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CONTENTS ISSUE 75

COACHING & SPORT SCIENCE REVIEW

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EDITORIAL

Welcome to issue 75 of the ITF Coaching and Sport Science Review. This issue covers a range of aspects in the game including: court scaling in doubles; video analysis and intelligent racket devices; emotional control; life as a tour coach; multi-sport participation; and, malalignment issues, among others. This issue also contains an article dedicated to the legal implications of group sessions, an essential reading for coaches and organisers.

The ITF Worldwide Participation Conference took place in London on 8 and 9 July 2018. The speakers, experts and top executives from world tennis and sports organisations alike, shared their valuable insight on a number of topics including: using data and technology; attracting and keeping more women in tennis; and, widening access to tennis.

The ITF Coaches Commission met during the French Open and covered several topics including the ITF Worldwide Coaches Conference by BNP Paribas; the ITF (online) Academy; and the 2017-2020 Development Strategy. A newly approved 'White' entry level certification for the Recognition of Coaching Education Systems is available to nations who are self-sufficient in delivering their own Play Tennis course.

The ITF Regional Coaches Conferences by BNP Paribas, in which women's tennis will be the main feature, have all the venues, dates and host countries finalised: Caribbean 19-21 September (Trinidad and Tobago); West and Central Asia 10-12 October (Qatar); Northern Africa 21-24 October (Egypt); Central America 25-27 October (Panama); Southern Africa 25-27 October (Botswana); South and East Asia 29-31 October (Hong Kong); and, South America 1-3 November (Brazil). For more information, please click here.

The ITF is now embarking with its World Tennis Rating Project of providing a unified system of player ratings as well as an easy conversion system which will contribute to the growth of the sport across the world as players will find it easier to find appropriate competition and progress their game; we look forward providing our member nations with more information about this in months to come.

The ITF eBooks app has over 90 publications, of which around 50 are free. The ITF recently published an eBook on the app of Essential Readings for Tour Tennis Coaches. Tennis iCoach now features selected presentations from the 2018 ITF Worldwide Participation Conference. You can sign up for just $30USD per year, and by going to www.tennisicoach.com. The ITF Online Academy, which will provide information, education and certification to all interested, will be launched soon. More information will be provided in the next issue.

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 75th edition of the ITF Coaching and Sport Science Review just as much as we enjoyed putting it together.

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Junior doubles development: an on-court progressive approach based on facts and stats

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ITF Coaching and Sport Science Review 2018; 75 (26): 3 - 4

ABSTRACT

Junior doubles is a discipline little developed and often little considered in the training programs of tennis coaches. The Italian Tennis Federation carried out a study aimed at assessing some parameters of doubles at junior level, and comparing them with those of professional tennis.

Key words: junior, doubles, court, scaling

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INTRODUCTION

Some statistical data was gathered through match analysis of doubles matches of 14&under players (boys and girls) during national training camps hosted on a regular basis by the Italian Tennis Federation at the National Tennis Center of Tirrenia, Italy (Centro di Preparazione Olimpica di Tirrenia). The matches analysed were played both on courts with "normal" dimensions (23,77 x 10,97 m) and on a reduced size for doubles singles court (23,77 x 8,23 m).

The analysis of these data highlighted that on the "normal" court, under 14&under players do not develop capablities in offensive situations and, as a consequence, offensive skills because these conditions do not usually reward players going to the net, practicing the transition game or winning solutions; rather they encourage more defensive and conservative tactical-strategic solutions.

RESULTS

Let's start analysing the different tactical parameters.

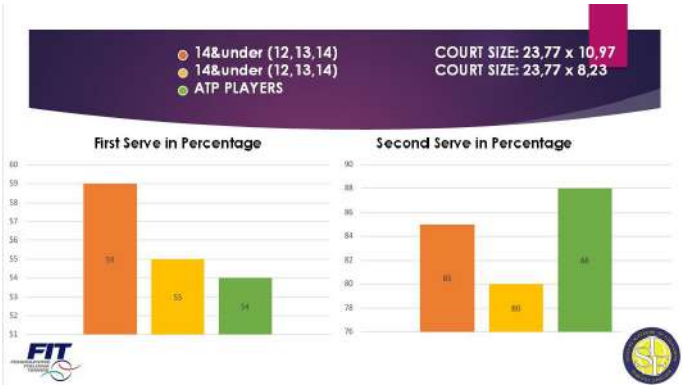

Figure 1. 1st Serve Percentage and 2nd Serve Percentage of 14&under players on different court sizes vs. ATP players - Istituto Superiore Formazione, R. Lombardi.

In Figure 1 we can see, surprisingly, that the 1st serve percentage in junior doubles on the "normal" court is much higher (59%) than the one measured on the "singles" court (55%) and the one for ATP doubles (54%).

As a matter of fact, this first finding should not be surprising; it leads to the following conclusions: in junior doubles the server's tactical approach is generally conservative on a full court and this low risk level causes a high 1st serve percentage. Reducing the court width stimulates a more offensive attitude from the server on the first serve which explains why obtained the data is closer to that of professional players.

A lower 2nd serve percentage (80%) on the "singles" court probably indicates, in this case too, an increase in attempts to take a risk, when compared to the "normal" court situation (85%).

Figure 2a and 2b. Winning Serves Percentage and Serve&Volley percentage of 14&under players on both court sizes vs ATP players - Istituto Superiore Formazione R. Lombardi.

Figure 2a shows the percentage of winning serves. The value measured on the "normal" court (6%) is much lower than the one on the "singles" court (12%). However the data of professional players remains very far above the others with 28%, perhaps due to the higher physical development of the players at this level.

The "Serve&Volley" percentage, figure 2b, also increases from the normal court to from 10 to 30%, tending towards the values of pro tennis players (57%).

Figure 2a and 2b show an increased tendency to search for offensive and definitive solutions with the serve considerably when the court width decreases.

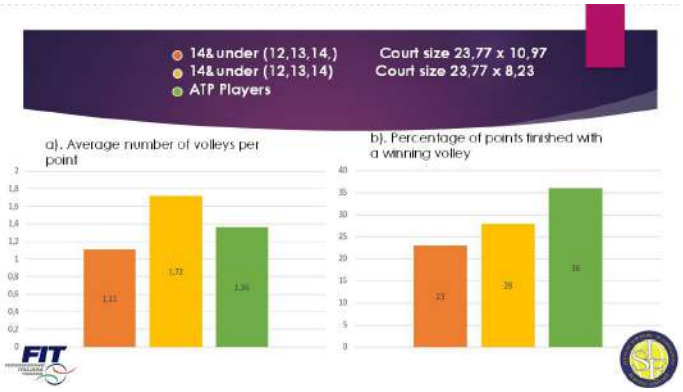

Figure 3a and 3b. Number of volleys/point – Percentage of points ended with a volley - Istituto Superiore Formazione R. Lombardi - FIT.

In Figure 3 we can see that the number of volleys played in each point is radically increased on the "singles" court (1.72) when compared to the normal court (1.11).

From the normal court to the smaller court, the percentage of points ending with a winning volley also increases, from 23% to 28%.

The statistical data of Figure 3 confirms the previous trends: the tactical choices and the game patterns become more offensive, getting closer to those of professionals when doubles is played on a court of reduced width.

Figure 4a and 4b. Percentage of volleys - Percentage of points won with a defensive shot - Istituto Superiore Formazione R. Lombardi - FIT.

The data shown in Figure 4a highlights net play. On the "singles" court the percentage rises to 23%, just like the professionals. In comparison, when doubles is played on the "normal" court, net play is only 6%. In figure 4b we can see that the percentage of points won with a defensive tactical action decreases with a smaller court(from 14% to 11%), and this is a consequence of the greater aggressive attitude of the players on the court, and there not being any passing down the alley options.

CONCLUSIONS

Our teaching proposal consists of changing both the size of the court, thus taking off the alleys, and changing the server's position, bringing her/him to serve inside the court.

These two modifications will stimulate girls and boys to naturally execute attack tactical patterns such as the "Serve&Volley", the volley, the "poach volley" and all attacking patterns in general.

Tennis coaches will propose doubles drills using the "singles" court, with the server serving from an advanced position (1-2 m inside the baseline).

We allude thus to "dead ball" drills (including drills from the basket), "rally drills" or even drills simulating "match play", exercises all in which young players might gradually develop all required skills to play high level doubles through specific technical-tactical progressions.

RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

TennisiCoach

Intelligent devices for tennis rackets

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ITF Coaching and Sport Science Review 2018; 75 (26): 5 - 7

ABSTRACT

The current technological advance within the field of sport is an undeniable fact, and this includes a speciallist sport such as tennis. In line with these changes, there are different devices in the market today to help players' technical and kinetic analysis. Coaches sometimes cast doubt about these devices' performance and technical characteristics. This article intends to ntroduce the tools that are currently marketed that offer technical and kinetic information about tennis players.

Key words: technology, intelligent devices, player statistics, game analysis

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INTRODUCTION

The use of technology in tennis, just as in other sports, has been booming over the last years. There are more and more powerful and affordable tools available in the market, whose objective is to improve tennis players' performance, and to help to improve training programmes. Perhaps one of the most exponential current advances is the availability of "intelligent courts" for training and competition such as Play-Sight (Play-Sight, USA), which, by means of a camera system, provides data about tactical and kinetic parameters, in real time, with continuous storage, videos, information about type and duration of points, and a long list of other possibilities for the technical team. It is true that this is advanced technology, which mainly due to its price, is not accessible to all coaches.

However, it is interesting to highlight that there are lots of devices in the market, chips or other instruments, that are attached to the racquet and provide a great deal of information in real time about performance, game statistics, etc.; there are free or low cost apps for portable devices that are easy to use, in tablets or smart phones (Quinlan, 2013). They all have the same objective, to provide players and coaches with a number of technical, tactical, physiological, kinetic or statistical parameters, in a timely and direct manner.

Because of this, the amount of data that players and coaches can gather using these tools is amazing. Still, for the scientific and technological contribution to be transmitted to improve performance, it is key for coaches to know how to select the relevant information, depending on their goals; and they should know how to interpret and convey it to the player (Barnett & Clarke, 2005; Barnett et al., 2008; Gillet et al., 2009; Martín, et al., 2014; O´Donoghue, 2001; Pollard et al., 2010; Reid et al., 2010, Over, & O'Donoghue, 2008; 2010; Pestre, 2009), given that just plain data can be meaningless for athletes.

This article intends to introduce the tools which are currently marketed and offer technical and kinetic information about the action of the racket on the ball.

METHODS AND PROCEDURES

A revision of the current market was carried out in order to identify the existing tools that provide technical and kinetic information. The results are framed within 3 options: a) built-in chips in the racket. b) devices that are externally placed on the racket, and, c) devices that are placed on the player´s wrist. Once all the devices have been selected, official websites of each product are analysed, in order to get more detailed information about the technical characteristics and possibilities of each tool.

DESCRIPTION OF THE DEVICES

Artengo Personal Coach

Artengo Personal Coach (https://www.decathlon.es/personal-coach-artengo-sensor-para-la-raqueta-id_8247319.html) is an external sensor that is placed on the racket´s throat, just at the end of the grip, to which it is attached by two Velcro tapes., There is also a watch which is connected to the sensor by means of waves with which it shares information immediately when the distance between them is less than 20 m. Its main disadvantages with respect to its competitors are: a) the attachment of the sensor to the racket is unstable, reducing reliability of the data, b) because it has a considerable size, and it is placed on the throat of the racket, it modifies the racket's balance and impacts on technical execution of the stroke (see figure 1).

Figure 1. Artengo Personal Coach.

Babolat Play System

Babolat Play System (http://es.babolatplay.com) is made up of several sensors that have been built-in the racket handle without altering its initial weight. This is its main advantage; however at the same time it may be used only on a single racket, an important aspect for those competition players who break strings all the time. In the butt cap there are two buttons and a USB port. The buttons are used for turning the device on and off, and for the Bluetooth connection; the USB port, is used to charge the battery and transfer the information recorded. It offers Bluetooth technology and an application for tablets and smart phones with which you can see the data instantly. Play technology is available in Babolat Pure Drive, Pure Drive Lite and Pure Aero (see figure 2).

Figure 2. Babolat Play.

Babolat Pop

Babolat Pop (http://es.babolatplay.com/pop), from same brand as the above, is a sensor that is placed on a specially designed wrist-band, which the player must wear on his dominant hand. Just like Babolat Play, it transfers the information through a USB port or via Bluetooth, and there is an app for tablets and smart phones. Its main advantage is that because it is outside the racket structure, it does not alter its weight or balance, and it can be used with all racket models and brands. At the same time, this might pose as a disadvantage, since it may reduce the reliability of its measurements, and it may not be comfortable for the player (Figure 3).

Figure 3. Babolat Pop.

Sony Smart Tennis Sensor

It is a small device that is placed on the butt of the racket and consists of something that is inserted (Figure 4). This device has an internal sensor, and just like the others above: it has Bluetooth technology; a USB port, to charge and to transfer the information; and, a specific application, as well. These characteristics are an asset when compared to Babolat Play system, as it can be attached to the structure of the racket, and therefore can be used with a variety of brands; however, not too often, since it increases the weight. This can slightly alter the sensations of the tennis player, and therefore affect their performance, although not so much as the Artengo Personal Coach, because of the position of the sensor. (https://www.sony.es/electronics/dispositivos-inteligentes/sse-tn1w)

Figure 4. Sony Smart Tennis Sensor.

Zepp Tennis

Zepp Tennis and Zepp Tennis 2 (http://www.zepp.com/en-us/tennis/), are two devices of a different brand, which have the same specifications as those detailed for the Sony Smart Tennis Sensor. That is, they are external devices, have a USB port and Bluetooth functionality, and can be used in different racket models. Therefore, they have the same advantages and disadvantages mentioned before (Figure 5).

Figure 5. Zepp Tennis & Zepp Tennis 2.

CHARACTERISTICS OF THE DEVICES

Table 1 below illustrates, in a simple way, the technical and working tcharacteristics of the different devices selected.

	Artengo Personal Coach	Babolat Pop	Babolat Play	Sony Smart Tennis Sensor	Zepp Tennis	Zepp Tenis 2
It can only be used on a single racket	-	-	✓	-	-	-
It can only be used on Wilson, Prince, Yonex and Head rackets	-	-	-	✓	-	-
This tool can be used in all kinds of brands	✓	✓	×	×	✓	✓
This tool discriminates data depending on the specific type of racket.	×	×	✓	✓	✓	✓
The tool discriminates between right and left handed players	?	✓	✓	✓	✓	✓
The tool does not alter the racket weight	×	×	✓	×	×	×
It can be used with junior rackets	×	×	×	×	×	×
The tool has Bluetooth technology	×	✓	✓	✓	✓	✓
Duration of the battery without Bluetooth technology	6 hours	?	6 hours	3 hours	4 hours	8 hours
Duration of the battery using Bluetooth technology	×	?	?	1.5 hours	?	?
Capacity of the memory in hours or strokes	10 hours	10 hours	150 hours	12,000 strokes	3,500 strokes	?
Charging time	3 hours	?	?	2 hours	2.5 hours	1.5 hours
Possibility to view date immediately	✓	✓	✓	✓	✓	✓
Weight	20 gr	10 gr	0 gr	8 gr	7.7 gr	6.25 gr
Size	?	-	-	31,3 x 17,6 mm	28 x 11 mm	25,4 x 12,3 mm
Compatible with iOS and Android	×	✓	✓	✓	✓	✓
Price (approximately, November 2017)	?	€80	€350	€200	-	€110

Table 1. Tool, application use and function related aspects of intelligent devices. NB. ? indicates that the information does not inlcude tehcnical and performance charcteristics.

CONCLUSION

After the final revision of scientific literature, and product websites, the conclusion is that the use of the technology is very positive, it gives a great deal of information in real time that will provide more quality, efficiency and motivation to the training programme. These tools must always be used as a complement to provide added value to the coaches´ task, but they will never become a suitable substitute. Thus, coaches must be updated as to developments in, and invest in the new technologies, if they want to improve their performance, and that of their athletes.

REFERENCES

Barnett, T., Meyer, D. & Pollar, G. (2005). Combining player statistics to predict outcomes of tennis matches. IMA Journal of Management Mathematics. 16(2). 113-120.

Barnett, T. & Clarke, S.R. (2008). Applying match statistics to increase serving performance. Medicine and Science in Tennis. 13(2). 24-27.

Gillet, E., Leroy, D., Thouvarecq, R. & Stein, J.F. (2009). A notational analysis of elite tennis serve and serve-return strategies on slow surface. Journal of Strength and Conditioning Research, 22(2), 532-539.

Martín, C., Pestre, B. & Peter, J.M. (2014). Tecnologías de ayuda al análisis técnico, Homenaje a Gil de Kermadec. ITF Coaching & Sport Science Review. 62, 17-19.

Quinlan, G. (2013). El uso de las aplicaciones para mejorar el entrenamiento: La aplicación técnica de Tenis Australia. ITF Coaching & Sport Science Review. 59, 22-24

Over, S. & O´Donoghue, P. (2008). Cuál es el punto. Análisis y porqués del tenis. ITF Coaching & Sport Science Review. 45, 19-21.

Over, S. & O´Donoghue, P. (2010). Análisis de la estrategia y la táctica en el tenis. ITF Coaching & Sport Science Review. 50, 15-16

Pestre, B. (2009). La politique de la FFT en matiere de formation des jeunes. In Le Tennis dans la societe de demain, L. Crognier & E. Bayle (Eds.), Montpellier: AFRAPS, p. 187-190.

Pollard, G.N., Pollard, G.H. Barnett, T. & Zeleznlkow, J. (2010). Applying strategies to the tennis challenge system. Medicine and Science in Tennis. 15(1). 12-15.

Reid, M., McMurtrie, D., Crespo, M. (2010). The relationship between match statistics and top 100 ranking in professional men´s tennis. International Journal of Performance in Analysis in Sport. 10(2). 131-138.

RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

Creativity on court II: Playing with emotions

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ITF Coaching and Sport Science Review 2018; 75 (26): 8 - 10

ABSTRACT

This article proposes regulating emotions, and returning to the enjoyment component of the sport, since it is the reason why all players take up tennis. In order to do so, the cognitive-behavioural vision of emotions has been taken as a basis. Exercises for all practice levels are suggested.

Key words: Emotions, game, cognitive-behavioural perspective.

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Article accepted: 28 June 2018

INTRODUCTION

"Rather than being a luxury, emotions are a very intelligent way of driving an organism toward certain outcomes." - Antonio Damasio.

"For the first time in my professional career, I have not been the owner of my emotions on court, I have had no control of my nerves, I have had tough times, but I have managed to get over them" - Rafael Nadal.

Emotions are psycho-physiological reactions to environmental issues that crop up (Lazarus, 2000). In psychology, the cognitive-behavioural perspective is one of the main perspectives and approaches. From this vision, and just as Epictetus pointed out some centuries ago, "It is not things that torment people, but the opinion tht people have of these things", that is to say, it is not the external circumstances that determine how we feel, but rather, the interpretation we make of those events. In this sense, given an annoying circumstance, as losing the first set could be, there might be many different reactions, and depending on the thoughts the player may have, both the emotion and what happens later will be determined.

This article intends to work on-court emotions, by means of the conscious modification of thoughts and behaviour, the main responsible for such emotions. For that, the notion of "play", that is inherent to tennis, will be taken into consideration, and it is applicable to all practice levels.

PLAYING WITH EMOTIONS

It's hard to imagine a boy or a girl, regardless of their origin and personal circumstances, who would take up tennis for reasons others than fun, spending hours on end hitting a ball against a wall, or against different "victims" (coaches, parents, mates ...), to satisfy their desires and the desire to improve and have fun. The emotions that arise in those circumstances (joy, happiness, love, surprise, anger, fear, etc.) put the engine to work, beyond fatigue, or the stress of the moment, and we cannot forget that all emotions, including those we call negative, have an adapted, social and motivational function (Reeve, 1994) that stretch our energy towards unsuspected limits.

Taking for granted that we want to help our players to awaken emotions that will help them to persist in improvement and giving effort, and at the same time are helpful for effective learning for other circumstances in life, why cannot we go back to those initial sensations that drove the player to continue playing back during his/her beginnings? Fundamentally we are talking about enjoyment. In the real expression of our sport, the idea of playing is important, i.e. we talk about playing tennis. And it is not a coincidence that human beings, and exceptionally talented boys or girls, learn just by playing. Proof of this is there is a great deal of documentation showing the relationship between fun and optimal performance in sport (Jackson, 2000), and in tennis in particular (Young, 2016).

"The moment I stop enjoying tennis, I will quit playing" - David Ferrer.

We can therefore ask: when is this idea of playing a game forgotten? Even though tennis players become professionals at an early age, there is a lot of money at stake, contracts and commitments of different sorts, what does remain constant - beyond the practice level- is the notion of enjoyment.

Money and fame make up a powerful engine, but if we want players to persist in practice, we must encourage enjoyment and agreeable emotions. But careful, it does not mean that disagreeable emotions should not be present, they must be, but in the right amount. When we say enjoy we do not mean that we should be laughing all the time, we mean being able to see tough times as growth opportunities and challenges, and enjoy them all.

Guidelines to playing with emotions

There are no set rules. As a coach, take the opportunity to awaken your creativity in the exercises you suggest, you will be surprised to see how, as a result, your players will begin to be more creative as well.

1. Relativize your emotions, do not take them so seriously". By definition, emotions are psycho- physiological responses that last seconds or minutes (Oatley & Jenkins, 1996), and then, vanish; it is a question of time.

2. Normalize their appearance. Emotions are rooted in our nature, they are always with us. Start thinking with this idea in mind, and the intensity of the emotion in times of stress will decrease considerably.

3. Take advantage of them all. Emotions provide a lot of information about you, profit from the occasion to observe your most common thoughts and behaviours.

4. Encourage positive emotions. It has been proved that they enlarge the thinking and action repertoires (Fredrickson,

2013), apart from generating a positive relationship with attention, creativity and decision making (Fernández-Abascal, Jiménez Sánchez, Martín Díaz, & Domínguez Sánchez, 2010).

5. Enjoy. One of the main gaps between your current situation and playing at your top level, is in the presence of enjoyment (Loehr & Fiske, 1995).

6. Panoramic vision. Not everything is emotional. Make a mental photograph of your situation, perhaps you need a technical or physical aspect?

7. Red lines. Set those attitudes that under no circumstance will you trespass.

8. Allies: All emotions have a very useful message, including disagreeable emotions. If only, instead of being frustrated because of them, and getting furious with ourselves, we used these emotions as our allies, we would change the negative consequences, and take them as an opportunity to improve. One example is anger, even though it is one of the most damaging emotions and, most unfortunately, one of the most common in the tour, it is also true that it activates a great deal of energy. What would it be like if we re-addressed this energy; instead of hitting the racket against the ground, we fight for every ball during the rest of the match.

Exercises

From the behavioural-cognitive vision, there are a number of exercises that help to modify or induce certain emotions. Here are some examples:

1. Face your emotions: It is difficult, in general, to name emotions simply because as we are not familiar with them, we have a very limited emotional vocabulary which terribly limits our expressive capabilities. Let´s start with a very basic and very effective exercise which consist of simply naming the emotion. To do this, we will use emoticons (emojis or pictographic expressions) that players are already familiar with. By using these emoticons, we open the door to our emotional state, and this will give way to a deeper conversation later on.

2. Characters: When your player is trapped in an emotion, what character does he/she look like? What role are they representing? Firstly, decide on this character with them, ask them. It might be: a Tasmanian Devil, who demolishes everything regardless of the moment in the match; a Woody Woodpecker, who just hits strokes without thinking; a Superman/ Wonder woman who has to do everything perfectly and at the right time; a submissive Butler who would walk head down and asking for permission; a Fire Truck that only reacts when the going gets tough; or, a Kind Soul who puts the interests of the others before their own.

   There are thousands of possibilities, but mind you, it is important for your players to be involved in the choice of character, and in no circumstances should they be imposed, mainly because it was this character who helped them to evolve to where they are now, and thus, deserves gratitude. It is just a matter of being aware that when in this state, they are led by emotions-thoughts-actions that prevent them from giving their best.

   Secondly, suggest that your player exaggerates the character to the absolute limit. Taking the character to “the permitted extremes” in which they are emotionally trapped can relativize very easily, and allow the player to realize how “ridiculous” it can be when you identify with him/her for a long time.

   Finally, and once the first two phases have been fluently mastered, establish - again and together with the player- a

   character that makes them reach their potential and give it their best They must put this in black and white, write their habitual thoughts, their ways of moving, of dressing, of walking on court, gesture, emotions.... And every day they should try to be him/her.

3. Mantra: What is the message, way of thinking, or belief that you need to repeat to yourself, so that you do your best, make you best effort, or simply relax in order to enjoy your tennis? Set and write one or two statements, and repeat them on different occasions: before training, during training, and before going to sleep. You can even put them in your pocket or hang them in a visible place. Do it over three weeks, then change them and put up others.

Suggestions:
• Read, train and invent your own dynamics.
• Set progressions according to the ability of your players to talk and acknowledge their emotions (Jiménez-Almendros & Graupera, 2017).
• Do not fall in the trap of judging emotions as good or bad, go beyond that and profit from everything that comes to you, even if it is not agreeable.
• Remember this is a task that needs some time to master.
• Practice the exercises yourself, before you use them with your players.

Table 1. Suggestions for Coaches.

CONCLUSIONS

In recent years, it has become very trendy to talk about emotions, how present they are during matches, and how to regulate them... In our opinion, it is particularly important to start from the most basic concept of identifying, naming and admitting them in order to act accordingly. Of all the different ways of working with them, we suggest some exercises that approach emotions at the behavioural and thinking level, they are as simple as they are efficient. Table 2 shows some key concepts to follow when working with your players.

Normalizing or changing the course of an emotion during training or a match provides a totally different experience of the situation, with totally different and much more satisfactory, long lasting and constructive results. It is up to you as a coach, to provide players with learning and cheerful experiences. Remember, you are their best role model, if they see that you are enjoying, most probably, they will enjoy it too.

3 Keys
• Emotions are temporary. • Encourage agreeable emotions without looking down on the disagreeable ones, make them your allies. • Play with emotions. Challenge your players so that they enjoy while doing their best to improve.

Table 2. Keys to remember.

REFERENCES

Fernández-Abascal, E. G., Jiménez Sánchez, M. P., Martín Díaz, M. D., & Domínguez Sánchez, F. J. (2010). Psicología de la emoción. Madrid: Editorial Universitaria Ramón Areces

Fredrickson, B. L. (2013). Positive Emotions Broaden and Build. In P. Devine & A. Plant (Eds.), Advances in Experimental Social Psychology (Vol. 47). Burlington: Academic Press

Jackson, S. A. (2000). Joy, fun, and flow state in sport. In Y. L. Hanin (Ed.), Emotions in sport (pp. 135-155). Champaign, IL: Human Kinetics

Jiménez-Almendros, L. y Graupera, J. L. (2017). Perfil de Afrontamiento Cognitivo-Emocional en tenistas de competición. E-Coach - Revista Electrónica del Técnico de Tenis, 29 (9), 25-33.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. The Sport Psychologist, 14(3), 229-252.

Loehr, J. y Fiske, S. (1995). 6 keys to getting & staying in the zone. Tennis, 31 (3), 36.

Oatley, K. y Jenkins, J.M. (1996). Understanding emotions. Cambridge: MA: Blackwell Scientific.

Reeve, J. (1994). Motivación y Emoción. Madrid: McGraw-Hill.

Young, J. (2016). Enjoyment: Fresh clues for coaches. ITF Coaching and Sport Science Review, 68, 21-23.

The joys of being a tour coach lie in the eyes of the beholder

Janet Young (AUS)

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ABSTRACT

This paper highlights the roles of a tennis coach on the professional tour and the key characteristics of 'life on the road'. The paper further proposes that different mind-sets underpin positive and negative experiences as a tour coach, and offers suggestions to facilitate and enhance positive experiences. These experiences are critically significant given they impact on a coach's well-being, job satisfaction and performance (Gallwey, 2009).

Key words: travel ,tour, coaching, mindset

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INTRODUCTION

"The travel is fine. I've been travelling even since being retired so it's not really an issue for me. The bigger issue is family, and not wanting to be away from them. I also have to have a passion for what I'm doing; If I don't feel like it's worth my time helping somebody, or I don't have a good connection with them, then it's not something I want to take the time to do. At this point in my life, I have the luxury of being able to pick and choose what I want to do" - (Michael Chang, coach of Kei Nishikori)

Travel is a way of life for many tennis coaches who support and guide their players at training and tournament venues away from home, both nationally and internationally. For many coaches, travel is exciting, fun, exhilarating and full of adventure. Being a coach on the professional tour can be the ultimate dream job. On the other hand, travel for many coaches conjures up a range of negative emotions and feelings including loneliness, boredom, resentment from being away from loved ones at home and frustration at a lack of routine.

This paper highlights the roles of a tennis coach on the professional tour and the key characteristics of 'life on the road'. The paper further proposes that different mind-sets underpin positive and negative experiences as a tour coach, and offers suggestions to facilitate and enhance positive experiences. These experiences are critically significant given they impact on a coach's well-being, job satisfaction and performance (Gallwey, 2009).

THE ROLES OF THE TOUR COACH

The multi-faceted roles of coaches are well documented (e.g., Crespo, Reid & Quinn, 2006). In brief, a coach is a person who plans, guides and monitors a player's development across technique, game planning, fitness and mental strength (Mouratoglou, 2011). According to Patrick Mouratoglou (current coach of Serena Williams), these extensive responsibilities are further extended for the tour coach who is often charged with organising travel, booking training facilities and courts, selecting and organising practice and training partners, getting racquets strung, managing nutrition and liaising with sponsors, tournament officials and/or media as required.

KEY CHARACTERISTICS OF 'LIFE ON THE ROAD'

While differences certainly exist between circuits (e.g., Junior, ITF Futures, Challengers, ATP or WTA etc.), there are also some common features of 'life on the road'.

Key characteristics of 'life on the road'
• There are often extended periods of time away from family and friends.
• Live out of a suitcase' – generally weekly travelling to tournament sites and accommodation.
• Considerable travel (plane, train and/or road) is involved and can be associated with jet lag and travel fatigue.
• There can be long delays for security checks when travelling.
• A variety of cultures, customs, foods and beverages can be encountered.
• There can be a variance of daily routines with no two days likely to be the same with different match and training times and playing conditions.
• There is a duty of care and responsibility from the coach towards at least one other person.
• There are often unfamiliar work environments at tournament and training sites.
• Pressurised, stressful and unfamiliar situations can challenge coach-player relationships as any issues often get magnified 'out of proportion'.
• Travelling may include periods of being alone and eating meals on one's own

Table 1. The key characteristics of 'life on the road' for a tour Coach (Davis, 2014; Terry, 2010, Toleski; 2012).

As noted in the introduction, 'life on the road' can be experienced differently by individual tour coaches. One explanation can be found in the mind-set of the individual, with contrasting mind-sets typically underpinning positive and negative experiences. In this context mind-set refers to an individual's perspective on/approach to a given situation or issue.

Mind-sets underpinning positive experiences	Mind-sets underpinning negative experiences
'Life on the road' is: • A privilege. • An honour. • A choice that is freely made. • A learning experience. • An opportunity for personal and pro-fessional growth. • An opportunity to make a significant contribution to a player's develop-ment. • A journey to be enjoyed. • A passion. • An exciting challenge	'Life on the road' is: • A chore. • An unavoidable necessity and a demand and/or requirement of the job. • An obligation. • Expected by others (e.g. the player, the player's family, National Tennis Associations).

Table 2. Mind-sets that typically underpin positive and negative experiences of 'life on the road' (Gallwey, 2009; King, 2008).

RECOMMENDATIONS

Mind-sets can be developed, changed and/or modified. So what can a coach do to cultivate and nurture a mind-set that is conducive to seeing "life on the road' in the most favourable light? A coach may wish to consider the suggestions listed and adapt these to their own individual needs and circumstances.

Realise the value of such an opportunity

It is important to be grateful for the opportunity as not all coaches have the ability and talent to be a tour coach. It should be considered a privilege to be a member of a relatively small but select group of travelling coaches. It is an opportunity that may not necessarily be offered, or open, again in the future.

Set goals

Gallwey (2009) recommends setting goals relating to three components of a job, namely performance outcomes, what is intended to be learnt and the degree of enjoyment that is wanted from the job. Setting specific goals will help to harness resources to find solutions when challenges arise, as they invariably will on any tour.

Pay attention to the detail

Thoroughly plan travel in order to reduce surprises and problems. Investigating travel is a relatively easy task currently, with so much information about accommodation, transportation options, weather, tournament sites, foods and safety warnings, etc. available on the internet. Such planning provides a sense of control, peace and comfort, at least over those matters that can be controlled 'on the road'.

Ask for help and support from a mentor or experienced colleagues

Not everything has to be solved alone. Others that are respected can offer insightful feedback, guidance and ideas on how to best approach issues. Often the first step of asking others for help is the most difficult. It may be surprising how willing and pleased others are to help.

Watch, listen and learn

Bob Brett, the appointed LTA Director of Player Development in 2014, provides sound advice regarding the opportunity that the tour affords for continued professional development: 'Listen and watch everything that is happening both on and off the court. See what others do well. Pay attention and see if the knowledge you gain may be transferred to the player you work with' (Davis, 2014).

Focus on a critical coach-player relationship

Creating and managing a healthy and respectful coach-player relationship is an enviable skill. Paying attention to the ability to communicate with a player is always paramount. All communication needs to be caring, timely and appropriate.

Seek a good balance with work, family, friends and recreation

Setting aside time in the daily schedule to be spent individually is important. For some coaches this means time allocated to fitness, rest, friends, shopping, sight-seeing and/or communicating with loved ones at home. Catering for one's own needs should not be ignored but may require some creative time management.

Keep a daily 'thankful' or 'gratitude' log

Make it a daily routine to record 3-5 things that have gone (particularly) well personally on tour that day. The purchasing of a special book or journal for this specific purpose might be beneficial.

Be kind to yourself

No good comes out of being negative about errors, mistakes or oversights. Remembering that even perfectionists are not perfect and 'life is a series of lessons to be learned'. Being able to accept imperfections, adapting if needs be and trying to find the positives in disappointments to be an even better coach and person are essential (King, 2008).

Be clear about 'the name of the game'

At selected times during a tour, a period of self-reflection should occur. Is a difference being made to the player/s? Does the player always give 100% effort and work diligently every day to be the best player he/she could be? If the answers are 'yes', then the coach, and the player(s) can be seen as being successful together.

CONCLUSION

This paper focuses on the psychology of being a tennis coach on the professional tour. It suggests that a coach's mind-set is a critical factor in determining how he/she experiences 'life on the road'. It is not the only factor but one most worthy of acknowledgement, consideration and action. Tour coaches can take an active role in determining their own fate. Firstly it takes an awareness of the power of the mind and then a willingness and commitment to develop, cultivate and nurture an inquisitive, creative and reflective mind-set. The onus is very much on the tour coach to make his/her job the ultimate dream job. The joys of the job are very much in the eyes of the beholder.

REFERENCES

Crespo, M., Reid, M., Quinn, A. (2006). Tennis Psychology: 200+ practical drills and the latest research. London: ITF Ltd.

Davis, R. (2014). Overseeing the superstars. Australian Tennis Magazine. 39(6), 50.

Gallwey, W.T. (2009). The Inner Game of Stress. New York: Random House.

King, B.J. (2008). Pressure is a Privilege. Lessons I've Learned from Life and the Battle of the Sexes. New York: Lifetime Media, Inc.

Mouratoglou, P. (2011). The role of the coach. Australian Tennis Magazine. 36(6), 9.

Terry, P.C. (2010). It's nice to go travelling, BUT... In S. Hanrahan & M. Anderson (Eds.), Routledge Handbook of Applied Sport Psychology: A Comprehensive Guide for Students and Practitioners (pp. 345-354). New York: Routledge.

Toleski, D. (2012). Committing to travel. Australian Tennis Magazine, 37(7), 58-59.

RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

The benefits of multi-sport participation for youth tennis players

E. Paul Roetert, Ronald B. Woods & Neeru A. Jayanthi (USA)

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ABSTRACT

Over the past decade, there has been a lot of debate about the topic of early sport specialization. In this article we review some of the current research as it relates to tennis and provide recommendations for multi-sport participation to help reduce injuries, improve overall sport skills and allow for the enjoyment of lifetime physical participation. In addition, we share our goals for young tennis players of all levels and provide specific coaching tips.

Key words: multi-sport participation, sport sampling, early sport specialization.

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INTRODUCTION

Over the past several decades we have had the opportunity to travel the world in a variety of different capacities related to the tennis business. This includes participating in the fields of coaching, coaching education, sport science and medicine as well as serving in several administrative roles. In these roles we have come to love and understand the sport from different perspectives and enjoy its many benefits, and we wish to share that passion around the globe. Coaches have this same opportunity, particularly as it relates to introducing young kids to the sport of tennis and teaching them the skills necessary to enjoy the game for a lifetime. Together, and hopefully with the help and support of the ITF, we are interested in achieving the following six goals:

- Attract kids to sports and in our case, specifically tennis.
- Retain kids in tennis as long as possible.
- Maximize their talent development to the highest level they seek and show the ability to achieve.
- Lay the foundation for a lifetime of physical activity by promoting and guiding kids towards a physically literate lifestyle.
- Provide for an injury free training and competition environment.
- Introduce kids to a variety of sports and physical activities starting at a young age.

Coaches certainly can play a significant role in achieving these goals by providing a healthy, positive and educational environment conducive to proper skill development while coach educators and tennis researchers should support this effort by: 1.) continuing to provide a greater body of knowledge in the fields related to coaching education; 2.) sharing practical applications in a user-friendly manner based on solid research as well as best practices; and, 3.) developing an age-appropriate body of knowledge to coach educators of all levels (Roetert & Bales, 2014).

One area of concern that each of these groups (coaches, coach educators and tennis researchers/scientists) have been addressing, particularly over the past decade, is the trend toward "single sport specialization" at young ages often based on guidance from coaches or parents who want to maximize the potential of kids to become elite athletes. Unfortunately, the results of this approach can potentially lead to a shortened career in sports and perhaps any physical activity due to physical overuse injuries or psychological burnout. Gould and colleagues (1996, 1997) studied burnout in youth tennis players and concluded that burnout is caused by the combination and interaction of four factors; physical injury or fatigue, logistical concerns and time demands, social

demands of family and peers, and psychological concerns such as pressure from competitive results and rankings. Often, a lot of money, time and effort is spent achieving success even if athletic talent or skills to reach the highest levels are not present, which potentially leaves the players with limited possibilities for other lifetime physical activities.

The extent to which youth athletes need to specialize at a young age is one of the most thought-provoking and relevant debates in youth sport today, and researchers from around the world have contested the question for decades (Horton, 2012). However, based on recent research, we believe that the strategy of "sport sampling" has many advantages, particularly (but not exclusively) as it relates to younger age-groups. In fact, early sports sampling and diversification does not seem to hinder success in sports where peak performance is reached after full maturity. Furthermore, sports diversification at younger ages appears to be positively linked to a longer sports career, a lifetime of physical activity and better overall health and wellness. (LaPrade et al, 2016, Coté et al. 2009). At the same time, there are certain sports including women's gymnastics, figure skating, diving and dance that may require earlier sports specialization (before age 12) by younger athletes because peak performance usually occurs in the middle and late teens before full maturation. Early specialization in these sports has been found to be a strong predictor of success at the elite levels. (Coté et al. 2009).

REDUCING INJURIES

In reviewing the literature, we are seeing that athletes in individual sports like tennis are more likely to specialize in a single sport than team sport athletes. There is also clear evidence that there is an increased risk of overuse injuries among young athletes who participate in single-sport specialized training (LaPrade et al, 2016, Jayanthi et al, 2015, Goodway & Robinson, 2015). Likely, one of the main reasons is that single-sport specialized athletes

have higher training volumes (Pasulka, 2017), although several other studies already referenced did adjust for age and training volume. Therefore, there might still be an independent risk for sport specialization. Even though early specialized training in individual sports such as tennis has shown evidence of leading to risks of both overuse injuries and burnout in adolescent players, most of that research to date has focused on young male athletes. A recent study by Jayanthi & Dugas (2017) however highlights emerging evidence of similar patterns based on early sport specialization in adolescent female athletes as well.

As a tennis coach, you and the parents of players need to be mindful of the total volume of tennis by keeping accurate records of a player's training time, intensity (match play vs. practice) and frequency daily, weekly and monthly. At the same time, while there is no perfect magic formula for optimal tennis training, you should be aware of the player's level of intrinsic motivation, energy level expended and apparent enjoyment. Determine these factors through your observation, elicited comments from players and parental evaluation. Set aside at least an hour monthly to review this data together with the player and parents and agree together on a training plan for the upcoming weeks. In addition, you should monitor players who participate in more hours per week than their age, for more than 16 hours per week in intense training, and who specialize in just tennis for indicators of burnout, overuse injury, or potential decrements in performance due to overtraining. (Jayanthi et al, 2011 and 2015). Based on research by Jayanthi et al. (2011 and 2015), tennis training each week should be guided by the chronological age versus the training hours. This general rule will reduce the chance of the occurrence of overuse injuries and subsequent time off from training.

Coaching tip 1

Young players should follow the age versus hours rule. Train no more hours per week than actual age. For example, a 12 year old player should be limited to a maximum of 12 hours of tennis training per week.

Coaching tip 2

In addition to adjusting and moderating frequency, volume and intensity of training based on players' age and time of season, emphasize sound stroke and movement technique to help mitigate injury risk. An example of limiting intensity of training is to limit the number of competitive tournaments/matches within a year and within each month to allow sufficient "recovery time" not only physically, but also emotionally and psychologically. Another key factor is to deliberately schedule several weeks of no tennis training periodically each year.

IMPROVING SPORT SKILLS

The term "fundamental motor skills" has been used for many years particularly as it relates to teaching young people key physical skills to be successful for a lifetime. A recent study suggests expanding that term to "foundational movement skills" to better recognize physical activities across the lifespan, potential cultural and geographic variations as well as the synergism between physical and psychological factors. Hulteen at al. (2018) propose that this change to help advance the application of motor development principles within the public health domain. Examples include resistance training movements, swimming strokes, and riding a bicycle. This idea appears to be very much in line with the concept of "Physical Literacy" which was discussed in the August 2016 issue of the ITF Coaching and Sport Science Review (Roetert et al., 2016). Physical Literacy is defined by the International Physical Literacy Association as the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engagement in physical activities for life (IPLA, 2016; Roetert, et al, 2018). Both concepts highlight a holistic approach to physical activity (physical and psychological), recognizing the benefits of multi-sport participation (sport sampling) and an overall focus on providing health benefits of participation across the lifespan.

Top 10 Benefits of multi-sport participation
• Greater overall athleticism
• Improved foundational motor skills and transferable skills
• Lower chance of drop-out
• Increased fun and enjoyment
• Wider circle of social relationships
• Reduced chance of overuse injuries
• Longer sport career and involvement
• Promotion of life long physical activity skills
• Greater intrinsic motivation
• Opportunity to learn new sports

Table 1. Top 10 benefits of multi-sport participation

At the elite level of performance, the current recommended model is a specialized sampling model, at least as recommended for football (soccer in the U.S.). This model, as described by Sieghartsleitner et al, 2018), allows for a specialized sampling model with a high degree of domain specificity within early sport participation (specialization), which is enriched by a sport-specific diversity resulting from a broad range of settings within the sport (sampling). We certainly hope and recommend that this type of study can be replicated focused on tennis players. Realizing that not every junior player is going to be a world-class competitor, these are important concepts to recognize for all tennis coaches. The term "sport sampling" is appropriate as it allows the athlete to focus on their main sport while enjoying participation in other sports and activities as well. Young athletes introduced to sport sampling are more likely to continue to participate in physical activities as they get older (Gallant et al, 2017).

At some point, elite athletes will have to decide to choose their best sport and devote their energy and effort through a deliberate practice and playing routine along with increased challenges in competitive tournament play. Other sports and physical activities can still play a role at a more recreational level during days or periods of recovery and rest from tennis training. The optimal time for sport specialization seem to be during the ages of 12-15 with individual variation based on overall maturity physically, emotionally, mentally and socially. Females generally mature a bit earlier than males but by about age 16, serious athletes typically immerse themselves in their sport of choice.

Coaching tip 3

Consider recommending other sport activities to your players that will help develop foundational athletic skills especially those that might transfer to tennis skills. For example, soccer, basketball, hockey, volleyball, baseball/softball movement, throwing, catching skills.

Coaching tip 4

Recommend varying experiences so that kids sample a team sport. This approach broadens and supports overall athleticism, physical skills, game sense and application of strategy and tactics.

ENJOYING LIFETIME PARTICIPATION

The benefit of participating in physical activity as players get older should not be underestimated. Tennis is a fantastic sport for a lifetime and competitions are available for many different age groups. In fact, research indicates that the more favorable the sports experience is for young athletes, the greater the chance that these athletes will participate in physical activity as an adult (Miller & Siegel, 2017). In addition, these authors highlight that coaches and parents should focus on the experience of youth sports above and beyond wins and losses. A positive experience with youth sports can last a lifetime. Again, this is very much in line with the concept of "physical literacy", which focuses on physical activity as a lifetime journey (Roetert et al, 2018) as well as "foundational movement skills", which touts how various movement forms support and maintain a lifetime of physical activity (Hulteen, 2018).

Coaching tip 5

Consider at least an introduction to other sports and skills that are likely to be accessible and prepare for lifetime activities such as: swimming, cycling, tennis, golf, yoga, martial arts, and various fitness activities for strength, flexibility and aerobic endurance.

Coaching tip 6

Allow your players to seek out opportunities to widen social network, meet new coaches, form new friendships with kids in other sport activities. This can assist in avoiding emotional-social burnout due to immature self-concept and confidence, social cliques and friendships just within the tennis community.

Coaching tip 7

Avoid mental burnout due to the same routines, lack of variety in practices, and natural learning and performance plateaus which may cause staleness. Allow time for healthy recovery and rest from sports and competition.

SUMMARY COMMENTS

Sports specialization has been defined as intensive, year-round training in a single sport at the exclusion of other sports (Jayanthi et al, 2013). Sports medicine/science experts have found that there has been an increase in sports specialization over the years which in turn likely increases the risk of injury and burnout in young athletes. In addition, significant financial resources and time may be allocated by families to support these specialized training patterns (Jayanthi et al, 2018). These concerns certainly affect the sport of tennis and we believe the readership of this publication (tennis researchers, coaching educators and coaching experts from many different countries) can help make a difference with organizations as well as players they reach throughout the world. Much work must still be accomplished in order to maximize the positive tennis experience for young players. This certainly includes conducting, promoting and sharing research related to early childhood sport specialization. We hope to be able to provide you with an update on future findings in the upcoming years. In the meantime, consider the six goals that we addressed as well as the recommended coaching tips for your players.

REFERENCES

Coté, J., Lidor, R., & Hackfort, D. 2009. ISSP Position Stand: To Sample or to Specialize? Seven Postulates About Youth Sport Activities that Lead to Continued Participation and Elite Performance. International Society of Sports Psychology. (ISSP).

Ericsson, K.A., Krampe, R.T. & Tesch-Romer, C. (1993). The role of deliberate practice in the acquisition of expert performance. Psychological Review. 100:363-406.

Gallant, F., O'Loughlin, J.L., Brunet, J., et al. (2017). Childhood Sports Participation and Adolescent Sport Profile. Pediatrics. 140(6):e20171449.

Goodway, J.D. & Robinson, L.E. (2015). Developmental Trajectories in Early Sport Specialization: A Case for Early Sampling from a Physical Growth and Motor Development Perspective. Kinesiology Review. 4, 267 -278. http://dx.doi.org/10.1123/kr.2015-0028.

Gould, D., Tuffey, S., Udry, E., & Loehr, J. 1996. Burnout in competitive junior tennis players: Qualitative content analysis and case studies. The Sport Psychologist, 10, 341-366.

Gould, D., Tuffey, S., Udry,E., & Loehr, J. 1997. Burnout in competitive junior tennis players; Individual Differences in the burnout experience. The Sport Psychologist, 11, 257-276.

Horton, S. (2012). Environmental influences on early development in sport experts. In Baker, J., Cobley, S. S. & Schorer, J. (Eds). Talent Identification and Development in Sport: International Perspectives: New York: Routledge.

Hulteen, R.M., Morgan, P., Barnett, L.M., Stodden, D.F. & Lubans, D.R. (2018). Development of Foundational Movement Skills: A Conceptual Model for Physical Activity Across the Lifespan. Sports Medicine. https://doi.org/10.1007/s40279-018-0892-6.

International Physical Literacy Association (2016). Definition of Physical Literacy. https://www.physical-literacy.org.uk/.

Jayanthi, N., Dechert, A., Durazo, R., Luke, A. (2011). Training and specialization risks in junior elite tennis players. Journal of Medicine and Science in Tennis. 16:14-20.

Jayanthi, N., Pinkham, C., Dugas, L., Patrick, B. & Labella, C. (2013). Sports specialization in young athletes: evidence-based recommendations. Sports Health. 5:251-257.

Jayanthi, N.A., LaBella, C.R., Fischer, D., Pasulka, J. & Dugas, L.R. (2015). Sports-specialized intensive training and the risk of injury in young athletes: a clinical case-control study. American Journal of Sports Medicine. 43:794-801.

Jayanthi, N.A. & Dugas, L.R. (2017). The Risks of Sports Specialization in the Adolescent Female Athlete. Strength and Conditioning Journal. 39(2) 20-26.

Jayanthi, N.A., Holt, D.B., LaBella, C.R. & Dugas, L.R. (2018). Socioeconomic Factors for Sports Specialization and Injury in Youth Athletes. Sports Health. (In Press).

LaPrade, R.F., Agel, J., Baker, J., Brenner, J.S., Cordasco, F.A., Coté, J., Engebretsen, L., Feeley, B.T., Gould, D., Hainline, B., Hewett, T., Jayanthi, N., Kocher, M.S., Myer, G.D., Nissen, C.W., Philippon, M.J. & Provencher M.T. (2016). AOSSM early sport

specialization consensus statement. Orthopaedic Journal of Sports Medicine. 4(4): 2325967116644241.
Miller, S.M. & Siegel, J.T. (2017). Youth sports and physical activity: The relationship between perceptions of childhood sport experience and adult exercise behavior. Psychology of Sport and Exercise. 33, 85-92.
Pasulka, J., Jayanthi, N., McCann, A., Dugas, L.R. & LaBella, C. (2017). Specialization patterns across various youth sports and relationship to injury risk. The Physician and Sportsmedicine. http://dx.doi.org/10.1080/00913847.2017.1313077
Roetert, E.P. & Bales, J. (2014). A Global Approach to Advancing the Profession of Coaching. International Sport Coaching Journal., 1, 2-4. http://dx.doi.org/10.1123/iscj.2013-0026.
Roetert, E.P., Kovacs, M., Crespo, M. & Miley, D. (2016). The role of tennis in developing physical literacy. ITF Coaching and Sport Science Review. 69 (24): 3 – 5.
Roetert E.P., Ellenbecker, T.S. & Kriellaars, D. (2018). Physical Literacy: why should we embrace this construct? British Journal of Sports Medicine. Epub ahead of print: April 13. doi:10.1136/bjsports-2017-098465.
Sieghartsleitner, R., Zuber, C., Zibung, M. & Conzelmann, A. (2018). "The Early Specialised Bird Catches the Worm!" – A Specialised Sampling Model in the Development of Football Talents. Frontiers in Psychology. 9, 1-12. doi: 10.3389/fpsyg.2018.00188.

RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

TennisiCoach

Using inertial sensors to monitor on-court tennis training sessions

Cyril Genevois, Christel Amsallem, Cédric Brandli and Isabelle Rogowski (FRA)

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ABSTRACT

Technological innovation provides coaches with practical tools that allow them to have more information about a player's activity during training and competition. This article presents a study using inertial sensors integrated into a wristband to quantify the different types of shots hit by players during one pre-season training week and to compare them with competition demands.

Key words: training monitoring, connected device, injury prevention

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INTRODUCTION

Training load management and its relation to injury risk has become an important point of interest for sport scientists in recent years (Soligard et al, 2016). More specifically, in tennis, it has been advocated that it is not the load itself but an inappropriate transition to a higher load, called the "road to load" that causes injuries (Pluim and Drew, 2016; Rogowski et al., 2016). Recently, it has been shown that upper arm injuries and in-event treatment frequency increased by ≥2.4 times in both sexes at the Australian Open Grand Slam over a 5-year period (Gesheit et al., 2017). These kinds of injuries are a direct result of the mechanical loads imposed on the musculoskeletal system (especially the serve) and it is suggested that some measure of ball striking be considered to feature in an upper limb/body exposure (Reid et al., 2018). Moreover, studies have shown some differences between junior and senior tennis players regarding the number of strokes hit during matches that coaches have to consider when planning training sessions, in order to match the demands of competition (Myers et al., 2016; Kovalchik et al., 2017; Perri et al., 2018). To quantify shot counts, coaches can use inertial sensors that are non-invasive, portable and able to discriminate between tennis strokes (Whiteside et al., 2017).

The goal of this study was to quantify the number of strokes and the hitting intensities (rate of strokes per minute) performed by junior male players during their on-court sessions over one week using inertial sensors. This training week took place in the pre-season period aiming at preparing specifically the players to the upcoming tournaments and the subsequent analysis of data was used to provide coaches with information regarding the potential gap between the content of on-court sessions and competition demands.

METHOD

Five on-court tennis sessions data of 14 junior male players (age: 15.4 ± 2.0 years, ranging from 13 to 19 years old, height: 172.8 ± 9.9 cm, weight: 60.0 ± 10.2 kg, years of experience: 9.7 ± 3.1 years, weekly training: 12.0 ± 2.5 hours, International Tennis Number = 3) were analysed using a sensor-packed smart wearable wristband on the dominant hand (Babolat Pop) (Figure 1). The player's activity was tracked during the tennis session and the information was sent wirelessly to a mobile device to be broken down stroke by stroke.

The total number of shots and the number of shots per minute were calculated for the full group. The descriptive analysis included average and standard deviation for serves, forehands, and backhands for the five sessions. Correlations between age and number of shots were also calculated. Finally, outcomes between shot types in the same session were compared using Student's

Figure 1. Babolat Pop device.

t-tests for paired samples with α set at 0.05. All statistical analyses were performed using SPSS 11.0 software (SPSS, Inc., Chicago, IL, USA).

RESULTS

Figure 2 shows the average distribution of forehands, backhands and serves hit during each of the five tennis sessions for the full group.

On average, the duration of a tennis session was 87.0 ± 32.3 minutes in which players hit 291.1 ± 150.5 forehands, 198.1 ± 100.6 backhands, and 53.5 ± 33.7 serves. The average weekly number of forehand shots was significantly higher than that of backhand shots ($p<0.05$). Both average weekly number of forehand and

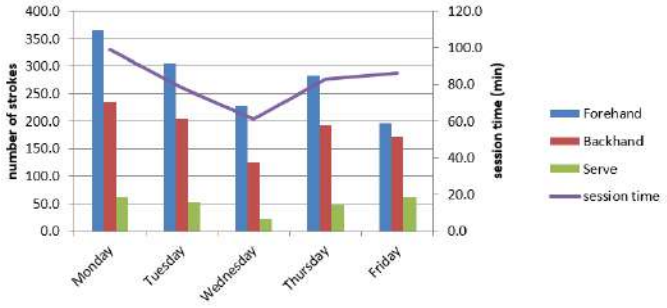

Figure 2. Relative average distribution of tennis shots over the training week.

backhand shots were both significantly higher than that of serves ($p<0.05$). There were no correlations between the age and the number of shots hit over the five training sessions.

DISCUSSION

The main finding is that there is a large disparity between the average numbers of serves, forehands and backhands hit in each session. The average forehand/backhand ratio in our study is 1.58 ± 0.64, which is higher than 1.24 ± 0.37 found for professional male players in competition (Reid et al, 2016). If the overemphasis on forehand shots seems to be a feature of the modern game, it should not be to the detriment of the improvement of backhand shots. Indeed, a study revealed that forehands are associated with a greater number of points won, while more points are lost with backhands played as the final shot (Cam et al., 2013). It could be argued that these results are unsurprising if one shot is played (or practiced) more than the other. Moreover, the average external load of training seems not to match the demands of competition which may be the goal in the pre-season. The hitting intensities (strokes/min) of groundstroke shots range from 4,3 ± 0,6 up to 6,8 ± 1,6 and are lower than those observed by Murphy et al. (2016) for training session (7 ± 1.0), simulated match play (10 ± 5.1) and tournament (14 ± 3.6). This difference could be due to longer rest time and/or a more technical/tactical focus.

Regarding the average number of serves, it was lower than the 120 serves proposed by Myers et al. (2016). Our results are similar to those of Perry et al. (2018) who observed that the number of serves during training session was significantly lower than that of competition for U15 male players (38.6 ± 24.2 vs 82.0 ± 24.8). Because tournament schedules for junior players are often condensed, the players may be required to play several matches in few days with a number of total serves that exceeds that of their current training week. This difference in volume of serves in competition compared to training suggests that coaches should better plan training serve loads (volume and intensity) to match competition to ensure a reduction in injury risk from inadequate exposure. Different recommendations may be implemented during training sessions to both improve serving efficiency and decrease the risk of overload shoulder injury. Firstly, the volume and the intensity of serves should be variable from session to session to allow tissue regeneration and should be planned with intervals simulating the real game (Myers et al, 2016). Secondly other training modalities, as motor imagery (Guillot et al, 2012) or physical training (Fernandez-Fernandez et al, 2013), have been shown to be effective in improving serving performance with junior players and could be combined with a decreased serve volume. Finally, it is also important to limit the imbalances in strength and range of motion between internal and external rotators by following a regular injury prevention program.

CONCLUSION

The inertial sensor is a practical tool allowing coaches to analyse relevant information about the number and rate of strokes. It can help them to better prescribe sessions according to the goals of the different training periods. Future longitudinal studies are warranted to establish references concerning the optimal number of strokes for performance improvement without increasing risk of injury.

REFERENCES

Cam, I., Turhan, B. & Onag, Z. (2013). The analysis of the last shots of the top-level tennis players in open tennis tournaments. Turkish Journal of Sport and Exercise 15(1), 54-57.

Gescheit, D.T., Cormack, S.J., Duffield, R., et al. (2017). Injury epidemiology of tennis players at the 2011-2016 Australian Open Grand Slam. Br J Sports Med, 51(17), 1289-1294.

Guillot, A., Genevois, C., Desliens, S., Saieb, S., & Rogowski, I. (2012). Motor imagery and 'placebo-racket effects' in tennis serve performance. Psychology of Sport and Exercise, 13, 533-540.

Murphy, A.P., Duffield, R., Kellett, A., & Reid, M. (2016). A comparison of the perceptual and technical demands of tennis training, simulated match play, and competitive tournaments. International Journal of Sports Physiology and Performance, 11(1), 40-47.

Myers, N.L., Sciascia, A.D., Kibler, W.B., & Uhl, T.L. (2016). Volume-based Interval Training Program for Elite Tennis Players. Sports Health, 8(6), 536-540.

Perri, T., Ian Norton, K.I., Bellenger, C.R., & Murphy, A.P. (2018) Training loads in typical junior-elite tennis training and competition: implications for transition periods in a high-performance pathway, International Journal of Performance Analysis in Sport, 18(2), 327-338.

Pluim, B.M., & Drew M.K. (2016). It's not the destination, it's the 'road to load' that matters: a tennis injury prevention perspective Br J Sports Med, 50(11), 641-642.

Reid, M., Cormack, S.J., Duffield, R., et al. (2018). Improving the reporting of tennis injuries: the use of time or workload data as the denominator. Br J Sports Med, 0:1-2.

Reid, M., Morgan, S., & Whiteside, D. (2016). Matchplay characteristics of Grand Slam tennis: implications for training and conditioning. Journal of Sports Sciences, 34(19), 1-8.

Rogowski, I., Creveaux, T., Genevois, C., Klouche, S., Rahme, M., Hardy, P. (2016). Upper limb joint muscle/tendon injury and anthropometric adaptations in French competitive tennis players. Eur J Sport Sci, 16(4), 483-9.

Soligard, T., Schwellnus, M., Alonso, J.M. et al. (2016). How much is too much? (Part 1) International Olympic Committee consensus statement on load in sport and risk of injury. Br J Sports Med, 50(17), 1030-1041.

Whiteside, D., Cant, O., Connoly, M., & Reid, M. (2017). Monitoring Hitting Load in tennis using inertial sensors and machine learning. Int J Sports Physiol Perform, 12(9), 1212-1217.

Legal consequences of accidents during tennis lessons

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ABSTRACT

The physical concentration of high numbers players on a tennis court during group lessons is a personal liability and health/safety risk factor. The objective of this article is to discuss who is liable, and under what circumstances. Since our readers are from different nationalities, and without making exact reference to concrete legal rules, we will determine the basic principles on the matter which are transferable to any territory, and are included in the Project of a Common Reference Framework for the European Private Law (DCFR)[1] or in the European Law Principles of Liability[2].

Key words: accidents, responsibility, classes, damages

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ORGANIZATION, DIRECTION AND EXECUTION OF PROGRAMMES FOR TEACHING TENNIS

These three functions, together with the evaluation of the results, are the essence of a programme for tennis teaching[3]. They can be carried out by one or several people. The first case may be self-employed coach "running" a tennis school in a facility, organizing groups, teaching lessons, getting payment from his or her students, and paying the owner for the use of the courts. In the second case, a sports institution or an external company of sport services organizes the tennis schools, appointing a director and contracting professionals in charge of delivering classes.

Who can be held liable if damages occur due to an accident? In order to answer this question, we have to start from the legal relationship that stems from tennis lessons.

LEGAL NATURE OF TENNIS LESSONS

Tennis teaching, as a paid activity, is framed within service contracts. The DCFR, Draft Common Frame of Reference, defines this as a contract in which the service provider gives a service to the client, in exchange for a fee[4]. The service provider is the club, the external company or the coach, while the clients are the players or their relatives. The obligation of the provider is not result oriented, since, as a random activity, no one is committed to a concrete and precise sport target, such as winning Wimbledon or being #1 in the ATP ranking. Their obligation has to do with the means, that is, to provide a quality service, complying with the teaching methods and techniques in order to assure satisfaction, a learning process, or improving the level of the students, taking into account their ages, technical aptitudes and concerns.

DIFFERENCE BETWEEN CONTRACTUAL AND EXTRA CONTRACTUAL LIABILITY

The coach must act with utmost care, so as not to fail student´s expectations, and minimize the risk of accidents during lessons. This is the difference between contractual and extra contractual liability.

[1]Draft Common Frame of Reference, Principles, Definitions and Model Rules of European Private Law, Accessible at https://www.degruyter.com/view/product/41776.

[2]Principles of European Tort Law, European Group on Tort Law, Accessible at http://civil.udg.edu/php/biblioteca/items/298/PETLSpanish.pdf.

[3]On the subject, vid. VALIÑO ARCOS, A. (2017). Gerentes y directores de organizaciones deportivas dedicadas al tenis. Accessible at: E-Coach - Electronic Magazine of the Tennis Coach, 29 (9), 48-56.

[4]Art. IV.C.-1:101 del DCFR.

The first one has to do with non-compliance or deficient, or late compliance when the coach is rendering the service: absence, unpunctuality, laziness or open incompetence in teaching classes are behaviours that fit this category[5].

The second starts when damages occur during classes due to an external cause to the service rendered, for example, the poor condition of the court.

These two types of liability are enforceable through different legal means, even though the frontiers between one type and the other are not always clear; it is not surprising they overlap, having in most legal systems different periods of limitation[6].

COMPENSATORY DAMAGES AND NON-COMPENSATORY DAMAGES

It is important to stress the fact that not all damages imply responsibility. Sport entails certain risks, whose consequences must be accepted by the athlete, like minor injuries resulting from a fall, or accidental contact with another athlete. It all depends on who suffered the accident, and how much they know about the conditions of the court or the conditions of the sport practice.

[5]Art. IV.C.-2:105(1) del DCFR: "the service provider must perform the service with the care and skill which a reasonable service provider would exercise under the circunstances". Para un estándar del entrenador ideal, vid. CRESPO CELDA, M. (1994). Cómo ser un buen entrenador de tenis. En: Workshop Regional de la ITF para Entrenadores. Montevideo, accesible en http://www.miguelcrespo.net/articulos/Crespo.%20Como%20ser%20un%20buen%20entrenador%20de%20tenis.%20Uruguay,%201994.pdf.

[6]En el Código Civil español, la acción para exigir responsabilidad contractual prescribe a los cinco años, mientras que la acción para exigir responsabilidad extracontractual prescribe en el plazo de un año.

Poor condition of the court

The Courts in Spain have dismissed claims for accidental falls which very unlikely were due to the court condition, for example, due to tripping on clay courts because of a very slight elevation of the lines with respect to the surface, causing minor injuries[7]. But, if the cause of an extraordinary damage, like a serious injury or even death, is the clear result of a lack of court maintenance, the lesson organizer/owner of the facilities could have an extra contractual responsibility for causing the accident. For instance, if the poor condition of the surface produces the fall of a player, who hits the floor with his/her head and dies, the possibility of receiving compensation is considered insofar as there has been a damage that is economically compensable and imputable due to a lack of conservation of the tennis court, and a link can be established between this poor maintenance and the extraordinary damage produced, which is attributable to the owner of the facilities where classes take place[8].

Impracticability of the court due to weather conditions

When risk depends on the real impracticability of the court, due to heavy rain, who the person who suffered the accident is will be relevant for the estimation of the claim. Thus, expert coaches and athletes can be expected to have a certain knowledge about the condition of the court; however, it is not so with beginner players. Therefore, injuries due to accidental falls fall into the first category of the theory of the assumption of risk by the injured[9], while in the second category, there is a possibility to claim against the organizer of the classes or the facilities owner who has unnecessarily put the athletes at risk.

Risk due to extreme weather conditions

During the summer and in areas where temperatures are higher than 30 degrees celcius, the risk of accident increases significantly. Thus, a cautious coach must plan classes during hours to avoid personal damages. This idea is also valid for competition environments, so, organizers must avoid matches during hours of maximum heat or humidity[10].

The risk due to recklessness of the coach when rendering the service

Inappropriate material or excess number of students are a potential source of damage attributable to the coach. The use of balls, which are not appropriate for the level of the players, makes control difficult and increases the level of risk. The same thing happens with accidental crashes or impact between players, for instance while waiting in line or retrieving balls. These accidents may imply the responsibility of the lesson organizer(s), unless they take all the preventive measures to avoid them. This happened in a club in Murcia, Spain: a child had to undergo several surgeries in one eye after being hit by the racket of a playmate. The sentence considered the Tennis Club was responsible: a teacher, contracted by the institution was teaching the class in which this unfortunate event occurred, while the kids were retrieving balls, and using their rackets as if they were trays. The criterion for the sentence was the fault or negligence due to the lack of surveillance or control of the kids[11].

BUDGET FOR DAMAGES

Taking responsibility for the damages occurred during classes depends on the diligence of the organizer. Keeping the court in good condition, using balls of different colours for students who cannot control the ball very well, and not teaching large groups are measures that contribute to preventing, or at least, reducing risk considerably. The same can be said about the selection and surveillance of the coaches that have been contracted; the organizer must make sure the methodology and exercises used do not put the safety and health of students at risk[12].

If all these measures are considered, and in spite of this, damages still occur, unless they are extraordinary, they must be assumed by the athlete, because even though sport benefits the physical and mental health of athletes, they are never exempt of certain risks[13].

In racket sports, due to the position of the players, impact is not frequent. But risk increases in doubles matches and also particularly in group lessons, due to the concentration of students in a small space. In the first category of a singles or even doubles match, the risk theory gets full application. In the second, due to the paid nature of the service in which classes occur, it gives rise to a presumption of the organizer´s guilt, which may even have contributed to the intensification of risk, for instance, when accepting a greater number of students than is reasonable, or using worn out balls that increase the risk level considerably[14].

THE IMPORTANCE OF HAVING LIABILITY INSURANCE

Although it is already a regulated requirement in many legal systems[15], tennis coaches, highly exposed to the inherent risks of group lessons, must have a liability insurance policy. So, by means of paying an insurance premium, it will be the insurance company that will have to pay the compensation in case of accidental damages during lessons.

[7]For a similar case, vid. Sentence of the Audiencia Provincial de Málaga (ection 4ª) nº 896/2004, December 9th.

[8]A real case in Spain on a paddle court was resolved by a Sentence of the Audiencia Provincial de Valencia (Section 6ª) nº 469/2012, July 23rd, the athletic club was sentenced for the accidental death of an athlete due to the poor condition of the court surface which produced the fall with this fatal outcome.

[9]The Sentence of the Audiencia Provincial of Cádiz, January 4th, 1999, quoted by CASADO ANDRÉS, B. (2017). El tenis: ¿un deporte de riesgo? In: Diario La Ley, nº 9023, Sección Tribuna, 5(13), in connection with tennis coach injury.

[10]Art. 8.5.h) of the Regulations of Sport Justice of the Tennis Federation of the Valence Community typify as a serious offence of arbitration bodies "to schedule matches between 2 and 5 pm when the forecasted temperature will be over 35 degrees, according to the National Meteorological Agency, and the participants of the tournament or competition are under age, no way will they be scheduled after 9pm, nor will matches be authorized if scheduled beforehand, but due to a delay have not started before 10 pm. These matches should be put off and start not before 10 the next day".

[11]Sentence of the Audiencia Provincial of Murcia (Section 4ª) nº 458/2013, July 18th.

[12]Article 6:102 (responsibility for auxiliaries) of the European Legal Principles of civil responsibility states that "a person is liable for the damages caused by their auxiliaries in the practice of the their functions, as long as they have breached the standard of behaviour required".

[13]The theory of the assumption of risk was formulated for the first time in Spain in the Sentence of the Supreme Court, Civil Tribunal, October 22nd. 1992 after an accident during a ball match, during which a player lost an eye after receiving an accidental ball in his eye from a playmate, who was not considered liable after hitting a ball during the match, there was no guilt or blame, since it was just part of the regular sport practice.

[14]On the risk of sport, vid. VERDERA SERVER, R. (2003). Una aproximación a los riesgos del deporte. In: InDret. Revista para el análisis del Derecho, 1, 1-19, in http://www.indret.com/pdf/116_es.pdf. El tenis: ¿un deporte de riesgo? In: Diario La Ley, nº 9023, Sección Tribuna, 3(13).

[15]In Spain, it is present in almost all autonomous sport laws, and its infringement is classified as a punishable administrative offense with strong economic fines.

CONCLUSION

Teaching a great number of players in a small area entails additional risks that force the tennis coach to be extremely cautious as to the number of students in the same lesson, the material selected in case students´ skills are limited, and the hours during the day in which classes are scheduled in case the weather conditions are extreme. Although damages are not frequent in tennis lessons, clubs and coaches are advised to sign a liability insurance policy, so as to diminish the possibilities of having an economic imbalance in case they receive legal claims for damages during the tennis lessons they organize.

REFERENCES

Casado Andrés, B. (2017). El tenis: ¿un deporte de riesgo? En: Diario La Ley, nº 9023, Sección Tribuna, 1-13.

Crespo Celda, M. (1994). Cómo ser un buen entrenador de tenis. En: Workshop Regional de la ITF para Entrenadores. Montevideo, accesible en http://www.miguelcrespo.net/articulos/Crespo.%20Como%20ser%20un%20buen%20entrenador%20de%20tenis.%20Uruguay,%201994.pdf.

Valiño Arcos, A. (2017). Gerentes y directores de organizaciones deportivas dedicadas al tenis. En: E-Coach - Electronic magazine of the Tennis Coach, 29 (9), 40-57.

Verdera Server, R. (2003). Una aproximación a los riesgos del deporte. En: InDret. Revista para el análisis del Derecho, 1, 1-19, accesible en http://www.indret.com/pdf/116_es.pdf.

RECOMMENDED ITF TENNIS ICOACH CONTENT (CLICK BELOW)

Practical tips to manage malaligned players

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ABSTRACT

Tennis, due to its one-handed nature and the prevalence of certain shots such as the forehand and serve within it, lends itself to malalignments which can lead to tension, weakness, loss of power / strength, and even injury. This article introduces and discusses malalignment syndrome, and provides exercises for evaluation and treatment.

Key words: Malalignment syndrome, injury, physiotherapy, prevention

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INTRODUCTION

Swinging sports like tennis are asymmetrical in nature and can cause torque on the body's muscle and fascial systems, leading to an imbalance in length and strength of muscles and tendons. With an estimated 75% of the strokes in the modern game being forehand or service motion, the pelvic ring can become distorted or malaligned unless steps are taken to correct it. Malalignment syndrome remains one of the frontiers in medicine, unrecognized as a primary or contributing cause in over 50% of those with back and limb pain (Schamberger 2002, 2013).

Few competitive tennis players complete an entire season without experiencing some form of injury. In a healthy body, the pelvis can withstand repeated gravitational, rotational and diagonal deceleration forces along the length of the kinetic chain. But, if the pelvic ring is distorted for a length of time your body's ability to adapt is overwhelmed; this can cause asymmetries of muscle tension, strength, weight-bearing and joint ranges of motion leading to inferior performance, dysfunction, pain and ultimately injury.

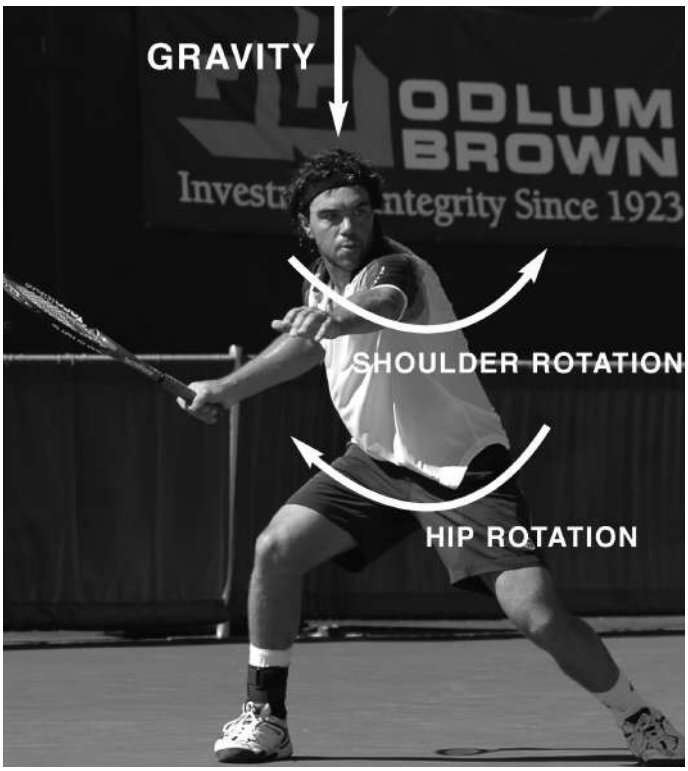

Figure 1. Gravity rotation- Player Paul Baccanello - Photo Courtesy Jon Benjamin Photography.

An average match duration for men was found to be 146 ± 58.2 minutes while women's matches were shorter at an average of 89 ± 24.6 minutes (Morante & Brotherhood, 2005). The overall average point duration was calculated as 6.9 ± 3.1 seconds (Morante & Brotherhood 2005; O'Donoghue & Ingram 2001; Smekal et al, 2001). It is common for players to perform more than 500 directional changes during a single match or practice (Roetart & Kovacs, 2011), with more than 70% of movements being side-to-side, less than 20% a forward linear direction and less than 8% of movements in a backward linear direction (Weber et al, 2007). Individuals designing training programs for tennis players must keep these time frames, directions of movement and additional needs in mind when designing programs for the different physical components (Petersen & Nittinger 2013).

WHAT DOES MALALIGNMENT FEEL LIKE?

Does the player's body ever seem like it is crooked or twisted? Do they feel as though one foot is scuffing the ground more than the other foot? If feelings such as these are accompanied by pain or stiffness in the lower back, groin, or into the buttocks and down the kinetic chain, this could be due to malalignment syndrome. Although there are many areas of abnormal biomechanics, a common one - namely, malalignment of the pelvis, spine, and extremities - is often overlooked.

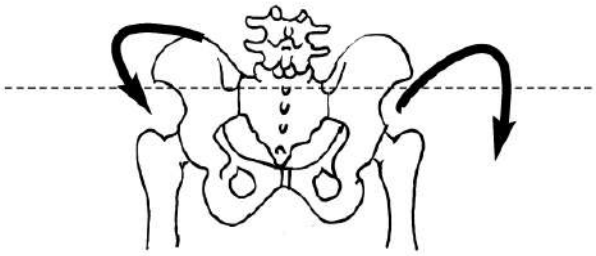

Figure 2: Diagram of the pelvis.

Clinically malalignment syndrome is characterized by the following features
• Distortion of the pelvic ring
• Associated changes in the alignment of the axial and appendicular skeleton, so there appears to be a reorientation of the body from head to foot
• Compensatory changes in the soft tissue structures
• Occasionally, also visceral involvement, affecting the genitourinary, gastrointestinal and reproductive systems.

Table 1: Clinical features of malalignment syndrome (adapted from Schamberger, 2002 & 2013).

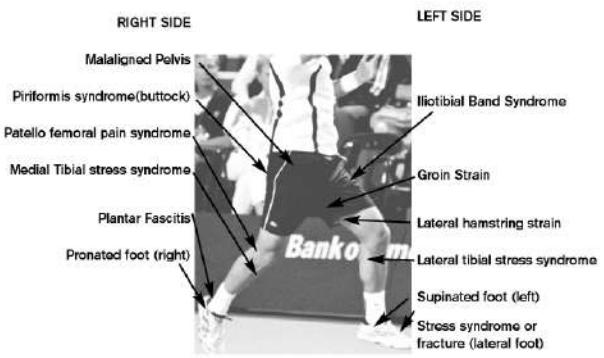

Figure 3. 3 common malalignment injuries .

COMMON RISK FACTORS FOR MALALIGNMENT (ADAPTED FROM PETERSEN & SCHAMBERGER, 2013):

- Playing asymmetrical sports that require a lunging and/or rotation action such as tennis and other swinging racquet sports such as golf, baseball, hockey or cricket
- Repeatedly landing from a jump with one leg first
- Training on a camber (sloped surface, like the side of the road)
- Inadequate inner core unit stability
- Inadequate muscle sling control, strength and endurance
- Inadequate hip flexibility, especially hip flexors
- Driving for long distances (reaching for the gas pedal)

The complete 'malalignment syndrome' is normally seen in association with two presentations of pelvic malalignment, namely 'rotational malalignment' and 'upslip'. Rotational malalignment is by far the most common, occurring in isolation in 80-85% of those with pelvic malalignment; an upslip occurs in isolation in about 5-10%, and the combination of an upslip with a rotational malalignment in another 5-10% (Schamberger, 2002, 2013). There are simple alignment checks that the players and coaches can do to help decide if they are rotationally malaligned. These are effective tools to help find the root of the problem but are not meant to be looked at in isolation and should be dealt with by an appropriately trained physiotherapist.

Quick Functional Test -Repeated Single Leg ¼ Squat (adapted after Petersen, 2006)

Purpose: To identify the presence of dysfunction in the dynamic stability and balance of the lower core and legs.

- Stand on one leg on flat ground or a step, keep heel flat
- Raise opposite leg up so knee is at 90 degrees and keep foot dorsiflexed
- Raise arms out in front to horizontal and clasp hands together
- Keep eyes facing straight forward and shoulders square and do a single leg squat (to 30-40 degrees) up and down three consecutive times, then repeat this routine on the opposite leg

Figure 4. Repeated'single leg 1/4 squat.

Pass Criteria:

You can complete the motion without the presence of pain, abnormal tracking and movement, unusual stiffness or tension.

- No Trendelenburg on stance leg (dipping of the hip on the opposite to stance leg)
- Ability to keep knees tracking over the toes
- Ankle stays stable
- Front foot stays flat on ground
- Hip does not thrust forward
- Low back does not hyperextend

Fail: You are NOT able to complete the motion and hold the position without the presence of pain, abnormal tracking and movement, unusual stiffness or tension.

RECOGNIZING MALALIGNMENT USING ANATOMICAL LANDMARKS

Quick leg length check: supine lying

Have the player lie on their back, then bend both knees - keeping feet flat on the surface - and lift buttocks off the surface. Now pull both legs out straight. Check functional leg length at the medial malleolus. It is best to take a bird's eye view from above to see if the malleoli line up. With the most common presentation (right anterior, left posterior torsional displacement) the right leg will most often look longer than the left.

Figure 5. Leg-length check supine lying.

Quick pelvic bone check: supine lying

Place one finger on each of the bony protuberances known as the anterior superior iliac spine (ASIS). Make sure to landmark on the same point of each side. Look from directly above and decide if the ASISs are aligned in relation to each other or if one appears to be displaced upward or more forward than the other. Most commonly, with a 'right innominate anterior, left posterior' rotational displacement, the right ASIS will appear displaced downward and forward relative to the left; the pubic bones will be similarly displaced relative to each other at the symphysis pubis.

Figure 6. Pelvic bone ASIS check supine lying.

RULES FOR MAINTAINING ALIGNMENT:

Rule 1. Re-Alignment Routine (6 x 6 corrective exercises)

Rule 2. Regain and Maintain Muscle Length

Rule 3. Release the Soft Tissue

Rule 4. Re-Connect the Core

Rule 1. Re-alignment routine (6 x 6 corrective exercises)

Once a rotational malalignment has been identified and corrected the players can effectively maintain it in neutral with the following simple 6 x 6 home program carried out when the player feels out of alignment after playing, training and travelling. Do the following simple muscle energy technique as demonstrated on the right and left side holding for 6 seconds and repeating 6 times using approximately 30% power.

Figure 7. Corrective exercises right.

Figure 8. Corrective exercises left.

Rule 2. Regain and maintain muscle length

Simple symmetrical stretches for the low back and hips will help keep the player properly aligned. The state of tension in muscle groups should be assessed daily and new stretches added to ensure that a good length-tension balance is maintained in all muscle groups. Static stretches prior to exercise did not prevent lower extremity overuse injuries, but additional static stretches after training and before bed resulted in 50% fewer injuries occurring (Hartig & Henderson, 1999). Static stretches should be held for 30 seconds to the point of tension -NOT pain- and repeated 3 times.

Figure 9. Paraspinal stretch.

Figure 10. Gluteal stretch.

Figure 11: hip flexor stretch.

Rule 3. Release the soft tissue

If an area is especially tight or sensitive, use the ball as a trigger point release tool and stay on the sore spot for up to two minutes or more (Petersen & Sirdevan, 2006). Post-training soft tissue release is often better than just advice and is a positive step towards relieving symptoms of trigger points, delayed onset muscle soreness and muscle tension.

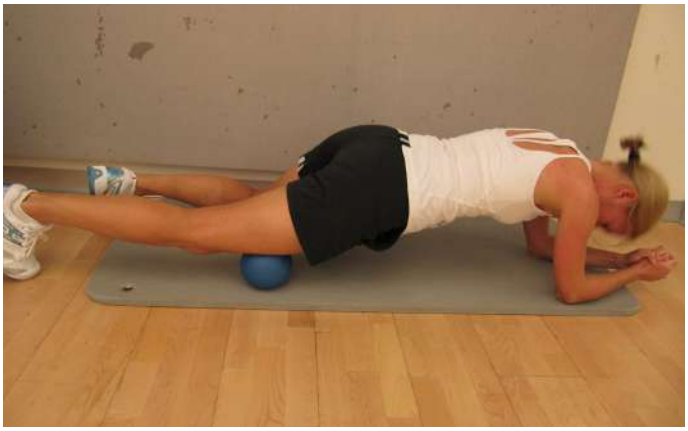

Figure 12: ball release quadriceps.

Figure 13: ball release gluteals.

Figure 14: ball release adductors.

Rule 4. Re-Connect the Core

All athletes need a strong core to maintain balance, stability and alignment as they generate power. The abdominal musculature plays a significant role in trunk and core stability providing a mechanical link between the lower and upper limbs (Maquirrian et al, 2007). When moving in multi-planar directions, the core muscles and hip stabilizers work functionally to control movement. Upper and lower core strength provides a stable 3-dimensional power platform for the extremities to work off during multi-planar, joint and muscle activities that involve acceleration and deceleration forces (Petersen, 2005). Research has demonstrated that lower extremity position influences scapular muscle recruitment and muscle balance ratios in closed kinetic chain exercises (Maenhout et al, 2010) and in open kinetic chain exercises (De Mey et al, 2012). Therefore, reconnecting the core with simple exercises that either close or partially close the kinetic chain for both upper and lower extremities helps increase the core stability and ensure optimal recruitment, timing, performance and injury prevention.

Figure 15a and 15b. Quadruped bridge (top) to arm & leg raises (bottom).

Training Tip:

- Reps: 5-10, Sets: 1-3, Tempo: 1-1-1 or 1-2-1

- Start in a quadruped bridge position on hands & knees
- Switch on your core muscles
- Now raise up either one arm, one leg or opposite arm & legs & hold for 2-4 seconds
- Repeat on opposite side
- Do 2-3 sets of 5-10-15 repetitions on each side


Figure 16a and 16b. Split squat & shoulder diagonal pull - start (left) and end (right).

Training Tip:

- Start in a split squat position in front of a physio ball with right lower leg on ball
- Hold a stretch band in right hand with the other end firmly anchored
- Switch on your core muscles
- Do a split squat down pulling stretch band up into a diagonal pattern
- Do 2-3 sets of 10-15 repetitions on both sides.


Figure 17a and 17b. Posterior oblique sling drill.

Training Tips:

- Stand facing a wall holding two ends of a stretch band against a wall & a light stretch band around ankles
- Switch on your core muscles
- Do a shoulder retraction with one arm while doing a hip extension on the opposite side
- Do 2-3 sets of 10-15 repetitions on both sides.


Figure 18a and 18b. Anterior oblique sling drill-dynamic hip hike .

Training Tips:

- Start in a split squat position with a physio ball at your back
- Switch on your core muscles
- Drive back knee up to opposite elbow & back down slowly to start position
- Do 2 -3 sets 10-15 repetitions on both sides.

CONCLUSION

Our intention with this article was to create an awareness of the malalignment syndrome and the type of problems these can create for tennis players. If there is inadequate development of the stable platforms of the upper core and arms and lower core and legs, the athletes may be at risk of injury (Petersen & Nittinger, 2013). Over time players can learn to recognize the subtle changes that may occur upon recurrence of malalignment, such as a change in walking or running gait, changes in ease of multi-directional movement, or abnormal tension in the tissues. Early recognition of malalignment allows for earlier treatment, correction, and ideally an avoidance of the discomfort and associated problems. Malalignment puts athletes at increased risk of injury and once injured they are likely to take longer to recover, or may even fail to do so at all (Schamberger 2002; 2013). Players who are not able to maintain alignment will have difficulty progressing in the technical and physical training aspects and may have to decrease volume and intensity of training and playing. In some extreme cases they may have to abandon the sport altogether.

REFERENCES

De Mey K, Danneels L, Cagnie B, Lotte VD, Johan F, Cools AM. (2012b) Kinetic chain influences on upper and lower trapezius muscle activation during eight variations of a scapular retraction exercise in overhead athletes. J Sci Med Sport. May 31

Hartig DE, Henderson JM. (1999) Increasing hamstring flexibility decreases lower extremity injuries in military basic trainees. Am J Sports Med.;27(2): 173-176.

Maenhout A, Van Praet K, Pizzi L, VanHerzeele M, Cools A. (2009) Electromyographic analysis of knee push-ups plus variations: what's the influence of the kinetic chain on scapular muscle activity? Br J Sports med, Published Online First:14 September 2009 doi:10.1136/bjsm.2009.062810

Maquirriain J, Ghisi JP, Kokalj, AM. (2007) Rectus abdominus (??abdominis??) muscle strains in tennis players. Br. J Sports Med: 41:842-848.

Morante SM, Brotherhood JR. Match characteristics of professional singles tennis. Med Sci Tennis 2005;10(3):12-3.

O'Donoghue P, Ingram B. A notational analysis of elite tennis strategy. J Sport Sci 2001; 19:107-15.

Petersen C. (2005) Fit to play: practical tips for faster recovery (part 1). J Medicine & Science in Tennis; (10) 1.

Petersen C, (2006) Chapter 24 Self-Assessment and Functional Testing in C. Petersen and N. Nittinger. Fit to Play-Tennis™, High Performance Training Tips. Racquet Tech Publishing, Vista, CA, USA. Pages:325-328.

Petersen C. & Sirdevan M. (2006) Soft Tissue Release (Muscle & Fasciae) in C. Petersen and N. Nittinger. Fit to Play-Tennis™, High Performance Training Tips. Racquet Tech Publishing, Vista, CA, USA. Page:380.

Petersen C. & Nittinger N. (2013) Connecting the Core-Exercises to Enhance Stability. J. Medicine & Science in Tennis; Feb: Vol:18, No.1

Petersen C, & Schamberger W. (2013) Managing Malalignment Syndrome: A Clinical Perspective J Medicine & Science in Tennis; (18) 3.

Roetert EP, Kovacs MS. (2011) Tennis Anatomy-Your illustrated guide for tennis strength, speed, power and agility. Human Kinetics, Champaign, Illinois page-1

Schamberger W. (2002) The malalignment syndrome: Implications for medicine and sport. Churchill Livingstone.

Schamberger W. (2013) The Malalignment Syndrome: Diagnosing and treating a common cause of acute and chronic pelvic, limb and back pain. Churchill Livingstone.

Smekal G, von Duvillard SP, Rihacek C, Pokan R, Hofmann P, Baron R, Tschan H, Bachl N. A physiological profile of tennis match play. Med Sci Sports Exerc 2001; 33:999-1005.

Weber K, Pieper S, Exler T. (2007). "Characteristics and significance of running speed at the Australian Open 2006 for training and injury prevention." Medicine and Science in Tennis 12(1): 14-17.

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Video analysis and video feedback in tennis: Using mobile devices to benefit digital teaching and learning

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ABSTRACT

Video analysis and feedback, especially through the use of mobile learning devices (MLDs), has established itself as a principal coaching instrument in the coaching toolkit. It provides an excellent source of information to learners about their movement, and when used effectively can speed up motor learning. This article provides recommendations on the use of video analysis and feedback based on research on the field of skill acquisition. It also provides a breakdown on the applications and features available in the market.

Key words: digital education, motor learning, movement technique, video analysis

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INTRODUCTION

Mobile learning devices (MLDs) like tablets or smartphones are used ever more frequently in daily life as well as in tennis practice. Video analyses and video feedback are only two of the possible application, and are highly effective didactic instruments in controlling movements in general as well as tennis technique performance in particular (Mohnsen, 2010). The primary goal of video analyses within motor learning processes is to speed the process up, optimize it, as well as make it more effective (Olivier, Rockmann & Krause, 2013). There are various opportunities to apply video analysis in tennis practice, depending on the availability of resources and technical devices (e.g. smartphone, tablet). The two most important opportunities for tennis coaches are video analyses outside of the practice court (record video on court ▪ analyse off court) and direct video feedback on court (recording video on court ▪ immediate feedback for the players). In general the use of video analyses is establishing itself more and more as a feedback method besides traditional ways like verbal feedback or tactile corrections (Mohnsen, 2010). Within the feedback loop, video analyses can be a big help in the target-performance comparison (Olivier, Rockmann & Krause, 2013). Coaches who use video analysis, including video feedback for the player, (e.g. player sees oneself on the video) have to bear in mind that motor learning (e.g. technique learning) is based on implicit and explicit learning processes and that seeing oneself perform excludes implicit learning.

IMPORTANT FACTORS FOR AN EFFICIENT USE

The efficiency of using video feedback as well as video analyses is determined by several factors.

The perspective of the video footage should guarantee that either the whole movement or a specific part of the movement (to be analysed) can be observed. In addition to that, possible sources of errors should be recognizable. Most of the tennis techniques (e.g. serve, forehand or backhand) should be captured preferably either from the side (see picture 1) or the back (camera is behind the court). Videos from the back show the rotation effort of the player, while watching the movement. To capture the whole movement, the camera has to be a sufficient distance away from the player.

The content of feedback is crucial for the learning process of the player. Mainly negative feedback in the training process is beneficial for short-term error correction but is disadvantageously for long-term learning and automation. In contrast, mainly positive feedback is beneficial for the long-term motor learning of the player amongst other things through the secretion of the "happiness hormone" dopamine (Glimcher, 2011).

Figure 1. Possible camera perspective to capture the forehand stroke.

Furthermore, research has shown that timing and frequency of feedback have a noticeable effect on the learning process (Marschall, Bund & Wiemeyer, 2007). Similar to the use of negative feedback, giving a lot of feedback (high frequency) seems to be more beneficial in the short-term than giving less feedback (e.g. 33% of the feedback). However, from a long-term perspective, less feedback is more effective since the players learn to solve problems by themselves better and are able to keep the amount of errors low in long-term, even though it may take them longer in the beginning.

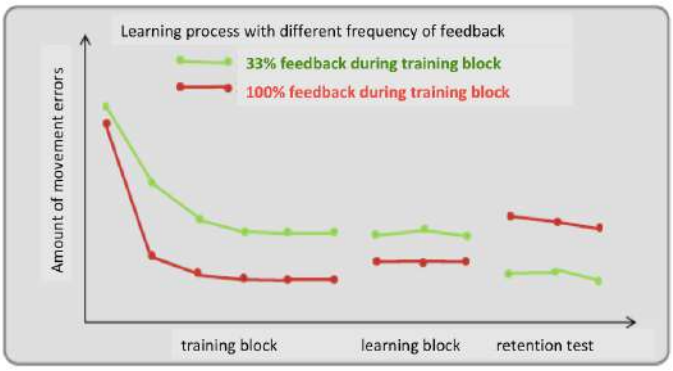

Figure 2. Amount of movement errors over time as a result of either high or low feedback frequency (Marschall, Bund & Wiemeyer, 2007).

Last but not least the timing of feedback is crucial (Olivier, Rockmann & Krause, 2013). When giving (visual/video) feedback, coaches have to keep in mind that the player needs some time to process their movement. At the same time the information about the own movement fades after a certain time. Research has shown that the best time window for coach feedback is between 5 and 30 seconds after the movement. Of equal importance is the timing between the feedback and the next movement of the player. The player again needs time to process the coach's feedback (min. 5 seconds) and needs the possibility to implement it in one's movement after a maximum of 120 seconds.

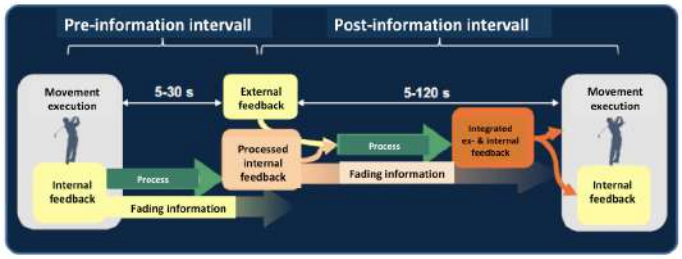

Figure 3. Timing of feedback (Olivier, Rockmann & Krause, 2013).

PRACTICAL APPLICATION

Coaches should never use MLDs for e.g. video analyses and/or feedback without a purpose or objective. The objective of the practice session should always be the main focus. Video analyses and/or video feedback are highly effective additional tools when used in the right way. Within a practice session coaches should always keep the time in mind. The use of MLD should not consume too much practice time but should rather be embedded in the training (Born et al., 2017). Longer analysis should be done off court immediately before or after a training session.

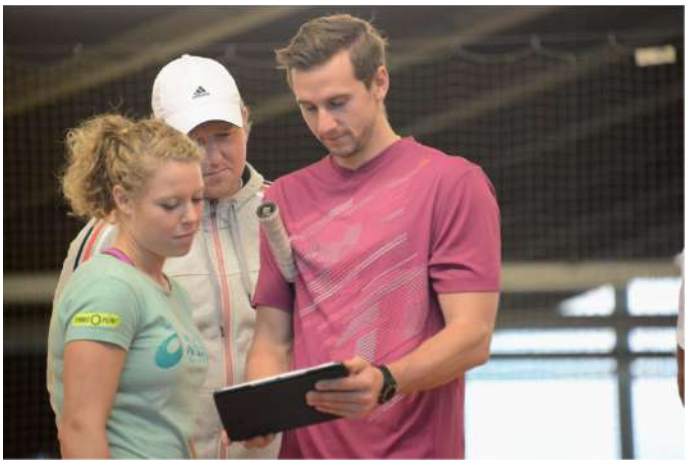

Figure 4. Coach and players gathering around a tablet for video analysis.

There are several applications available for tablets and smartphones that can support and enhance video analyses and feedback like "Coaches Eye" or "Hudl Technique". Both have a very good slow-motion function and coaches can draw, point out and highlight whatever they want by using several features of the applications. In addition, videos can be compared in a split-screen and/or overlay mode. Of all available applications the "Tennis Australia Technique App" (TATA) stands out as it has all of the above features and a variety of prefabricated videos for all age groups. Another very helpful feature in the TATA is the "Preview Delay". The coach may set a delay of 5 to 200 seconds. This feature allows the players to see their movement techniques immediately after having performed (e.g. player hits 6 forehands, runs to the tablet/smartphone and watches his forehands before playing another set of forehands).

Figure 5. Possible set up of the MLD behind the serving players.

CONCLUSION

The use of MLDs and video analysis is widespread, and the technology has established itself as a legitimate coaching tool. With only more and more use of the technology to be expected, and given the technological era that we live in, recommendations and guidelines for best practice should be established. Research has shown that very regular feedback can improve short-term performance but at the expense of long-term performance, whereas less regular feedback can improve performance long-term but at the expense of short-term performance; it is therefore up to coaches to keep this in mind when designing sessions and implementing video analysis and feedback. Video analysis should also take into account the goals of the session (there should be specific goals related to the video analysis), and the recording should show the key elements of the movement; thus, careful decisions need to be made about positioning the camera to the side/behind the player, the distance from the player, and other elements such as slow-motion and angles. Finally, there are a number of apps which enhance the experience such as 'Coaches Eye', 'Hudl Technique' or 'Tennis Australia Technique App' which offer split screens and overlays where technique can be compared to models, or annotated.

REFERENCES

Born et al. (2017), Embedding tennis-specific teaching videos into long-term educational concepts to improve movement learning and technique performances. Journal of Physical Education and Sport, 18 (1), Art 34, pp. 255 - 261, Deutscher Tennis Bund (2018): https://dtb.campus.tennisgate.com

Glimcher, P. W. (2011). Understanding dopamine and reinforcement learning: the dopamine reward prediction error hypothesis. Proceedings of the National Academy of Sciences, 108(Supplement 3), 15647-15654.

Marschall, F., Bund, A., & Wiemeyer, J. (2007). Does frequent augmented feedback really degrade learning? A meta-analysis. Bewegung und Training, 1, 75-86.

Mohnsen, B. S. (2010). Using Technology in Physical Education. 7th edition. Big Bear Lake, CA: Bonnie's Fitware.

Olivier, N., Rockmann, U., & Krause, D. (2013). Grundlagen der Bewegungswissenschaft und –lehre (2. Aufl.). Schorndorf: Hofmann.

Applied Integrated training on-court - specific case studies: Is it a methodology of the future?

Piotr Unierzyski, Mieczysław Bogusławski (POL) and Simon Wheatley (GBR)

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ABSTRACT

This paper discusses integrated coaching, an approach which stems from the theory that expert performance is predicated on the different game aspects (physical, psychological, technical and tactical) being used instinctively and together by the athlete, and that therefore the best way to create expert skills and performance is to train these aspects together. Practical examples and case studies are discussed.

Key words: integrated training, skill development, high-performance, holistic approach

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INTRODUCTION

The difference between the best tennis players and all others is discussed by many coaches, players and parents every day. The findings of certain studies (Schönborn 1984, 1994, Unierzyski 2011) define coordination-agility-speed, power, tactical-technical skills and mental features as the most important factors affecting (limiting) performance in tennis. Research also show that top players possess very high and aligned (without major gaps) level of all these factors already from the junior age.

Respecting these findings we like to look at successfulness in tennis from a slightly different perspective and draw up conclusions for practice. Looking a bit deeper and from a game point of few (using game based philosophy) the performance of very best players can be described as follows:

- They make high % decisions
- They hit the ball with "sufficient" power and a high degree of precision,
- They have a clearly defined game style with specific game patterns and favourite combinations of shots)
- They have "weapons" and super strengths
- They have great anticipation skills
- They are also able to improvise when necessary, make unorthodox decisions and execute unorthodox shots. In essence they have great adaptation skills
- They can play all 3 phases of play well, knowing when and how best to attack, rally, defend and counter attack

Developing Pierre Bourdieu's theory and the game based approach / tactical approach to coaching, we can explain that the real champions are able to instinctively connect tactical decisions, fluent technique and shot precision into one effective process in such a way that the reactions become automatic (Bourdieu, 1990; Crespo and Cooke, 1999). They are able to use all skills specific to the game (technical, physical, coordination and mental) together, at the same time, so they support each other. This skill, a combination of "Instinct" and "complex" skills, can be called a "super competency" or, from Bourdieu, "habitus".

There are also many statements that suggest that separation between mental, physical and tactical-technical training on a high performance level is a "more artificial than natural" (Crespo and Reid 2002). It is logical that if all these different skills have to work together, players and coaches should work on them integrated way as much as possible.

The question is: how to do it, how to teach it, and how best to make our players learn and develop?

Some coaches still work in a traditional way using methods which are not game specific, and are therefore in separation.

The classical example are:

- Physical training
  - Using long distance running – to create an "aerobic base" as major methods recommended for all levels of players.
  - Working on "general flexibility" or strength in a gym only.
- Mental preparation - working with players in their offices – away from a real match situation
- On court training - using closed drills as main tools to develop tactical and technical skills.

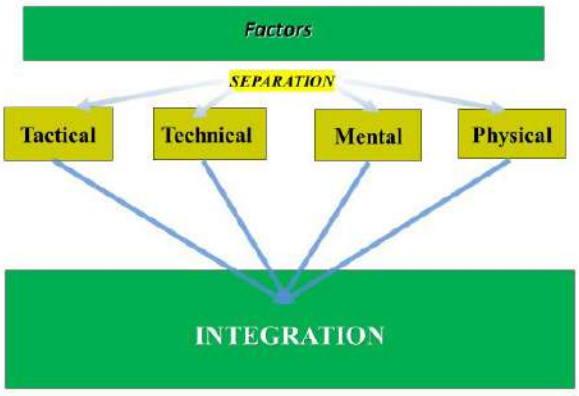

Figure 1. Different aspects of coaching tennis and integration for a holistic approach.

Using methods taken from track and field or personal training without respecting the "model" of the game leads to improve all-round fitness but usually will not help players much to improve on court performance. The same or better result can be reached through specific on court practice, and when experts/coaches from different fields (physical, mental, technical-tactical) work together on court.

Recently, we can observe that traditional, conservative teaching methods are being enriched by new ones. The efforts of leading coaches go into adapting training methods to the specific demands of the game more than before - the concept of integrated coaching is more and more accepted.

The final goal of such approach to coaching is to teach players to be able to connect tactical decisions, fluent technique and shot precision instinctively. To achieve this, modern coaches use more complex drills to consolidate and integrate mental and physical preparation with technical and tactical skills. Integrated training allows the knowledgeable coach to better choose cocktails of exercises individually designated to players' needs while maintaining specific energy regimes specific to the game.

The whole process starts from deep analysis of players performance in open situations. Match statistics might be a good point to start from, but ideally the reason for better or worse performance should be investigated deeper. For example, the reasons for better or worse performance may be:

- Mental (e.g. attitude, poor focus, emotional control, lack of motivation)
- Physical (core stability, power, strength, speed)
- Tactical (e.g. how to play game effectively against a lefty, patterns, decision making etc)
- Technical
  - Reception skills (Racket work, body work and footwork)
  - Sending skills (Racket work, body work and footwork)

So we start from a mental aspect, e.g. attitude, then tactical (what was your plan?), followed by physical and technical analysis. The Observation/Analysis & possible intervention should take into account all 4 performance factors. It is important to coach in collaboration with the athlete using e.g. leading questions to assess the player in a specific game situation. After this, the training goals and a training plan for a player have to be set up.

This might be best illustrated with real life examples of players who have raised the level of their game dramatically.

CASE STUDIES

Example Nº 1

An elite (WTA) player ranked below 400 with aspiration to get into top 100.

- Relatively small (no big weapons)
- Great attitude, work ethic
- To be more efficient she has to play more aggressive, base-line game so her opponents will run more and make more errors.
- Mentally and physically she has to be run more quickly and ready to play long rallies and matches.
- Must be able to play rallies with 8-10 shots or more (so above the average for women tennis) with higher speed and great precision and to "kill" opponents with a stamina, high tempo and precision of base-line game.
- Furthermore she has to able to play 4-5 matches in a week, on the same level, which means she has to be able to recover quickly.

So her tennis-specific speed and endurance (which are contrasting to each other) has to be better than her opponents, and movements more economical in order to out-rally and out-last her opponents, and finally be able to play the whole tournament, not just 1 or 2 matches.

According to traditional coaching methods, she should run a lot outside the court in order to develop aerobic base and use gym to make her body stronger and to work on her tactical and technical skills separately, in isolation from strength and conditioning.

Instead of this she has enriched her program and included one or two sets of integrated training per week into her regular on-court practise.

Example:

- Series of 6-8 blocks, each consists of one strength and conditioning exercise followed by tennis drill (closed or more open depending on the training goal):
- Practice directed to develop specific "tennis" speed and power :
- 6-10 seconds S&C exercise followed by tennis drill lasting 6 to 10 shots
- Practice directed to develop specific endurance/stamina
- 10-20 seconds exercise followed by tennis drill lasting 12 to 18 shots

Each block is followed by a break until phosphocreatine recovery.

Such practice must be followed by practice match.

The whole practise should be challenging but not extremely tiring (lactate acid between 6-8 millimoles)

- Allows to shape all parameters (factors limiting performance) in very short time
- Speeds up the training process
- Saves time

It is crucial to teach proper movements technique prior working on speed and desired dynamics.

Results of such practise:

Maximal Oxygen uptake (Vo2 max) raised up to 59 ml/kg/min – action and running speed also raised (without any conventional long distance or interval training).

Also, the player confessed:

"I was not able to win more than two matches in a row."

"I do not know that has happened to me but….I am much quicker, fitter, more dynamic and play much better."

"I have won 13 matches, many in 3 sets - after only two months of such practise."

"I have moved from 600 to 180 WTA in a very short time."

"The longest rally I have won lasted over 45 shots !!!) – my opponent "died" but I was able to play normally after this."

It does not mean that she never has to go the gym, but she doesn't have to use long-distance running to improve her endurance.

Example Nº 2

11 year old elite player (top 3 in Poland)

Training goals:

To develop basics of an all-round, offensive-game style; be able to make the opponent run using both grounds strokes; and, improve emotional control through learning on court routines

Example:

- Series of 6 blocks, each consists of one specific "tennis" speed/agility lasting 4-6 seconds, followed by tennis closed drill (Series of 4 - 5 -6 – 5 - 4 shots shorter crosses into targets performed with moderate intensity)
- This Followed by a break until full recovery (pulse rate below 90 beat per minute)
- The player has to show routine behaviour after each tennis drill.

This is followed by 20 minutes practice match (e.g. super tie break),

With example 2, it is important to note that young players before puberty are not ready to withstand high intensity anaerobic type exercises so all drills must be shorter based on the use of the phosphocreatine system as the main source of energy, i.e. drills are challenging but not extremely tiring. When doing drills ensure there is a high amount of challenge with a high amount of support.

CONCLUSION

One of the advantages of these practices (in both examples) is that the body, when working under challenging conditions, starts to perform in a more economical way. Observation shows that some unnecessary muscles "switch off" and only the most important ones, responsible for performing a given technique, works more fluently. As a result the technique and even shot precision increases together with specific speed/power and endurance.

The resultant behavioural change is also relatively long lasting, and it is also enough to perform this type of session once per week within a normal but structured training programme in order to elicit positive adaptations.

Integrated practice or training should be seen as a more effective way to transfer more general abilities (mental, physical and coordination) into tennis-specific skills. It also allows for greater consolidation and integration of all performance parameters/ factors (factors limiting performance) in a shorter amount of time and in a more complete way which arguably means that you'll create a more complete player. It speeds up the training process which means that players see results faster and may be happier about their progress as a result, and can also dedicate more time to other essential activities including injury prevention. This type of training might also be the next step in the player centred approach as it implies coaching in a more holistic way, putting the 'person' first, before the 'player'.

REFERENCES:

Bourdieu, P. (1990).The Logic of Practice. Cambridge Polity Press.

Cayer, L. (2017) Personal communication.

Crespo, M., and Cooke K. (1999). "The Tactical Approach to Coaching Tennis". ITF Coaches Review, Issue 19, 7-8.

Crespo, M., and Reid M. (2002). "Modern tactics: an introduction". ITF Coaching & Sport Science Review. 27, 2.

Kovacs, M. S. (2006) . Applied physiology of tennis performance (Br J Sports Med 2006;40:381–386. doi: 10.1136/ bjsm.2005.023309)

Unierzyski, P. (2011) Retrospective analysis of factors affecting performance in tennis. (in Polish). Monografia 397. AWF, Pozna

Schönborn, R. (1984). Leistungslimitierende und Leistungsbestimmende Faktoren. (In:) H. Gabler, B. Zein (eds), Talentsuche und Talent Förderung im Tennis. Beitraege vom 1. Symposium des Sportwissenschaftlichen Beirats des DTB 1983, Ahrensburg: Czwalina, 51-75.

Schönborn, R. (1993). Players' performance and development. ITF Coaches Review, 2, 1-2.

Schönborn, R. (1994). Modern Complex Training in Tennis. ITF Coaches Review, 4, 2-3.

Unierzyski, P. (1994). Relations Between Experience, Fitness, Morphological Factors and Performance Level with Reference to the Age. ITF Sport Science and Coaches Review, no. 3, 8.

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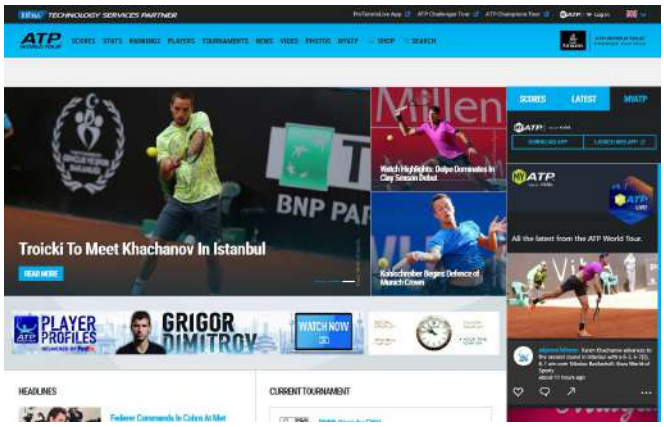

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