BASIC THEORY RELATED TO THE CONCEPT OF FATIGUE AND RECOVERY

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Abstract

As the quote says, "it is not how hard you train, but how well you recover", this is a proofed truth. A not properly recover means to miss the experience of strength, power, or endurance adaptations why somebody is in the sport for. Without adequate recovery the musculo-skeletal system, nervous system, and immune system become compromised, which bring a greater risk for injury, illness, weakness or a poor attitude. The body's hormonal response to the deterioration of these systems is often a state of sympathetic arousal – the "fight or flight" response—which floods the body with high levels of catabolic hormones like cortisol. None of these things are good for performance, so thei is a reason to take a closer look to what recovery means.

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1. Introduction

Fatigue is a physiological, reversible condition that occurs after an applied effort (volume and significant intensity), manifested by diminished ability to provide psycho-physical efort . As an unpleasant physiological reaction, general or local discomfort, it may diminish and disappear through rest. Fatigue can be installed generally as a result of high stress activities physical and/or mental.

Domain experts have been involved in the definition of fatigue, so this condition was described as:

- "reversible decrease physical performance capacity performance reversible physical and / or mental, which allows continuing work at the cost of an additional considerable energy and a decrease in driving accuracy" (Weineck, J., 1995);
- "as reversible physiological condition, manifested by reducing physical or mental performance capacity, arising after an effort that disappears through resting" (Bota, C, 2000);
- "physiological reaction, protective inhibition in the CNS, which are law-like and logical psychophysiological activity of a certain duration and intensity" (Dragan, I, 2002);

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- "reversible physiological process that protects the body from total exhaustion" (Gurău, A., 2004).

Fatigue is appearing after reducing overall functional capacity or type of somatic orpsychological component (Bougoignon).

Content

Recovery is a concept that belongs to both physical education and the sport as part of the same process of formative competitive motor activity. Restore (rebuild or biological rebalance) is considered an integral part of the training, effort and recovery being two components closely related to each other (Manescu, D.C., 2009, p.166).

Current reality of sports training, conducted with considerable psychophysical stress, requires special concern in rehabilitation approach in this context, the restoration of exercise capacity or factor became part of sports training; competition with biological preparation, recovering of exercise capacity joins structural components of sports training: physical preparation, technique, tactics, theoretical, psychological, biological competition (and the recovering of exercise capacity).

Recovering is a complex process, methodical, pedagogical, medical pursued in all structures of planning, starting from training lesson (pauses between work), continuing with the recovering weekly stage, annual (planned transition period) and even post Olympic cycle recovery.

According to Dragan, I. (2002), recovery constitutes a "training indirect form of energy (battery power) of the body depleted of fuel, either through excessive energy consumption, exercise-induced, either by increased losses of biological agents" .

As part of the training or physical education, rehabilitation teaching brings together a series of measures and means to restore or acceleration applied to recover the biological balance of the body.

Etymologically, the concept of recovery refers to: restoration, update to the previous state; strengthening recovery. Synonyms concept of recovery are: rebalancing, reconditioning, biological regeneration. Recovery process addresses only to restore the healthy bodies, unlike recovery which is addressing to sick bodies (Manescu, D.C., 2011, pag.95)

Met in specialized foreign literature as (remake, recover - English; réfection - fr; reconstituzione - ital; Repuestos - sp; Wiederherstellung - Germ.), the concept generalizes the idea of recovering health. Specifically, the recovery concerns a set of means (natural and artificial, internal or external by nature), which applied

rationally, aiming to restore the equilibrium state of the internal environment and operational parameters at the previous level of effort (homeostasis) and even overcome this threshold (overcompensation). Recovery is aimed at countering fatigue (rest) and biological rebalancing of athlete.

Recovery is sports training component, which, through the use of natural or artificial means, restores the biological potential of the previous level (or exceeds) - trophotrope restoration phase or component. It processes statutes post-active action (stress / fatigue, rest / recovery), the biological parameters return is spontaneous, natural, but in a certain order: operating parameters, metabolic, hormonal and enzyme, in a time between a few minutes and several days.

Given the contemporary sport (6-8 hours of daily training), natural spontaneous biological restoration, recovering is insufficient. An incomplete biological reconditioning can cause pathological fatigue (overfocus, overtraining). To avoid these conditions, in addition to the specific methodological sports training, it interferes with directed recovery, which aims to accelerate and facilitate natural recovery.

Directed recovering is divided into two chronological phases:

- Biological reconstruction phase;
- Functional economy phase.

The recovery process is sometimes accompanied by the restore process. Between the two states which are generated by sports practice, there are differences: restoring is addresed to healthy body, while recovery is addresed to harmed bodies and effort they need to rebuild the morpho-functional integrity.

Principles of rehabilitation - in sport, theory and methodology of training and competition obviously evolved, which led to profound studies on the theory of recovery, as factor or component of preparation (training) sports. In this regard, some laws have been developed, which complies with the value of principles:

1. Recovery of exercise capacity is an integral, essential part of the training process - the current approach to sports training, competition requirements and hence the request for training and expanded their boundaries, which requires that the athlete body recovery process as a factor, component of preparation. Requests psychophysical stress, wich extends physiological and psychological limit to high performance athletes, restoring of biological condition and ensuring energy potential for the following efforts.

2. Recovery is a process that addresses healthy athletes who performed a psychophysical effort , which affected some functional or biochemical parameters - recovery addresses athletes who are physically and mentally tired after exercise training or competitions. Restoration is different, conceptually, recovery, referring to restore the functions affected by an injury to a level that allows to resume training and participation in competitions. Recovery as a process of restoring work

capacity after an effort, is a customized, differentiated by branch or sample the sport, the type of exercise performed, sports experience, training status, age.

3. Recovery is a natural process that spontaneously fires immediately after cessation or reduction of effort parameters - it is proved by the direct dependence of exercise capacity recovery, central nervous system and endocrine vegetative. Immediately after the exercise, independent of the athlete will naturally triggers recovery phase, to restore the body to its original state. In some cases, due to high energy consumption, special physiological conditions, unusual external conditions for conducting training or competition, spontaneous recovery is not enough, which induces the need for intervention to accelerate recovery.

4. Recovering systems and required devices for effort made, is done in certain order:

- First start restoring vital functions, neuro-vegetative parameters (heart rate FC, FR respiratory rate, blood pressure BP), 10 to 30 minutes;
- Metabolic parameters, which takes place over several hours (after intense effort, glycogen is restored after a few hours after cessation of application);
- Finally recover fine systems, enzymatic redox and neuro-hormonal systems - in 1-3 days.

Recovery is subject to physiological central nervous system (cerebral cortex), which, in turn, is recovered only after restoration of vegetative and metabolic parameters.

5. Recovery has individualized character according to the individual peculiarities of athlete, individual application recovery process is determined by:

- health and training of the athlete. Some diseases, injuries have contraindications to certain means of recovery; high performance athlete has provided a special effort needs a complex recovery, especially after competition of liability, unlike the beginner or advanced athlete, which means recovery are simpler and smaller;
- specific sports industry, namely the type, nature effort provided: recovery applied by means of anaerobic effort are different from those that follow an aerobic exercise;
- athlete's age determines differentiation media recovery: beginners recover naturaly, spontaneous, without any special (sleep, food), while renowned athletes resort to complex restoration, using all means and techniques recognized;
- the workout determines the selection means respecting the specific objectives periods of training, competition, and pre-competitive transition on training, rehabilitation refers to the means that athlete has in the location where they are, they are less or more extensive , whereas the transition period (recovery) operational means to restore must be multiple (eg restoring resorts, where there is growing arsenal spa);
- recovery time: intra-effort: based on training lesson (after repetitions,

exercises, lesson parts) and linked to competition (between sets, round); post-exercise: related to training or competition, after a microcycle (5-7 days) after a stage, a period, a training cycle (2-4 years);

- organ or biological system most affected, tired of exercise performed: resourse used in a long-distance runner in the sample are different from those of a gymnast or pitcher or fencer.

6. Recovery is a process with two components, which makes the support of training and sporting competition:

- trophotrope component - which restores the body's homeostasis, biological potential at the previous level of sports performance training or competition;
- ergotrope component - which aims to energy "overload", in order to increase utilization capacity, the release of energy excess consumption in an workout effort or competition.

7. Natural recovery is completing with conducted restore: in some cases, quite frequent in the current approach to sports training requiring superior biological limits of potential athlete, the body fails to restore balance physicochemical before exercise. Breaks, sleep, nutrition, simple rest between efforts, do not rest athlete body; as such, requires outside intervention of team training specialists, namely: doctor, nutritionist, psychologist, massage therapist, who, by their means, accelerate the recovery process, so trophotrope purposes and ergotrope.

Conclusions and recomandations

In contemporary training when training is done in a multidisciplinary team and knowledge of coaches is complex, it rarely happens phenomenon aperance of pathological chronic fatigue or overtraining.

Preventing the onset of this condition is through the proper application of training stimulation and especially the optimum utilization of the means of during and post recovery effort.

In case of manifestation of overtraining condition (OC), we use the following means:

OC (BASEDOW FORM) EXCITATION PROCESS IS DOMINANT	**OC (ADDISON FORM) INHIBITORY PROCESS IS DOMINANT**
Pasive rest (sleep) ▪ 9 hours with medication Hidroxizin, Napoton;	**Pasive rest** (sleep) ▪ 9 hours with medication Hidroxizin, Napoton;
Alcaline food ▪ food of plant origin: ▪ vegetables, fruits, potatoes; ▪ milk;	**Acidifying food** ▪ food of animal origin: ▪ meat, organes; ▪ cheese, yellow cheese, eggs; ▪ corn oil, sesame oil;

OC (BASEDOW FORM) EXCITATION PROCESS IS DOMINANT	OC (ADDISON FORM) INHIBITORY PROCESS IS DOMINANT
Medication ▪ brominated sedatives; ▪ vitamines: A, C, D, E ▪ minerales: cobalt (milk);	**Medication** ▪ vitamines: B complex; ▪ minerales: manganese, copper;
Hydrotherapie ▪ 35-37°C warm bath, plants (lavender) oil, gas, sodium bicarbonate; ▪ cold showers in the morning;	**Hydrotherapie** ▪ shower alternativ; ▪ sauna with fragrances, oils; ▪ partial baths with herbs, salt Bazna;
Massage ▪ relaxing maneuvers (with oils of lavander, rattles, basil);	**Massage** ▪ stimulating maneuvers (with oils of mint, carrot);
Activ leisure ▪ relaxation exercises, light; ▪ walkings; ▪ outdoor swimming;	**Activ leisure** ▪ dynamic exercises: jogging tennis games, sports movement;
Psychotherapy ▪ psychological counseling; ▪ analytical relaxation; ▪ synthetic relaxation;	**Psyhotherapy** ▪ simple relaxation;
Climate care ▪ subalpine health resort (600 - 1000 m); ▪ oxygen and natural air ionization: coniferous forests, open mountain valleys; ▪ silvaterapie: peaceful walks (3-5 km / h) or on the coasts with weeping willows;	**Climate care** ▪ preferred climate: Alpine spa resort (over 1,000 m) or seaside; ▪ oxygen and natural air ionization: coniferous forests, open mountain valleys; ▪ silvaterapie: hiking, running in maple forests (leaves yellow, orange) trees (leafy), poplar (senior);
Music therapy ▪ -songs of nature (waves, rustle of leaves, birds); ▪ -vocals with "A"; ▪ -listening music harmonic seating position: oblique; ▪ -for insomnia slow compositions, single instrument (piano, guitar);	**Music therapy** ▪ vocals with "O"; ▪ listening rhythmic music, relaxing position: almost vertical; ▪ for insomnia slow compositions, single instrument (piano, guitar);

Intervention previously mentioned, favorable outcome of medical control allows athletes to join the sport in 6-8 weeks, given the gradual resumption of training and graded: nonspecific effort from the beginning; the volume of effort slowly increase; exercise intensity increases even more slowly; attention to during and after-exercise recovery.

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