



IMPORTANCE OF RECOVERY IN SPORTS PERFORMANCE

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Abstract

Recovery is considered by some authors the ergotropic phase of the biological preparation of the competition. It aims to overcompensate the body not only to restore its homeostasis. In the stage of preparation for the great performance, the problem of restoration in the shortest possible time is essential, being conditioned by the training time and the frequency of the competitions. Purpose is to compensate for changes in the body as a result of the effort.

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1. Introduction

Post-exercise recovery is defined as a component of sports training that through the targeted use of physiological effects means to restore the homeostasis of the body to pre-competitive level or training and not only attaining that level, but by superior one - overcompensation - which represents optimization time for restoration.

2. Issues addressed

Recovery is considered by some authors the ergotropic phase of the biological preparation of the competition. It aims to overcompensate the body not only to restore its homeostasis. In the stage of preparation for the great performance, the problem of restoration in the shortest possible time is essential, being conditioned by the training time and the frequency of the competitions. Its purpose is to compensate for changes in the body as a result of the effort. This is done by replacing the energy consumed compounds and eliminating the catabolism products resulting from the effort in order not to become toxic to the body and not to exceed the physiological limits of the body. This is a biochemical justification of natural restoration with the support of directed rehabilitation.

Directed refurbishment can not replace natural regeneration, it is just a supplement that helps accelerate the natural, physiological recovery process. We appeal to this strategy because natural regeneration requires longer time and more energy consumption, which is trying to be avoided in sports performance. (Aunola, S. 2000)

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As a necessity, directed remaking becomes a component of sports training and obeys its basic principles: accessibility, continuity, systematization.

3. Practical applications

Massage

As a means of recovery, it is recommended by specialists after both effort and intra-comfort. In the latter case it will be used in three different situations: small breaks between 1 minute and 10-15 minutes (boxing, fencing, games) - in this case the massage will be directed segmentally in areas where the athlete accuses fatigue, with relaxing maneuvers, the time being limited; longer breaks of 15-20 minutes (athletics) - in this case segmented relaxation maneuvers are practiced in the first minutes, followed by a short pause followed by a stimulant massage for the preparation of the next stage;

Long breaks of more than 1 hour in competitions (series, semifinals, final) in which apply two series of massage, relaxing at the beginning and toning at the end; Characteristic of this period is the fact that other means of biological rehabilitation and preparation, such as dietary and pharmacological means, are associated. (Baldwin, Kenneth David Sutherland, George H. Fahey D. 2005)

Dietary Remedies - Dieting Recovery

Administered usually in the following hours after the competition, its purpose is not to restore body integrally after effort, but to compensate for dehydration, depletion of energy reserves and fight against marked protein catabolism, also favoring the elimination of waste and fighting Metabolic acidosis (produced by the accumulation of lactic acid in the body), these being the main factors of fatigue.

Carbohydrates are usually discussed after exercise, with dietary strategies to stimulate post-effort glycogenesis. It is intended to remove lactic acid from the blood and turn it into muscle glycogen, which occurs at a maximum rate within the first 30 minutes after the effort. At the same time, the highest rate of refill of muscle glycogen stores is recorded in the first 4 hours, of which the first 15 minutes are the most important. (Baldwin, Kenneth David Sutherland, George H. Fahey D. 2005). The mode of administration of carbohydrates for maximum efficacy should be in large amounts, distributed in small and frequent fractions, utilizing a high rate of muscle glycogenesis. In terms of quantity, most specialists recommend that 500-600 g of carbohydrates be administered within the first 24 hours after exercise. Of these, 0.7 g / kg will be given within the first 2 hours after exercise to have an increased rate of muscle glycogen resonance. The glucose-fructose ratio will be set according to priorities, as it is well known that muscle glycogen regeneration is predominantly by glucose uptake and liver glucose by fructose intake. Regarding the carbohydrate ratio / effort staging, Brouns and colleagues make the following suggestions:



If the next effort comes after 1-2 days, 55-65% carbohydrates with low glycemic index (IG) will be consumed, so 400-600g / day;

If effort is daily, 12 g carbohydrate / kg / day will be consumed;

If we have two maximum efforts per day, with a break between them that is large enough to allow for food, high carbohydrate foods with high GI are recommended. (Barth-Beck, Bell, B.2007)

Also, protein intake should not be neglected to compensate for effort-induced loss by small muscle cell destruction or very long and prolonged effort. Amino acids with branched-chain leucine chains are recommended, which completely cross the liver, becoming a source of nitrogen for the muscle, while also contributing to reducing the central fatigue component installed after this type of effort. Loss of protein substances causes a negative nitrate balance, resulting in decreased performance. For these reasons, a recovery diet should be: hypocaloric, normoproteic, hyperglucidic, rich in vitamins and mineral salts. (Wittekopf G. Marhold G. Piper K.S.2000)

Because dietary fat and fiber slow down the digestion and absorption of carbohydrates and mineral salts, the diet will now be poor in lipids and fibers to slow down the recovery process. As 75% of the chemical energy consumed by the muscles is transformed into heat during the effort, it causes an increase in body temperature, which in order to maintain its thermal equilibrium leads to sweating. In turn, these sweat losses can lead to dehydration if they are not compensated constantly and at the right time, dehydration worsens and can lead to exhaustion and collapse. (Barth-Beck, Bell, B.2007,)

To prevent these metabolic imbalances, the athlete must be taught and forced to hydrate during the effort, before the thirst develops, respecting certain rules:

- the maximum amount ingested per hour does not exceed 500-600 ml, fractionated from 15 to 15 minutes;
- the hydration solution should be at a suitable temperature, not very cold, not to accelerate intestinal transit;
- hydration solution will contain mineral salts and vitamins to replace their losses through sweating;
- for more than one hour efforts it is necessary to also contain carbohydrates.

The first post-competition meal is administered, it will be easily digestible, hypocaloric, while meeting all the requirements we have discussed above. It will be composed of a liquid (salt soup, vegetable cream), salted enough, enriched with sweet cow cheese, rich in methionine, followed by a kind of protein base - beef, fish or chicken with vegetable garnish, Rice or pasta, vitamin vitamin salad and alkalinisation of the internal environment, dessert: homemade cakes, baked or compote fruit, sweetened with honey, for intake of high GI carbohydrates, avoiding raw fruits that produce fermentation and bloating.

The second day of the competition will be determined by two situations:



Day break after which there is still a competition test - in this case, it will be a light, balanced, richer carbohydrate regimen with low GI to reach the competition goals (muscle and liver glycogen stores, lactic acid elimination, Fatty acids in the blood as a source of energy), vitaminizing, normoproteic, with emphasis on the amino acid composition (valine-leucine). The distribution will take three meals a day, the last meal will not be taken too late to give the body time to assimilate for the day.

If the competition is over, this day will be a transition to the athlete's usual diet, from which he will enter the third day. In this situation, it will be a balanced, hipocaloric regime with a focus on the recovery of the losses, specific to the effort of the sport practiced. The caloric value of ration is lower, with nutritionists' recommendations around 2000-2500 kcal / day.

In many situations in high performance sports, where the competitive program is very busy and the effort is very high, we will not be able to compensate for losses through diet only, and then we will use the effort pharmacology.

Pharmacological means for restoration

- Recovering the body after a very long effort in a short time, characterized by a very high energy consumption, is hard to do only on the basis of food intake. The amount of food required would exceed the digestion and absorption possibilities of the body and so diminished by the physical effort. For these reasons, the pharmacological means of supporting the guided restoration were used, and those groups of drugs consisting of synthesis or natural products that intervene in the metabolism, having an important compensating role, were approached.
- We mention the groups:
- Vitamins and minerals - their compounds being present in all rehydration beverages;
- Carbohydrate compounds - also present in rehydration hydration, given their metabolic importance during the first hours after exercise;
- Amino acids - present in hydrolyzates rich in dipeptides and tripeptides, among them inosine (contributes to the elimination of ammonia from the muscle), L. cysteine (important antioxidant floating role), arginine (hepatic detoxifier), aspartic acid (important role in metabolic recovery), Glycol (important in neuropsychic and neuromuscular repair);
- These products are found in formulations in a unique form or in associations, being especially useful for recovery from endurance sports where protein is used as an energy source, thus being a useful means of metabolic recovery. (Netolitzchi M. 2002)
- Medicinal preparations with trophic and general effects. The most useful in the recovery are the preparations based on ginseng, aslavital. (Netolitzchi M. 2002)
- Antioxidant - as it is known that physical effort determines the growth



of free radicals, which ultimately affect the muscle cell, products have been sought to ameliorate this phenomenon. The most commonly used are selenium, vitamin E, coenzyme Q, superoxide dismutase. (Pelin R.A. 2005)

- Products with neurotrophic effects - of which Piracetam is most used to play a role in neuropsychotic recovery, due to its ability to protect neurons from various aggressions.
- Hepatotropic products: silimarine, SOD, sorbitol + arginine, aspartic acid, glutamic acid associations, choline, methionine with group B vitamins, phospholipid-containing compounds, inositol that helps to regenerate the liver cell.

Various products: royal jelly, apilarnil.

Biological indicators of restoration

Considering the physiological bases of post-exercise recovery, we can use some tiredness indicators as indicators of recovery after effort.

Among these indicators, we mention:

- Body weight; basal cardiac frequency, clino, orthostatic; Sleep, appetite, feeling tired;
- Biochemical tests - capillary lactate, serum urate, urine summary, CK, mucoproteins;
- Neurogram - Driving speed on peripheral nerves, muscle fiber, latent distal;
- Depending on the harvesting data and their analysis, we will make a fair assessment of the athlete's recovery, we will draw up an individual recovery plan that will meet the objectives of the apparatus and systems, depending on the individual recovery level, Physical, mental, functional, and preparedness.

The effectiveness of restoration is found in sports results, but especially in sports longevity and health care.

4. Conclusions

We define the relationships between the two types of recovery as follows:

- natural and guided restoration influences each other;
- directed restoration can not replace natural regeneration but potentiates it;
- restoring is addressed to healthy bodies affected by the effort;
- restoration is conditioned by the nature and intensity of the effort, the volume of effort, the environmental conditions in which the effort takes place;
- restoration can be applied daily at the end of a weekly or end-of-stage cycle;



- restoration can be applied post-effort or intra-effort.

After more than 20 years of use of the guided restoration, all authors concluded that it is useful to systematize the means of rehabilitation after their effects and by their belonging, trying more systematizations:

by membership:

- balneo-kineto-physiotherapeutic means: warm-shower hydrotherapy 15 minutes at 36-37 ° C, bath tub, jacuzzi, pool, herbal baths, cryotherapy-ice packs, ice massage, sauna, yoga;
- massage, oxygenation and aeroionization;
- low altitude cure (600-700 m);
- dietetic means - recovery diet;
- pharmacological means
- psychological means - relaxation techniques, autogenous training, suggestion, autosuggestion;
- biological means - passive rest, active rest.
- follow effects: neuropsychic, neuromuscular, cardiorespiratory, endocrinometabolic, vegetative means, etc. (Wittekopf G. Marhold G. Piper K.S.2000)
- by the nature of the effort: aerobic (requires cardiorespiratory and endocrinometabolic recovery), anaerobic (neuropsychotic and neuromuscular repair) and mixed.
- special: psychological pharmacological means, special massage techniques (reflex massage), acupuncture, acupuncture.

5. Motions

From the multitude of these means, the specialist will have to select the most useful, depending on the nature of the effort, the competitive stress, the degree of fatigue and the physiological stages of recovery, since the return of the biological parameters to the initial values is done in a strict order, and certain:

First, the functional parameters return in just a few minutes, being influenced by the neurovegetative system;

After that in a few hours, the metabolic parameters return, the last being the hormone and enzyme that return after a few days.

The most used means are hydrotherapy, massage, dietetic and pharmacological.



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