MILAN

INTERNATIONAL SOCCER ACADEMY

What You Need to Know About

Recovery and Regeneration

Do you want your players to compete at their peak potential on a regular basis, and not have to take time or practices off so that they can recover from the game or practice? This is the question every coach should ask themselves as the soccer season progresses.

The coach is responsible to ensure that his/her players are able to perform at their optimal levels while maintaining a high level of consistency in effort, skill, and mental preparation. If a player is allowed to reach the point of mental and physical saturation (fatigue), performance will be affected. As a result, the team may not perform well on days that count the most.

The lack of or poor recovery and regeneration strategies will lead to over-training. The greater the fatigue of the tissue, the greater the poor after-effects; this will ultimately lead to:

- Low recovery rate
- Poor coordination
- Decreased speed and power of muscle contraction (Lehmann et al, 1997).
- Eventual injury

Every coach needs to be informed of the various strategies used by professional players. While some may not be age appropriate for your specific team needs this year; however, as players get older being able to go back to the following strategies will be beneficial.

Players need to avoid the following three types of fatigue:

- Metabolic fatigue: When the body does not have enough energy stored for the next training session or is unable to rebuild damaged tissue.
- Neural fatigue: When the body is no longer able to activate muscles.
- Psychological fatigue: Actual or perceived mental overload.

FACTORS AFFECTING RECOVERY

Age

- Older athletes require longer recovery periods after training than younger players. Of note is that athletes under 18 years of age require ***longer*** rest periods between training to facilitate higher intensity training (Nudel et al, 1989).

Gender

- Females recover slower than males, primarily due to decreased levels of testosterone (Vender et al, 1990).

Injury

- Injured players require more time to recover between sessions because the tissues are already compromised (Berg, 1994).

Type of Muscle Fibers

Fast-twitch muscle fibers recover faster than slow-twitch, thus quadriceps and hamstrings would benefit from specific recovery strategies.

Psychological

Negative feelings appear to trigger the release of stress related hormones, which in turn can cause a variety of physiological problems that can inhibit muscle tissue growth repair (Bloomfield et al, 1993).

Lactic Acid Removal from the Body

Lactic acid is a waste product of intense exercise that needs to be removed from both muscle and blood in order for the body to recover from exercise.

NOTE: It takes at least **two hours** for lactic acid to be removed from blood and muscle tissue if the steps athlete undertakes relies on simple rest and recovery. On the other hand, if a player uses active recovery, which includes some light jogging where the heart rate is 60% of maximum for a minimum of ten minutes, the lactic acid is removed in **one hour**.

You as a coach can help reduce the effects of these factors by implementing all or some of the following strategies:

PERIODIZATION OF TRAINING

Every coach needs to chart out the season for his team and decide when the team needs to peak and slowly build the team fitness and knowledge base so that the players are peaking at the appropriate times.

Sometimes the team will need to peak at two different times in the season. This needs to be taken into consideration when planning training days and specific days off.

Remember that a lot of the recovery and regeneration does NOT necessarily take place on the soccer field; consequently, although a team may only have two specific training days allocated, they can do activities together in a gym, weight room, park, track, or other similar facility to ensure training strategies are met.

Players should also be educated to the value of incorporating the following Methodologies into their schedules:

REST and SLEEP

It can't be emphasized enough to players that rest and sleep are necessary components for recovery and regeneration. A sleep period lasting 7-10 hours is a must, even for night owl teenagers.

The body's ability to restore the appropriate energy stores and allow the nutrients to reach the correct tissues is done during this period.

Cat naps of fifteen to twenty minutes during the day have proven to be very beneficial to re-energizing the individual.

Naps lasting longer than twenty minutes quite often may lead to a sluggish performance during afternoon training sessions, reducing the quality of training for that session and lowering overall training effect.

NUTRITION

Proper nutrition is needed to replenish depleted energy stores. Carbohydrates, protein, minerals and vitamins are all needed for energy, and repairing and building tissue. There are many good resources regarding nutrition and they should be consulted for a better appreciation of the extent of knowledge that is needed.

GENERAL FITNESS

The fitter the athlete the faster the recovery due to:

- More efficient removal of damaged waste products produced by a high intensity session.
- More efficient delivery system of nutrients to muscles for rebuilding tissue
- Better ability to handle stressors (both mental and physical).

RECOMMENDATIONS

A coach can help implement some or all of the following strategies to help his players avoid the pitfalls of over training and burnout. It is suggested that a coach use one, some or all of the following approaches:

Kino-therapy

- Moderate aerobic running (for up to ten to 15 minutes at 60% maximum heart rate) which can include some **dynamic stretches** and end with **static stretches** of the key fast twitch fibers of the calf muscles, the quadriceps and hamstrings as well as the torso.

Rest

- Allow players enough time to sleep 7-10 hours when possible.

Massage

- Players can get a post-event massage of the major muscles in the body or they can use a small foam roller to massage key muscles noted earlier.

Cold tubs

- Allow time for players to use ice on key joints in the lower extremity and/or allow time for the players to use ice baths. Typically the players are submerged waist high, up to 10-minutes, at 4-8 degrees Celsius ice bath (benefit mostly comes from the analgesic effect on localized tissue).
- This is even more useful with injured tissue, fast twitch muscles (like the lower extremity) and tendons.

Fluid and Fuel Replenishment

- An easy way is to have players weigh themselves before and after playing. They need to drink 1-1.5 liters (4-6 cups) of water for every kilogram (2.2 lbs) lost during the competition.
- Eating carbohydrate rich foods within twenty to forty minutes post competition is often very useful.

Compression

- Some athletes may benefit from using compression shorts and socks to promote circulation.

Final scientific studies on this theory have not been published to date but anecdotal evidence from athletes using this method is positive.

Positive feedback

- Being positive and encouraging to your players will allow them to perform at their peak potential. The avoidance of negative feelings will not trigger the hormones leading to inhibition of tissue repair.

SUMMARY

- Be sensitive to your athletes and look for signs that your athletes are struggling with the schedule.
- Be flexible in your approach so that players do not burnout and the season becomes enjoyable, successful and injury free.

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