

Frequently Asked Questions on Medicine and Tennis

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The medical needs of the competitive tennis players nowadays are very wide and varied. The physician has to fulfil the physical, emotional and spiritual needs of the athlete in the context of the sport and the team. These demands imply that the physician of a sports team should have a broad criteria and sound knowledge since his success depends on his technical abilities as much as on his ability to solve specific problems.

With this practical scope, this presentation will present some topics on tennis medicine frequently asked by competitive tennis players.

1) HOW CAN JET-LAG BE OVERCOME?

Travelling through time zones alters the body clock. The state of the athlete, his temperature, strength and flexibility vary throughout the day. Long trips alter the normal circadian rhythms. The more time zones crossed, the greater the disturbance. Travelling East when the day shortens is more stressing than travelling West. The “airplane stress” is added to the “jet-lag” due to the dry air, the reduced space, the noise and the alteration of the diet. Jet-lag will occur always at different degrees but its symptoms can be minimised. Before travelling it is convenient to sleep well, to avoid drinking alcohol, try to get a comfortable seat, order food you are used to, ensure you drink plenty of liquid, and do some relaxing activities. When in the plane, drink lots of liquid, avoid alcohol, coffee, tea and cola soft drinks; avoid eating too much, adjust the lunch and sleep times to the ones at destination, move and do some stretches, wear comfortable clothes, and ask the doctor in case you need to take some tranquiliser or melatonin. When arriving, adjust to the local time, expose yourself to the sun light, do a light practice the first day, reduce the rest in the afternoon, follow a recovery therapy and engage in social activities.

Recommended reading:

- Crespo, M., Pluim, B. & Reid, M. (2001). Conquering jet lag. *Tennis Medicine for Tennis Coaches*. ITF.

2) ARE INJECTIONS SAFE?

Most injections use gluco-corticoids with or without local anaesthetics. The gluco-corticoids are powerful anti-inflammatory agents. It should be indicated that the injection of these medicaments is only permitted intra joint with previous authorisation (TUE). The illnesses that find more benefits from injections are arthritis, peri-arthritis, tendonitis, bursitis, nervous impingements and arthrosis, among other. It is indispensable to conduct them in a sterile environment. They cannot be performed in the presence of a local infection, when there are coagulation problems, in joints difficult to access, or when there is a prothesis. Associate problems that can be found include:

“flare” with local pain (2-3%), arthropathy, tendon rupture (1%), skin atrophy and depigmentation (1%), transitory paresia, calcifications, and damage of the joint cartilage. After the injection a protective bandage should be maintained for 8-12 hours, the joint should rest and the rehabilitation has to start with passive mobilisation. The player should visit the doctor if the flare with pain persists longer than 72 hours.

To reduce the complications of injections, it is recommended to limit them to 3 per year, especially in joints that suffer loads, avoid them if rest is not possible or if the first two were not effective; do not infiltrate tendons, and ensure the diagnosis before the injection (disregarding tumours, infections and fractures).

Recommended reading:

- Pfenninger, J. L., et al. (1994). Injection and aspiration. In *“Sports Medicine Secrets”*. Mellion MB (editor) Hanley & Belfus, Philadelphia.

3) CAN CHILDREN OR ADOLESCENTS LIFT WEIGHTS?

It is evident that the greater gains in muscular strength occur after the hormonal development of puberty. However, pre-pubertal and pubertal athletes can increase their muscular strength through weight training, especially with motor learning.

Different organisations recommend a previous medical check-up, the existence of emotional maturity to accept advice, the supervision by expert coaches, considering weight training as a complement, warming-up and cooling down appropriately, and perform exercises throughout the whole joint range.

Further, it is recommended not to train maximum strength (1RM), but to start with low weights to learn the technique, perform 6-15 reps per series, gradually increase the load, work in sessions of 30 min up to 3 times per week, emphasising concentric strength and controlling the breathing to avoid dizziness.

The incidence of injury due to weight training is around 7-8% and the more common ones are growth plate injuries, stress fractures, osteocondritis and disc hernias, among others. Plyometric training for children should also follow sound concepts as per initiation and progression.

Recommended reading:

- Reid, M., Quinn, A., Crespo, M. (2003). *Strength and Conditioning for Tennis*. ITF.
- Guy, J. A., Micheli, L. J. (2001). Strength training for children and adolescents. *J Am Acad Orthop Surg*, 9, 29-36.

4) WHAT SHOULD A PLAYER EAT AFTER A MATCH OR A PRACTICE?

The regular diet of a competitive player should be rich in carbohydrates (60%), average in proteins (15%) and low in fat (25%). The goal of ingesting carbohydrates during intense and continuous exercise is to maintain euglycemia, save muscle glycogen and

prevent fatigue. Carbohydrate supplementation should be done when glycogen reserves can be compromised.

The first two hours after exercise are determining for the re-synthesis of glycogen. The synthesis rate is augmented with the increase of insulin and the tissue sensitivity to insulin, with a low level of catecholamine, and by the increase of the activity of the glycogen synthase. It is suggested to ingest 1g/kg weight during 2 hours through food with high-moderate glycogen index and of fast absorption (sports drinks, rice, cereals, carrots, whole bread, and raisins). Then an ingestion of 7-10 g/kg weight per day with food with a low to moderate glycogen index is followed. The optimal recovery rate is 5-7% per hour and 20 hours are required for total recovery. Glycogen storage is depleted faster if dehydration exists.

Recommended reading:

- American College of Sports Medicine, American Dietetic Association, Dietitians of Canada. *Nutrition and Athletic Performance*. www.acsm-msse.org
- Arnett, B., Benardot, D., Maughan, R., et al. (2001). Accelerating recovery after exercise. *Sports Science Exchange*, MR 46, vol 12 (4). www.gssi.com

5) WHICH IS THE FIRST AID FOR A PLAYER SUFFERING CRAMPS?

An exercise cramp is the painful, spasmodic and involuntary contraction of the muscle that occurs during or immediately after exercise. Acute cramp treatment consists of a passive stretch of the muscle until fasciculation ends, massage with ice, hydration and cooling. They should be treated as an emergency if they are generalised, if there is an alteration of consciousness (semi-coma, confusion) and if urine is scarce. In the case of recurrent cramps, the challenge for the physician is to identify if the cause is the exercise or an illness (hypothyroidism, diabetes, myopathy, vascular insufficiency, etc). Cramps are prevented by avoiding early muscle fatigue (adequate practice, stretching, appropriate nutrition, and psychotherapy).

Recommended reading:

- Schwellnus, M. P. (1999). Skeletal muscle cramps during exercise. *Phys Sportsmed*, vol 27(12), November.

6) WHICH IS THE BEST STRETCHING REGIME?

Actual concepts indicate the effectiveness of stretching to improve flexibility but its efficiency to prevent sports injuries has not yet been demonstrated. 1-5 reps of 15-30 secs with any method (PNF) is recommended. One paradigm has changed since it has been shown that static stretching reduces maximal strength (5-30%) due to the decrease of the contractile strength. That is why static stretching would be not recommended before exercise.

Recommended reading:

- Knudson, D. (2003). Stretching recommendations for tennis players. *Med & Science in Tennis*, vol 8 (3), Dec. www.stms.nl
- Thacker, S. B., Gilchrist, J., Stroup, D.F., et al. (2004). The impact of stretching on sports injury risk: a systematic review of the literature. *Med Sci Sports Exerc*, vol 36 (3).

7) CAN A PLAYER PRACTICE IF HE HAS GOT A FEVER?

The most frequent causes of fever syndromes are the viral infections of the superior respiratory tract. The greater risk is to aggravate an infection during the incubation period and cause a myocarditis. The limit temperature to engage in exercise is around 38°. When a player has got a high fever, muscular pain, and appetite loss, exercise is not recommended. High fever reduces strength and endurance. A trip by plane can aggravate a sinusitis. Preventative measures include washing the hands frequently, avoid crowds, avoid sharing towels and glasses, and complete the vaccination recommendations.

Recommended reading:

- Howe, W. B. (2003). Preventing infectious disease in sports. *Phys Sportsmed*, vol 31(2), February.

8) WHAT IS OVER-TRAINING?

Over-training is an inappropriate balance between exercise and recovery in which the training programme exceeds the physiological and psychological limits causing fatigue and impairing performance. Over-training is characterised by psychological alterations (fatigue, lack of motivation, difficulty to sleep, loss of appetite, depression, irritability), physiological alterations (increase of the basal Heart rate, weight loss, recurrent infections and injuries, increase of the ingestion of liquid at night, myalgias) and performance alterations (intolerance to training, reduction of speed and endurance, increase of heart rate, ventilation, lactate level, reaction time, effort perception, and loss of co-ordination). The coach intervention is crucial for an early detection of over-training.

Recommended reading:

- Mellion, M, B. (1994). Overtraining. In *"Sports Medicine Secrets"*. Mellion MB (editor) Hanley & Belfus, Philadelphia.

9) WHICH IS THE APPROPRIATE FOOTWEAR FOR TENNIS?

Adequate sport's footwear can increase performance and prevent injuries. For an adequate selection it is recommended to try the footwear after practice or at the end of the day since the size of the foot tends to increase in these circumstances. Footwear has to be comfortable as soon as it is tried on and the heel should be firmly supported. If the athlete practices 3 times a week, specific footwear for that discipline is needed.

In tennis footwear lateral stability, torsion flexibility, cushioning and traction control are important. The shoe should not act as a lever.



Recommended reading:

- Ortega, C. (2002). Check equipment: if the shoe fit, look again! *Med & Science in Tennis*, vol. 7(3), December. www.stms.nl

10) HOW IS HEIGHT PREDICTION FOR AN ATHLETE PERFORMED?

A very common and user-friendly method (Tañer-Whiteson, TW2) requires a radiography of the non-dominant hand, the birth date, height and weight of the athlete, and the height of the parents. With these data a prediction of the adult height can be performed with a given precision depending on the age of the athlete.

11) HAVE INJURIES IN COMPETITIVE TENNIS INCREASED?

In our sport it is difficult to measure with precision the incidence of injuries. In the pro circuit an approximate figure can be obtained with the register of matches abandoned. The index of abandoned / played matches has increased from 3% in 1994 to 5.53% in 2002.

The abandoned rate in Grand Slam tournaments has also dramatically increased in the last years. Injuries were more frequent on clay surfaces (39%), followed by hard courts (33%), rebound ace (10%), carpet (10%), and grass (8%).

Recommended reading:

- Matheson, G.O. (2001). Are we losing the injury-prevention battle? *Phys Sportsmed*, vol 29 (6), June.