researched in the mid 1990s to investigate whether poor performance results from the psychological effect of a negative stereotype rather than biological or socio-economic factors. In the seminal study, Steele & Aronson (1995) found that black students consistently underperformed academically when the stereotype that blacks are less intelligent than whites was introduced. In the first study, the stereotype was activated by informing the stereotype threat (ST) group that the test determined intellectual ability (the control group (C) were informed that it did not). By the final study, the researchers discovered that the stereotype, and its harmful effect on performance, was so pervasive that performance worsened when black participants were asked to indicate their race on the pre-test questionnaire. Therefore, being reminded of their race, in an environment with negative racial stereotypes, was enough to activate ST effects. Steele and Aronson also posited that chronic underperformance could lead to a devaluation and disidentification with the domain, and ultimately lead to drop out. Work has shown that three factors need to prevail in order for ST to impact performance:

- Test difficulty - at the limit of participants' ability
- Domain identification - participants must be invested in the domain
- Stereotype salience - participants must be aware of the stereotype (Aronson et al., 1999)

Stereotype threat has been investigated in motor-coordination and sports settings in a number of studies, using tasks ranging from golf putting to basketball shooting (e.g., see Beilock et al., 2006). Given that sport is still considered a male domain (Clément-Guillot, Chalabaev & Fontayne, 2011), it is unsurprising that the predominant stereotyped group being studied is females (e.g.,



Beilock & McConnell, 2004). On this basis, research to ascertain whether negative female stereotypes in sport could be affecting young female tennis players is warranted. If ST effects exist within tennis, this could be a contributing factor to the retention deficit and therefore pave the way for subsequent intervention work to be undertaken in this area.

## METHOD

Study 1 was a field-based, mixed factorial investigation with 26 competitive female players aged 9-14. To participate, the girls were required to be British Tennis Members and have competed in county level and above tournaments. To activate ST participants read a short text explaining that the test results would indicate levels of athleticism and that previous tests had shown gender differences. This explicit activation replicated previous studies (see Beilock et al. 2006). The control group were instructed that the tests were simply fact-finding activities to ascertain individual test scores. Participants were randomly assigned to either a stereotype threat group (ST) or a control group (C), and the female experimenter was blind to the conditions. Testing was undertaken individually to remove social facilitation effects.

Three motor tests recorded either tennis performance (forehand accuracy) or movements identified as integral to performance on court (standing broad jump and modified T test; Sassi et al., 2009).

After familiarisation and warm-up, participants hit 15 forehands at a target cross court with depth and width error being captured by two cameras placed at 90 degrees to the target. Data was subsequently analysed via a software programme (Tracker for Mac) and radial error was calculated. Each of the motor tests

were performed three times, with the broad jump being measured using tape measures, and the T-test times using light gates. After collection of pre-test data the condition was activated, and then participants repeated all tasks, in the same order, for the post-test measures.

## RESULTS

Counter to the hypotheses for the study, the results indicated that for standing jump (figure 1) and agility (figure 2), performance improved pre to post in the ST condition. The change was small on both occasions but potentially meaningful given the number of times a tennis player is required to display these key motor skills during tennis practice and performance.

There were no discernible differences in performance across condition in the forehand accuracy test scores (figure 3).

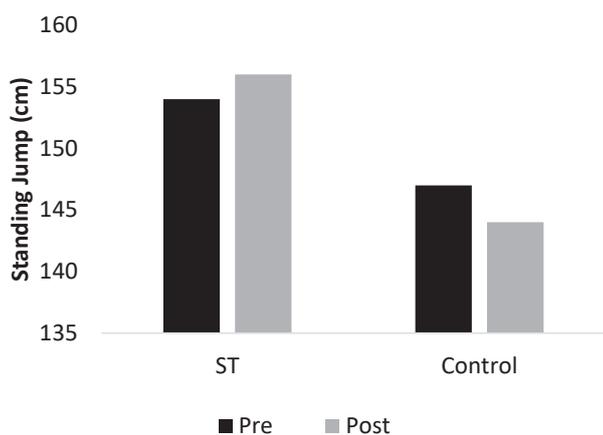


Figure 1. Figure showing pre/post standing jump by condition.

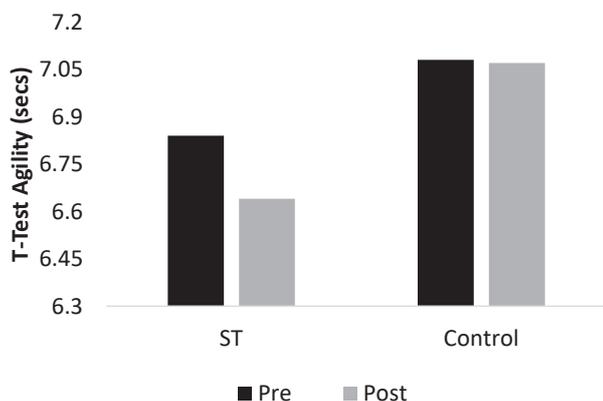


Figure 2. Figure showing pre/post agility by condition.

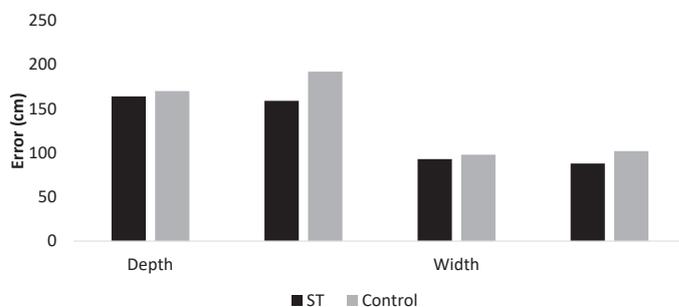


Figure 3. Figure showing pre/post by condition for both depth and width error in the tennis accuracy task.

## DISCUSSION

There are several potential explanations for the unanticipated direction of the results with one possible reason being that the tests were not sufficiently difficult to be at the limit of the participants' abilities, which has been established as a necessary factor to elicit ST effects. Previous studies have shown that when test difficulty is not achieved, participants can actually improve performance (e.g., Ben-Zeev, Fein & Inzlicht, 2005). A second possible consideration is that the method of stereotype activation was inappropriate for the age of the participants. Activation via reading a short text is common in studies of adult populations, however there are more diverse, and perhaps more appropriate, methods of engaging a younger audience. For example, Ambady et al., (2001) utilised a colouring in task, and a number of studies have delivered the threat activation verbally (e.g., Alter, et al., 2010; Chan & Rosenthal, 2014). A third potential factor is the nullifying effect of an ingroup experimenter who is both known to participants and also known to actively and explicitly dispel the types of negative stereotypes being used to activate ST. Further studies are planned that will seek to address these considerations and thus continue to explore the potential role of ST in performance and participation outcomes of competitive junior female players.

In conclusion, this research demonstrates that there are small, but potentially meaningful, ST effects on sensorimotor performance. This, combined with the ST research across myriad domains and social groups, suggests that ST warrants further investigation. Indeed, for as long as women and girls in tennis continue to be outnumbered by 3:1 every effort must be made that could ultimately lead to the development of methods to alleviate or eradicate the effects of ST.



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



# Match-fixing, a threat to the integrity of tennis

Alejandro Valiño (ESP)

ITF Coaching and Sport Science Review; 77 (27): 33-35

## ABSTRACT

Match-fixing presents a particularly great threat to the integrity of professional tennis and the online betting market has made the landscape around match-fixing and betting extremely complicated. A number of high profile offences have occurred in recent years, drawing worldwide attention. This has led to a series of developments in the legal landscape surrounding match-fixing which all players and coaches should be aware of. Offences not only include fixing the final score, but fixing elements such as when aces, breaks, or doubles occur, as well as not reporting requests to throw/fix matches.

**Key words:** match-fixing, betting, tennis integrity, professional tennis

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Article received: 29 Aug 2018

Article accepted: 7 Oct 2018

## INTRODUCTION

Match-fixing is one of the greatest threats to the integrity of professional tennis, especially due to its link to the online betting market. Previously, this concern had been limited to the predetermining of competition results. For this reason, the legal system categorised this behaviour as illegal requiring disciplinary action<sup>1</sup>, as well as illegal and criminal when it concerned competitions of a high sporting or economic importance<sup>2</sup>.

However, other aspects of the game can also be predetermined, such as, for example, the amount of times, or the exact moments when, there is a break, a double fault, or an ace. Even if fraudulent intent could have been recognized, it would not have been possible to impose a sanction if the final result was not affected. So, the field remained open for betters and people related to professional tennis to reap great benefits through the low-risk possibilities that betting platforms offer.

## THE LEGAL SYSTEM TO COMBAT MATCH-FIXING IN PROFESSIONAL TENNIS

It all started after the scandal during the match played on August 2nd, 2007 in Sopot (Poland) between Nikolai Davydenko (ATP 4) and Martín Vassallo-Aguüello (ATP 87). Although Davydenko won the first set easily, bets favouring the Argentine player continued to rise until they amounted to over 7 million dollars. Finally, Vassallo-Argüello won the match as the Russian forfeited due to injury in the third set. 'Betfair' betting company cancelled bets before the end of the match<sup>3</sup>.

Media intervention into the event forced the main international tennis organizations (ATP, WTA, ITF and GSB) to take action on

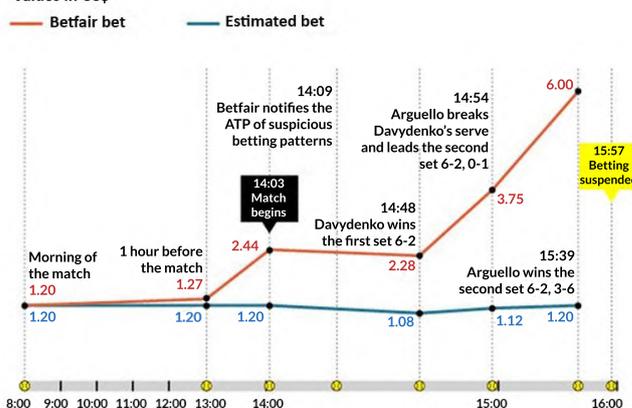
<sup>1</sup> In state competitions in Spain, art. 76.1.c) law 10/1990, dated 15 October, defines as a very serious offence "actions intending to predetermine, using money, intimidation or simple agreements, the result of a match or competition", and depending on the case, the person responsible could be fined between 3,001 and 30,000 euros, prohibited from entering sporting facilities, or disqualified for between 2 and 5 years (art. 79.1 of the above mentioned sports law).

<sup>2</sup> Art. 286 bis of the Spanish Penal Code imposes prison sentences of between 6 months and 4 years, special disqualification from practising the profession or position for 1 to 6 years, and a fine that is triple the value of the benefit or advantage received by the directors, administrators, employees or collaborators of a sport organization, as well as the athletes or umpires, when they engage in behaviours aiming to deliberately and fraudulently determine or alter the result of a contest, match or sport competition.

<sup>3</sup> Graph taken from 'La Nación', the Argentine newspaper: <http://www.lanacion.com.ar/1863408-asi-fue-el-triunfo-de-vassallo-arguello-sobre-davydenko-y-el-extrano-movimiento-en-las-apuestas-que-destapo-el-escandalo>.

## Betting change

Values in US\$



Source: Betfair

Figure 1. Variation in betting during the Vassallo Argüello vs Davydenko match, 2 August, 2007.

the matter. Ben Gunn and Jeff Rees were asked to write a report on the situation, highlighting the main threats to the integrity of tennis. Among the main recommendations made was the creation of an organization to deal specifically with this issue: the Tennis Integrity Unit (TIU). Along with this, they expressed the need to set up a Tennis Anti-Corruption Programme to put an end to the diversity of the existing regulations. Those who are subject to their provisions (covered Person) are the players, the people related to them (related Person) and the personnel whose activities take place in the tournaments (Tournament Support Personnel). Let's examine its content:

## Typical offences

1. Prohibition of betting or trying to do so, directly or indirectly, in relation to the result or any other aspect of the game during a competition.

Those who are subject to the Anti-Corruption Programme provisions are prohibited from betting on any category of tennis event, no matter if they participate in the competition in question or not, and even if there has been no influence exerted on the result or any other aspect of the game. It is, therefore, absolutely prohibited, and any infringement incurs a punishment of a lifetime ban or a disqualification for a



limited time, depending on the circumstances<sup>4</sup>.

This offence is also applicable if betting is promoted or facilitated for others, for instance by encouraging betting, advertising or having links to betting companies, writing for publications in the betting sector, or including links to internet betting sites on personal webpages.

2. Provision of credentials or confidential information for a price or service.

The purpose is to limit illegitimate approaches to players and umpires, as well as to avoid exposing the physical or mental status of a player, which could impact on the online betting market.

3. Not playing to the best of one's abilities or encouraging others to give up.

This is understood as asking or facilitating, directly or through a third party, a player to not give their "best efforts". This includes asking for or accepting money or services for negatively affecting one's own performance or that of another player. A sign of this can be excessive bets in favour of players whose ranking is remarkably lower than that of their opponents. Then, those subject to the Anti-Corruption Programme must help in the investigation carried out by a kind of instructor (PTIO) appointed for that purpose, making available whatever is requested (cell phones, computers, caller lists, SIM cards, etc.).

Certainly, there is a thin line between what is illicit and what is not; there may be sporting variables that justify a poorer performance during a match (tiredness, lack of emotional control, injuries, conserving energy). Still, the legal asset protected is the integrity of the game so as not to disappoint audiences and sponsors. The focus is on tournaments with lower prizes, where players are frequently tempted by cross-border betting mafias in order to make the continuation of their emerging (or vanishing) careers economically viable.

4. Violation of the duty to inform.

The Anti-Corruption Programme, so as to strengthen its efficacy, imposes on all of its subjects the obligation to report to the TIU (Reporting Obligation) any corruption offence, or suspicion of a corruption offence, they might know of, whether it affects them directly or the people around them,

such as third parties. The penalty for non-compliance with this obligation is equivalent to that of the offender, unless their own life or integrity, or those of their close family, could be compromised.

### 'Courtsiding'

Among those sanctioned by the TIU there is a great number of umpires disqualified for life, either for altering the scores in the matches they were arbitrating (for example, the number of deuces in a given game), or being late to enter the scores into official tablets so that certain spectators could bet safely on certain aspects of the game before betting companies' systems synchronized<sup>5</sup>.

### Typical sanctions

After the substantiation of the procedure by the Anticorruption Programme, different sanctions may be imposed on the responsible party. For players, they can be punished for betting with fines of up to USD 250,000, on top of the amount they have benefitted, and a disqualification from competing. They could be punished with a lifetime ban in more serious cases, such as for failing to inform of corruption offences or encouraging a player not to make their maximum effort in competition. For the players' staff, the penalty is the confiscation of credentials and the prohibition of access to events for a period of no less than one year, or even permanently in more serious cases.

Those who cooperate with TIU ongoing investigations or anticorruption education programmes may have a discretionary reduction. The Serbian player David Savic was disqualified for life and fined with USD 100,000 for offering his opponent USD 30,000 to lose the first set. Collaborating with the TIU, with his image being used for prevention programmes, has allowed him to have a partial removal of his lifetime disqualification, and now he is allowed to be a coach and enter tennis events as such.

The Spaniard Guillermo Olaso, another well-known case of corruption, was disqualified for 5 years and fined with USD 25,000 for not reporting the approach of a third party who offered him USD 15,000 to lose.

### CONCLUSION

The issue of match-fixing is far from being resolved. However, professional tennis has pioneered in this field. Many of the measures in the Agreement of the European Council of 9th July 2014 on the Manipulation of Sport Competitions have already been included in the TIU Anti-Corruption Programme. Its real efficacy is still to be proved, since the money that professional tennis manages and that the betting market generates, together with the precariousness of the lower levels of professional tennis, will fuel the search for new ways to manage the adopted measures with the least possible risk for offenders.

<sup>5</sup> There are well-known cases: the French umpire Morgan Lamri, the Kazakh Kirill Parfenov, the Uzbeks Sherzod Hasanov and Arkhip Molotyagin, and the Turks Serkan Aslan and Mehmet Ulker.

<sup>4</sup> Resolution dated October 3rd, 2017 ([http://tennisintegrityunit.com/storage/app/media/Media%20Releases/Anti-Corruption\\_Hearing\\_Officer\\_decision\\_on\\_sanction\\_Samuel\\_Navarette.pdf](http://tennisintegrityunit.com/storage/app/media/Media%20Releases/Anti-Corruption_Hearing_Officer_decision_on_sanction_Samuel_Navarette.pdf)), the Anti-Corruption Judge (AHO) penalized the Spanish player Samuel Ribiero with a 1,000 dollar fine and an 8 month disqualification, with such a light sanction being due to the time elapsed since the bets were made (2013) and the small amount of bets made (28) in such a short space of time with no recurrence.



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Welcome to the TIU Education page

**TIU education**

The TIU Education team works to maintain the integrity of tennis by delivering a world class programme that informs, educates and protects players and the wider tennis family against corruption and betting related offences in professional tennis.

inform. educate. protect.

**TACP Explained**  
This one page document provides a summary of the rules and how they apply to different categories of tennis.

**The Rules**

The Tennis Anti-Corruption Program (TACP) is in place to maintain the integrity of our sport and protect against corruption and betting related offences.

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International Tennis Federation, Ltd.  
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Website: <http://en.coaching.itftennis.com/home>  
ISSN: 2225-4757  
Foto Credits: Gabriel Rossi, Paul Zimmer,  
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**The Tennis Anti-Corruption Program (TACP)** is in place to protect the integrity of our sport and protect you as coaches and all those within tennis against corruption and betting related offences. This document provides a summary of the anti-corruption rules, for the full list please visit [www.tennisintegrityunit.com](http://www.tennisintegrityunit.com).



## Coaches

### Betting

- ✗ **DO NOT** bet on any tennis event, at anytime, anywhere in the world or assist others to do so
- ✗ Betting companies **MUST NOT** sponsor, employ or provide any other benefits to you in exchange for yours or your player's services

### Match Fixing

- ✗ **DO NOT** ask or help any player to fix the outcome or any aspect of a tennis event (this includes spot fixing of points, games or sets or attempting to manipulate the draw in any way)
- ✗ **DO NOT** ask or help any player to perform below their best efforts in a tennis event

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- ✗ **DO NOT** share non-public, sensitive information about a tennis event or a player for betting purposes with anyone
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- ✓ **YOU MUST** cooperate fully with investigations conducted by the TIU, which may include being interviewed or providing your mobile phone, other devices or relevant documents



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