



ADVANCED SCHOOL FOR COACHES IN GRECO-ROMAN WRESTLING

16-19 December 2010 – Lahti (FIN)

PROGRAM-RECOMMENDATION FOR THE RECOVERY OF ATHLETES BETWEEN THE MATCHES

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In wrestling, during the tournament season, it is common to have three, four or five matches in a row.

It's quite complicated for an athlete to manage such a large sequence of fights and still maintain a good and steady performance.

It seems normal to face a decline in performance, from time to time, mainly due to fatigue and secondly due to reduction of physical condition parameters.



Wrestling is a sport that requires force and power production from both the upper and lower extremities muscles as well as isometric and eccentric force for the various wrestling techniques.

There is evidence of eccentric contraction causing significant muscle damage and inflammation. Therefore, force and power generation could be probably further reduced due to large number of matches.

That would cause further stress than that already produced by weight loss and physiological and psychological parameters of the competition.



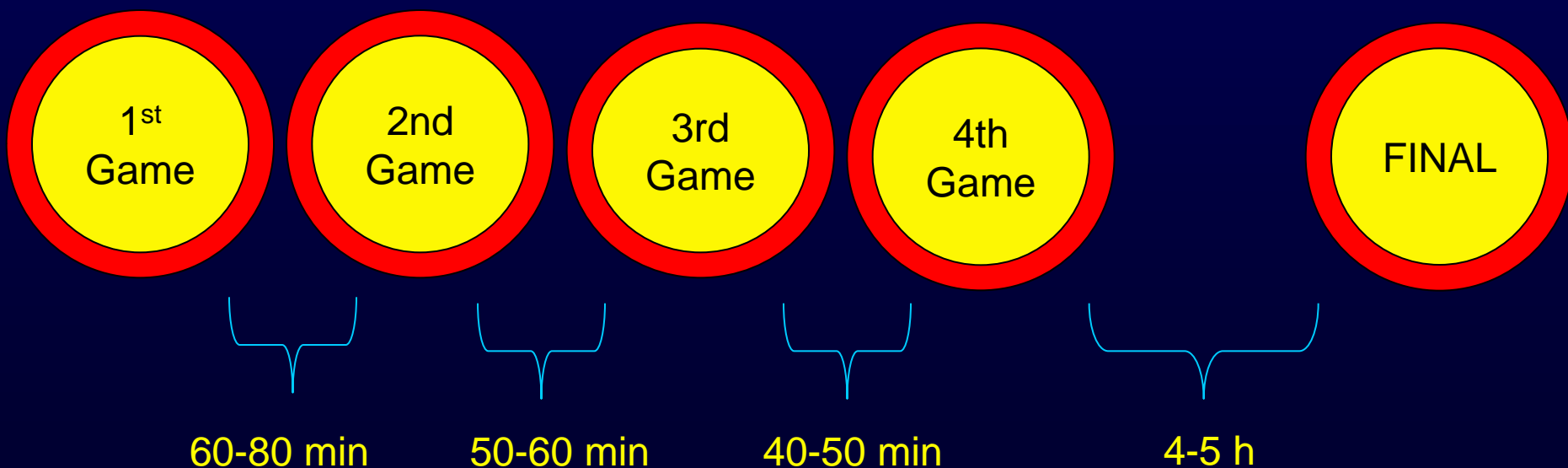
Our main goal is to maintain a top level of performance for all the matches to come. To this effect we must emphasize to a sufficient after match recovery.

So, wrestlers schedule should be tailored to the next fight as much as to the fight that just ended.





I'm sure that you have seen your athletes running out of strength during a match. I am also certain that you are aware of how strained muscles are, especially after 2 or 3 tough matches and how much do athletes feel out of energy.

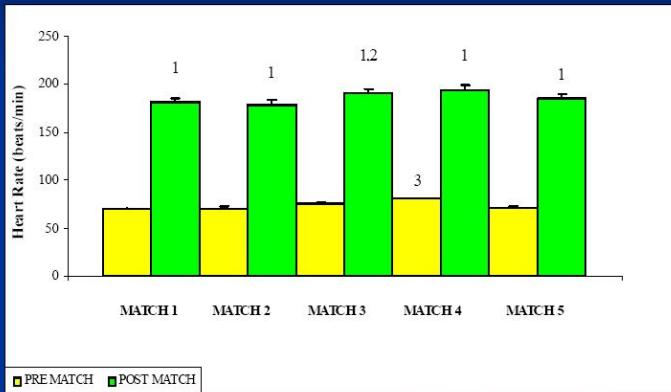




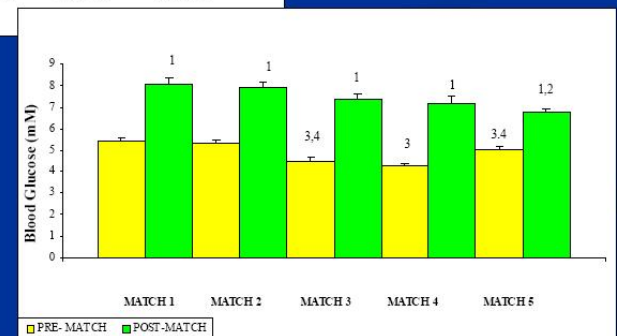
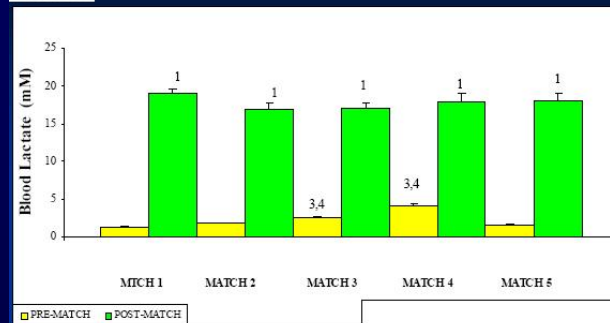
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Heart Rate



Lactate & Glucose



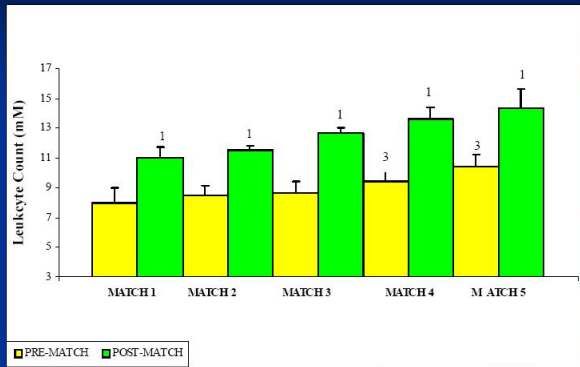


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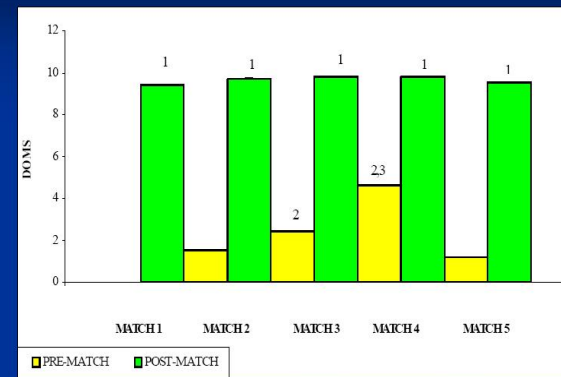
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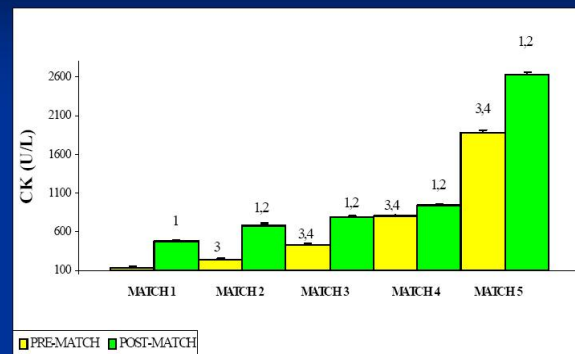
Leukocyte Count



DOMS



Creatine Kinase





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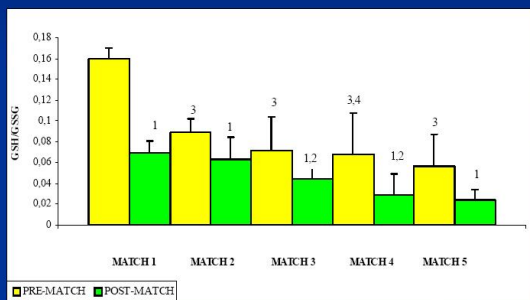
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Oxidative Stress Markers



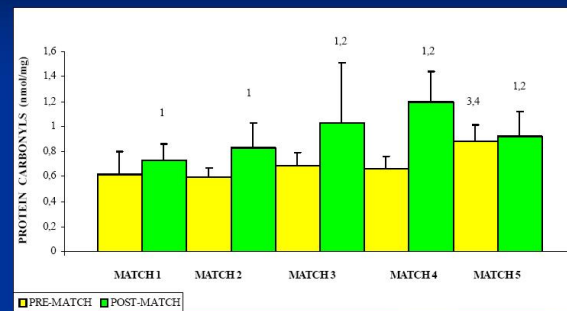
REDUCED TO OXIDIZED GLUTATHIONE RATIO



Oxidative Stress Markers



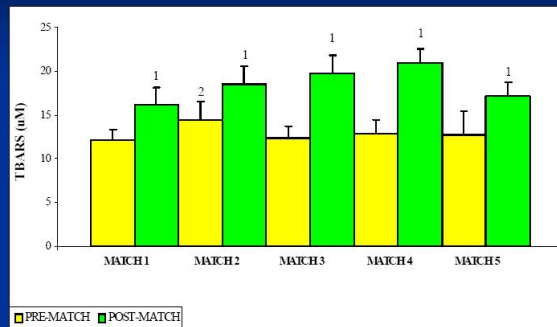
PROTEIN OXIDATION: PROTEIN CARBOXYLS



Oxidative Stress Markers



Lipid Peroxidation: TBARS





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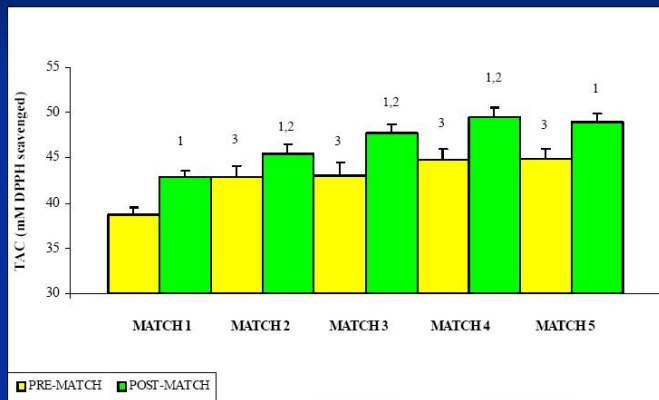
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Antioxidant Status Markers



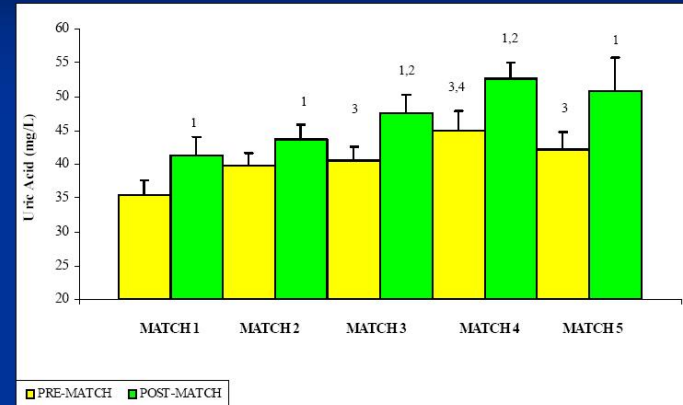
TOTAL ANTIOXIDANT CAPACITY



Antioxidant Status Markers



URIC ACID





Unfortunately, most of coaches believe that this is an integral part of a successful match.

But this is just a myth. In fact those symptoms are a result of poor diet and inefficient recovery. The word recovery refers to the body procedure for the regain of balance via the replenishment of energy store and the repair of small muscle damage that happens during a match.



There are two methods that could prevent the drop of performance.

a) Nutritional composition

Meal schedule,



b) Physiotherapy application





Nutritional composition & Meal schedule

It is very important to focus on nutrition and rest. Therefore, what should an athlete do to achieve optimum recovery?



- 1. Restoration of fluids and electrolytes lost by sweating.**
- 2. Replenishment of muscle glycogen as a primary combustible material.**
- 3. Reducing muscle and immune damage caused to the body due to intense matches.**
- 4. Recast of muscle proteins that are essential for muscle structure and function.**

Let's try to analyse that theory:



1. Restoration of fluids and electrolytes is very important, because small changes in their balance may cause significant reduction in body function and performance, but most important, an increased possibility of thermoregulation disturbance.

Therefore, athletes should drink isotonic drinks, electrolytes or even still water.



2. Replenishment of muscle glycogen is perhaps the most important component for the recovery of the energy reserves after exercise. It is very important to retain high values of muscle glycogen, because it is the basic energy substratum that our body uses during exercise.

Wrestlers must consume 1.5g carbohydrates per kilogram of body weight within the first 30 minutes after the end of a match. This is the indicated way to accelerate replenishment of muscle glycogen and carbohydrate overcompensation.



3. Reducing muscle and immune damages is the third but also important factor of recovery. Regardless of the level of physical condition, any athlete could experience stiff muscles especially after a tough game.

This is due to the oxidative stress that occurs during exercise. According to reference anti-oxidative agents can reduce oxidative stress and its implications.



4. The recast of muscle proteins is another important factor for the recovery after the match. Although, we know that protein is the structural material of muscles which produce movement.

Recent studies have shown that protein intake increases the rate of muscle cell recast and stimulates the insulin excretion, which in turn increases the uptake of amino acids and reduces the levels of cortisol (also known as a catabolic hormone).



How will your athlete get the lost energy back

- a) Before the match, consume meals with slow release carbohydrates, which will not allow a large amount of insulin to intrude cells (which reduces the glucose available)
- b) Before the match, increase the creatine store
- c) After match, boost the storage of creatine and glycogen.

Meals before and after the match

Before the match, a meal with low or medium glycaemic index could be beneficial. This meal should contain 300-600 calories, mostly from carbohydrates and a small amount of protein.

Athletes should drink four (4) ml of water or electrolytes per kilogram of body mass (around 2 cups for a 74 kg athlete).





Meals after the match

Dietary instructions after the match are divided into 2 steps:

1st STEP

-meal consumed in match day (scheduled),



2nd STEP

-meal consumed between scheduled meals (recovery)





Immediate post match meal (recovery) should be consumed as soon as possible. It should consist of 180-200gr of moderate to high glycaemic index carbohydrates and 30-40 gr of protein.

High glycaemic index carbohydrates consumed directly after the match are found to replenish glycogen faster than foods with low glycaemic index. Athletes should choose from a variety of foods that have not been processed and are high in fibres.

Recovery Methods

1. Kinesiotherapy or active recovery

For example, within the first 10 minutes of slow continuous running, 62% of blood lactate is removed and within the next 10 minutes an additional of 26% is removed also.





In conclusion, it is reasonable to perform active recovery for a period of 10-20 minutes after a demanding match in order to remove a large amount of blood lactate even in the range of 88%.

The intensity used as a recovery process should not exceed 60% of maximum heart rate of the athlete.

2. Massage

Massage is the manipulation of superficial layers of muscle and connective tissue to enhance the function and promote relaxation. It helps the removal of metabolic byproducts generated by the body during the match.





The stimulation caused by the massage relaxes the muscular system and helps to prevent injuries. We can apply two types of massage, superficial and deep massage.

We choose the type that fits the best to the body type of each athlete. Massage plays an important role in rehabilitation after intense exercise and affects the psychological state of the athletes, removing anxiety, stress, impatience, etc..















Here are some of the benefits of massage:

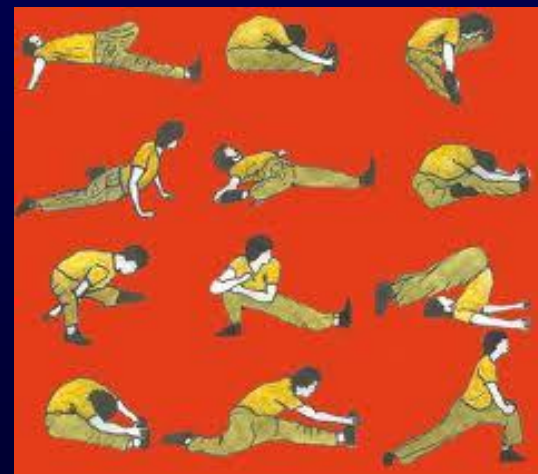
- 1. Increase of blood flow in the muscles which means better transfer of oxygen and vital components to the muscles.**
- 2. Improvement of the lymphatic circulation which assists blood circulation to remove metabolic byproducts generated by the body during the match.**
- 3. Prevention of swelling which could be caused due to muscle fascicle damage during the match.**



3. Stretching

The recovery of strained muscles performed with the help of stretching. These dimensions assist in the removal of such products, and flexibility in acquiring, using this method achieved the removal of metabolic products such as lactic acid.

stretching.name (my routine)			
			
1/12 ref2.2 20 seconds	2/12 ref3.4 5 seconds	3/12 ref4.4 5 seconds	4/12 ref5.2 10 seconds each side
			
5/12 ref6.3 15 seconds each arm	6/12 ref7.3 15 seconds	7/12 ref8.3 10 seconds each arm	8/12 ref9.3 30 seconds each leg
			
9/12 ref10.2 20 seconds	10/12 ref11.2 15 seconds each leg	11/12 ref12.2 15 seconds each leg	12/12 ref13.2 10 seconds





4. Hot pads

The circulatory system serves two purposes; supplying tissues with all the nutrients they need and helps homeostasis, ie to balance the temperature between body and environment.

The emission of heat occurs through the skin and the application of hot pads results in a decrease of body temperature, which was previously increased due to exercise and increase of blood flow (hyperemia), thereby relaxing the tissues and muscles.



5. Cryotherapy

The analgesic effect of cryotherapy is one of the biggest benefits we gain. Large changes in body temperature affect the reflex centers associated with pain. The cryotherapy reduces the intensity of muscle spasm and pain. The implementation of means such as ice massage, ice packs, etc., may be done also by the athlete with ease of use and





6. Succession of Hot & Cold

This method is not appropriate in a boom phase of injury, and the reason is to avoid the presence of hot. The temperature of hot and cold pads must be between 35-37C and 10-15C, respectively.



Recommended treatment duration is 20-30 minutes, longer duration may lead to better results but we must always bear in mind that small muscle groups require short-term treatment.

The use of cold pad should be 3-4 times longer than the hot. Everything begins and ends with cold compresses especially after exhausting matches.

7. The contribution of psychology in the Fatigue and Recovery

The physical and psychological fatigue affect performance.

The psychological stress decreases the function of neurotransmitters, the production of somatropin and unexpectedly reduces the production of growth and other hormones.





Studies have also shown that stress is responsible for anatomical and biochemical changes. These types of changes affect muscle function coordination, synchronization, etc. and lead to chronic fatigue and reduced strength.

Even the personality type affects your stress whether it is type A (edgy - competing), or is type B (calm - relaxed).



**Following the tips above, more or less,
depending on the quantity (number of matches)
and the intensity of the games, you can
significantly improve the level of recovery after
the match, which will lead to greater efficiency
in the next match, further improvement of your
performance but mainly to maintenance of your
health.**



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Do not forget!

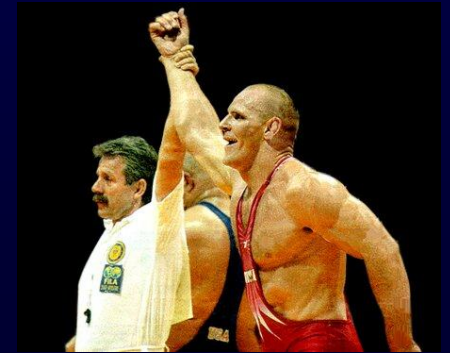
MATCH + RECOVERY = PERFORMANCE





So this important information results in optimal recovery of the athlete and improvement of his/her effectiveness.

Remember that even Olympic Champions may not be training more than your athletes, but perhaps more properly.





References

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Thank you very much for
your attention