

Recovery for the tennis player

By Machar Reid (ITF), Miguel Crespo (ITF) & Angela Calder (Australian Institute of Sport)

Introduction

In the previous issue of ITF Coaching & Sport Science Review we included an introductory piece on recovery and its importance in optimising tennis performance. In effect, the principle of recovery relates to the encouragement of adaptive processes after the presentation of a training stimulus. Adaptation to this stimulus is evidenced by improved performances - the goal of every tennis player's training program.

The intention of this article is to therefore explore in greater depth how three different recovery modalities (passive rest, active rest and physical therapies) can best be used to enhance the physiological and neurological recoverability/adaptability of a tennis player. The authors recognise the undoubted importance of appropriate nutrition and hydration in this regard yet are comforted by the wealth of readily accessible information on this matter, while in a future issue of ITF Coaching & Sport Science Review recovery techniques specific to the psychology of a player will be covered.

PASSIVE REST

As simple as it sounds, sleep is the most important form of passive rest. Typically seven to nine hours of sleep per night provides invaluable adaptation time for players to adjust to any physical and emotional stressors

they experience during the day. Occasionally players will have difficulty getting to sleep due to the excitement of the day's events or the anticipation of those to come therefore it is important for players to develop habits to promote a good nights sleep (Figure 1).

Figure 1. How to develop good sleeping habits

Things to do:

1. Reduce thinking and worrying in bed - learn to *switch off!*
2. Practise relaxation techniques before going to bed. (relaxing music, muscle relaxation, breathing exercises, visualisation)
3. Lie down to sleep ONLY when you are sleepy.
4. If you don't fall asleep within 30 minutes after turning out the light get up and do some relaxation work (see Point 1).
5. If you wake up in the night and can't go back to sleep follow Point 3.
6. Get up at the same time each day.

Things to avoid (evening)

- i. Caffeine (eg. coffee, tea, coke, chocolate)
- ii. Nicotine
- iii. Alcohol
- iv. High protein meals

(Adapted from *Recovery in Training and Competition* (Calder, 1994)

Other forms of passive rest that are readily available to all players are reading and listening to relaxing music. Meditation and flotation (flotation tanks provide an environment with minimal stimulation by reproducing weightlessness, no sight, no sound unless the player relaxes to music or to an affirmation tape) are two other techniques that help a player's mind switch off from all surrounding stimuli but are somewhat restrictive as they can be quite expensive or may initially require special training.

When to use for recovery purposes:

Sleep - at the end of each day. After a late night however, players can sleep for one hour during the day, preferably after lunch (players should always try to wake up within one hour of their normal wake up time, irrespective of how late the night).

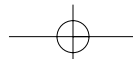
Music, reading - between and/or training sessions, before bed.

Meditation - personal preference.

Flotation - after training sessions, on rest days.

ACTIVE REST

Active rest is much underestimated by tennis players and athletes in general. While active rest can be incorporated throughout training sessions, typically it is at the end of a training session, in particular a heavy session, or following





a competition or heavy training week, that represent the ideal times to introduce active recovery activities.

Activities are selected to fulfil two main tasks: either to help recover the physiological state of the player (eg light walking or cycle to recover the lactate system), or they can focus on musculo-skeletal recovery (eg stretching and exercises to promote postural efficiency).

Often, cross training can be used as a form of active rest provided the work intensities are modest (light aerobic) and the exercises undertaken are different to those normally performed in training. Pool work incorporating different movement patterns or swimming, particularly backstroke, are effective modes of active recovery for players and should be encouraged given that most clubs at which players train or hotels at which they stay during competition are equipped with a pool facility.

Rest days are essential. At least one day per week should be a non-training day. This allows players time for physical recovery as well as time to develop interests outside their sport, to help them lead a more balanced lifestyle.

PHYSICAL THERAPIES

Hydrotherapies

A wide range of physical therapies are available to tennis players. While hydrotherapies and sports massage are the two most frequently used in sport, hydrotherapies are considerably underused and undervalued among the tennis fraternity. Showers, spa, baths, float tanks and saunas (dry baths), provide ideal environments in which to stretch and perform self massage. Contrasting hot and cold showers (which have recently been found to be as effective as an active recovery in recovering lactates), or using a warm spa with a cold plunge pool provides an increase in peripheral circulation, and neural stimulation. Similarly pressure from jets and shower nozzles enhance muscle relaxation by stimulating light contractions in muscles. Collectively this promotes both physiological and neurological recovery.

However as sweating tends to go unnoticed in wet environments, coaches should remind players of the need to be rehydrate before, during, and after treatments. It is also important that treatment times are monitored carefully (Figure 2) as there is a tendency for players to linger in the warm environment and offset the benefits of the treatment through

dehydration and neural fatigue. Players should feel relaxed but stimulated afterwards, not sleepy and lethargic.

Figure 2: Guidelines for Hydrotherapies

Guidelines for Baths/Showers/Spa * *How to Use*

Rehydrate before, during, and after session

Clean skin with soap and shower off beforehand

Alternate: Hot (35-38C) Cold (10-16C)

Shower	1-2 minutes	10-30 seconds
		repeat X 3

OR

Spa/Bath	3-4 minutes	30-60 seconds
		repeat X 3

Shower and rehydrate to finish.

When to Use

Showers can be used anytime. Before, during after a session.

Spas and baths are best left till the end of the day (unless the athlete uses it properly when it can be used earlier)

*Note: do not use if the player has a virus or cold or recent soft tissue injury.

(Adapted from Recovery in Training and Competition (Calder, 1994)

Sports Massage

The second most frequently used recovery modality is sports massage (Figure 3). It has two major physiological benefits. First, it increases blood flow to enhance the delivery of oxygen and nutrients to tired muscles while also promoting the removal of metabolic by-products such as lactic acid.

Secondly, the warming and stretching of soft tissues provides temporary flexibility gains. There are also psychological benefits as tired and tight muscles relax there is a corresponding improvement in mood states. Players feel less fatigued and more relaxed.

Perhaps the greatest benefit from a sports massage however is the biofeedback players' gain as they become more aware of their bodies. *Tuning-in* to the way the body and its muscles and tendons have been stressed better helps the player identify and manage the stressed and fatigued areas.

While most tournaments have physiotherapists and/or masseuses on-site, they are more often that not, in

very high demand. Players should be encouraged to learn self massage techniques that are easy to administer, particularly for the lower legs, chest, neck, shoulders and forearms.

Figure 3: Sports Massage Treatments

Sports Massage

Sports massage treatments can be administered during three phases of training:

(a) Within training sessions: massage is given during training sessions to help accommodate for high training loads and to increase the player's training potential.

(b) Preparatory Massage: as part of a warm-up* phase can be given 15-20 minutes before competition. Techniques can be varied so that the massage can either relax an over-stimulated player or arouse an apathetic one. Sometimes the massage is localised to an injured area in an effort to prepare it before activity.

(c) Restorative Massage: is given in the post loading part of a training session or competition. The techniques used aim to reduce muscle tension and fatigue and lower stress levels. The length and number of massage treatments varies depending on the type and intensity of the activity, and the state of the individual players. Elite performers should have at least two full body massages per week.

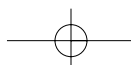
(** Note: Massage is an adjunct only to a sport specific warm-up and should never replace an active warm-up, which prepares the body both physiologically and neurologically for specific sports activities.)

(Adapted from Recovery in Training and Competition (Calder, 1994)

Acupuncture and Acupressure

Acupressure is often performed in addition to sports massage. Conversely, acupuncture requires the practitioner to have more extensive qualifications and consequently is less accessible and more expensive. Both techniques focus on balancing energy fields via specific points located on fourteen meridians, which pass through the body and have been claimed to influence a wide variety of conditions including oxygen uptake, respiration, and the immune system.

Although a recent study from China has demonstrated that muscles relax more after acupuncture than muscles, which receive no acupuncture





treatments (which would in turn have a positive effect on the aforementioned conditions) there have been few other scientific endeavours to substantiate the effectiveness of acupuncture.

Hyperbaric Oxygenation (HBO)
Hyperbaric Oxygenation Therapy (HBO) is a means for increasing the availability of oxygen to the body. This is achieved by inhaling gas with a high oxygen content in an environment with increased atmospheric pressure. This enables oxygen molecules to reach damaged and fatigued body parts more easily than under normal atmospheric

pressures, which have a much lower oxygen content.

Although HBO has been used as an aid to accelerate training adaptations in the former Soviet Union and more recently applied to sporting situations in Australia with the intent of accelerating the repair process for injuries, it is still in its infancy and its effectiveness in facilitating training adaptation and injury repair is under scientific review. HBO is unlikely to be readily available to tennis players for some time.

Summary

Recovery is an essential ingredient of a balanced training program and

fundamental for long term success in tennis. On it's own, hard work does not correspond to the best results. Tennis players need time to adapt to the work undertaken. With the provision of appropriate rest (and nutrition) and physical therapy, players will be better positioned to recover, and optimise, their physiological and neurological condition. Coaches should subsequently direct and encourage players to trial different recovery strategies in an effort to determine what is of best service to the personality and body of each individual.