



WELCOME TO COACHES REVIEW !

Welcome to issue 11 of ITF Coaches Review which features articles from the US, Britain, Germany, Argentina and Spain. The subjects covered include an article on the second serve/volley/return game by Dan O'Connell, how to prepare young players for physical training by Tim Newenham, and a very practical article on biomechanics of the serve by Jayne Piller. Nick Jones illustrates the importance of following a tennis system based upon a vision and philosophy with the example of Ajax soccer club. Jack Groppe emphasises the importance of an adequate fluid intake for tennis players. Howard Brody explains the characteristics of the vibration dampers. There is also an article on hand and wrist injuries in tennis by Geoffrey Griffiths. Richard Schonborn explains a new way to understand the structure of technical training. The role of a national team captain is illustrated by José María Piza, Alberto Riba and Miguel Crespo in a very interesting article while Gustavo Granitto explains the goals and methodology of a 'training camp' for junior players.

In this issue we start a new section called "What tennis research tell us about...". In this section we will include summaries of articles published in scientific journals that may be of interest for tennis coaches. Each issue will deal with one specific topic: psychology, technique, biomechanics, medicine, pedagogy, physical education, etc. We will also include the articles references in case coaches want to obtain an entire copy of the article.

The ITF's global presence on the Internet is also covered in an article that will open a section of "Tennis on the web" in future issues.

Finally, we include an index of all articles published in Coaches Review. They are classified by subjects which include: technique and biomechanics, tactics, psychology, medicine, physical conditioning,

planification and periodisation, and teaching and training. We hope this will help coaches to find the articles they may need.

Many of our readers will be interested to know that the ITF level 2 Coaches Syllabus will be ready by the middle of this year. Full details on course implementation will be sent soon to all National Associations interested. We are also preparing a mini-tennis publication that will be ready by Autumn this year.

The release of our next issue will coincide with the staging of the 10th ITF Worldwide Coaches Workshop in Puerto Vallarta, Mexico from 17 to 24 November 1997. We hope to see many of you there.

We hope that the articles in Coaches Review continue to generate a lot of discussion among coaches around the world. If some of our readers are interested in commenting on any of the articles published in Coaches Review we would be happy to receive your letters and if we feel your comments are of interest, we may publish some letters in future issues.

Once again we would like to thank all the coaches who have contributed articles for this issue of ITF Coaches Review. If you have any material that you deem relevant and worthy of inclusion in a future issue, please forward it to us for consideration.

We do hope you enjoy our 11th issue of Coaches Review.



Doug MacCurdy
General Manager



Dave Miley
Manager,
Development



Miguel Crespo
Research Officer

THE SECOND SERVE/VOLLEY/RETURN GAME

by Dan O'Connell (ITF Development Officer - Pacific Oceania)

This four player round robin consists of four games. All players sit out one game (three players are involved in each game). In a game, each player serves ten points and receives ten points (20 points). As each player participates in three games, a maximum of 60 points can be won/lost by each player.

Rotation: Player 'A' receives 10 second serves, with players 'B' and 'C' alternating serve (service order is like a game: deuce, add, deuce, add, deuce). After 'B' and 'C' have served five points each, the players rotate, with 'B' returning 10 serves. In the final rotation, 'C' returns 10 serves.

Rule: After each serve, the server must run to the net to hit a volley.

Purpose: To monitor second serve accuracy, to develop the serve / volley game and to enhance the service return. Scores are recorded to determine a winner.

DATE: _____

	NAME	DOUBLE FAULTS	SERVICE POINTS WON	RETURN POINTS WON	TOTAL POINTS WON
GAME # 1	A. _____ ()	_____	_____	+	_____ = _____
	B. _____ ()	_____	_____	+	_____ = _____
	C. _____ ()	_____	_____	+	_____ = _____
GAME # 2	B. _____ ()	_____	_____	+	_____ = _____
	C. _____ ()	_____	_____	+	_____ = _____
	D. _____ ()	_____	_____	+	_____ = _____
GAME # 3	C. _____ ()	_____	_____	+	_____ = _____
	D. _____ ()	_____	_____	+	_____ = _____
	A. _____ ()	_____	_____	+	_____ = _____
GAME # 4	D. _____ ()	_____	_____	+	_____ = _____
	A. _____ ()	_____	_____	+	_____ = _____
	B. _____ ()	_____	_____	+	_____ = _____

NAME

A. _____ TOTAL POINTS WON _____ DOUBLE FAULTS _____
 B. _____ TOTAL POINTS WON _____ DOUBLE FAULTS _____
 C. _____ TOTAL POINTS WON _____ DOUBLE FAULTS _____
 D. _____ TOTAL POINTS WON _____ DOUBLE FAULTS _____

PREPARING YOUNG PLAYERS FOR PHYSICAL TRAINING

*by Tim Newenham (LTA Fitness Trainer, Great Britain)
 This article first appeared in Coaching Excellence, issue 13*

Before joining the LTA, I have taken fitness training sessions with various groups, sports and ages for the past 12 years. Here are a few observations that may help you establish fitness training programmes for your junior players. The main aims should be to help them develop good habits early as well as improve their fitness levels.

1. Make the sessions fun. It's going to be a hard slog if your players don't enjoy what they're doing. Remember their first experience of regular training may shape their attitude to training later in their career.

2. Establish regular sessions. If sessions are cancelled, the routine breaks down. If this happens there won't be much benefit from the training. So have someone ready to cover in case of last minute emergencies. If this person isn't a fitness guru, conduct a training session they're familiar with. Don't cancel!

3. Ensure the group ethos is positive. The training atmosphere must be encouraging for everyone in the group. No-one should feel intimidated by others. Watch for early signs of anyone overstepping the mark with a 'sarcastic' or 'negative' comment. Try to ensure a relaxed atmosphere where players think more of beating personal bests than the other players.



Junior players training at the ITF/SATA Training Centre at Ellis Park, Johannesburg

4. Use a standard start/train/finish structure. We all fear the unknown to some extent and juniors will feel more comfortable quicker if they are confident that they can cope. So have a routine that they can get to know quickly. For example:

● **Start: 10 minute warm-up:** tennis football; unihockey; basketball, handball, anaerobic equipment. **5 minute stretch:** same routine, one new stretch every two sessions. Involve the group members in leading the warm-up.

● **Training scheme: 35 minutes.** Strength, power, speed, endurance, flexibility.

● **Finish: 10 minute cool-down.** Aerobic equipment; jogging as a group; stretch; summary 'chat' (end on a positive note).

5. Develop a 'switch-on, switch-off' philosophy. Have a chat or a drink in-between repetitions and sets of training. But when it's the players turn to train they should have 100% focus. This is far better than half-hearted concentration throughout. This useful technique does need to be reinforced with the youngsters early on in their development.

6. You don't have to do it yourself. There may be a fitness trainer in your area who has experience of dealing with juniors, but not necessarily with tennis experience. A fresh face would not only give you a break, it would give your group a break from you and make use of another persons expertise.

Fitness training should be undertaken at a sensible time, convenient to the majority of the group you wish to invite. Once the routine is in place, the players may be given a priority area to work on in their own time, to fit in around their busy schedules. If it is kept simple, it will work. A junior player really doesn't need to know in great detail the rationale behind it. They just want to have **fun** and **play**. Good luck!

GUIDELINES FOR TEAM CAPTAINS

by José María Piza (Technical Co-ordinator Royal Spanish Tennis Federation), Alberto Riba (Technical Director Royal Spanish Tennis Federation) and Miguel Crespo (ITF)

In this paper some of the experiences as team captains at different levels from club to national level are summarised. At club, regional or national level the captain's role is a very similar one although there are some small differences.

NOMINATION

When you are nominated as team captain by a club of a Regional or National Association it is assumed that you have a broad knowledge of the players on the age-category. The main source of information about players is by looking at the possible team candidates during competition. A good captain should attend the most important age-group competitions in order to have an exact knowledge of the play of his players.

In our opinion, a champion/winner is the player who performs better in competition than during practice, while the loser is the one that practices at high level but can not cope with the pressure of the match. The champion of the future is the one that overcomes adversity and doesn't choke in the important moments of a match. A team captain has to choose players with this 'winner mentality' for his team.

Junior players have a very fast evolution in all aspects: physically, physiologically, mentally and technically. Thus the captain has to be very aware of this evolution in order to appreciate the possible changes.



José Maria Piza with the Spanish team at the 1996 NTT finals in Nagoya, Japan. (Picture: Yoshio Kato).

SELECTION CRITERIA

- 1. Surface:** The type of surface will affect the team selection. When selecting players for fast surfaces try to consider their offensive game (serve and volley, winners, etc). When selecting players for slow surfaces consider aspects such as percentage play, creativity, consistency, patience, etc.
- 2. Decision:** The captain's decision will be based on his knowledge of the player, the opponents and the competition. He has to be open to other colleagues' opinions but he should never allow pressures from parents, private coaches, etc., to influence the decision. The person who makes a decision can be wrong, but the worst decision is no decision!. There isn't an absolute truth but the captain has to play his role with honesty and integrity.
- 3. Nominated players:** The selected players should be the ones who are playing best at that moment. The captain can use previous head to head confrontation between the players as a criteria, but he doesn't need to nominate necessarily the national champion of the age-group. Including a good prospect to gain experience for the future can be a good idea.
- 4. Players' behaviour:** This is an important aspect in and out of the court but unfortunately it is difficult to leave aside a troublesome number one player that will help the team to win. When facing this situations, a good idea is to make the player realise the great responsibility they have in representing his country and playing a team competition.
- 5. Placing strategy:** It is not easy to find more than two players that can play number 1 and 2 of the team. When the level of the best player is basically equal the captain can place them in a strategic position but always respecting the tournament regulations.

RELATIONSHIP

- 1. Parents:** The captain has to respect the parents' role and vice versa. They have to co-operate without interferences. Parents have to understand the team concept. However they can help to create a familiar atmosphere especially during international competitions played abroad.

- 2. Private coaches:** Respect and communication are the key words. The captain has to realise that if problems occur with the private coach the player performance may decrease and the team climate will be worse.
- 3. Team atmosphere:** Creating a team philosophy with players who are intrinsically individualistic isn't an easy task and demands a big effort from the captain. This team approach will have very positive consequences for the players since they will learn to share responsibilities and to make joint efforts for the well-being of the team. The captain is responsible for creating a familiar atmosphere that helps to reduce pressure from the competition.

PRACTICAL ISSUES

- 1. Pre-competition:** It is very important to organise a preparation or pre-competition stage with all team members. Practices should emphasise high intensity and improvement of confidence in all areas of play. At this time the captain will have the opportunity to determine the player's places according to their present level of performance.
- 2. Competition:** International competition allows the captain and the team to be with the best players. You get to know other clubs, regions, countries and people, different life styles and various ways of organising tennis. It allows the team to compare and to improve.
- 3. Doubles:** The captain has to decide the doubles team. It is usually difficult because the players belong to different clubs, cities or regions and often they haven't played together before. Since the doubles match usually decides the tie, it is a good idea to practice it during the pre-competition stage by testing different team combinations. Obviously it is much better that the nominated doubles team is composed of players that get on well. But this will not always be the case!
- 4. Tactics:** There are a lot of tactical differences between men's and women's teams, and between under 14, under 16 and under 18 teams. Junior players tend to have a lot of ups and downs in their game. Thus you can make a tactical plan before the match but for sure you will have to adapt it during the match.
- 5. Coaching:** Players win or lose their matches, but captains can help players to play up to their maximum. The captain has not the main role during the match but he can't be considered only as the one that opens the bottle of water or towels off the player.
- 6. Umpires and officials:** The captain has to respect umpires and officials. It is a bad strategy to complain about all the decisions or umpire's mistakes. But you do have to show that you are prepared to defend your team's interests with good manners and ability.

CONCLUSION

Being a team captain is a very demanding job, but it also has a lot of rewarding benefits that make you a better professional and a better person.

HOW TENNIS DEVELOPMENT CAN LEARN FROM THE AJAX SOCCER-DYNASTY SUCCESS

by Nick Jones (ITF Development Officer, Africa)

Ajax of Amsterdam have, arguably, the most thriving youth development system in European soccer and can perhaps be compared with Swedish tennis in the past 20 years; both have achieved this relying on relatively modest resources. With two recent successive European Cup Finals and with the average age of its squad member's barely out of the teens bracket, Ajax's youth policy is worthy of a cross-sporting comparison, having produced players like Cruyff, Rijkaard, Bergkamp, Kluivert and Van Basten, (in tennis terms, Borg, Edberg and Wilander et al.). Key factors in the Ajax youth programme contributing to an abundance of players are:

1. Every player is evaluated according to a system called, TIPS. This standards for Technique, Intelligence, Personality and Speed. The 'Personality' checklist looks for creativity, audacity, and charisma as well as self-confidence.
2. Ajax focus on a 40 km. radius from the club, holding a talent day event twice a year for up to 1500-2000 players. There is a 'belief' in the support and confidence of local talent.
3. There is a clear style - the Ajax Way. The values of discipline and 'tough' training schedules coupled with care and sensitivity of players is a trade mark at the club. A perceptible 'special culture' bonds and unifies the players around a common identity, which, crucially, is reinforced by the quality and personality of people coaching, who think long term about the system of play and of the players.
4. Ajax gives everyone involved in the club a sense of value. The groundsman stayed at the same hotel as the Chairman during the last year's European Cup Final.
5. Ajax players can play in all field positions. Learning intelligent play is a priority over labelling players in terms of specialised positions.
6. There are 10 teams of 16 players, ages range from 7-18. All teams are encouraged to play older teams with little concern about winning. Fast one-touch passing is instilled in young teams, often at the expense of results. This process assists preparation for a call-up to the senior team before the age of 20,

allowing the player to test himself early at a higher level, (Cruyff made his debut at 16).

7. Performance is reviewed annually. Details are important, ranging from drills/technique to personality analysis.
8. The belief in a club identity. It is important to decide on a clear and definable system, then apply it, with the development of coaches to bring it to effect.



The Ajax soccer team - one of the most successful development systems in European soccer.(Picture: Louis van de Vuurst)

9. Ajax spend \$1 million a year on development of the club's 10 youth teams. However, one player, Clarence Seedorf, was sold for \$6.4 million to an Italian side, and recently moved to a top Spanish club. Ajax have made development of talent a commercial success, allowing them to compete with rich clubs like AC Milan and Barcelona.
10. The opinion that the drills are easy for other clubs to copy but the unique identity and culture at Ajax which has formed will be difficult to replicate. Personnel being a key issue in cultivating a productive and positive sporting environment.

These ideas/perspectives of development have been put forward in interviews by the Ajax coaches who have been responsible for the most successful programme in European soccer in recent years. The relevance to tennis is clear; to produce a system based upon a vision and philosophy, implemented within a special team environment which cultivates all participants with the feeling of worth, from the Chairman to the groundsman. A good relationship between colleagues based upon a joint sense of purpose enhances the prospects of success.

FLUID INTAKE FOR TENNIS PLAYERS

by Jack L. Groppe, Ph.D. (LGE Sport Science, United States))

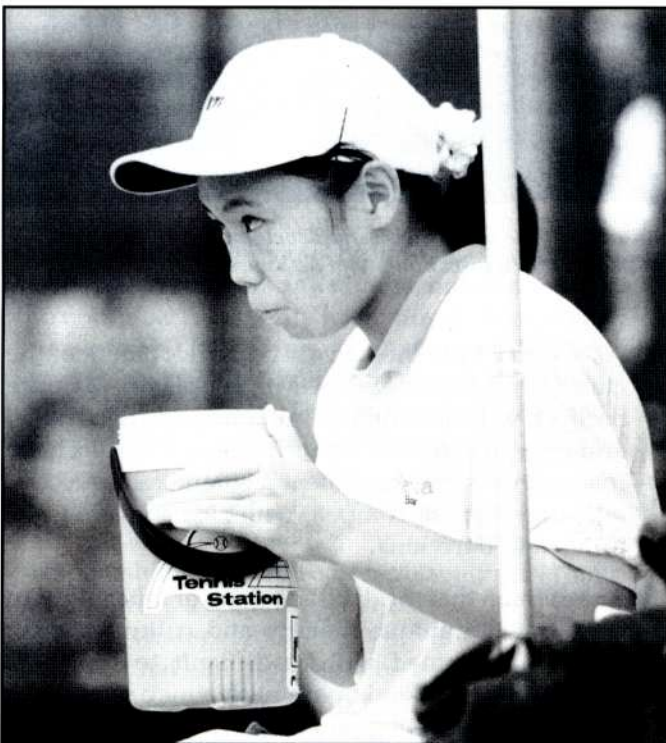
This article first appeared in "The Prince Sports Science Supplement". Summer/Fall 1995

Water is probably the most important nutrient for an athlete's success since dehydration can impair athletic performance. The human body is approximately 65% water, therefore, an individual needs to replace fluids throughout the day in order to maintain proper body temperature and energy-producing capabilities.

DEHYDRATION

It takes the human body 12 to 14 hours to replace fluids lost from heat and exercise. (A camel can replace all of its fluids at one time). The key statement is 'Drink before you are thirsty'. The thirsty mechanism is not precise in humans and by the time someone feels thirsty, he or she is probably well on the way to becoming dehydrated. As a rule, if you exercise less than 90 minutes, drink water. If you exercise more than 90 minutes, drink a sports drink.

Athletes should be aware of the following information on dehydration:



Replacing fluids lost during exercise is essential
(Photo: Yoshio Kato).

These are the symptoms:

1. Small volume of urine,
2. Dark urine,
3. Headache and
4. Elevated heart rate

The facts about other fluids are simply this:

1. Alcohol or caffeine are diuretics,
2. Carbonated drinks may decrease the volume of fluids consumed,
3. The body requires 2 cups of water or sports drink for every pound of body weight lost and
4. The body requires 8-16 ounces of fluid prior to working out.

Dehydration has important effects on athletic performance. A weight loss from dehydration of 2-3% can have a major effect on athletic performance. An athlete with 3% weight loss should not practice. An individual can lose up to 3% weight before the thirst mechanism tells the person he or she needs fluids.

Dehydration vs. performance for a 150 lb. person

Percent	Pounds lost	Effect
1%	1.5	Increased body temperature
3%	4.5	Impaired performance
5%	7.5	Heath exhaustion
10%	15.0	Death

SPORT DRINKS

In 1965 the first sports drink was developed at the University of Florida by a team of researchers under the leadership of Dr. Robert Cade. Today, there are many sports drinks available in both liquid and powder forms. The manufacturers of these drinks have made many claims to promote their products and this has led to confusion among athletes.

Each sports drink differs in its chemical makeup and this will affect the rate at which the drink leaves the stomach. An 8 ounce serving of a sports drink usually takes between 20 to 30 minutes to empty from the stomach.

Factors on fluids emptying from the stomach:

- Temperature
- Volume
- Concentration
- Intensity of exercise
- Type of carbohydrate

Glucose polymers or maltodextrins are a new breed sugar. They are metabolised by the body in the same way as glucose. Research has shown that polymers empty from the stomach faster than simple sugars of the same concentration and thus prevent the bloated feeling that sometimes occurs.

Research has also shown that beverages of either sucrose,

glucose or glucose polymers containing equal caloric content will empty from the stomach at similar rates and during exercise and will give similar cardiovascular, thermoregulatory and performance results.

Scientific studies now show that sports drinks containing glucose or sucrose can be consumed with up to about 8 percent concentration with no slowdown in absorption or gastrointestinal problems.

Fructose is a type of sugar found in honey or fruits and is used in some sports drinks primarily as a sweetening agent. Therefore, fructose should not be relied upon as the primary carbohydrate source during prolonged exercise. Fructose can cause gastrointestinal distress if concentrations are high.

One of the most important factors in a sports drink is the

taste of the drink because the flavour can indirectly affect the performance. A sports drink that tastes good will lead to a greater fluid consumption over plain water. Since people have different tastes, you should experiment with several products during training to see which one is best suited for you.

Select sports drinks that list glucose, sucrose, glucose polymers or maltodextrins as the first ingredient. Do not select drinks with a high concentration of fructose (listed as the first ingredient under carbohydrates).

Note that fructose is found in most sports drinks primarily as a sweetener.

Compare Fluid-Replacement Drinks

<u>Energy and fluid replacement drink</u>	<u>Primary Source of carbohydrates</u>	<u>Percentage of carbohydrate concentration</u>	<u>Osmolality (mOsm/l)</u>
Tough energy drink	Glucose, polymers and fructose	7*	249**
Grape juice unsweetened	Fructose and sucrose	16.9	1000
Orange juice unsweetened	Sucrose, fructose and glucose	11.7	550
Fruit juice sweetened	High fructose, corn syrup and sucrose	11.2 - 14.1	682 - 839
Soft drinks (colas, non-colas)	High fructose, corn syrup and sucrose	10.3 - 11.0	599 - 653
Diet soft drinks	None	0	59 - 74

* Studies have shown that fluid - replacement drinks with carbohydrate levels between 6% and 8% provide optimum energy without compromising fluid absorption.

** Drinks with high osmolality can retard fluid absorption. Note that the osmolality of Tough energy drink is even lower than the 290 mOsm/l of blood.

The following example illustrates the importance of proper fluid intake:

Not too long ago, the United States Tennis Association sent several of its top junior girls to the Olympic Training Center in Colorado Springs. The purpose was to evaluate their level of fitness and the quality of their nutritional status and then to advise them on training regimens and dietary intake. A goal of one of the training sessions was to evaluate their water consumption during a workout. The players were weighed at the start of practice and periodically weighed throughout the session. In addition, as they drank water, the exact weight of the water was measured. At the end of the practice, the players were weighed again.

All findings were evaluated and the players were advised of their individual results and counselled about how they could improve. But, one player's results are of particular interest. She was an excellent athlete who always performed at high levels in junior tournaments. On this day, however, she had a revelation about her fluid intake during training

competition. During the two hour practice session, she lost 7.75 pounds of water and only drank 3.5 pounds of water. She ended up 39% dehydrated since she only replaced about the 61% of the fluid she lost. After being advised of this problem, it was discussed how she should try to drink every 10-15 minutes in practice and on every changeover during a match.

The next day at practice the same study was repeated with particular attention to the player who had such a disparity in her water consumption the day before. On this day, however, she was perfect. She lost 5.5 pounds of water and drank 6.0 pounds of water so she totally replenished the water lost.

Fluid replacement Case Study

	<u>June 25</u>	<u>June 26</u>
Fluid lost	7.75#	5.5#
Fluid intake	3.0#	6.5#
% Fluid replaced	38.7%	118%
Dehydration	3.69%	—

VIBRATION STOPPERS

by Howard Brody, Ph.D. (United States)

This article first appeared in "Sport Science for Tennis". Winter 1997

You have seen and probably tried those little gummy, rubber like things that are placed in the strings of your racket in order to damp out vibrations. They cost a few dollars and weigh a fraction of an ounce. They come in all sorts of shapes and some people even make their own out of rubber bands or surgical tubing.

DO THEY DO ANY GOOD OR ARE JUST A PLACEBO?

Experiments have shown that they damp out string vibrations rather well but they do essentially nothing to vibrations of the frame. Does it make them useful, or are they another gadget that you don't need?

When the ball hits the racket, the strings deform. The ball then is propelled out by the strings snapping back. But the strings overshoot and oscillate for a while with a frequency that depends mostly on their tension and the size of the racket head. The frequency is in the 500 vibrations per second range and that is what you hear after a shot - the ping of the strings. (The musical note A is 440 vibrations/sec). A damper mounted in the strings does a good job in reducing the vibrations very quickly, and instead of a ping you hear a thud. Some players like the feel of the racket (or possibly the sound) with the damper in place. Others have tried it and do not find it necessary. **There is no medical reason to use these devices.** There is very little energy involved in string vibration (the strings weight about ½ ounce) and these oscillation should not be the cause of any damage to your arm, with or without the damper in place.

Frame vibrations are a different story. The racket weighs 20 times as much as the strings and when it deforms and then snaps back, there is a great deal more energy involved. The frequency of frame oscillations runs from 100 to 200 vibrations per second depending on the frame weight and stiffness. Experiments have shown that the currently available dampers, when placed in the strings, will do absolutely NOTHING to reduce or damp out frame vibrations. Your hand is probably the best frame vibration dampener around. The tighter you hold the handle, the sooner the vibrations die out (with your hand and arm absorbing the energy). Unlike string vibrations, which occur every time you hit the ball, frame vibrations are not a problem when the ball strikes near the center of the head (the location of minimum vibration is called the NODE). The farther the impact is from the node and the more flexible the racket, the bigger are the frame vibrations. When you hit the ball hard and near the tip (where the racket is more flexible), you may be tempted to look down at the court to see if any of your fingers have been shaken off of your hand and are lying on the ground.

Tests have shown that a single damper is very effective in eliminating string vibrations, so it is not necessary to use multiple dampers, as some people do. The device must be placed outside of the last string of the head, to conform to ITF rules.

THE STRUCTURE OF TECHNICAL TRAINING - PRESENTED IN A DIFFERENT WAY

by Richard Schonborn (Germany)

A recurring topic for debate among experts is the question why a given player X or a female player Y never made it to the world class top, in spite of having the best possible preconditions and results during their junior years and, conversely, why other players, whom nobody suspected being capable, did precisely that.

Very often in those cases, comparisons are made concerning the players' abilities and circumstances. More often than not, these turn out to be positive precisely for those players who did not make it. How is that possible?

In Germany, we too are constantly confronted with this issue. Many talented, or so called "talented", young players, who had the best possible support, did not make it, while, in other cases players who seemed not too promising, or not promising at all, made it, for instance, not only to the top 100, but even to the top 50

or higher. On the other hand, some players who had what it takes to make to the very top never managed to be ranked higher than 25 or 35.

This issue deserves our attention since the reasons for it can be manifold.

The first reason has to do with the basic evaluation criteria to assess "talent". So far, nowhere in the world has it been possible, and it probably will not be possible in the future either, to develop a definite assessment method.

What we already know now is that the assessment of a talent is a process that takes several years, in which 1) many genetically conditioned abilities (which are known to us) have to be there from the very beginning, and 2) that the young player must have a very high learning capacity and be a fast learner (and be able to quickly put

into practice what they learn). Again, these abilities are contingent upon several criteria (which are also generally known).

On that basis, it could be maintained that the "talented" players referred to above were not really that talented. Very often they were thought to be on the basis of unqualified or premature assessments, or due to wishful thinking by parents, sports administrators or coaches. We can therefore exclude that group of players from our analysis.

We are then left with the talented players who, apparently, do fulfil the above mentioned criteria. However, to our great regret, far too often these people do not make it. So, what can we do?

Of course, I cannot claim to have a magic formula either. But I think that I can offer a couple of considerations which could be of help.

Let us try to characterise some of the top players and search for the reasons for the relative failure of many other players.

What common characteristics have players such as, for instance, R. Laver, K. Rosewall, S. Smith, J. Kodes, J. McEnroe, B. Borg, J. Connors, G. Vilas, I. Lendl, M. Wilander, S. Edberg, B. Becker, M. Stich, J. Courier, P. Sampras, B. J. King, E. Goolagong, C. Evert, M. Navratilova, S. Graf, M. Seles, and many others?

Naturally it cannot be stated for instance, that all these players were or are "super-talents" in the area of motor skills (Stich, Sampras and a few others excepted, of course) and that there were not or are not more talented players in that respect among the "failures".

Undoubtedly, there were and are whole lot of players who had one or several technically more perfect shots, or even were or are technically more proficient than many of the successful male and female players.

I could probably mention several examples which would speak in favour of those "left behind". Still, they did not make it. Let us, therefore, have a closer look at the problem.

All those players who made it have certain common traits:

1. Uncompromising fighting spirit.
2. Immense dedication to hard work in training.
3. High resistance to stress, even in the most critical situations.
4. High motivation and determination.
5. Maximum concentration capacity.
6. Economy in all movements
7. Individual technical strengths, which were turned to super- weapons.
8. Perfect footwork and absolute balance control in all situations.
9. Perfect return and passing shot.
10. Enormous power- and action-speed, movement frequency, speed co-ordination, start- power and explosive power in combination with high accuracy.
11. High aerobic endurance.
12. Excellent perception and anticipation.

13. Appropriate height (above the average of their contemporary generation; exceptions: Rosewall, Chang) and long thin muscles (exceptions: Vilas, Chang) and matching ideal weight.
14. Apart from a few exceptions (Becker, Graf), very high or almost total resilience to injuries, which is an indication of an excellent general state of training (conditioning).

Maybe it could be possible to find other common characteristics, although I think that we have mentioned the most important ones above.

If we analyse the individual items of the list and compare them with each other, we shall see that over one third of them have to do with the mental area.

It is intriguing to note, for instance, that over the years there have been quite a few super-stars with a rather weak service- Rosewall, Kodes, Connors, Vilas, Wilander, Courier, Goolagong, Evert, and for a long time also Seles - but all of them had, or still have, perfect returns and passing-shots, as well as an outstanding footwork (the connection between these three components has long been demonstrated). Their health stability shows that they were generally fit and well trained athletes.

It is also eye catching that precisely two representatives of German tennis are negative exceptions in that respect. Could it be that there is something wrong with the training, with the substance of the training of these two players? Quantity does not by any means guarantee quality. A high training volume does not automatically translate into a systematic training substance. This is only a hypothesis, or rather, a possible explanation. The real causes are perhaps only known to the players themselves. Certainly they are known to their doctors, but they are bound by their duty to observe professional discretion.

All points mentioned above, however, clearly indicate the true reasons for outstanding success. Here is the core of this presentation. There is a big difference between a good, or even a very good tennis player and a player capable of sustaining long term high level performances, i.e. between technical maturity (or even perfection) and competitive sport performance.

Technical maturity is certainly a requirement, but by no means a guarantee for top performance in sports, and in tennis, in particular.

The foundations for top sport performances are highly complex, and involve many factors. This, in turn, creates the conditions for high regularity.

If we look again at the 14 points of the list above, we shall probably realise that almost none of these areas receives a great deal of attention during junior player development. Some of these factors are not trained specifically. Others are only trained more or less marginally, but not in a goal-oriented or conscious fashion. Others are somewhat covered, but the quality of training is unsatisfactory, or are not systematically integrated into the player development program.

Here are some examples:

When, how and how often is, for instance, the return of serve trained?

The return is not a standard forehand or backhand. It is a special shot with its own rules and requirements. The same can be said of the passing shot. What is the importance attached to footwork in training, and particularly to the specific teaching of balance control? What emphasis is put in training on stroke and movement economy? The necessary condition is an optimal swing, which depends on the observance of bio-mechanical principles. How specific and how frequent is the training of power- and action-speed, co-ordination-speed, explosive power, etc., particularly in connection with the solution of difficult tennis-specific situations, as part of the training program, especially for 8 to 12 year old players? How specific is the training of perception and anticipation skills? How systematic is the development of the torso muscles, on both sides? How meaningful is the continued and simultaneous development of the agonistic and the antagonistic muscles in the weekly exercises. These are both the guarantee and the prerequisite for maximum resilience to injuries? What is specially done to strengthen ankle-joints, in view of the constantly increasing number of injuries? What methods are used by the great majority of teachers to systematically develop tennis-specific aerobic stamina? How is it monitored? How many performance-oriented junior players maintain an ideal weight?. This is a problem not only for juniors, but also for some of our lady players. How is their diet checked by their coaches? Dietary habits are acquired, not innate!. And finally, what influence do coaches have on the development of the whole mental dimension? How important is, for instance, the fact that the player is assessed as being a hard-worker, a fighter, pressure-tough, etc.? How are these areas built into training? What conclusions are drawn in

the absence of progress in these areas, even if the player improves, let us say, in terms of technique?

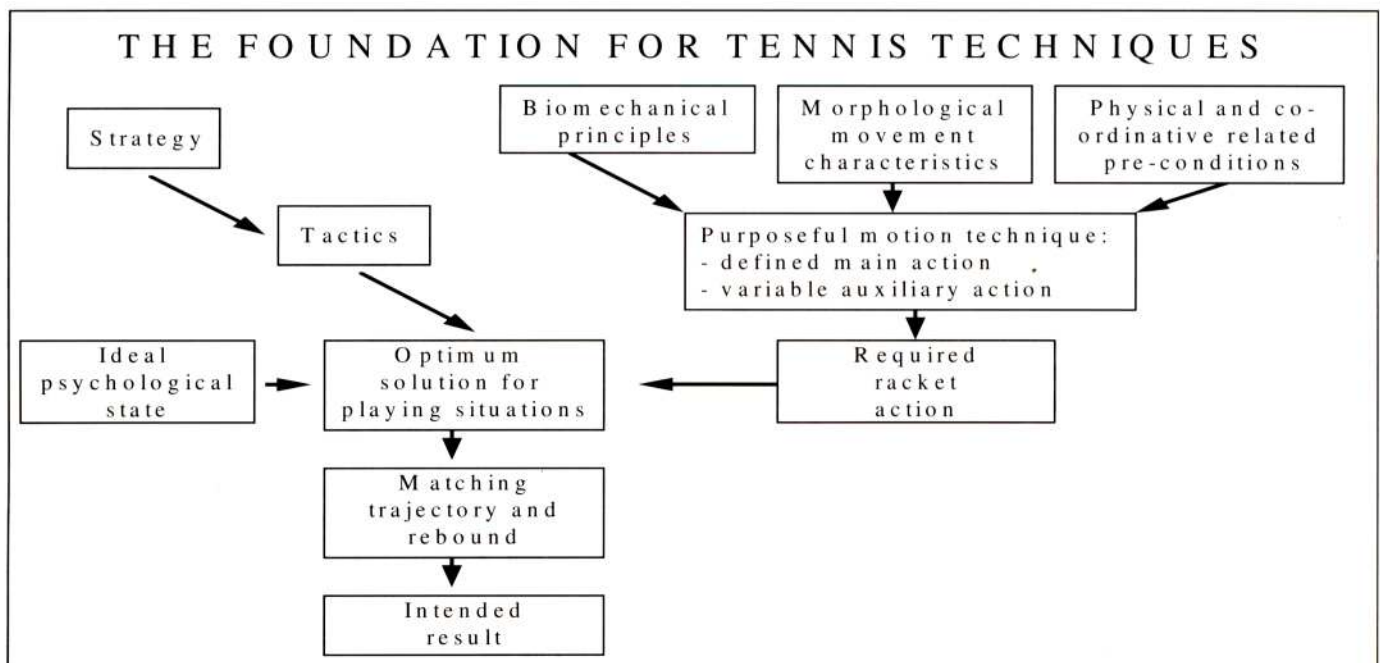
Sure enough, some of you who are reading these lines may already think: I DO all of these things!...Well. If that is the case, it is great. However, from my own personal experience with scores of students in the teacher courses and hundreds, or even thousands, in the continuing education courses for teaching professionals, I know for sure that precisely the above mentioned areas are dramatically weak spots in our training system. Alas, more often than not, it is due to sheer ignorance of how to teach these things or how to integrate them.

The point is, however, that without a strong focus on just these areas, and particularly on their inter-dependence, we shall keep on losing many motor-skills talented people. As a matter of fact, technique is almost (I repeat: almost) the only thing that is drilled right now. The other areas are often taught in a non-result-oriented fashion.

Technique cannot become a goal in itself. Therefore, it should never be taught in isolation. From the very beginning, technique training should be task- and goal-oriented, and not only motion-oriented, as it has generally been the case until now.

The above mentioned male and female successful players distinguish themselves precisely by their ability to solve successfully all kinds of tasks, even the most challenging ones, in the most difficult situations and under the most trying circumstances. Technique is, in that respect, just a means to an end. The real secret of the high performance capacity of those players lies in the areas listed above, or rather, in their ability to "put all those areas to work" by using the technical means available to them (see Table 1).

(To be continued in next issue)



CONDUCTING A JUNIOR TRAINING CAMP

by Gustavo Granitto (ITF Development Officer for Central America and the Spanish-speaking Caribbean)

In early 1997 we organised a camp for junior players from our region, to prepare them for the junior and satellite tournaments which take place in the first few months of the year. However, during the lead-up to the camp we realised that we could extend the original purpose of the camp and try to improve on two specific points which we felt would be of assistance to all the players:

A. How to increase the players' focus on effective practice, in all aspects leading to the positive progress of the player.

B. How to develop effectively the players' independence both on and off court.

We began by making a list of the elements involved, ranging from the level of technique, quality / quantity of accumulated training, percentage of success at national and international level, right through to life-style, etc.

To deal with point **A.** we tried to ensure a perfect warm-up, was done by each player prior to the work on court, thus giving a feeling of maximum control on court. The following detailed breakdown of the warm-up includes ideas from both Richard Schonborn (Germany) and Dave Miley (ITF, Manager - Development):

1.1. Warm-up: 3 minutes of joint manipulation, 5 minutes gentle jogging, 15 minutes stretching exercises, 10 minutes gentle jogging - with variations. Four series of the above exercises in slow motion - 25 seconds each exercise; four series of the above at half-speed, 15 seconds each exercise; and four series of exercises at the correct speed - 10 seconds per series.

1.2. On-court Work: The court is divided lengthwise into two, with a minimum of four players per court. Players begin standing at the service line hitting groundstrokes, (one backhand, one forehand) the aim being to keep the ball in play for 10 strokes each. Without stopping, the players move back and continue hitting groundstrokes, once again aiming at 10 strokes each without a break. They move back again and continue with the ball bouncing behind the service line until they have reached ten strokes each. The goal then becomes 20 strokes for each player.

Play continues with one player volleying at the net - backhand and forehand alternately - while the other stays back. After six strokes each, the other player moves up to the net. Then the smash is added to the volleys. Then the changeover takes place after 12 strokes each. If there are more than 4 players per court, the extra player takes over when there is a break in play, replacing the player who loses the final shot.

Whilst playing, correct use of the body is paramount, especially the receiving position, movement between each stroke, keeping the knees at the level of the ball, placing the feet correctly when hitting the ball, turning the shoulders, raising and lowering the body, etc.

The point here is that from the first shot in the warm up we expected the "highest" quality and intensity from each player which helped to ensure efficient practice from the very start.



Gustavo Granitto illustrates on court instruction during a junior training camp.

In order to improve point **B.**, a sense of responsibility was created by signing an agreement outlining the players' obligations. Using certain corrective methods (Guided Discovery and Positive Sandwich Method) helped further the development of the player's ability to reflect more on, and thus attempt to resolve, situations on his or her own.

Herewith some examples:

- What happened to that shot?
- Why do you think your shots are dropping short?
- Your first volley is very solid. How can you make it more effective?
- "Coach - what did I do wrong in that shot?"
Response: - I don't know what you did wrong... think for yourself how you can improve it...
- Your attitude for the return of service is very challenging; what can you do to improve it?

At the end it became clear that the inhibiting factors in **A.** and **B.** and the relationship between them provided the player with the pointers he or she required. The advantage to the player in becoming more creative, thinking more, taking decisions then following through on them, is that they gain confidence in decision-making and thus acquire self-confidence.

Feeling that he is more capable, the player's self-confidence grows and he gets to a stage - probably not known to him previously - where his self assurance stimulates and motivates him to put everything he has into winning.

The results of the work we did at the camp show us that over and above the aims and objectives we have for the player, only after working through the process outlined above can we measure the player's true ability and thus assess the results he is capable of achieving.

BIOMECHANICAL ANALYSIS OF THE SERVE

by Jayne Piller(Great Britain)

This article first appeared in Coaches and Coaching, issue 13

BIOMECHANICS is the study of human motion. A tennis biomechanist analyses a player's efficiency of movement and tries to determine whether a player could perform more effectively. Information gained from biomechanical principles and their practical application to tennis could be helpful in answering the questions currently posed by coaches as to the most effective movement patterns required for stroke production.

Although there is no perfect way to play the game, the coach should be able to analyse and utilise the scientific information available to help each individual player achieve optimal performance. One method of biomechanical technique analysis involves the use of video or cine cameras to record movements performed. The film can then be viewed in greater detail than can be seen with the naked eye, and hence it is possible to provide an increased amount of information to the player and coach regarding the most important aspects of each tennis stroke.

To examine the important biomechanical aspects of the tennis service, a research project was undertaken at Crewe and Alsager College of Higher Education. The experiment involved the filming of the service action of 7 nationally ranked and 7 county right-handed male players using high speed cine cameras.

RESULTS AND COACHING APPLICATIONS

1. CENTRE OF GRAVITY MOVEMENT

A significant finding related to the timing of the movement of the back foot forward during the preparation phase. The county players moved their back foot forward on average one second prior to impact, whereas the nationally ranked players initiated

forward movement of the back foot 0.60 seconds prior to impact.

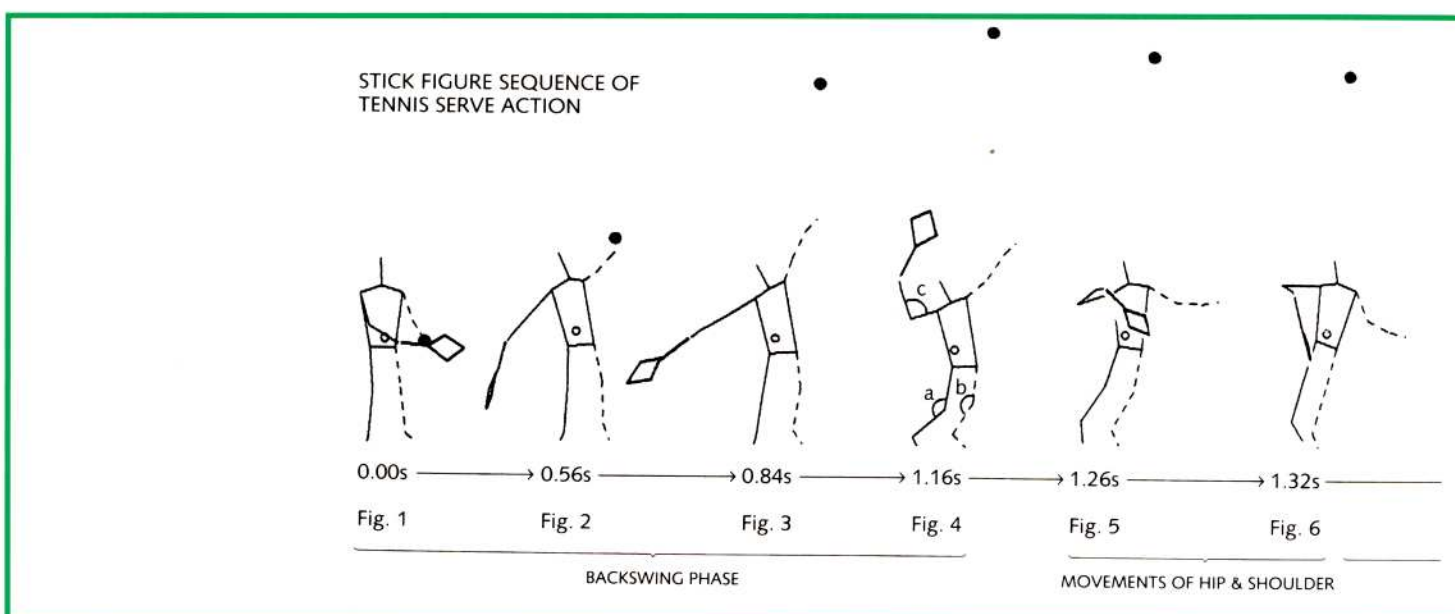
During the force production phase, the nationally ranked players recorded significantly greater mass centre movement in the vertical direction, whereas the county players recorded significantly greater mass centre movement in the horizontal direction. The open circles shown on each stick figure on figures 1-8 represent the position of the centre of gravity, and also its movement throughout the service sequence.

A high correlation was found between the timing of the movement of the back foot forward and the ball speed at impact. It would therefore appear from the findings that the movement of the back foot forward could have caused a reduction in the stability of the server by creating a small base of support.

COACHING APPLICATION As a coach, it is therefore important to analyse a player's foot movement throughout the motion, as this ultimately effects the height one is able to generate upwards, and the timing of weight transfer forwards so as to make contact with the ball at an optimum height. Examine the time during the service motion when the player brings the back foot forward, as this may affect both the stability of the player and also the ability to generate hip rotation later in the action.

2. BACKSWING PHASE

During the backswing phase, no significant differences were found between the nationally ranked and county players with regards to the minimum right and left knee joint angles respectively. Figure 4 shows how the angles for the right (a) and left (b) joint angles were measured.



An ideal knee angle would appear to be around 120-130 degrees to ensure effective momentum generated during knee extension and drive upwards towards the ball.

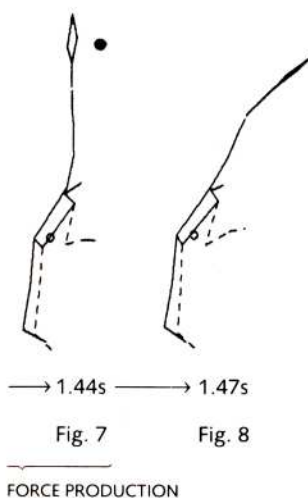
The mean right elbow joint angle of 48.7 degrees obtained by players in the present experiment was far lower than the previous reported values of 74.5 degrees from elite Australian players. From the stick-figure sequence, figure 4 (c) shows the angle measured. The present findings therefore appear to indicate that too much bend of the right elbow as the racket moves down the back of the player may effect the potential for effective generation of racket momentum as the elbow extends up to the impact point.

COACHING APPLICATION Coaches should examine the bend of the hitting elbow and right and left knee joints respectively. There is no perfect angle at which the knees and elbow should bend. However the coach should experiment with various angles to see whether a smaller or larger angle may increase the generation of momentum with regards to the hitting arm, or a greater utilisation of the ground-reaction forces when examining the knees. To encourage adequate knee bend, a coach could use the phrase as used by the Australian system - 'left hand - left knee', which should encourage players to begin bending the knees as the ball is releases from the hand on the ball toss.

3. THE LINKED CHAIN SYSTEM

All players were seen to show an aggressive increase in the speeds of the segments from the shoulder to elbow to wrist and finally to the end of the racket as the time of the impact approached.

COACHING APPLICATION A correct movement of body parts must occur in linked sequence from the shoulder to the end of the racket, so as to achieve optimal racket velocity at impact. An ideal/optimal sequence as been suggested by Elliott (1990):



- leg drive..... increases velocity of hip
- + trunk/shoulder..... increases shoulder velocity rotation
- + upper arm elevation.... increases elbow velocity
- + forehand extension..... aligns the racket for impact and
- and pronation..... increases wrist velocity
- + hand flexion..... increases racket velocity

Use the command phrase 'Throw the racket handle'. Players should be encouraged to perform lots of shadows swings as this will aid concentration on the action without worrying about the ball.

4. THE BALL TOSS

Obviously there is no perfect ball toss height, but effective generation of racket momentum will only be achieved if co-ordination exists between the service toss and the height of the ball at impact. The stick figure sequence shows a drop in the height of the ball of almost one metre from its highest vertical position to its height at impact.

Also examined was the impact height in relation to standing height. These results indicate the potential for an increased leg drive and therefore greater impact height.

COACHING APPLICATION Players should fit the ball toss to the 'serve' and not alter the service motion to accommodate a poor service toss. The latter will only result in a poor service outcome and also increase the potential for injury due to excessive twisting and bending spinal movements. The ball should be pushed to the height of the top of the racket when the player is fully extended to ensure a fully extended body position at impact.

5. BODY POSITION AT IMPACT

Both groups recorded similar knee joint angles of around 160 degrees (figure 7). This value was lower than expected, as a more extended knee joint could have resulted in an increase in the maximum hitting height.

The nationally ranked players produced a more extended trunk position at impact, once again increasing the potential for hitting height.

COACHING APPLICATION Coaches should encourage players to 'reach' or 'drive' up for the ball, so as to enable a more extended body position and hence a higher contact point. One way to do this is to encourage the player to hit the ball as it hovers as this invariably forces them to stretch up to the ball more.

CONCLUSIONS

One of the most important components of effective serving is the ball speed at impact. The nationally ranked players were able to achieve a greater ball speed at impact compared to the county players. The major differences between the two groups were found to be:

- the timing of the movement of the back foot forward and subsequent shifts in body weight
- the increased speed of movement of the segment end-points
- the increased velocity of the elbow and hence momentum of the hitting arm

- the increased impact position and increased drive upwards towards the ball

As stated earlier, there is no perfect way to play the game of tennis, but the coach should examine a player's technique with the use of video to see if they could perform more effectively and efficiently. Any movements which may lead to future injury problems could also be pinpointed, and hence movement patterns adapted. The coach should be aware of the requirements of each performer, allow for freedom of individual idiosyncrasies and experiment with various techniques so that the player can perform at an optimum level.

HAND AND WRIST INJURIES IN TENNIS

by Geoffrey P. Griffiths, Ph.D. (United States)

This article first appeared in "Sport Science for Tennis". Winter 1997

The hand and wrist are complex structures consisting of 29 bones most with multiple connections to other bones. Due to this, the possibilities for injury to these areas are great and can often result in significant amounts of lost training time. When using a racket there is an increased chance for injury because the bones, joints, and tissues of the wrist and hand must also absorb the force of the ball against the racket head.

There are various categories of wrist/hand injuries. The two most common are the fractures and /or dislocations (acute trauma), and repetition strain injuries (also known as stress failure syndrome). A fracture or dislocation resulting from a fall or direct impact is a common occurrence. Such injuries produce significant pain and swelling with occasional gross deformity. These injuries should be referred for medical attention along with x-ray evaluation. Many simple fractures and dislocations are easily treated and usually require only 3-4 weeks of splinting or casting before a gradual return to play.

The most common injuries in tennis are repetition strain injuries which are the result of repetitive activities that eventually overwhelm the tissues ability to adapt. Wrist extensor tendinitis and ulnar impingement syndrome are two examples. In order to treat the injury, it is important to isolate the exact location and type of activity that is generating the pain. Note changes in the training regimen, such as a thicker grip, changes in string tension, or an abrupt increase in play time, are essential for accurate diagnosis.

Pain in the direction of the small finger (ulnar-sided) is more typical in tennis than on the side of the thumb (radial-sided). Cartilage tears in the joint or inflammation of the lining are often cited as factors in this type of pain. Faulty stroke techniques can result in all forms of wrist and hand pain. The coach plays an essential role investigating this possibility as well as offering solutions.

Serving and forehand shots can contribute to wrist flexor tendinitis while the backhand can exacerbate wrist extensor tendinitis. A player who uses a two-handed backhand often will have symptoms in the non-dominant hand.

If pain does occur, a thorough stretching routine before and after play along with ice therapy should initially be attempted. If the pain persists, an accurate evaluation, diagnosis, and treatment by a sports medicine / orthopaedic / hand specialist should be sought. Rehabilitation efforts need to be directed toward healing



Wrist injuries exacerbated by serving include wrist flexor tendinitis.

the affected tissue. Types of treatments employed may include splinting, use of anti-inflammatory medication, working with a therapist trained in post-injury management of hand and wrist conditions, and occasionally surgery. Return to competition is usually permitted when a range of motion and grip strength have returned to normal. With a well co-ordinated and gradual plan of rehabilitation, a player should be able to return to pre-injury level of play in a short time.

WHAT TENNIS RESEARCH TELL US ABOUT... PSYCHOLOGY

compiled and summarised by Miguel Crespo (ITF)

Below a series of articles on tennis psychology which have appeared in sport scientific publications are summarised. Coaches interested in obtaining more information from these articles can find them using the relevant references.

Burnout in competitive junior tennis players I. A quantitative psychological assessment

This study reports results from the first phase of a large-scale research project designed to examine burnout in competitive junior tennis players. 30 junior tennis burnout and 32 comparison players, identified by the USTA voluntarily completed a battery of psychological assessments. Analyses revealed that the burned out in contrast to comparison players, had significantly: (a) high burnout scores, (b) less input into training, (c) were more likely to have played high school tennis; (d) more likely played up in age

divisions, (e) practised fewer days; (f) were lower in external motivation; (g) were higher in amotivation; (h) reported being more withdrawn; (i) differed on a variety of perfectionism subscales; (j) were less likely to use planning coping strategies; and (k) were lower on positive interpretation and growth coping. It was concluded that in addition to a variety of personal and situational predictors of burnout, perfectionism plays an important role.

Gould, D., Udry, E., Tuffey, S., & Loehr, J. (1996). Burnout in competitive junior tennis players. I. A quantitative psychological assessment. The Sport Psychologist, 10, 322-340.

Burnout in competitive junior tennis players II. Qualitative analysis

This article reports findings from the second phase of a large-scale research project designed to examine burnout in competitive junior tennis players. Interviews were conducted with 10 individuals who were identified as being more burned out in the phase 1 (see article above). Content analysis of their answers identified several characteristics of burnout: (a) mental symptoms: low motivation energy, negative feelings/affect, feelings of isolation, concentration problems, highs and lows, (b) physical symptoms: physically symptomatic (injuries, lack of energy, illness) or physically asymptomatic (no injuries, no lack of energy, not sick). Some factors leading to burnout were also identified: (a) Physical problems and poor play, (b) time demands of tennis, (c) travel concerns; (d) adjusting to school, (e) dissatisfaction with social life; (f) negative parental influence; (g) dissatisfaction with those involved; (h) unfulfilled inappropriate

expectations; (i) lack of enjoyment; (j) lack of motivation, wanted to pursue other interests, and (k) personality not conducive to competitive tennis. Advice for other players include: (a) play for your own reasons; (b) balance tennis with other things, (c) no fun, no play: try to make it fun; (d) relax; (e) take time off; (f) other: set goals, be patient, make friends, etc. Advice for parents include: (a) recognise optimal amount of pushing needed, (b) lessen involvement, (c) reduce importance of outcome, (d) show support/empathy, (e) separate/clarify parent/coach role, (f) solicit player input, and (g) other: do non tennis activities with kids, etc. Advice for coaches include: (a) cultivate personal involvement with player, (b) have two-way communication with player, (c) utilise player input, (d) understand player feelings, and (e) other: foster right atmosphere, etc.

Gould, D., Udry, E., Tuffey, S., & Loehr, J. (1996). Burnout in competitive junior tennis players. I. A quantitative psychological assessment. The Sport Psychologist, 10, 341-366.

Main motives of youngsters for playing tennis

This study reports the motives of youngsters for playing tennis and if these motives differ depending on players age and gender. 143 young tennis players (93 boys and 50 girls) with a mean age of 12.57 years filled the Participation Motivation Inventory (Gill, Gross & Huddleston, 1983). Results confirm previous investigations and reveal that the main motives of youngsters for playing tennis include: (a) increase playing level, (b) keeping physically fit, (c) improve skills; (d) make new friends, and (e) keep in shape. The less important motives include: (a) satisfy parents or friends; (b) feeling an important person; (c) being popular; (d) use up energy; and (e) rewards and prizes.

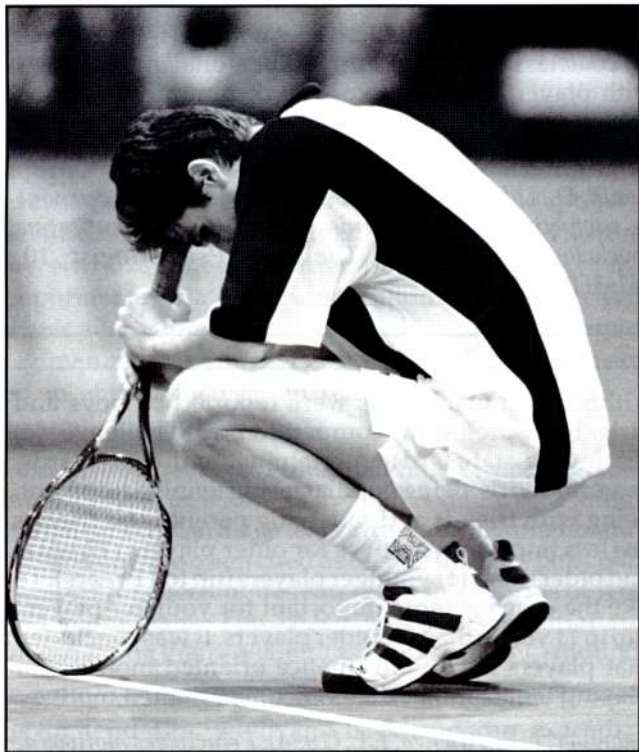
Although similar values were reported by boys and girls, boys prefer: (a) competition, (b) challenge, (c) reaching a status, (d) entertaining, and (e) rewards, more than girls. Being popular, using tennis equipment, being with friends and satisfying parents and friends are less important motives for older players (12 years and older) than for younger players (up to 11 years). To like the coach is more important for younger players (up to 11 years) than for older players. It was concluded that players have performance oriented motives for playing tennis rather than outcome oriented motives.

Balaguer, I., & Atienza, F.L. (1994). Principales motivos de los jóvenes para jugar al tenis. Apunts d'Educació Física i Esport, 31, 285-299.

A systematic observation of more and less successful high school tennis coaches

The purpose of this study was to describe and analyse systematically the coaching behaviours of more and less successful high school boy's tennis coaches during practice sessions. 9 coaches (5 judged as more successful and 4 judged less successful, based on win records) were observed for a total of three observations per coach during preseason/early season, midseason, and late season by experts who completed the ASUOI (an observation instrument consisting of 14 behaviour categories). These categories are: preinstruction, concurrent instruction, postinstruction, questioning, manual manipulation, positive modelling, negative modelling, first name, hustle, praise, scold, management, silence, and other (playing, talking to parents, etc.). Results showed that: (a) coaches demonstrated more instructional behaviours than any other behaviours, (b) spent more intervals in the other category than in any other behavioural category, (c) other, management and silence categories accounted for almost 75% of all intervals, (d) the less successful coaches instructed more than did the more successful coaches, (e) praise was used more by the less successful coaches, (f) more successful coaches asked a significantly greater number of questions of their players than did the less successful coaches.

Claxton, D.B.. (1988). *A systematic observation of more and less successful high school tennis coaches. Journal of Teaching in Physical Education*, 7, 302-310.



Ability to control emotions is very important in Davis Cup matches. (Photo: Alsport, Clive Brunskill).

Mood states of professional female tennis players

The purpose of this study was to develop a psychological profile of professional female athletes, specifically of elite tennis players and to compare it to college-age athletes. 16 professional female tennis players from five countries with a mean national ranking of 2.8, a mean international ranking of 82.9 and a mean age of 27.4 yr. participated in the study. They were given the POMS (McNair, Lorr & Droppleman, 1981) to measure six mood states: tension, depression, anger, vigour, fatigue and confusion. Results showed that: (a) professional tennis players were less tense, depressed, fatigued and confused, and had more vigour than college-age individuals, (b) younger players tended to display a psychological profile more similar to the norming sample of college-age women than older players, (c) older players exhibit the 'iceberg profile', i.e. they scored higher on the vigour mood state and lower on all other mood states than younger players and college aged-women. A possible explanation for these finding is that perhaps younger players have to compete in more tournaments thus requiring more physical demands and reducing the amount of vigour displaying, while older players know what important tournaments to select and when to peak and so have higher vigour scores.

Wughalter, E.H. & Gondola, J.C. (1991). *Mood states of professional female tennis players. Perceptual and Motor Skills*, 73, 187-190.

Building self-efficacy in tennis players: A coach's perspective

The purpose of this investigation was to explore the different type of strategies used by tennis coaches to develop self-efficacy in players. Coaches participating in the study coached beginner and intermediate players. The 13 self-efficacy building strategies include the following: (1) ensure performance improvements through instruction and drilling, (2) encourage positive talk from the player, (3) act confident yourself, (4) liberally use rewarding statements, (5) emphasise improvements in technique while downplaying match outcome, (6) verbally persuade the player that they can do it, (7) ensure performance improvements by setting specific performance goals, (8) emphasise that failure results form a lack of effort or experience and not from a lack of innate ability, (9) have the player imagine himself succeeding, (10) employ hard physical conditioning drills, (11) reduce feelings of anxiety by employing relaxation techniques, (12) point out other players who are similar to yours and have achieved success, and (13) emphasise to the player that feelings of anxiety are not fear but are a sign of readiness. Results indicated that these coaches used the above self-efficacy building strategies to a moderate degree and found these techniques to be at least moderately effective. The most used strategies to enhance self-efficacy, as well as those strategies found most effective, included: (1) encouraging positive self-talk, (2) modelling confidence oneself, (3) using instruction and drills, (3) using rewarding statements liberally, and (4) using verbal persuasion.

Weinberg, R.S., & Jackson, A.. (199). *Building self-efficacy in tennis players: A coach's perspective. Journal of Applied Sport Psychology*, 2, 164-174.

Strategies for building self-efficacy in tennis players: A comparative analysis of Australian and American Coaches

The purpose of this investigation was to compare Australian tennis coaches' frequency of use, and perceived effectiveness, of 13 self-efficacy building strategies to those of American tennis coaches. Results indicated that coaches of both nationalities used the same types of self-efficacy strategies. However, the American coaches used more of: (1) conditioning drills, (2) model of other successful players, (3) emphasis that feelings of anxiety are not fear but are a sign of readiness, and (4) emphasis that failure results from a lack of effort or experience and not from a lack of innate ability

Weinberg, R.S., Grove, R., & Jackson, A.. (1992). *Strategies for building self-efficacy in tennis players: A comparative analysis of Australian and American Coaches. The Sport Psychologist*, 6, 3-13.

The relationship between observable self-talk and competitive Junior Tennis Players' Match Performances

The purpose of this research was to examine self-talk in competitive sport performance. 24 junior tennis players, were observed during tournament matches. Their observable self-talk, gestures, and match scores were recorded. Players also described their positive, negative, and other thoughts on a postmatch questionnaire. The analysis revealed that negative self-talk was associated with losing and that players who reported in believing in the utility of self-talk won more points than players who did not. These results suggest that self-talk influences competitive tennis outcomes.

Van Raalte, J.L., Brewer, B.W., Rivera, P.M. & Petitpas, A.J. (1994).. *The relationship between observable self-talk and competitive Junior Tennis Players' Match Performances Journal of Sport and Exercise Psychology*, 16, 400-415

Student thoughts during tennis instruction

30 fourth-grade students were provided two 30-min lesson on the tennis forehand ground stroke. The students and the teacher were videotaped, and, following each lesson, the students were interviewed using a stimulated-recall procedure. Frequency measures of successful practice trials were also coded for each student during each practice session. Analysis revealed a significant positive relationship between skill-related thoughts and successful performance during class. In analysing the students thoughts a system consisting of three categories was established: (a) reports on affective thoughts: negative evaluation of self, motivating self, self/talk assessment, (b) reports of skill related thoughts: skill outcome, skill technique, (c) reports of off-task thoughts or no thoughts: thinking about going home, about my leg itching, etc. The analysis revealed that those students who had skill technique thoughts were more likely to be successful during practice, and that negative self-evaluation thoughts may have influenced the students' inability to perform an effective technique. The findings support the notion that student thoughts are important mediators between instruction and student response patterns.

Lee, A.M., Landin, D.K. & Carter J.A. (1992). *Student Thoughts during tennis instruction. Journal of Teaching in Physical Education*, 11, 256-267.

Auditory information in playing tennis

Three experienced tennis players used earplugs to deprive them of auditory information when playing tennis matches. The analysis revealed that they lost more games in the auditory deprived condition than in the condition without earplugs. Their ability in receiving the service decreased although ability to deliver the service did not. The main conclusion of this study is that the loss of auditory information has negative effects in playing tennis. These observations suggest that multisensory information is used in an adaptive manner when playing tennis.

Takeuchi, T. (1993). *Auditory information in playing tennis. Perceptual and motor skills*, 76, 1323-1328

THE ITF ON THE INTERNET
<http://www.itftennis.com>

from ITF News

The ITF has established a global presence on the Internet. On 29 November 1996, ITF launched its new web site, ITF Online. This web site consists of eight sections including the ITF flagship events, the Davis Cup by NEC and KB Fed Cup. The official 'Davis Cup by NEC' site provides a continuous results service in addition to information about competing teams including player biographies and

head-to-head statistics. There is also a news section and an interactive quiz inviting visitors to guess the match results with prizes awarded for the correct predictions. The 'KB Fed Cup' section incorporates a brief history of the event through the use of text and graphics.

ITF Online consists of six additional sections including 'This is the ITF', which covers the history and activities of



the Federation, while 'ITF Events' focuses on the Olympic Games, Men's Professional Tennis, Women's Tennis, Junior Tennis, Veteran Tennis, Wheelchair Tennis and, of course, the four grand Slams and the Compaq Grand Slam Cup and the Hopman Cup. Visitors to the web site will be able to print out details of 1997 tournaments from the 'Calendar' section, tournament entry forms, as well as rankings and results

from juniors, veterans and wheelchair tennis from the 'Results' archive.

The 'Rules of Tennis' and 'Technical Forum' provide full details of tennis regulations, and find out why rule changes have been made. The 'News Release System' is the place to check up the latest happenings from the ITF's world of tennis.

The ITF Online is the stepping stone to the establishment of a worldwide communications network connecting all of the National and Regional Associations, not only with the ITF but also with each other.

ITF Online can be accessed by visiting <http://www.itftennis.com> where you will also find links to the following web sites: the Davis Cup by NEC, the four Grand Slam, the USTA, Tennis Australia, the Swedish Tennis Association, the Fédération Française de Tennis and the Sydney 2000 Olympic Games. The existing material represents Phase One of the web site. Phases Two and Three will incorporate further enhancements, including an interactive database providing tennis statistics on ITF events and information on product licensing, as well as a programme to handle various tournament administrative processes.

For other tennis-related web sites, try visiting the following online tennis magazines <http://www.tennisserver.com> or Tennis Magazine's online version - <http://www.tennis.com>

ITF COACHES REVIEW SUBJECT INDEX

by Miguel Crespo (ITF)

Below, there is an index of all articles published in Coaches Review. They are classified by subjects which include: technique and biomechanics, tactics, psychology, medicine, physical conditioning, planification and periodisation, and teaching and training. The citation procedure is as follows: author's surname, author's name initial, year of the publication, title of the article, issue number and pages.

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- Bolletieri, N. (1995). Return of serve: my opinion, 6, 1-2.
 Brody, H. (1996). Slicing the slice, 8, 8.
 Dent, P. & Jones, P. (1994). Load up for the serve, 5, 9.
 Dent, P. (1995). Awareness of standards, 7, 3-4.
 Brody, H. (1995). A matter of inches, 6, 3.
 Elliott, B. & Colette, D. (1993). Biomechanics, 1, 4-6.
 Elliott, B. (1994). Backswing for volleys, 3, 9.
 Knudson, D. (1994). Improve accuracy with oversized rackets, 3, 5.
 Miranda, M. (1996). How to assess your own serve, 9, 11.
 O'Connell, D. (1997). The second serve/volley/return game, 11, 1.
 Piller, J. (1997). Biomechanical analysis of the serve, 11, 12-13

- Reynolds, K. (1996). Biomechanics and the five fundamentals, 10, 3-5.
 Tennis Australia (1993). Biomechanics: the semi-western forehand, 2, 2-3
 Tennis Australia (1994). Topspin backhand drive, 4, 8-11.
 Tennis Australia (1994). Two handed backhand drive, 3, 6-7.

TACTICS

- Antoun, R. (1996). Let variety be the spice of life, 10, 12-13.
 Brabenec, J. (1995). How to help with correct decision making, 7, 3.
 Brabenec, J. (1996). If a player knows how, then when is the important question, 10, 7-8.
 Crespo, M. (1995). Tactical goals for different skill levels: a step by step plan, 6, 8-10.
 Dent, P. (1994). Reading the game, 3, 4-5.
 Farrell, P. (1996). Anticipation skills and drills, 9, 13.
 Kopsic, D. & Segal, F. (1995). Guidelines to develop a game on clay, 7, 4-5.
 Lawrence, N. (1995). Gaining momentum, 7, 7.
 Sammel, D. (1995). How to counter specialist styles, 7, 5-6.
 Schonborn, R. (1993). Tactics, 1, 10.
 Skorodumova, A. (1994). Match play analysis, 4, 4.

PSYCHOLOGY

- Dorsky, F. (1996). Mental training: a lot like physical training, 9, 8.
- Fox, A. (1995). Don't let fear ruin your match, 6, 7-8.
- Henman & Rusedski, G. (1996). Mental toughness questions answered, 10, 15.
- Jones, S. (1996). The principles of a winning team, 8, 4.
- Moran, A. (1994). The psychology of concentration in tennis, 5, 7-8.
- Moran, A. (1995). Dealing with pressure, 6, 10-12.
- Taylor, J. (1994). Pre-match routines, 4, 11.
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- Tennis Australia (1993). Sport Psychology, 2, 4-5
- Tennis Canada (1993). Psychology, 1, 3.
- Van Fraayenhoven, F. & Mion, V. (1996). How to make a mental profile of a tennis player, 9, 9-10.
- Van Fraayenhoven, F. (1995). Groaning and moaning, 6, 7.
- Zlesak, F. (1995). Building up a professional attitude, 7, 10.

MEDICINE

- Armstrong, L. (1993). Prepare players to compete in the heat, 1, 11.
- Brody, H. (1997). Vibration stoppers, 11, 9-10.
- Bergeron, M. (1996). Playing tennis at the heat, 10, 1-2.
- Christmass, M. et al. (1996). Training energy systems in tennis players, 8, 5-6.
- Griffiths, G.P. (1997). Hand and wrist injuries in tennis, 11, 14.
- Groppe, J.L. (1997). Fluid intake for tennis players, 11, 7-9.
- Linderman, A. (1994). Nutrition for competition, 5, 9.
- Loehr, J.E. (1996). Protecting the sleep cycle, 8, 2-3.
- Petersen, C. (1995). Frequent flyer blues, 7, 11.
- Petersen, C. (1995). Tennis medicine, 7, 12.
- University of California (1994). Napping: a refresher, 4, 11.

PHYSICAL CONDITIONING

- Chu, D. (1994). Improve fitness with a medicine ball workout, 4, 5.
- Chu, D. (1995). Shoulder strengthen exercise, 6, 8.
- Chu, D. (1996). Abdominal muscle pulls in tennis players, 10, 5-6.
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- Dent, P. (1996). Co-ordinate to accelerate, 8, 6-7.
- Etcheverry, P. (1996). Move more effectively on court, 8, 2.
- Newham, T. (1997). Preparing your players for physical training, 11, 2-3.
- Pluim, B. (1994). Abdominal strength exercises, 4, 6.
- Pluim, B. (1994). Overtraining and burnout, 5, 10-11
- Quinn, A. (1993). Fitness, 2, 7.
- Quinn, A. (1993). Training principles to incorporate into a fitness programme, 1, 1-2.
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- Redding, D. & Dent, P. (1993). Short burst circuit, 2, 10-11.
- Roetert, P. (1994). Fitness and testing, 5, 4-6.
- Roetert, P. (1996). A question of balance, 8, 8-9.
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PLANIFICATION & PERIODISATION

- Brabenec, J. (1996). Selection, 8, 9-10.
- Brabenec, J. (1996). Talent identification, 9, 10.
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- Schonborn, R. (1993). Players' performance and development, 2, 1.
- Schonborn, R. (1997). The structure of technical training presented in a different way (I), 11, 8-10.
- Simpkin, A. (1996). Birthdate of juniors tennis players, 10, 14.
- Treleven, J. & Miley, D. (1993). Top 100 male players as of June 1993, 2, 9.
- Treleven, J. & Miley, D. (1996). Men's professional tennis, 10, 16.
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- Treleven, J. (1994). 1993 men's professional tennis matches played (including walkovers) 4, 3.
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- Tennis Canada (1993). Road to the top, 2, 10-11.
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- Unierzyski, P. (1996). A retrospective analysis of junior Grand Slam Winners, 9, 2.
- Van Fraayenhoven, F. (1994). Player profiling, self analysis, 3, 10-11
- Zmajic, H. (1996). Are the top tennis players born in January, 9, 3-4.

TRAINING & TEACHING

- AAVV (1994). Age limits set by commission report, 5, 11-12.
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- Brabenec, J. (1994). Creating efficient training sessions, 5, 1-2
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- Brabenec, J. (1994). Teaching good habits, 3, 9.
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- Granitto, G. (1997). Conducting a junior training camp, 11, 14.
- Kopsic, D. & Segal, F. (1996). How to develop female tennis players, 9, 5-6.
- Molina, I. (1995). The comprehensive coaching system, 7, 1-2.
- O'Connell, D. (1995). The 400 point ball contest, 7, 7-9.
- Piza, J.M., Riba, A. & Crespo, M. (1997). Guidelines for team captains, 11, 3-4
- Schonborn, R. (1994). Modern complex training, 4, 1-3.
- Stojan, S. (1996). From talent to champion: the role of the coach, 9, 14-15.
- Tennis Canada (1993). Know the jargon. 1, 9
- Zlesak, F. (1994). Systems approach to coaching tennis, 3, 1-2.