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

Welcome to Issue 57 of the ITF Coaching & Sport Science Review. The articles in this issue cover a variety of topics including female tennis player development, recovery strategies, momentum during match play, parents and tennis, the use of slower balls in wheelchair tennis, the double handed forehand and the impact of fatigue on serve velocity.

The programmes for the five 2012 Regional Coaches Conferences by BNP Paribas, commencing with the first in León (Mexico) in September, can all be found on the ITF coaching weblet as well as information on how to enroll. The ITF are pleased to announce that the keynote speakers include Beni Linder (SWZ), Paul Dent (GBR), Mike Barrell (GBR), David Sanz (ESP), Bernard Pestre (FRA), Gabriel Jaramillo (USA), Ivan Molina (COL), Louis Cayer (CAN), Mark Kovacs (USA) and Max de Vlyder (GB). In addition to this line up of speakers, both regional and national experts will also present at the Conferences.



Coaches who are interested in the Regional biannual Coaches Conference should approach their National Associations who will have received detailed information regarding the conferences. More information will be included in www.itftennis.com/coaching over the coming months.

The ITF Regional Coaches Conferences are conducted in partnership with Olympic Solidarity and the Regional Associations (ATF, COSAT, COTECC, and CAT) and the dates for the 2012 Regional Coaches Conferences are as follows:

19 - 22 September

7th Central American and Caribbean Regional Coaches Conference by BNP Paribas – Guanajuato, Mexico

20 - 23 September

8th Southern African Regional Coaches Conference by BNP Paribas – Sun City, South Africa

10 - 13 October

1st North African & West Asian Regional Coaches Conference by BNP Paribas - Hammamet, Tunisia

16 - 19 October

14th South American Regional Coaches Conference by BNP Paribas - Santa Cruz, Bolivia

7 - 10 November

16th Asian Regional Coaches Conference by BNP Paribas - Bangkok, Thailand

The European Coaches Symposium will also take place in Helsinki, Finland from 24th -28th October and coaches interested in attending should contact Tennis Europe.

As most of our readers will be aware, Tennis iCoach is the official coaching platform of the ITF. It is the world's premier coach education resource offering both practical coaching and tennis specific sport science content on technique, tactics, biomechanics, psychology, sports medicine and coaching methodology. Tennis iCoach is an invaluable learning tool for tennis parents, players and coaches and offers a unique opportunity to optimise coaching knowledge and enhance your players' development.

Tennis iCoach is the only way to experience cutting edge developments in the game, from the world's top coaches and coach education experts. For a promotional period only, membership is now available

for just \$30. If you would like to join Tennis iCoach, please visit www.tenniscoach.com to sign up. Coaches can also contact their National Association, to enquire if their country currently holds a National Payment Plan which can allow unlimited coaches from those nations.

At the recent ITF AGM a new programme Tennis Xpress was showcased and this active and dynamic coaching course for starter players centred on the use of the 25% slower green ball will be rolled out in 2013 as part of the Tennis Play and Stay campaign. More information on Tennis Xpress will be available in the next issue...

Finally, we do hope you will enjoy this issue of the ITF Coaching and Sport Science Review.



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Recommendations for coaches on enhancing parental involvement in tennis

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ABSTRACT

Parents play a critical role in the development of tennis players. Although numerous parents are involved in their child's tennis in appropriate ways, some parents are less appropriately involved. Inappropriate involvement can lead to a number of negative consequences for players, including competitive anxiety, fear of failure, and reduced perceptions of competence. As such, enhancing parents' positive involvement in tennis is important. This article will provide some recommendations to coaches regarding how they can help to enhance parents' involvement in tennis.

Key words: Parental involvement, Coaches, Player Development

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INTRODUCTION

"I never questioned my father's love. I just wish it were softer, with more listening and less rage. In fact, I sometimes wish my father loved me less. Maybe then he'd back off, let me make my own choices...having no choice, having no say about what I do or who I am, makes me crazy" (Andre Agassi, Open: An Autobiography, 2009, p.65).

When Andre Agassi released his autobiography he provided numerous candid and vivid descriptions of his father's intense and, at times, seemingly abusive involvement in his tennis development. In recounting these experiences, Agassi drew attention to the range of negative consequences he associated with his father's involvement. For example, Agassi described a lack of interest in playing tennis, reduced enjoyment for the sport, and a desire to dropout. These negative consequences, in addition to others such as heightened pre-competitive anxiety, lowered self-esteem and self-confidence, and fear of failure, have frequently emerged in the scientific literature as possible consequences of inappropriate parental involvement in sport (e.g., Gould, Lauer, Rolo, Jannes, & Pennisi, 2006; 2008; Gould, Tuffey, Udry, & Loehr, 1996; Leff & Hoyle, 1995; Sager & Lavallee, 2010).

Given the negative consequences that are associated with inappropriate parental involvement in sport, striving to enhance parental involvement seems to be an important endeavour (Gould et al., 2006; Knight, Boden, & Holt, 2010; Knight & Holt, 2011a; 2011b). Coaches can play a critical role in this endeavour (Knight & Holt, 2011a). Specifically, coaches can help to enhance parental involvement in (at least) three ways: (1) By understanding parents' experiences, (2) By supporting parents, and (3) By educating parents (Knight & Holt, 2011c). Overall, if coaches can work with parents to enhance their involvement in tennis, it will hopefully lead to children having more successful and enjoyable tennis experiences.

UNDERSTANDING PARENTS

Understanding parents' experiences of parenting children in tennis is important because supporting children's tennis involvement can be a difficult task for parents (Wolfenden & Holt, 2005). Further, the inappropriate behaviors that some parents display may occur as a result of the emotions or stressors they are encountering in the tennis environment (Gould et al., 2008; Knight, Holt, & Tamminen, 2009). By committing time to learning about parents' experiences, coaches may be able to develop a better understanding of why parents behave in the manner they do and help parents to change these behaviors (Knight & Holt, 2011c).

There are a number of ways coaches can learn about parents' experiences. For example, the most direct route is to engage parents in formal or informal conversations and ask parents about their

experiences. Hosting social evenings or parents meetings could also provide a forum for parents to share their experiences with other parents and coaches. This would not only help coaches to understand what parents are experiencing, but also allow parents to learn from other parents. There is also an increasing body of literature exploring parents' experiences of tennis, which coaches could use to guide their interactions with parents (Knight & Holt, 2011c).

For example, two studies exploring "tennis parent stressors" were conducted with the parents of tennis players in the United Kingdom (Harwood & Knight, 2009a; 2009b). These studies illustrated the numerous stressors parents encountered as a result of supporting their children's tennis involvement. Stressors were varied, but included among others, uncertainty regarding appropriate behaviors at tournaments, difficulties watching their children underperform, struggling to finance their children's tennis involvement, encountering issues at work due to the time commitment required to take their children to training, and general concerns regarding their children's development. By reading about and understanding these experiences coaches can help prepare parents for the potential challenges or demands that might arise as they support their children's tennis involvement (Harwood & Knight, 2009b). In turn, hopefully, reducing the negative behaviors that parents may display as a result of the stress they experience.

SUPPORTING PARENTS

Working with parents has been identified as one of the main sources of stress for tennis coaches and recognized as a contributing factor to coaches leaving the profession (Knight & Harwood, 2009). This is an understandable finding given that many coaches find parents to be difficult, challenging, overly involved, and negative (Knight & Holt, 2011c). However, despite the difficulties coaches might encounter with some parents, working with parents is an important and necessary component of the coaching job (Harwood, 2011). Particularly because parents often rely heavily on the support of coaches as they seek to provide their children with the best possible tennis experiences (Knight & Holt, 2011b).

Parents have indicated that they turn to coaches for informational, emotional, and tangible support to cope with the stressors they encounter and to be able to provide the best tennis experiences for their children (Knight & Holt, 2011b). Specifically, parents look to coaches to provide them with appropriate information to allow their children to progress in tennis. For example, parents seek coaches who will share information regarding their child's development, goals, and potential progression. Further, parents benefit from coaches advising them and their children on more than just technical aspects of the game. In providing such information, coaches can help parents understand all aspects of their child's

tennis, which can help parents to provide the appropriate support and information to their children (Knight & Holt, 2011a).

Given the extent of the demands parents encounter, parents also look to coaches for emotional support, particularly following difficult matches. Such support can be in a variety of forms, such as a shoulder for parents to cry on, taking time to listen to parents' problems, or providing parents with advice on how to deal with different situations. By providing such emotional support, coaches might reduce the emotional strain parents encounter; hopefully reducing any negative reactions parents might have towards their children (Knight & Holt, 2011c).

EDUCATING PARENTS

One of the main difficulties for parents is knowing how to behave at tournaments, particularly knowing how to respond to their children following losses or poor performances (Knight & Harwood, 2009b). Coaches, children, and parents have identified the behaviors that are more and less appropriate in relation to tennis (Gould et al., 2006; 2008; Knight et al., 2010; Knight & Holt, 2011a; Lauer, Gould, Roman, Pierce, 2010a; 2010b). Coaches can play a vital role in educating parents, based on this information, regarding the behaviors that are and are not appropriate in different situations.

Gould and colleagues (Gould et al., 2006, 2008; Gould, Lauer et al., 2010a; 2010b) conducted a series of studies examining the role of parents in the development of junior tennis players. Through interviews, focus groups, and surveys with coaches, elite players, and parents, these studies highlighted a range of positive and negative parental behaviors that could influence children's tennis development. The behaviors perceived to most seriously hinder players' development were parents overemphasizing winning, criticizing their child, and lacking emotional control. In contrast, the parental behaviors perceived to most positively influence players' development were the provision of unconditional love and support, logistical and financial support, and parents holding children accountable for their on-court behavior. Providing such information to parents and ensuring that parents understand why certain behaviors are more or less helpful to their children may enable parents to better regulate their tennis involvement (Knight & Holt, 2011a).

Coaches can also encourage parents to talk to their child regarding their involvement in their tennis, specifically at competitions (Knight & Holt, 2011a). A recent study with adolescent tennis players indicated that children prefer their parents to display certain behaviors at tournaments and dislike others (Knight et al., 2010). Players identified five primary preferences for parental behaviors, which were grouped under a broader theme of athletes' views of supportive behaviors. The five preferred behaviors were; (a) Do not provide technical or tactical advice (unless parents had the appropriate knowledge due to being a coach or having played at a high level); (b) Ensure comments focus on players' effort and attitude, rather than their performance or match outcome; (c) Provide practical advice to help players prepare and recover from matches, but do not become repetitive; (d) Respect the etiquette of tennis by not becoming involved in matches or excessively supportive of children during one-sided matches, and; (e) Match nonverbal behaviors (such as facial expressions and body position) with supportive comments and keep these consistent throughout the match. Using these findings as a starting point, coaches could encourage parents to identify their child's individual needs at tournaments (Knight & Holt, 2011a). By having such a conversation parents might be able to alter their involvement to meet the needs of their child.

CONCLUSION

Parenting children in tennis is an important but potentially challenging endeavor. The support and guidance parents receive from coaches can greatly influence the extent to which parents are positively involved in their child's tennis. If coaches can commit time to understanding, supporting, and educating parents, the potential for parents to be appropriately involved in their child's tennis may be enhanced.

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Making the top 100- ITF top 10 junior transition to top 100 WTA tour (1996 – 2005)

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ABSTRACT

This study investigated transition from a Top 10 ITF Junior rank to Top 100 WTA Tour rank over a ten-year period between 1996 and 2005. It provides an insight into the development variables of ITF junior win: loss ratios, number of junior and ITF Pro-Circuit events played between 14-18 years of age and ranking in the years prior to entering the Top 100. The results of this study can help to establish a range of statistical benchmarks coaches and Federations can use for players aspiring at a professional career on the WTA Tour.

Key words: Player Development, Top 100, Womens

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INTRODUCTION & BACKGROUND

Achieving a Top 100 WTA rank is a significant achievement in men's professional tennis. Much discussion surrounds the path a player and time a player should take in achieving this goal.

There have been a number of studies that have profiled average age of top-ranked male and female tennis players (Tennis Canada, Treleven & Miley). This study investigated transition from a Top 10 ITF Junior rank to Top 100 WTA Tour rank over a ten-year period between 1996 and 2005. It provides an insight into the development variables of ITF junior win:loss ratios, number of junior and ITF Pro-Circuit events played between 14-18 years of age and ranking in the years prior to entering the Top 100. The intended use of this study was to establish a range of statistical benchmarks coaches and Federations can use for players aspiring at a professional career on the WTA Tour.



METHODOLOGY

The study's data was obtained from the ITF and WTA Tour websites:

- www.itftennis.com/juniors / www.itftennis.com/mens / www.wtatour.com

Data was collated on players meeting the criteria of:

- Top 10 ITF Junior year-end rank between 1996 – 2005. (90 players*)
- Top 100 WTA Tour Players as at February 2 2009. (100 players)
- Basic statistical measures of mean, median, standard deviation, minimum, maximum, were used to profile players.

* - Duplicate names were removed as players finished in Top 10 for more than one year in a row. Also some players achieved a Top 100 Rank during the calendar year but failed to stay inside the Top 100 at year-end. These players were included in the study and categorised as having achieved a Top 100 WTA Tour rank.

ITF TOP 10 JUNIOR TO WTA TOP 100 PLAYER PROFILE (1996 – 2005)

	Average	St d . Dev	Min	Max	Median	
SENIOR PROFILE						
Highest WTA Rank	32.0	22.5	1.0	94.0	29.5	
Age at Highest WTA Rank	20.9	2.4	16.2	26.8	20.4	
Age at First Year End Rank	16.3	1.3	15.0	19.0	16.0	
Age at Top 100 Rank	19.0	2.5	15.0	27.0	18.0	
Years in Top 100	3.6	2.5	1.0	11.0	3.0	
Transition Time Top 100 (yrs)	3.7	2.0	1.0	9.0	3.0	
W:L Ratio – Career (MD)	1.6	0.7	0.8	4.6	1.5	
- WTA Tour (MD)	1.2	0.7	0.2	4.5	1.0	
- ITF Pro Circuit (MD)	2.5	1.1	0.7	6.5	2.3	
JUNIOR PROFILE						
ITF Junior W:L Ratio	3.6	1.3	1.8	7.8	3.3	
ITF Junior Matches Played	119	32	32	229	111	
ITF Junior Tournaments Played	35	13	10	80	34	
WTA/ITF Pro Circuit Matches Played	125	33	26	240	116	
WTA/ITF Pro Circuit Tournaments Played	50	14.5	6	77	51	
YEARS PRIOR TO TOP 100 RANK						
	5	4	3	2	1	(0)
Average Year End Rank	535	355	196	135	115	90
APPROX. YEAR END RANK	550	350	200	150	125	Top 100

Table 1. Profiles sixty-five* girls who finished with a Top 10 Junior ITF Year End Rank between 1996 – 2005 who have achieved a Top 100 WTA Senior Rank. (MD) = Main Draw. * - Duplicate names removed.

DISCUSSION

Top 10 ITF Junior Circuit Player who achieved Top 100 WTA Tour Rank
Table 1.0 outlines the profile (mean) of a Top 10 ITF Junior Circuit player (1996 – 2005) who achieved a Top 100 WTA Tour rank. Sixty-five (65) players comprised this group after duplicate names were removed as some players finished with Top 10 rank for more than one year in a row.

ITF Junior Circuit Profile

• An average W:L Ratio of 3.6:1 (min 1.8 / max 7.8) was required in the ITF Junior Circuit to achieve a Top 10 year end rank. Players competed in 35 (min 10 / max 80) ITF Junior Circuit events and participated 119 (min 33 / max 229) matches during their junior career.

• Players competed in 50 (min 6 / max 77) ITF Pro Circuit events and participated in 125 (min 26 / max 240) matches between 15 – 18 years.

ITF JUNIOR PROFILE AGE & NUMBER OF EVENTS PER YEAR						
Years	13	14	15	16	17	18
Mean	0	7	11	12	9	5
Std Dev	0	6	6	5	5	5
Min	0	1	1	3	1	1
Max	0	21	24	29	19	17
Median	0	6	11	13	8	2
%	0%	83%	95%	84%	80%	38%

Table 2. The number of ITF Junior events players competed in by age.

Table 2 illustrates the number of ITF Junior events players competed in by age.

- 83% had begun playing by age 14.
- This peaked to 95% at 15 years and dropped to 88% by year 16.
- It continued to fall, with only 88% at 17 years and 38% by 18 years competing on the ITF Junior Circuit.

WTA + ITF PRO CIRCUIT PROFILE AGE & NUMBER OF EVENTS PER YEAR						
Years	13	14	15	16	17	18
Mean	0	0	5	10	14	21
Std Dev	0	0	4	5	6	6
Min	0	0	0	0	0	6
Max	0	0	13	22	26	34
Median	0	0	5	10	15	22
%	0%	0%	86%	94%	100%	100%

Table 3. The number of WTA Tour and ITF Pro Circuit events players competed in by age.

Table 3 above illustrates the number of WTA Tour and ITF Pro Circuit events players competed in by age. 86% had begun playing by age 15. This rose to 94% at 16 years and peaked at 100% by year 17 and 18.

Table 4 below illustrates the combined number of ITF Junior; WTA Tour and ITF Pro Circuit events players competed in by age:

- At age 15, a total of 15 events were played with a 67/33% proportion to Junior circuit.
- By age 16 this had increased to 22 events with a 55/45% split to Junior circuit.
- At age 17, players competed in 23 events with a 39/61% swing towards Senior circuit events.
- By the 18th year, the Top 10 ITF juniors that achieved a Top 100 WTA rank competed in 26 events with a further swing toward Senior circuit events of 19/81%.

TOURNAMENT PROFILE (ITF JUNIOR & WTA / ITF PRO CIRCUIT) AGE & NUMBER OF EVENTS PER YEAR				
Age Profile	15	16	17	18
Total Events	16	22	23	26
Junior	11	12	9	5
Senior	5	10	14	21
Junior %	67%	55%	39%	19%
Senior %	33%	45%	61%	81%
Est. %	70	55	40	20
	30	45	60	80
15% shift to Seniors from Juniors at year 16 & 17. 20% shift to Seniors from Juniors at year 18.				

Table 4. Combined number of ITF Junior; WTA Tour and ITF Pro Circuit events players competed in by age.

ITF Pro Circuit & WTA Tour Profile

• The first ITF Pro Circuit rank was obtained at 16.3 years (min 15.0 / max 19.0) and a Top 100 WTA Tour rank at 19.0 years (min 15.0 / max 27.0). Players remained in the Top 100 for 3.6 years (min 1.2 / max 11.0).

• The highest WTA Tour rank was obtained at age 20.9 (min 16.2 / max 26.8), with a transition time of 3.7 years (min 1.0 / max 9.0). To achieve this the player initially required a W:L Ratio of 2.5:1 (min 0.7 / max 6.5) on the ITF Pro Circuit, then 1.2:1 (min 0.6 / max 4.5) on WTA Tour. A career W:L Ratio of 1.6:1 (min 0.8 / max 4.6) was required.

• The average year-end rank was calculated for up to 5 years from a Top 100 rank. Results are below with an approximate ranking proposed also.

YEARS PRIOR TO TOP 100 RANK	5	4	3	2	1	(0)
Average Year End Rank	535	355	196	135	115	90
Approx. Year End Rank	550	350	200	150	125	Top 100

Table 5. Year-end rank for up to 5 years from a Top 100 rank.

FINDINGS

Analysis of Top 10 ITF Junior Circuit players from 1996 – 2005 who achieved a Top 100 WTA Tour rank in their career, indicated:

- (1) 72% of players who achieved a Top 10 ITF Junior rank between 1996-2005 achieved a career high Top 100 WTA Tour Rank.
- (2) First ITF Pro Circuit rank achieved at 16.3 years.
- (3) Transition time from first year-end rank to Top 100 WTA Tour of 3.7 years at an age of 19.0 years.
- (4) Highest WTA Tour rank achieved approximately two years after entering WTA Tour Top 100 at 20.9 years with an average of 3.6 years inside Top 100 rank.
- (5) Players competed in 35 ITF Junior Circuit events and participated in 119 matches between age 14-18 years.
- (6) Players competed in 50 ITF Pro Circuit / WTA Tour events and participated in 125 matches between age 15 – 18 years.
- (7) Career W:L Ratio of 1.6:1 on WTA Tour, 2.5:1 on the ITF Pro Circuit and 3.6:1 on the ITF Junior Circuit.
- (8) The above ranking benchmarks could be used as an indicator prior to a Top 100 WTA Tour ranking.

SUMMARY

The best Juniors' over a 10 year period achieved an WTA rank before their 17th birthday and entered the Top 100 WTA Tour, three to four years later before the age of 20 yrs. They competed in over 50 ITF Pro Circuit events between 15-18 yrs while continuing to compete on the ITF Junior Circuit playing 35 events in the same period. They achieved a win:loss ratio of over 3:6 in juniors and almost 2:5 in the Pro Circuit. They approximately halved their WTA ranking every second year over 4 years before entering the Top 100.

DEVELOPMENT IMPLICATIONS

It is recommended Federations and Coaches create 'Development Schedules' for players which are underpinned by the findings of this study. The cornerstone of a players schedule should be periods of technical, tactical, physical and mental 'development'. Competition plans should be appropriate to the players' stage of development. Performance benchmarks of win:loss ratios and ranking timelines should be used as a guide to a players overall development.

GLOSSARY

- Age at Highest WTA Rank – The chronological of player at time of highest WTA rank.
- Age at First Year End Rank – The chronological age of player at time of ranking.
- Age at Top 100 Rank – The chronological age of player when first Top 100 rank achieved.
- Years in Top 100 – The number of years a player was ranked inside the Top 100 on WTA Tour.
- Transition Time – The number of years taken to achieve Top 100 WTA Tour rank from first year-end rank.
- Win:Loss (W:L) Ratio (MD) – Calculation of Career (ITF Pro Circuit & WTA Tour) win / loss ratio in main draw matches. Breakdown of WTA Tour, ITF Pro Circuit and ITF Junior Circuit.

- ITF Junior Circuit – The world governing body tournament circuit for age 18/U tennis players.
- ITF Pro Circuit (PC) - The world governing body tournament circuit for over 18 yrs. tennis players.
- WTA Tour – The Woman's Tennis Association professional tournament circuit.

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Fit to Play™ & perform-Rules of recovery (part 2)

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ABSTRACT

This article is the second in a four part series that will provide the reader with greater insight into the concepts of overtraining and recovery. Part two specifically will introduce the first six short-term rules of recovery giving practical applications of each for athletes and coaches.

Key words: recovery, overstress, overtraining

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INTRODUCTION

One key to success of tennis players and other athletes is not just in how hard they train off and on court, but how well they recover from training, playing, environment and travel (Petersen, 2006a). High performance players are exposed to a very demanding schedule often training two or more times per day. Under these circumstances athletes may be pushed beyond physiological and psychological limits which can result in decreased function (Bompa, 1985) and have the potential for overstress or under-recovery to occur.

Descriptions and Definitions from the Literature.

Overtraining is described as an imbalance between training and recovery (Kuipers & Keizer, 1988) or an imbalance between stress and recovery, that is too much stress combined with too little regeneration (Lehman et al, 1999). It is the final stage of an advanced state of fatigue which is characterized by a decline in the athlete's performance capability and their inability to adapt to training (Marion, 1995). Recovery is a process in time for the re-establishment of performance abilities. It varies between and within individuals and exists at multi-levels (e.g. psychological, physiological, social) (Kellmann & Kallus, 2001). Whereas under-recovery is described as the failure to fulfill current recovery demands (Kellman, 2003).

The diagnosis of overtraining is complicated. There are no exact diagnostic criteria, and physicians must rule out other diseases before the diagnosis can be made (Uusitalo, 2001). The general causes of under-recovery and subsequent overtraining are thought to include too rapid increases in intensity, volume or density of training that overwhelm the body's ability to adapt. Other factors include single sport overload, monotonous or poor periodization of training and too many competitions without adequate rest and insufficient recovery.

Efforts have been made to develop effective, easily transportable and administered techniques that will accelerate recovery and in turn improve performance. This quest however remains for the most part a combination of art and science along with a healthy dose of trial and error. The process of recovery should be an overall lifestyle focus where minor setbacks are learning experiences and change is implemented on an as needed basis.

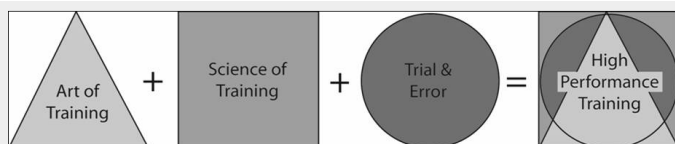


Figure 1. Petersen & Nittinger, 2006)(with permission Racquet Tech Publishing).

As workloads and other associated stresses increase so does the time required for planning and

implementing adequate recovery strategies. By varying or cycling the specifics of training volume,

intensity, and density you can achieve peak levels of conditioning at the proper time (Petersen, 2006b). The best treatment for prevention of overstress, overtraining or overreaching is prevention (Uuistalo, 2001) with a well planned daily, weekly, monthly and

yearly schedule that includes use of a variety of high performance recovery tips and strategies (Petersen, 2006a).

Recovery sessions provide an opportunity for both player and coach to start to unwind, recover and prepare for the next day. It is important for coaches to recognize that they also need to

recover as they undertake large amounts of physical work and stress (Calder, 2003). The relaxed atmosphere fosters a good interchange of ideas that can be implemented into the training structure.

The list of short-term rules of recovery (see below) have been developed to help athletes and coaches set priorities in the recovery process. They are based on experience, current literature, anecdotal evidence from athletes as well as coaches and sport medicine and science personnel. Following these short-term rules of recovery on a regular basis will help to ensure the athletes' recovery needs are met and thus will protect against overstress.

SHORT-TERM RULES OF RECOVERY (DAILY)	
Rule #1-Re-hydration	Rule # 7-Release the soft tissue
Rule #2-Re-fuel	Rule # 8-Regain & maintain muscle length
Rule #3-Recovery work	Rule # 9-Re-play & review your training or competition
Rule #4-Re-align the body	Rule # 10-Reinvigorate with recovery menu
Rule # 5-Re-set the balance clock	Rule # 11-Relaxation
Rule # 6-Re-connect the core	Rule # 12-Rest (passive)

Table 1. Short-term Rules of Recovery (daily) (adapted after Petersen, 2003, Peteresen & Nittinger 2007, Petersen, 2009).

SHORT-TERM RULES OF RECOVERY

What Athletes do for Themselves

Rule #1- Rehydration

The most important nutritional considerations for recovery relate to fluid and fuel replacement strategies (Burke, 2000), therefore drink plenty of water. The goal is to have light colored urine. The harder, higher and hotter conditions you train or compete in, the more you need to drink. Pre-hydration and immediate re-hydration are key. Losing as little as 2% of body weight through sweat can impair an athlete's ability to perform due to low blood volume and less than optimal utilization of nutrients and oxygen. Also, younger players may need to be more vigilant about hydration strategies as dehydration seems to be more detrimental to children than to adults (Bar-Or, 2001).

Rule #2-Re-fuel

Athletes can help minimize the effects of metabolic fatigue by starting each session with adequate carbohydrate stores (fuel) on board. Adequate supplies of glycogen in the muscle and in the liver are needed to support the energy demands of the player and promote recovery for the next training session. Ensure that adequate nutrition (carbohydrate fuel) is consumed pre- and post-

training. Dietary carbohydrate is the primary source for the body to manufacture glucose (Coyle, 1995). Since glycogen stores take 24-48 hours to replenish, they must be replaced daily.

(Costill & Hargreaves, 1992). Each gram of glycogen is stored with approximately three grams of water, so ensure adequate hydration to ensure maximum glycogen synthesis.

There is a window of opportunity within the first 20-30 minutes after strenuous exercise, to replenish muscle fuel stores at a faster rate than if carbohydrate intake is delayed for longer. Small amounts of protein taken with carbohydrates before, during and after hard training, helps to minimize muscle protein breakdown as a result of heavy workloads. Athletes should consume between 1.2 and 1.5 g/kg body weight of simple carbohydrates as soon as possible after exercise (Costill & Hargreaves, 1992).

Practical Application

Consume 1.2-1.5 grams of carbohydrate per kilogram of body weight immediately after exercise and then follow that with an additional 1.5-2.0 grams of carbohydrate per kilogram at a meal or snack within two hours (Parsons, 2006). A banana has about 30 grams of carbohydrates and 2 cups of 1% chocolate milk contains approximately 54 grams of carbohydrate. Other good recovery foods are dried fruit bars, yogurt and low fat granola cereal.

Rule #3-Re-align the body

Training for a sport like tennis is asymmetrical in nature and can torque the body's muscle and fascial systems leading to an imbalance in length and strength of muscles and tendons. The flexed posture of competitive sport further adds to this imbalance. While upper body development is asymmetrical in tennis, symmetrical strength and flexibility of the legs and lower torso are necessary for optimum court mobility (Petersen, 1988). The malalignment syndrome remains one of the frontiers in medicine, unrecognized as a cause of over 50% of back and limb pain (Schamberger, 2002). The associated biomechanical changes-especially the shift in weight-bearing and the asymmetries of muscle tension, strength and joint range of motion- affect soft tissues, joints and organ systems throughout the body. Abnormal pelvic motion during training can put undue strain on a variety of structures that lead to overuse problems. Very few competitive players in swinging sports make it through an entire season without experiencing some form of lumbar, hip, knee, thoracic or shoulder pain associated with kinetic chain weakness and/or malalignment issues (Petersen, 2010).

The most common presentation of malalignment syndrome is rotational malalignment. Other conditions like upslip, pelvic inflare and outflare and other presentations can also occur but should be dealt with by an appropriately trained therapist that has had special training to recognize, diagnose and treat the malalignment syndromes (Petersen et al, 2006). As sport medicine and therapy personnel we must recognize malalignment and postural syndromes and ensure that the daily training plans and rehabilitation protocols address these syndromes in a pro-active manner (Petersen, 2006c).

Practical Application



Figure 2a. Muscle energy techniques.



Figure 2a & b. Simple muscle energy techniques can be used to help correct. Consult with your physical therapist.



Figure 3. Stretches following the self correction regain muscle length.

Rule #4-Recovery work

Within Session

Players can facilitate recovery and lactic acid removal within their playing and practice session by continuing to move between points with walking small or baby steps and doing knee and ankle pumping exercises while seated at changeovers. Although the periods of walking and rest during match play are probably sufficient to allow players to metabolize lactate efficiently, when recovery between rallies is too short, running speed for strokes preparation and stroke speed is decreased (Ferrauti et al, 2001). In addition, shaking or vibrational techniques can also help to decrease tension in the lower and upper extremities.

Post Session

The utilization of recovery techniques must become habitual and be performed daily (Bompa, 1985). Studies suggest that light aerobic exercise such as cycling following anaerobic training (e.g. sprint) might facilitate recovery of force or speed/power by increasing lactic acid removal, thus possibly helping restore normal calcium levels within muscle fibers (Signorile et al, 1993). To help flush out the lactic acid and other waste products that built up in the muscle during training and competitions, try using the 'spin only' cycle routine. At higher pedalling rates there is a greater recruitment of slow twitch fibres. Since slow twitch fibres are more resistant to fatigue, a higher pedalling rate will prove advantageous and less likely to cause premature fatigue (Hagan et al, 1992). Other modalities such as pool running or walking can be used in the absence of a bike.



Figure 4. Use light resistance and cycle at 85-90 RPM (revolutions per minute) for 15-20 minutes.

Rule #5-Regain and maintain muscle length

The state of tension in muscle groups should be assessed on a daily basis and new stretches added to ensure that a good length-tension balance is maintained in all muscle groups responsible for on-court performance. Research has shown that 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). Performing static and facilitated stretches optimizes muscle and tendon length post training. Players should develop their own set of stretches based on an evaluation by their sport science and medicine team and be adjusted as the training emphasis and demands change.

'Hold relax and contract relax' PNF techniques have been shown to be more effective than just static stretching (Enoka, 1994; Lucas & Koslow, 1984). PNF techniques may be relaxing as players can lie down and perform no work while being stretched passively- therefore PNF can also be an effective means of post exercise relaxation (Reque, 2003).

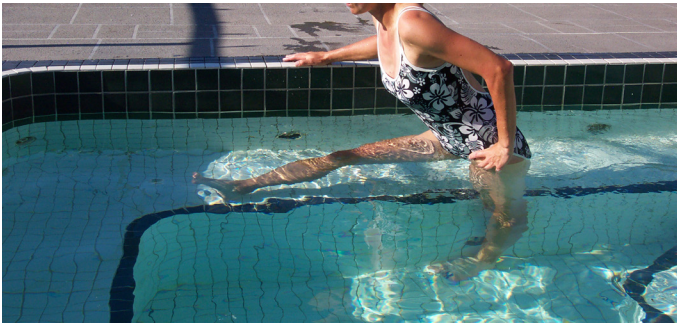


Figure 5. Hamstring stretches and other stretches can be done both post activity and during a pool session.

Rule #6-Re-set the balance clock

Balance training is a fundamental component of functional mobility and dynamic sports activity and should be part of everyone's daily fitness routine whether destined for the pro-circuit or not (Petersen, 2006d). As physical therapists and fitness coaches we have long known the benefits of balance and body awareness exercises in rehabilitating injuries and in sport specific training. Most gyms will have some balance equipment available. By training on an unstable surface, balance reactions and coordination are trained at a subconscious level, facilitating these reactions to become automatic. This helps to prevent injury and improve sport performance. Re-set your balance clock with some drills using wobble boards, foam rolls, rolled towels or the dynamic edge.



Figure 6. Balance training with a rolled towel or a wobble board.



Figure 7. Balance training with a dynamic edge device.

CONCLUSION

The challenge for most coaches and players is to identify which specific capacities are fatigued and then select appropriate recovery strategies to restore the player to a normal functioning state. Athletes, coaches, therapists and parents all need to be more aware of the importance of restoration and regeneration following heavy workloads and how best to use the equipment, facilities and modalities available to facilitate recovery.

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Confidentiality: The key to trust and reputation

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ABSTRACT

This paper reviews the critical issue of confidentiality in the coach-player relationship. The rewards for coaches who safeguard player confidences are highlighted. The review concludes with a number of practical guidelines for coaches to follow.

Key words: Confidentiality, Trust, Reputation, Communication

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INTRODUCTION

The role of the coach is under increasing scrutiny as the demands on coaches continue to increase and evolve in an ever-changing sporting environment. As articulated by Bell-Laroche (2008),

“There is possibly no role in sport that involves more interaction than the role of the coach: they are constantly at the intersection of volunteers, administrators, athletes, parents and officials.”

If this statement is accepted, then it follows one can conclude that communication from, and to, a coach is of critical importance. Information must be shared effectively. Further, given communication is the basis of any relationship of trust and honesty, then information that is ‘sensitive’, and may be potentially embarrassing or damaging if it falls into the wrong hands, must be protected. Herein lies the ethical pillar of ‘confidentiality’ that emphasizes the obligation of a coach to safeguard the confidences and rights of those with whom he/she might interact in the course of conducting his/her coaching duties. This article reviews several significant issues relating to ‘confidentiality’ in the coaching setting and, specifically, as it relates to a coach-player relationship.



WHAT IS ‘CONFIDENTIALITY?’

Confidentiality has been defined as “ensuring that information is accessible only to those authorised to have access” (Thornbory, 2008, p.29). As such, a coach’s duty of confidentiality can be defined as “one which prevents the holder of confidential information from using it or disclosing it for purposes other than those for which it has been provided, without the consent of the person to whom the duty of confidentiality is owed” (Howard, 2005, p.17).

There are very limited exceptions to a coach’s duty not to breach confidentiality (MacAuley & Bartlett, 2000). In rare cases, confidentiality may be breached where:

- Failure to disclose information may expose a player, or a third party, to risk of death or serious harm – here the ‘public interest’ principle is seen to take highest precedence
- There are statutory obligations or orders of a court or tribunal to do so

For a tennis coach, his/her duty of confidentiality can be found in the International Tennis Federation Code of Ethics for Coaches that states: “The tennis coach will determine, in consultation with students and others, what information is confidential and respect

that confidentiality” (point 7). A list of ethical standards illustrating how the confidentiality principle applies to the activities of a coach is shown in Table 1.

CONFIDENTIALITY STANDARDS
1. Determine, in consultation with player (and others as required), what information is confidential
2. Keep confidential any information about player gained through coaching activities and considered confidential by these players
3. Share confidential information only with the consent of players (or their parents/guardians) or in a way that the player cannot be identified
4. Exercise discretion in recording and communicating information to prevent this information from being interpreted or used to the detriment of player
5. Implement procedures to protect confidential information (e.g., restrict access to confidential records)

Table 1. Key Standards Applicable to a Coach-Player Relationship. [adapted from Coaching Association of Canada Code of Conduct (n.d)].

WHY IS CONFIDENTIALITY SO IMPORTANT?

With specific reference to a coach-player relationship, the benefits of a coach adhering to confidentiality include:

- Establishes the trust essential for a successful and/or satisfying coach-player relationship – that trust is generally eroded when information obtained within the sanctity of a coach-player relationship is disseminated inappropriately
- Facilitates players feeling at ease, comfortable and confident in participating in open discussions with their coach
- Grows, and maintains, the stature and reputation of the coach as a professional of integrity
- Helps a coach to steer clear of misunderstandings with his/her player(s)
- Helps a coach to avoid, or minimise the risks of, perceptions, complaints or allegations of professional misconduct for breach of confidentiality

WHAT INFORMATION IS CONFIDENTIAL?

A multitude of information might be considered confidential including a player’s sexual orientation or preferences, his/her record of any misdemeanors or indiscretions, his/her medical record (including injuries and illnesses) and issues in a player’s family or playing background. A critical consideration here is what a player perceives or thinks is ‘sensitive’ (to be kept private) information rather than what information a coach might necessarily deem as such.

HINTS TO COACHES

Avoiding potential pitfalls, for inappropriate disclosure of information is mostly a matter of common sense and good judgment. Here are some suggested guidelines for coaches:

- A good ‘rule of thumb’ to follow is always to take time to think twice about the potential impact of what you are about to say or write
- Discuss confidentiality (including its limitations) at the beginning of a professional relationship with a player
- Avoid getting personal – restrict asking questions of a player to those which will provide essential information to deliver ‘expert’ coaching advice. What is not known cannot be disclosed!
- Ask players what information they have provided is ‘sensitive’ and to be kept confidential. Get written informed consent from players (or their parents/guardian if player is legally deemed ‘under age’) if such information is required, or sought, by others (e.g., selectors, sport science support personnel, team captains). ‘Informed consent’ means giving the player complete details about the proposed disclosure of information including risks, benefits and alternatives.
- Be mindful of risks associated with using the communication tools in our ‘new information age’. For example, emails, faxes and mobile text messages can be inadvertently sent to unintended others. Similarly, telephone conversations can be overheard, and information left on computer screens accessed, by unintended others. Voice mail messages and messages/comments posted on Facebook and Twitter can find the wrong home. Taking due diligence in all communications is a must!
- Keep accurate and factual records of conversations/meetings etc and secure a safe place to store these records
- If in doubt, get advice!

CONCLUSIONS

If coaches are genuinely interested in developing and maintaining a sound, healthy and productive professional relationship with players, then coaches must adopt ethical communication practices. Confidentiality is a must. Confidentiality lies at the heart of trust in a coach-player relationship and is a key ingredient of an enviable coaching reputation. As such, confidentiality is about promoting good things for a coach and not only about preventing adverse situations. Safeguarding player confidences can be achieved by all coaches when common sense and good judgment are applied.

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Tennis goes green: Should wheelchair tennis follow?

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ABSTRACT

The use of low compression balls has been much debated; however the new tennis rule change poses questions for its introduction into wheelchair tennis. The green balls provide a slower ball alongside a lower bounce than the normal yellow balls. It is discussed in this article how the green balls could lead to many different benefits, particularly related to wheelchair tennis players' including improved performance, physiological, psychological and social effects.

Key words: Low compression balls, green balls, wheelchair tennis, mobility.

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INTRODUCTION

The wind of change began to blow in the world of able-bodied tennis as a new rule came into effect this year which allows stage 1 green balls to be used as an optional ball to the yellow balls for competitive play (ITF 2011). Low compression balls were first introduced with the focus on children but as their popularity spread worldwide, the benefits for all ages were soon discovered. This poses the question to whether wheelchair tennis, which is one of the fastest growing Paralympic sports and becoming increasingly like the able-bodied game, should increase the use of green balls in competition.

Before one jumps to false conclusions that green balls are only for beginners and not relevant in the competitive sports world, many other sports already have similar examples. An analogy can be drawn from skiing, where modified balls are the tennis equivalent of blue, red and black pistes in skiing; no matter which slope you go down you are still skiing. Many people even prefer going down a red slope to a black as they are not having to focus so much on the difficulty of the terrain which results in a positive effect on their skiing; they perform better and experience enhanced enjoyment. The same can be said for these balls which can have multiple effects on performance and skill acquisition alongside health and social benefits. There are three types of slower balls; red stage 3 (slow) to green stage 1 (faster) (ITF 2008). This article will examine some of these ball types and look at the potential for the introduction of green balls within wheelchair tennis for both adults and juniors.

SKILL PERFORMANCE AND ACQUISITION

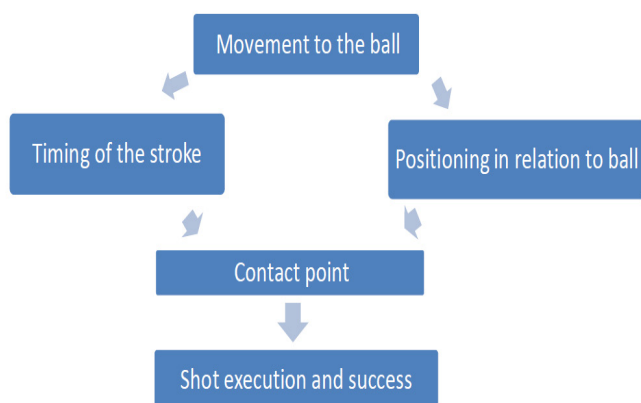


Figure 1. The importance of mobility upon performance in tennis.

Mobility and movement

The green balls are 25% slower than the yellow balls, providing the player with more time between shots and to move to the ball (ITF 2008). Tennis requires a high level of technical competence, and physiological challenge to the individual (Reid et al. 2007; Diaper and Goosey-Tolfrey 2009). However, movement is often considered one of the more important factors; poor movement results in poor

positioning, timing and shot execution leading to a large number of errors and short rallies. The diagram below shows how these factors interlink. By increasing time for movement, players are more likely to have increased control as a result of an enhancement of the above factors (ITF 2008). One scientific study by Hammond & Smith (2006) noted that when using low compression balls rallies went on for longer and that there was a positive effect upon aspects of technique that are related to improving power of the shot.

In wheelchair tennis mobility is considered by some as even more important than movement in able-bodied tennis (Elderton, 2000). Dr. Moore, the current US National coach (cited in Elderton, 2000) even went so far as to claim that "mobility is the single most important aspect of wheelchair tennis". There is the added factor of wheelchair control to be considered. Some athletes may not be in day chairs so as well as reaction and movement aspects to master, there is also the control of the chair. By increasing time available to the player, a player's experience is less affected by their chair control and mobility and it enables them to develop these skills more progressively.

Contact point and hitting zone

It is not only the speed of the ball but the lower ball bounce which could be beneficial, as the green balls despite having a fairly similar bounce do finish at a slightly lower height. Figure 2 below displays the difference in average bounce height after the first bounce across all ball types. As in the diagram, an adult wheelchair tennis player evidently sits at a lower height than an able-bodied tennis player. For a wheelchair player, the height is more similar to that of an average able-bodied 10 year old. Therefore a lower bounce can result in increased success, as players are more likely to make contact in the ideal hitting zone and not hit so many balls at head height. Especially considering the increased popularity in top spin, it could almost be argued that green balls may have a more important place within wheelchair tennis than the able-bodied sport by increasing the time players have and the resultant lower bounce.

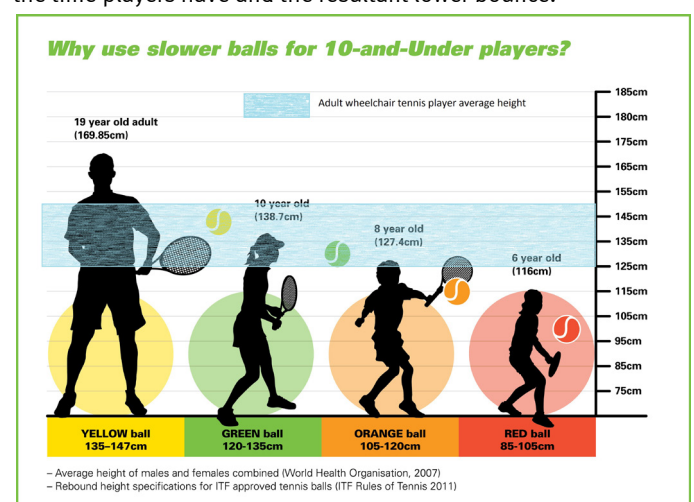


Figure 2. Slower balls for wheelchair tennis. Source: ITF (2008).

HEALTH BENEFITS

Linked to tennis are numerous health benefits including increased cardio respiratory fitness, muscle strength, flexibility and a reduced risk of heart disease (Pluim et al. 2007). Longer rallies and increased control will augment the time that people actually spend playing tennis, increasing the exercise intensity and thus the health benefits. Increased duration of exercise has also been shown to lead to increased production of energy from fat stores, reducing the risk of obesity (Pluim et al. 2007). In wheelchair tennis these health benefits can improve a players functioning in daily activities such as transferring in and out of a chair, respiratory function and quality of life (Janssen et al. 1994 cited in Diaper and Tolfrey 2009). The green balls could enhance these effects and thus could be linked to considerably improving a players' quality of life.

OTHER BENEFITS

Alongside the physiological benefits associated with the use of slower balls, other psychological and social implications are arguable connected. It already has been discussed that slower balls means more control, which in turn results in longer rallies and greater success. Hand in hand with success comes enjoyment, increased self-efficacy and performance achievement. These feelings then can translate over to life outside of tennis (Hutzer & Bar-Eli 1993). From a tennis perspective numerous studies have shown that enjoyment is one of the, if not the key influential factor on a person remaining involved in sport. By enhancing the experience of a wheelchair tennis player through the use of green balls, we are augmenting the likelihood of them remaining within the sport (Scanlan et al. 1993).

WHY GO GREEN?

We have just seen that there is the potential to reap huge benefits from the use of the green balls. But why use the green and not the red or the orange? The red and orange ball is arguably too different for competitive play to act as a replacement for the yellow balls. In wheelchair tennis, due to the second bounce rule, the red and orange balls are not always practical due to the dying second bounce (particularly with red) which means that the ball is often too low resulting in a low success rate and increasing difficulty. The Green balls therefore offer an excellent balance, as they are more similar to the yellow balls in speed and in bounce characteristics and pose no real significant negative changes in the overall playing experience.

The change in balls has the potential to impact thousands of players around the world in a variety of different capacities along with improving people's tennis experience, helping to grow the sport. There is limited research in both the able-bodied tennis and even less in wheelchair tennis with many limitations in the current research to date. But it is a question that should be investigated as this has the power to transform wheelchair tennis. Why not introduce green balls in your next coaching session and observe the benefits of the green ball for your players.

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Are serve velocity and ground reaction forces altered following prolonged tennis?

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ABSTRACT

Serving performance is likely to deteriorate when players become fatigued, and since fatigue induces a decrease in leg muscle strength, the contribution of the lower limbs to the stroke may be affected. This study aimed to examine this effect by investigating the impact of prolonged tennis playing on stroke velocity and peak vertical forces during first (flat and slice) and second (topspin) serves. Results are discussed and suggestions are offered for training players to cope with effects of fatigue.

Key words: Fatigue, Tennis serve, Lower limbs

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INTRODUCTION

Recent biomechanical analyses of the tennis serve have focused on lower extremity kinematics (movements/motion), ground reaction forces or EMG activity of selected leg muscles, underlying the importance of a forceful lower limb drive to produce efficient strokes (Bonney et al. 2009; Girard et al. 2005; Reid et al. 2008). A decrease in isometric maximal voluntary strength of both knee extensors (Girard et al. 2008) and plantar flexors (Girard et al. 2011) has been reported after prolonged (3-h) tennis playing. However, strength losses with fatigue - as measured from isolated leg muscle contractions - do not necessarily reflect changes in lower limb involvement during dynamic/functional and complex multi-segmental movements such as tennis strokes (Wilson and Murphy, 1996). Therefore, it is unclear whether fatigue actually alters stroke efficiency through a modified lower limb contribution during the serve.

The purpose of this study was to examine the impact of prolonged tennis playing on ball velocity and peak vertical ground reaction forces during three different types of serve.



Figure 1. Peak vertical forces and post-impact ball velocity were determined by means of force platform and radar, respectively.

forces and post-impact ball velocity were determined for each trial by means of force platform (dimension: 100 x 80 x 7 cm; Captels, France) and radar (precision: 0.1 km.h⁻¹; Stalker, USA) fixed on a 2.5 m high tripod situated two meters behind the players, respectively (Figure 1). Heart rate was recorded continuously and averaged every

five seconds during the match using short range radio telemetry (S610; Polar Electro Oy, Kempele, Finland). Values are means \pm S.D., compared by ANOVA.

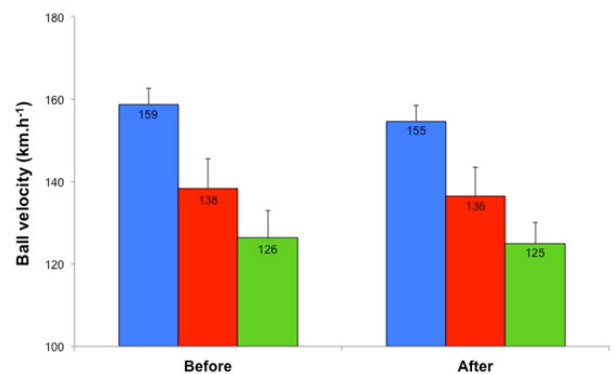


Figure 2. Ball velocity during the first (blue bars), slice (red bars) and topspin (green bars) serves before and after prolonged (150-min) tennis playing.

METHODS

Nine competitive tennis players (mean \pm SD: age 26.1 \pm 4.7 years; height 181.5 \pm 6.8 cm; body mass 76.3 \pm 7.6 kg) competing at regional to national levels (International Tennis Number ranging from 2 to 4) participated in the study. They randomly executed 10 flat (first, FS), 5 slice (first, SS) and 5 topspin (second, TS) serves before and after a 150-min tennis match against an opponent of similar standard. All serve trials were completed from the deuce service court. Peak vertical

RESULTS

Ball velocity did not change from pre- to post-match for all serve conditions (Figure 2). In the fatigued state, peak vertical forces were 8.2% higher ($P < 0.05$) for TS, but remained unchanged in FS and SS (Figure 3). There was no significant correlation between changes in peak vertical forces and ball velocity ($0.03 < r < 0.62$; $P > 0.05$) from pre- to post-match. During the 150 min tennis match, the mean heart rate was 140 \pm 8 beats/min, which represents a mean intensity of 75 \pm 7% of maximal heart rate (estimated as 220-age).

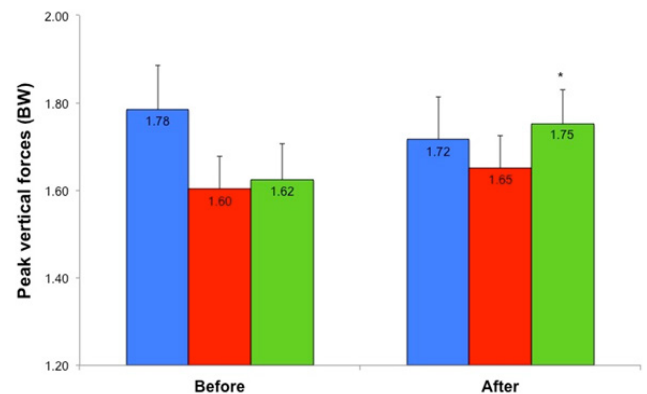


Figure 3. Peak vertical forces during the first (blue bars), slice (red bars) and topspin (green bars) serves before and after prolonged (150-min) tennis playing. * $P < 0.05$, significantly different from before.

DISCUSSION

During the last two decades, the occurrence of fatigue on skilled tennis performance has been researched increasingly (Davey et al. 2002; Vergauwen et al. 1998). The prevailing view of those investigations is that fatigue during a tennis match or experimental protocol manifests as mistimed shots (decreased velocity and precision). Consistent with other literature (Hornery et al. 2007), however, ball velocity did not change after prolonged tennis playing in this study. Contrasting effects of fatigue on tennis serve efficiency between studies may relate to discrepancy regarding service type, nature of fatiguing protocol or subjects' characteristics. In support of the last point, by comparing the effect of fatigue on attacking forehand drive proficiency between highly-skilled and recreational table tennis players, Aune et al. (2008) demonstrated that expertise enhances potential to adjust motor coordination strategies for minimizing the deleterious effects of physical fatigue.

In the fatigued state, peak vertical forces were unchanged in FS and SS. In line with these findings, no significant changes in explosive strength - as measured from squat and countermovement jumps - were observed after a tennis match protocol of the same duration (Girard et al. 2006). Unexpectedly, our results also displayed increased peak vertical forces in TS under fatigue. Since the ball velocity was unchanged, this stronger lower limb involvement during TS suggests that the contribution of other body segments participating to the kinetic chain (trunk, upper limbs) could be altered with fatigue (Figure 4). This is further supported by the absence of significant correlation between changes in peak vertical forces and ball velocity from pre- to post-match, as already observed in a non-fatigued state (Girard et al. 2005). Given that the aetiology of muscle fatigue during prolonged tennis playing is complex and likely to include both muscular (muscle contractility) and neural (muscle activation) factors (Girard et al. 2008; Girard et al. 2011), compensatory mechanisms at various levels of the coordination kinematic chain may act to delay the effects of fatigue, thus efficiently maintaining the velocity of the serve. It is possible that this compensation in trunk and/or upper limb muscles may be obtained by a greater reliance on the lower limbs during the TS. This view is consistent with others showing that under fatigue, the segmental coordination of complex movements may be rearranged. In an incrementally fatiguing study of junior elite water polo players, Royal et al. (2006) observed modifications to technical skill proficiency despite no reductions in shot accuracy or velocity. Bonnard et al. (1994) also studied multi-segment movements under fatigue and showed that hopping could be maintained for long periods of time by using different coordination strategies.

The use of pre-fatiguing situations (bouncing, in-depth jumping, plyometric exercise, medicine-ball) of specific muscle groups (i.e. knee extensors, shoulder internal rotators) followed by on-court high-intensity interval-training are recommended in order to widen one player's motor skill repertoire.

CONCLUSION

After a prolonged tennis match, ball velocity remained unchanged while the effects of fatigue on the lower limb drive were different according to the serve type. This may indicate a modification in inter-segmental coordination to maintain stroke efficiency under fatigue that requires further EMG (timing, muscle activation) and kinematic (linear and angular velocities, joint angles) data from leg, trunk and arm body segments. Results obtained on the serve must be expended to groundstrokes with, in parallel, a strict control of stroke proficiency including not only velocity but also reliable standardized measures of accuracy.

COACHING IMPLICATIONS

One main characteristic of the neuromuscular system is its adaptability. The training of competitive players should therefore focus on improving their ability not only to resist to fatigue but, more importantly, to adjust the coordination under fatigue. In other words, it is important to develop compensatory mechanisms at various levels of the inter-segmental chain in order to maintain the stroke efficiency when playing several hours. The use of pre-fatiguing situations (bouncing, in-depth jumping, plyometric exercise, medicine-ball) of specific muscle groups (i.e. knee extensors, shoulder internal rotators) followed by on-court high-intensity interval-training - possibly through the training version of the CREOPP tennis specific incremental test (Girard et al. 2006) - are recommended in order to widen one player's motor skill repertoire.

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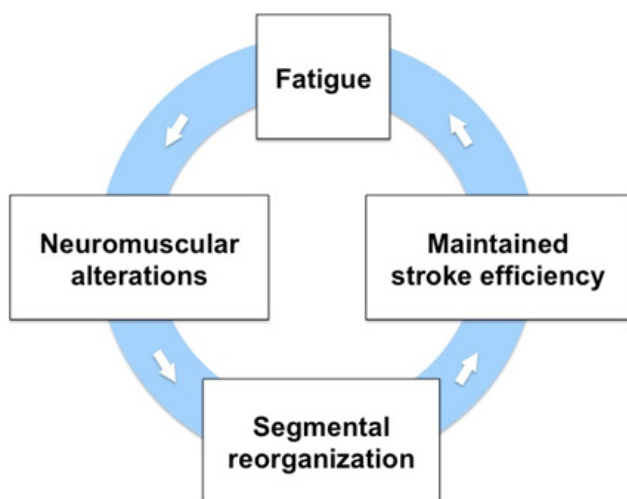


Figure 4. Hypothetical model of preserved serve efficiency under fatigue.

Seeking momentum

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ABSTRACT

This article reviews the phenomenon of momentum. This psychological construct denotes an advantage for a player and is associated with peak performance, confidence and self-esteem. A plan of action to attain, maintain and recapture (if required) momentum is proposed.

Key words: Psychology, momentum

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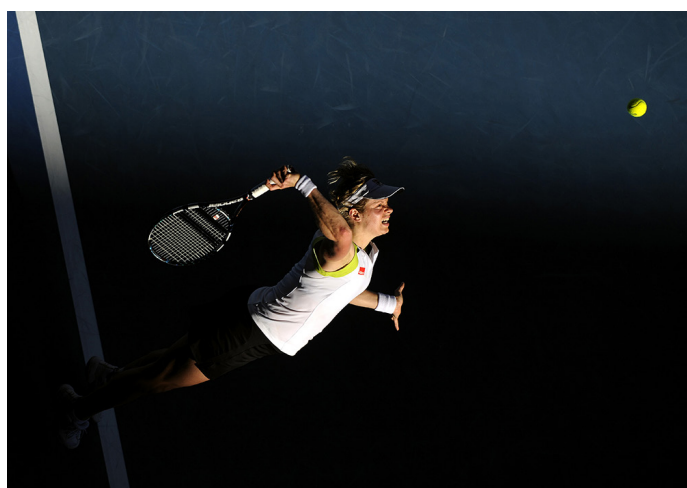
Article accepted: 3 March 2012

INTRODUCTION

In a recent Grand Slam women's singles match the momentum flowed and ebbed in an enthralling encounter over several hours. One player played almost flawlessly to lead 6.2 5.3 and match point with an unexpected win against a higher ranked player firmly in sight. It was then that the momentum swung to the fancied player who recovered to take over the lead and herself to face victory in the third set, only to lose in a heart-stopping long final set after holding match point. This match had it all and illustrated 'momentum', 'turning points' and 'shifts in momentum'. How do players get 'on a roll' or 'winning streak'? Why do 'momentum shifts' occur?

WHAT IS MOMENTUM?

Momentum (referred to as 'psychological momentum' in the literature) lacks a clear definition and has been defined as "an added or gained psychological power" (Richardson, Adler and Hanks, 1988, p.69); "the results of purposeful striving for accomplishment (Miller and Weinberg, 1991, p.211); and, "progressing toward one's goals" (Vallerand, Colavecchio and Pelletier, 1988, p.94). What is, however, clear about the term momentum is that it denotes a sense that events are going well and moving in a positive direction towards a desired outcome. As such, momentum is a subjective feeling or state of mind that things are likely to progress in line with previous success. For example, a player who has momentum and won the first set is most likely to win the next set. Accordingly, momentum can refer to a number of possible scenarios including a series of points, games, matches, tournaments or even Grand Slam victories!



Players are thought to vary in their ability to get, and be aware they have, momentum. It is often in retrospect that a player realises he/she had momentum when something happened to change the course of the match (referred to as a 'turning point'). In the case of the match described in the Introduction, the player pinpointed her nerves and emotions as the reasons momentum changed for her. As she said in her post match interview,

"I got a bit nervous and tight. I guess it was just adrenaline (at match point in the second set) and all the emotions hitting you at once".

Other factors that can influence momentum include interruptions to play [e.g., weather delays, dispute over line calls or score, injury] and the opponent's antics, tactics or change of play (e.g., Silva, Hardy & Crace, 1988). What is important here is a player's perception of such factors. For some players such factors may have no effect, but for others, they are perceived as the 'turning points' in a match.

It is interesting to note Csikzentmihalyi's (1992) contention that momentum is fragile such that, should a player stop to reflect on it at the time it is happening, this can cause momentum to change and/or disappear. Notwithstanding its unstable nature, players and coaches are encouraged to understand momentum because of its positive association with peak performance and healthy self-esteem and confidence. Players who gain momentum are more likely to achieve a positive outcome and feel good about their game and themselves.

HOW DOES A PLAYER GET MOMENTUM?

Unfortunately there is no easy step-by-step formula to guarantee momentum. Paradoxically, the best advice is not to think about momentum per se but rather to commit to a plan of action, the result of which facilitates momentum. While each plan should be tailored to the individual, the following suggestions are offered to players:

- 1. Take a game plan into the match** – define what you want to achieve in playing the match and develop a set of strategies to get you there
- 2. Take it one point at a time** – only the point you are playing has any relevance so keep playing the points, one at a time, until there are no more points to play and the match has finished
- 3. Commit to giving your best efforts and endeavor to win each point rather than playing to the score** – this will help to avoid anxiety and nerves that occur when one attaches specific importance to particular score lines (i.e., adopt the approach "my plan for playing this point is" versus "this is match point, and if I win this my ranking will go up and")
- 4. Expect the unexpected** – interruptions (e.g., poor line calls, opponent stalling between points, changes in weather conditions) are examples of a myriad of things that can happen during a match. Do not let them distract you from what you want to achieve, albeit you may need to adapt your game plan to address changing events and circumstances
- 5. Enjoy the game and its challenges** - remember tennis is fun and generally we perform at our best when we are enjoying and fully engaged in what we choose to do

These five elements of the action plan are interrelated and momentum is most likely to occur when all, or almost all, are present. These elements are also helpful should a player feel he/she is losing momentum or has lost it. What do they do? They can:

- Return to their plan of action and refocus on a new set of strategies (to accommodate the changed circumstances since the beginning of the match)

- Recommit to playing each and every point to the best of their ability and
- Reassure themselves that they can address anything that happens out on the court and the fun is in meeting the challenges as competently as they can.



CONCLUSION

The benefit of adopting the suggested plan of action is that it facilitates possible ‘turning points’ or ‘momentum shifts’ in a player’s favour. Every point is played to the best of a player’s abilities and efforts so that there are no regrets in hindsight about the points and games that got away or ‘turned’ the match. The player who is committed and motivated with a game plan, competes intensely on each point, enjoys the challenge and expects the unexpected is primed to find his/her groove, rhythm or flow. It may not happen each time a player plays but the chances are it will become more frequent.

Returning to the match described in the Introduction, it is most likely both players have reviewed and learnt from the experience. It certainly provided spectators with a real-life illustration of what tennis is all about - being challenged to take a lead, and then recover a lead, over the course of a match. Matches seldom go ‘without a hiccup’ but rather tend to flow and ebb. Momentum may very well all be in the mind but it certainly feels good when it happens and the match results are generally better!

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Continuous professional development in Europe

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ABSTRACT

With the game ever evolving, coaches need practical support and education on an ongoing basis. The present study summarizes the results of a survey of 24 European nations on Continuous Professional Development (CPD) practices within tennis coach education. Data was collected at the European Coaches Symposium held in Portugal in September 2011. Results from the study showed the different incentive strategies used for engaging coaches in CPD, the use of online resources for engaging in CPD, as well as the prevalence of mentoring programmes across Europe. Results are discussed in relation to improving CPD procedures in Europe and worldwide, as well as potential future directions for CPD.

Key words: Continuous professional development, coach education

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INTRODUCTION

The game of tennis is constantly developing, improving and reaching new levels. It should therefore follow that coaching behaviour and expertise must develop with it. From the adoption of new teaching methodologies right down to the daily application of modern advances in technique, a coach must continually strive to improve their level of knowledge and expertise if their intention is to produce players for the modern game.

As in the hypothetical model below by Van Fraayenhoven (2006), knowledge acquisition by a coach should not cease after initial certification, but rather continue by a constant and cyclical process of gaining new knowledge and applying it. Formal Continuous Professional Development (CPD) undoubtedly plays a key role in this cycle, by supporting coaches' learning on a constant basis. Furthermore, research has asserted that the key to improved coaching lies within both coach education and development (Woodman, 1993; Cushion, Armour & Jones, 2003). With the important role that CPD plays in Coach Development, the current research investigates a number of aspects surrounding CPD practices in 24 European countries.

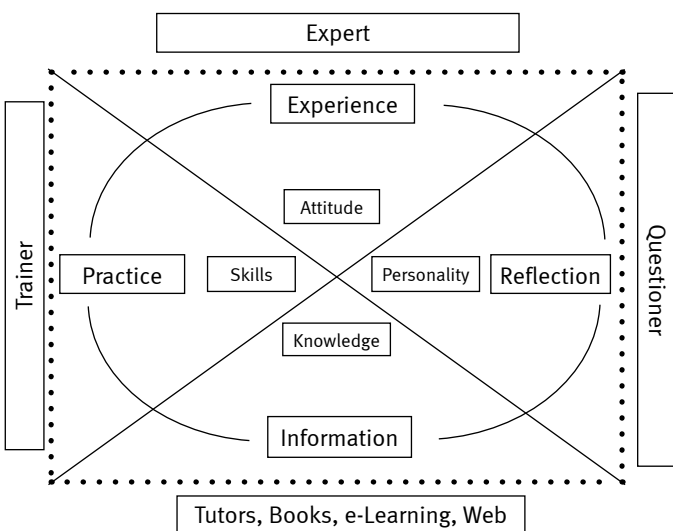


Table 1. Hypothetical model of knowledge acquisition for coaches (Van Fraayenhoven, 2006).

METHOD

Surveys were distributed to the coach education directors and national coaches of 24 European nations plus Australia (N=25) at the Tennis Europe Coaches Symposium, Vilamoura, Portugal. Participating nations included Finland, Turkey, Switzerland, Netherlands, Latvia, Italy, UK, Belgium (Dutch), Belgium (AFT), Cyprus, Spain, Georgia, Belarus, Ukraine, Austria, Sweden, Norway, Hungary, Germany, France, Luxembourg, Poland, Romania and Ireland. Australia, although not a European nation also participated in the survey. Results were analyzed and are displayed visually in the results section below.

RESULTS AND DISCUSSION

Research has shown that one of the most relied upon sources of CPD is through informal coach to coach learning and exchange of information- coaches serve what is described in physical education as an 'apprenticeship of observation' (Cushion et. al, 2003). This observation of other more experienced coaches with different proficiencies is a key aspect of developing professionally and is supported in the literature. However, in addition to informal CPD, it is recognised that coaches should engage in formal means of education on a regular basis.

Incentivising Continuous Professional Development

Indeed one of the key issues associated with CPD is encouraging coaches to participate in such events, courses and educational workshops. From a practical perspective, attendance at conferences and training courses can ensue financial costs associated with attendance (in addition to the coach not being able to work whilst attending the event). Investing in professional development can therefore at times be seen as 'unattractive' for some coaches, and they therefore often abstain from formal CPD. The pie chart below illustrates what incentives and rewards are in place across Europe to encourage coaches to engage in CPD, and therefore continue to improve their level of expertise and knowledge.

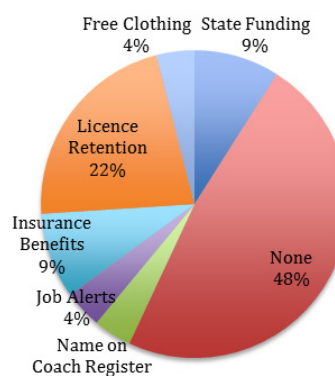


Figure 1. What incentives/rewards are in place to encourage your coaches to engage with CPD?

The above pie chart demonstrates a number of useful incentives adopted by European nations, including primarily the use of license retention to encourage CPD attendance. The use of a licensing scheme within a coach education programme allows for a system whereby coaches must 'earn' their license by engaging in CPD throughout the year. This is a commonly used approach by many nations. The use of a license is therefore recommended as a way in which to attract coaches to engage in CPD, and therefore raise their knowledge base, experience and level of coaching. The results however illustrate that only 22% of nations in Europe currently engage in the use of license retention as an incentive to engage in CPD.

In addition to license points, insurance benefits, job notifications and inclusion on a coaches register were found to be other forms of reward. However, it is evident again from figure 1, that although there are a number of useful incentives for coaches, a vast majority of European nations (48%) do not engage in any incentive/reward scheme to encourage a coach to engage in CPD.

Continuous Professional Development online

The use of online resources is continually gaining strength with technological advances that allow for more effective online distance learning, and also the management and tracking of that learning through Learning Management Systems (commonly referred to as LMS). Online resources (see figure 2.) are an attractive CPD tool due to the convenience they present to the coach. Resources such as the ITF Tennis iCoach allow coaches to expand and improve knowledge, and attend conferences virtually. In the future, online CPD will continue to become a more important tool. Indeed, a further result from the present survey indicated a positive attitude towards online CPD from a majority of European Nations (see figure 3.) National Associations are therefore encouraged to continue to make use of online resources that provide cost effective and convenient continuous education for coaches.vv

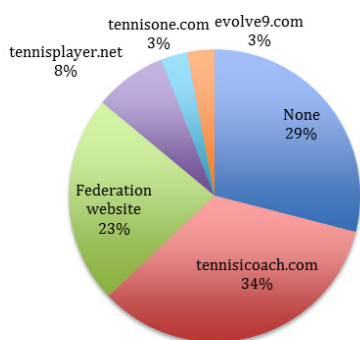


Figure 2. Websites where coaches receive "free" or subsidized access from their National Association.

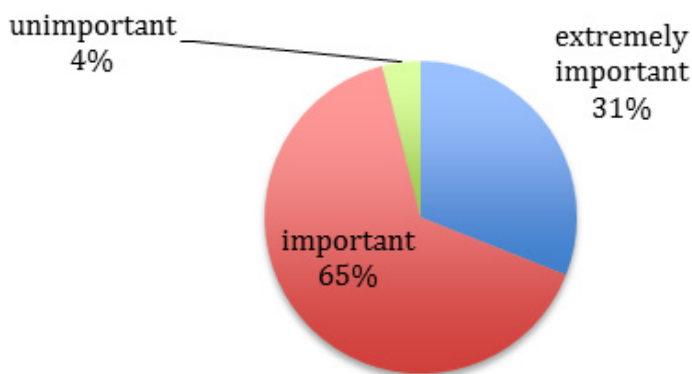


Figure 3. European attitudes towards the importance of distance learning and online resources for CPD.

Mentoring programmes

Figure 4. below shows the proportion of nations that have a mentoring programme in place that coaches can avail of after initial qualification. Mentoring involves ongoing training and advice from more experienced coaches, in order to support a coach during that vital "in the field" period. Results show more than 50% of European nations are without a mentoring programme. Research into mentoring programme efficacy outside of sport has commonly reported benefits including increased levels of learning and coaching, assistance with career planning, and psychosocial support (Eby & Lockwood, 2004). Furthermore, the development of reflective skills has been cited by Knowles et al. (2005) as a key element of coach development. Engagement in mentoring programmes undoubtedly fosters reflection and self-evaluation practices. With these valuable aids potentially at hand, a recommendation of the current research is therefore to encourage National Associations to adopt the use of mentoring programmes as part of their overall CPD programme, if not already doing so.

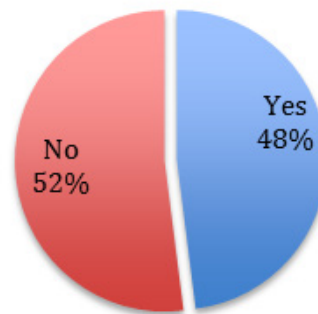


Figure 4. Nations with a Mentoring Programme in place.

CPD FOR THE FUTURE

The table below shows a number of interesting facts about CPD. Firstly, the development of e-learning is seen as a high priority relative to other forms. CPD that is available online (therefore bringing convenience and cost effectiveness) is by far the most attractive forum for coaches, and is therefore more likely to be undertaken. In addition, the implementation of a licensing scheme is seen as a priority. The use of licensing schemes is not only an incentive for coaches to continually educate themselves, but it is also an important step for tennis coaching to be legally recognised as a formal profession (similar to the legal and medical sector for example).

PRIORITY IN CPD FOR THE FORESEEABLE FUTURE IS:	
Response	Number of responses (Nations)
Develop e-learning opportunities	3
Implement licensing scheme	3
Involve university education opportunities	3
How to work effectively with starter players	1
Develop international cooperation	1
Make it compulsory	1
Specific theme workshops	1
Develop a database of coaches	1
Increase the number of coaches involved	1
Run a course for tutors	1

Table 2. CPD priorities for National Federations.

CONCLUSION

Coach education has been cited as being a crucial element for improving the standards of a sport (Cunningham, 2000). From a practical perspective, the modern day coach is now frequently expected to take on a variety of tasks beyond simply coaching, in order to foster a better working environment for the performer or the coach (Knowles, Borrie & Telfers, 2005). All these factors combined elucidate the challenging role coaching can offer, and therefore re-iterates the importance of continually developing ones skill, expertise and knowledge set through Continuous Professional Development.



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Tennis 10s: adapting coaching methodology to the rule change

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ABSTRACT

This article reflects on the current need to adapt coaching methodology according to the implementation of the Tennis 10s rule change enforced by the ITF in January 2012. It discusses two fundamental aspects of the Tennis10s programme and justifies the importance of this methodological evolution focusing on the benefits for beginner players. Finally, it reflects on a key aspect: appropriately focused competition being a fundamental driver at the beginner level for the teaching – learning process.

Key words: Tennis 10s, rules, methodology, initiation

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INTRODUCTION

The modern model of teaching – a way of learning based on systemic training (Crespo, 2011), which consists of tactical, technical, physical and psychological development as a single and integrated concept from the very first lesson. This is a systemic training where tactics is the underlying impetus for training, and defines all aspects and content.

In order for this model to develop players optimally, a number of things are required of coaches. Enthusiasm on the part of the coaches is paramount as well as a will to provide players with better quality lessons that provide the appropriate intensity and challenge. Furthermore, considerations about the child's maturity and the demands of the game being placed on them is required.

TENNIS 10S

Tennis 10s, an ITF campaign (Miley, 2010) adopted by many countries all over the world, includes three clearly differentiated stages (Red, Orange and Green). The teaching - learning methods and contents were introduced by the ITF throughout previous years through different courses and seminars organized by national associations and clubs. Whilst these changes have been taking place, many coaches still find changing their coaching methodology a challenge. The present article argues that coaches only need to make some small adjustments to what they have been doing so far.

Red, Orange and Green stages consider the psychomotor development of the child. The targets set for each stage can only be achieved at a certain point of development and not before, so it is important to adapt the player's progression to an important element: INDIVIDUALITY.

This way, it will be possible to develop a player with the characteristics that modern game requires, particularly those that address the tactical aspects, the development of mobility, the technical development with strong and accurate strokes, and independence and confidence in the game among other variables and attributes (Barrell, 2010).

All these changes provide the coach with the guidelines he will need to put the child in a game situation on a permanent basis (Anderson, 2010), which will help him to make decisions and technical adjustments to the tactical decisions made by the child.

More interested readers are directed to the special CSSR issue on Tennis10s, published in August 2010.

ADVANTAGES

After expressing opinion on the programme, it is important to ask ourselves: How does this change help us as coaches?

There are, in the author's opinion, several reasons to justify the adoption of Tennis10s (ITF, 2009):

- To conceptualise the different stages in a clearer and more concise way.

- Clearly defined development goals at each stage are a great incentive for players and parents to know the objectives so as to focus their efforts on something that has previously been defined without having to rely on intuition.
- The coach will evaluate the players' development according to their needs.
- It helps parents to understand the education process and the stage of their children development.

Having clear didactic and methodological targets for each stage of the learning process will avoid exposing the children to education processes in which improvisation and intuition are the main protagonists (Cabral, 2010).

It is important to recognise that bad habits adopted during the first years of a child's tennis development can negatively impact expected progress as a child grows up (Newman, 2010), but, what is worse, this can also lead to a lack of motivation and quitting on the part of most beginners. Our only objective as a coach should be, and the author agrees with Crespo (2010), the education of a child who is happy with activities and classes, and that has an intelligent and complete understanding of the game at the same time.



TENNIS 10S AND COMPETITION ADAPTED FOR CHILDREN

It is vital to create a competition that is tailored for children in order to achieve a good future development and more and better tennis players (Declercq, 2010). The present article aligns itself with the statement: "Competition is not negative in itself, what is negative is its misinterpretation and incorrect application to competition".

Competition is natural for a child (Tennant, 2010), it reassures the player, it helps the player evolve, it improves character, self-esteem and social bonds whilst also teaching them how to interpret and accept rules. Thus, it is necessary to have a structure and an organization to help the child to feel closer to the game (Procter, 2010). Competition is also another way to acquire new skills and is a systemic part of the education of a child (Elderton, 2010).

This is the time for all those involved in the training process of our tennis players (managers, coaches and parents) to adopt the tool that Tennis10s provides (adapted courts, balls and rules) and adapt the familiar adult game for use by children- taking into account the level of development of each child so that they can compete at the appropriate stage depending on their tennis level.



CONCLUSION

With the Play and Stay participation programme being stronger than ever, it has never been a better time to continue to work towards enlarging the tennis participation base (Cabral, 2010) at all levels. This includes not only players, parents and coaches, but also federations and the tennis industry as a whole (De Boer, 2010). Having said that, one must not focus only on initiation per se; and seek to improve the grass roots level having top performance in mind (McEnroe, 2010). To conclude the present argument in one statement: “More players- Better competition - Better psychomotor development”

Note: Instances of ‘he’ refers to both male and female.

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The two-handed forehand (Part 2)

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ITF Coaching and Sport Science Review 2012; 57 (20): 25 - 26

ABSTRACT

This article is a continuation from an article published in a previous issue CSSR 55, that discusses the two handed forehand. In this second part, the issue of shifting from the two handed forehand to the single handed forehand is discussed as well as the different criticisms that this stroke has received. The main discussion point of this article is the consideration of the two-handed forehand as a solution to aid in the correction of a flawed one-handed forehand. Finally, laterality is also discussed as a feature of players using this stroke.

Key words: Technique, two- handed forehand, teaching methodology

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INTRODUCTION

Former champions such as Gene Mayer (n° 3), Gildmeister (n° 10) and more recently Monica Seles (ex n°1 WTA) as well as French players Fabrice Santoro and Marion Bartoli all developed a great game efficiency using a two-handed technique on both their forehand and backhand. Furthermore, Rafael Nadal is an example of a player that played this way up to the age of 10-years-old. Indeed if we let very young players (4-5-6 years old) practise freely with balls, either bouncing or on the ground, they will in many instances perform groundstrokes using both hands on both sides. This article continues the discussion from part 1 of this article, by looking more at the features of this two handed technique.

SHIFTING FROM THE TWO HANDED FOREHAND TO THE ONE HANDED FOREHAND: AN EASY SWITCH

A player that uses a two handed forehand grip can make the move to the single handed forehand with relative ease. Like any technical change, success will not be immediate but the change is relatively straight forward. As a coach, all one should do is instruct the child to remove their left hand (assuming right-handedness). Once the player has removed the left hand, the player must then begin to accustom themselves to execution with the right hand only. The right hand should simply position itself naturally lower on the handle for a full one-handed stroke execution (at the beginning the child naturally brings his hand closer to the heart of the racket for purposes of handiness rather than strength).



Figure 1. Ludovic hitting a one handed forehand (grip on the bottom end of the handle).

Right hand at the bottom end of the handle, left hand above: The one hand from two hands switch is all the easier since the right hand is already in the best position for playing a one-handed shot (whereas the two-handed preparation poses some problems of swing fluidity).

It should be noted that when a child uses a one-handed grip, it is done either for the entire swing (from the preparation to the follow through) or partially, with the other hand taking hold of the racket again towards the end. Coaches should ensure that these procedures respect the stroke fundamentals by verifying that they are efficient both technically and tactically.

CRITICISM OF THIS BROADER STROKE LEARNING EXPERIENCE

Learning a two-handed stroke to end up using a one-handed technique can be seen as unnecessarily time-consuming.

At the beginning of the learning process, the motor experience must be wide-ranging even if tennis-oriented at all. The child must practise hitting bouncing balls (or volleying) on both the left and the right side: two-handed / one-handed techniques with the right hand (right-hander forehand – right-hander backhand) and the left hand (lefthander forehand – lefthander backhand).

At this stage, this broader motor experience gives the child a better knowledge of his body as he/she needs time to define their laterality (a skilled child usually doesn't refrain from swapping hands in order to hit balls on either his right or left side!).

This allows to better learn the basics and to develop proper technical sensations, which are easily transferred from two-handed strokes to one-handed strokes and vice-versa (for instance, in the forehand the rotation is better experienced through the two-handed technique and the forward swing is better acquired through the one-handed technique).

THE TWO-HANDED FOREHAND AS A SOLUTION TO CORRECT A FLAWED ONE-HANDED FOREHAND

The two-handed forehand can help correct several aspects of an imperfectly learned one-handed forehand:

- Excessive swing size during stroke preparation (position of racket and arm much beyond the shoulder line at the end of the preparation): a preparation with both hands naturally limits the amplitude of the backswing.
- Lack of quality in the wrist action during the preparation and ball impact: with a two-handed forehand, the wrists are firmer during the backswing and more toned during the forward swing.
- Improper positioning: with a one-handed forehand, the child can rely more easily on his arms as opposed to his legs in order to reach the ball. The two-handed strokes force him into adopting a more rigorous footwork and making more accurate adjustments to the ball (due to the link between arms and body).
- Impact zone too lateral: either because of an excessive preparation or a lack of dynamism in the stroke (only played with the arm, with no leg drive or rotation of the hips, shoulders, etc.). Two-handed strokes make it much easier to rotate in order to hit the ball in front of the body.

- Elbow away from the body at contact: when the arm swings too far from the body - during either the preparation or the end of the shot, but more particularly at ball contact- the shot cannot combine the strength from the arms and legs. However, with the two handed forehand it is easier to maintain the elbows close to the body throughout the entire swing.

- A compensation shot with unintended slice effect: due to all the above reasons but also to the additional power gained by using both arms, two-handed forehands make it easier to brush up the ball.

CONCLUSION

In light of the above, the two-handed forehand is a not a miracle solution: it is useless against a poor assessment of ball trajectories or limited physical capabilities ... Yet, a less skilled player is more likely to reach the ball and to hit accurately with this stroke.

It is an ideal starting point to ensure early in the learning process a proper shoulder alignment, a positioning of the elbow close to the body both during backswing and forward swing, a smoother rotary motion, etc. It is similar to the one-handed forehand in terms of swing motion and shifting from one to the other is easy.

The fact remains, however, that many players show a marked laterality, have one arm stronger than the other, a dominant eye that affects more or less the orientation of the body, a weak footwork, etc.

Once beyond the initiation stage, it is up to the coach to guide the player toward the future efficiency of his shots (two-handed, one-handed?) in the most varied game conditions.

At the highest level, the two-handed forehand of a player like Santoro was never a real “weapon”. However, with his two-handed technique, Santoro would create some problems to the best players (including Federer) due to his game being based on touch, accuracy and depth. On the contrary, Marion Bartoli hits her forehands with a lot of power and takes the ball early... Who can tell if in the future two-handed forehands and backhands won't become the solution to counter the extraordinary power displayed by the best servers in the world?

PUBLICATION NOTE

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From 1st January 2012 the Rules of Tennis will change and it will be mandatory for competition for players aged 10 and under to be played with slower Red, Orange and Green balls on the appropriate sized courts. The traditional yellow ball will no longer be permitted for 10 and under competition.

Story Time (Andre Agassi & Steffi Graf)

The ITF's Tennis Play and Stay campaign centres around the slogan "tennis, rally and score" and the recommendation that starter players play the game from the first lesson. The campaign is supported by the top ITF national professional players including Roger Federer, Rafael Nadal and Justine Henin, as well as the equipment manufacturers.

The campaign aims to retain more starter children and adults in the sport by improving the way adults in which coaches worldwide introduce tennis to starter players, ensuring their first experience is both positive and enjoyable.

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ITF Development Programme - Annual Report 2011 published online
(24 May 2012) The ITF Development Programme, a publication providing a detailed breakdown of the various projects supported by the Development programme of the ITF and the Grand Slam Development Fund, is now available online.

Nigeria and Benin dominate in Senegal
(13 Jun 2012) Nigeria and Benin dominated at the ITF-CAT West & Central Africa 15 and 14 & Under Circuit at the Stade de Senegal.

Semic athletes on North African tour
(14 Jun 2012) Serbian Sandra Perkovic and Croatia's Iva Majumec were the ITF-CAT West & Central America 13 & Under Circuit at the Estadio de Santiago.

Guatemala dominates in El Salvador
(10 Jun 2012) Guatemala dominated at the ITF-CAT Central America 13 & Under Championships 2012.

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tennis 10s **PLAY+STAY**

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Regular tennis ball eliminated from ITF competition
(10 Jun 2012) The ITF's new 10s ball, which is designed for competition, came into worldwide effect on 1 January 2012.

Asian and Graf support ITF and Olympic rule change
(10 Jun 2012) The ITF has teamed up with Andre Agassi and Steffi Graf to make a commercial that promotes the new 10 and under rule change.

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