200 - CURRENT CONSIDERATIONS ABOUT DOPING

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INTRODUCTION

The Doping if gives from the moment where a healthful individual uses exogenics substances (originated in the exterior of the organism) or physiological in extreme amounts or for abnormal ways, in order to result in an increase of its income in competitions. This definition caused many controversies in the world of the sports, because many forbidden substances are pharmacs of use joint and the athlete and the respective doctor could allege that this medicine was only e exclusively with therapeutical ends. The doctor has total autonomy on the athlete, it he is the only one that he can prescribe a medicine an athlete when it will be wounded or sick, and also alone it can authorize the participation of the same in a competition if it will be wounded, sick or under substance treatment (any that is its nature, dosage, preparation or way of administration), that for its effect they can modify, artificial and in an underhand way, the income of the practitioner, during the period of the porting tests, is forbidden to it, in this height, the competition, for having to consider itself doped. For this reason, the medical commission of the IOC finished for adopting as legal definition of doping, the use of any medicine or product I contend substances of the forbidden substance lists. In this conformity, and also according to legislation regent in the countries where the control antidoping is officialized, is estimated that the cited control is made in relation the forbidden substance lists, that is, of considered substances as doping. These lists are not, however, uniforms: they can differ from modality for modality, and, in one same modality, evolve with the time. What it facilitates the use of these substances is the easy access that if have they, the lack of information, absence of effect in short term, lack of moral and pedagogical formation of the involved agents, etc. The easy access to these substances, wants way pharmacies, (with the call doctor prescribes), wants in the "black Market", wants for sale exempts; Absence of immediate negative secondary effect or in short term; The Myth of that efficient substances exist, miraculous and innocuous Lack of one has controlled adequate, efficient and systematic (that it recently started to be promoted); lack of moral, pedagogical and scientific formation of the different involved agents, fact that leads, also, to the incitement of the substance use. When it is said in "doping" associates sport, therefore some cases of athletes are known who had been attemped to the chemical composite use or another type of products to raise its physical activity. However, not only the sportsmen, but leading, medical, also pharmaceutical, technician of sport and other intermediate are involved in this perversion of the values of the Porting Ethics. FORBIDDEN SUBSTANCES AND THE CONSEQUENCES OF ITS USES: STIMULANTS: Increase of the sanguine flow; suppression of the fatigue sensation; they increase the monitoring; loss of the judgment capacity; chronic headaches, anxiety and tremors; taquicardies excitement, sleeplessness; emaciation; death for collapse. Narcotics: They act as analgesic against moderate or strong pains; respiratory depression; nauseas, vomits and giddiness; physical and psychological dependence. ANABOLIC STEROIDIS: Increase of the muscular mass and force; increase of the aggressiveness; arteriosclerosis; growth and precocious maturation of the skeleton; infertility (man); menstrual irregularities (woman); hepatics carcinoma. BETA BLOCKING: They increase the concentration power. DIURECTICS: Fast reduction of the weight; reduction of the medicaments substance concentration in piss; disturbances of the cardiac rhythm and the hidric balance. Some substance classrooms are submitted the restrictions, such as the alcohol, local marijuana, anesthetics and corticosteroids. DOPAGEM METHODS: FARMACOLOGIC MANIPULATION, CHEMISTRY OR PHYSICS: It consists of the use of methods or substances that intervene with the integrity and validity of the piss samples that go to be citizens the control. With this procedure not identification in the urines of dopiness substances is looked to it, trying itself that the analysis "gives" refusal. From there the prohibition of the catheterization (introduction of the catheter in the human body and that it has diverse objectives), the substitution and/or alteration of piss and the inhibition of the renal excretal. The risks are the intestine's development of urinary infections and calculations in the kidneys and problems. AUTOLOGIC DOPING: The Characteristic of this type of doping is that the blood to be used it is removed of the proper athlete and is stored for a posterior reinfusion, it prevents a drastic reduction in the concentration of the sanguine cells, each unit of blood (a the 450 unit is equivalent ml) is removed during a period of three the eight weeks, therefore in general the period of time is this that the individual leads to reestablish hepatics the levels normal. In this technique the plasma is removed and immediately reinfunded and the Popes of erythrocytes they are congealed and kept (Gledhill, 1982). The storage of this blood can be made in two different ways: it can be storaged of the form established in the memorandum of understanding, that is, in refrigeration approximately 4ºC, or can after be congealed to be centrifuged and to be mixed high doses of glycerol and to be stored in liquid nitrogen -80oC (Jones & Pedoe, 1989). The minimum time that the blood must remain stored before the reinfusion must be of three weeks so that the normal levels of Hb if they after reestablish in the organism of the athletes the phlebotomy (vein inflammation), but the period of time considered ideal for the storage is of eight the 12 weeks (Collings, 1988). This period is indicated on the basis of the fact of that six 7% of the stored red cells are lost to each week when the conventional technique is used (refrigeration 4° C) (Jones & Pedoe, 1989). Therefore, this technique is limited how much to the profit in "performance" of the athletes, therefore at the moment of the reinfusion, after three or four weeks of storage, the blood can have lost enters 30 40% of the erythrocytes, harming the waited results (Gledhill, 1982; Jones & Pedoe, 1989). Autologic, Doping for involving intravenous infusion, results in some risks as venous thrombosis and phlebitis, mainly if the transfusion is made without the well-taken care of had ones with the sterilization. Moreover, the raised Hct, the viscosity and hipercoagulability of the blood increased the transfusion after submit the athlete to the risks of venous thromboses and pulmonary embolism (Jones & Pedoe, 1989). Another problem is that the withdrawal of 500 ml of blood in one or more occasions causes distrainment effect (Jones & Pedoe, 1989). HETEROLOGIC DOPING: Also called homologous "doping" (McArdle et al., 1992), this form of "doping" can be placed as precursory of doping sanguine. In this technique to be used blood is removed of other people who possess a compatible blood to the one of the athlete, being able to be infunded immediately or to be stored for posterior use (Jones & Pedoe, 1989). The procedures of withdrawal, storage and reinfusion obey the same principles of "autologic doping" This sanguine form of "doping" displays the athlete to the risks mentioned in "doping" sanguine; autologic, because of the intravenous sanguine infusion, and to a series of relative risks to the transmission of infectum-contagious illnesses, AIDS, for example, as well as of other illnesses as chronic hepatitis and hepatics illnesses (Alter, 1981; Berglund, 1988; Jones & Pedoe, 1989). Another difficulty that if finds is the possibility to occur reactions to the transfusion, mainly due to incompatibility of sanguine types (Berglund, 1988; Jones & Pedoe, 1989). DOPING WITH RECOMBINANT ERITROPOIETINE HUMAN BEING (rhEPO): Erythropoietin (EPO) is a glycoprotein

hormone with molecular weight of 30 the 400 daltons, being constituted of a composed polypeptide chain of 165 amino acids with three disulfides bridges and four polissacaridics chains (Gareau et al. 1994). Its production is unchained, mainly, for the kidneys (Fried et al., 1984; Jacobson, Goldwasser, Fried & Plzak, 1957; Maxwell et al., 1990), even so in the fetal and neonatal period is produced mainly by the liver (Clemons et al. 1986; Zanjani et al., 1981). The EPO acts mainly on the cells called formatters colonies of units of eritroidis, that they are very sensible to its action. The formation of erythrocytes is mainly stimulated by the mechanisms unchained after the formation of hemocitoblastus, before exactly of the beginning of the synthesis of Hb. These small colonies tend to be e with low level of Hb (Zanjani & Ascensão, 1989), being considered the main focus of action of the EPO. From the characterization biochemist of the EPO (You quote, 1982; Myiake et al., 1977) used one technique of recombinant DNA to develop rhEPO. This substance comes being used has some time in the treatment of patients with anemia caused for chronic renal insufficience (Eschbach et al., 1989; Hughes et al., 1990; Winearls et al., 1986) with proven success, for increasing the production of erythrocytes and facilitating to the autologic sanguine donation (Adamson & Eschbach, 1990; Goodnough et al., 1989). With the sprouting of this hormone in the market, from 1988, the suspicion exists of that it comes being used for athlete of high level of the modalities of aerobic predominance (Casoni et al., 1993; Conconi et al., 1994; International Olympic Committee, 1992), based in the principle of that a bigger production of erythrocytes would have as consequence an improvement in the transport of the O2 for the blood, followed of an improvement in the "performance" (Adamsom & Vapnek, 1991; Casoni et al., 1993; Conconi et al., 1994; Ekblom & Berglund, 1991). In this sanguine type of "doping", with administration of rhEPO, the presented collateral effect was increase in the systolic arterial pressure (SAP) (Canadian Erythropoietin Study Group, 1990) in exercise carried through with corresponding load to the 200 Watts (Berglund & Ekblom, 1991) and in maximum exercise (Rassier et al., 1994) after the treatment with rhEPO. SANGUINE DOPING: In accordance with United States Olympic Committee (USOC) cited by Fox et al. (1991), "doping" sanguine is the intravenous injection of blood (total blood, Pope of erythrocytes or derivatives of blood), without medical reasons, in the organism of an athlete independently of the fact of this blood to be of the proper athlete or of another person, with the purpose to improve the performance. The risks of this type of doping pass for the development of alergics reactions, transmission of infectious illnesses, overload of the circulatory device and metabolic shock. From the knowledge of that when an athlete is submitted the training in raised altitudes, it is known, its aerobic capacity is increased e, on the basis of the reply of the organism when displayed to a hypoxia condition, had been initiated, in years 70, the research in the area of "doping" sanguine with Ekblom, et al. (1972). In accordance with McArdle et al. (1992), it is admitted, theoretically, that the added sanguine volume contributes for a bigger maximum cardiac debit and that the Pope of erythrocytes increases the sanguine capacity to carry oxygen (O_2) e, in such a way, raises it amount of available O_2 for the active muscles. "Doping" sanguine is carried through basically of three forms: autologic, heterologic and, more recently, the use of rhEPO, which will be described to follow. "Doping" sanguine if apóia in the idea of that after the flebotomie, the organism of the athlete enters in the state of eritropoiesis, searching the reestablishment of the normal level of erythrocytes. After the infusion or sanguine reinfusão, is had as consequence one raised [plasmatic Hb], increasing, thus, the capacity to carry O_2 consequently and the aerobic capacity (Berglund et al., 1987; Buick, et al. 1980); In relation to the use of rhEPO, some studies (Gibilaro et al., 1988; Mayer et al., 1988; Robertson et al., 1988) had demonstrated significant increase in the anaerobic threshold, the max.VO2, [Hb], the tolerance to the exercise and the maximum capacity of effort of treated anemics patients with rhEPO. Robertson et al. (1990) they had demonstrated that the capacity of anemic individuals, that made hemodialysis, to execute physical exercises significantly after improved the correction of its anemia with rhEPO. These authors had observed that all the patients had increased the Hct significantly and this was associated with an increase in the max.VO2 especially for "doping" sanguine not yet a method of fully trustworthy detention exists. CONVENTIONAL DOPING: Berglund (1988) indicates that the distribution not uniform of the sizes of the red cells, influenced for the age of the cell, has been suggested as a method for detention of the sanguine transfusion. Segundo Videman et al. (1990), if after the calculations the average values of the concentrations of Hb and EPO to present variations of three shunting lines above of the average values of the population, the data would have to be submitted the posterior analyses. However, these authors had analyzed 66 samples in a championship of mountain ski and they had not detected none case. Moreover, the conventionally cooled infusion of blood (4°C) produces a fast increase in the serious iron and bilirubine and a fall in the serious EPO. This EPO is supplied by physical exercise e, thus, the low level of EPO of the athletes in competitions cannot be diagnosised (Jones & Pedoe, 1989). Searching another form of detention, Fargehol & Heir (1994) they had indicated that the transfusion of a unit (450 ml) of all blood will result approximately in 10% of alogenics erythrocytes in the circulation. For such detention these methods depend on the identification of different blood groups between the blood of the individual and the transfunded blood. For this, they are necessary techniques of classification as: ABO-, Rh (Cc Dee) -, K, Jk, Fy and MNSs. In accordance with these authors, to obtain high probability of that the transfunded alogenic blood is detected, it is important to investigate great number of immunologic systems of blood groups. Based in the position of Fargehol & Heir (1994), it seems to be easier to detect antigen-positive alogenics cells between antigen-negative of what vice versa. These methods are accepted to objective demonstrate to the presence of more than one 5% of transfunded cells and that the alogenic blood sample that the giver and the receiver differ in at least an antigen of highly the polymorphic systems of blood groups of the man. TECHNOLOGICAL DOPING: In the question of the technological resources, biochemists, psychological and others techniques of trick to the ethics, do not have a classification or a relation of what it is forbidden; these techniques, in many cases, have difficult evidence, because a consensus does not exist on its application. These techniques are the following ones: Dopagem biochemist: autohemotransfusion. Already it was a very used procedure. It consists of removing of 0.5 the 1 liter of blood, thirty days before the competition and reinject it in the eve. Any organism manufactures in these thirty days the amount of blood that was removed. The devolution of the blood to the circulation means that the athlete will go to compete with an additional amount of blood and, therefore, of red globules, in last analysis of oxygen, with consequent advantage in the aerobic capacity. PHYSICAL DOPAGEM: Stimulation for electrodes. This is one technique that if cannot prove that it was made, but to the athletes sends regards that they do not submit it Consists of rank of electrodes in the tendinous insertions of a muscle or a group of muscles, followed of the 50 superior electric impulses volts. The violent isometric contraction that if follows allows muscular hypertrophies very quickly, but the risk of serious and mainly tendinous muscular ruptures is extremely high, this method was very used in the former Soviet Union.

CONCLUSÃO

Analyzing the research it is observed necessity of more research on the subject, so that some controversies regarding the physiological recital of doping sanguine are cured, and mainly in the part that if relates to the detention in examination anti-doping, therefore still exists a certain incompatibility in the last results of research in such a way for doping conventional (today less used), how much for the injection of rhEPO. Therefore, it is concluded that it is of utmost importance the awareness of the porting agencies and of the government, not only in the deepening of the research with regard to the detention of the examination anti-doping, but yes in alerting to the athletes how much doping is harmful for its health, as well as for the future of the sport, in

which use of the same would finish with the essence it Fair Play (ethical porting or clean game), where these athletes obtain advantage on the others that they pass seasons training hard, and that they have a fort investment financier or not, for getting conquests in the competitions.

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RESUMO

O conteúdo que será abordado no presente trabalho tem o objetivo de mostrar as diversas formas e tipos de doping (algo que se tornou bastante polêmico no mundo esportivo nos últimos tempos), as substâncias que são permitidas ou proibidas, as conseqüências do seu eventual uso, e as falcatruas que os atletas fazem para obter uma vantagem sobre o seu adversário. Normalmente alguns desses métodos de dopagem comprometem a saúde dos atletas. A constante busca por grandes resultados faz com que atletas e técnicos utilizem diversas formas para o melhoramento da performance, às vezes deixando de lado a ética esportiva e utilizando substâncias ilícitas, ou seja, substâncias repugnadas pelas entidades desportivas.

Palavras-chave: Fraude substâncias ilícitas, saúde.

ABSTRACT

The content that will be approached in the present task has the objective of showing the several forms and doping types (something that became quite polemic in the sporting world in the last times), the substances that are allowed or forbidden, the consequences of its eventual use, and the swindles that the athletes do to obtain an advantage on its opponent. Some of those methods usually commit the athletes' health. The constant looks for great results that athletes and coaches use several forms for the improvement of the performance, sometimes leaving the sporting ethics sideways and using illicit substances, that is to say, substances rejected by the sport entities.

Key words: Frauds, illicit substances, health.

RÉSUMÉ

Le contenu qui sera approché dans le présent charge a l'objectif de montrer les multiples formes et d'enduire les types (quelque chose qui sont devenu tout à fait polémiques dans le monde sportif dans les derniers temps), les substances qui sont permises ou interdites, les conséquences de son utilisation certaine, et les escroqueries que les athlètes font pour obtenir un avantage sur son adversaire. Certaines de ces méthodes commettent habituellement la santé des athlètes. La constante recherche les grands résultats que les athlètes et les entraîneurs emploient plusieurs formes pour l'amélioration de l'exécution, laissant parfois l'éthique sportive en longueur et employant les substances illicites, c'est-à-dire, des substances rejetées par les entités de sport.

Mots clés: Fraudes, substances illicites, santé.

EXTRACTO

El contenido que será acercado en la actual tarea tiene el objetivo de demostrar las varias formas y de dopar los tipos (algo que llegaron a ser absolutamente polémicos en el mundo que se divertía en las veces ultimas), las sustancias se permiten o se prohíben que, las consecuencias de su uso eventual, y los timos que los atletas hacen para obtener una ventaja en su opositor. Algunos de esos métodos confían generalmente la salud de los atletas. La constante busca los grandes resultados que los atletas y los coches utilizan varias formas para la mejora del funcionamiento, saliendo a veces del ética que se divierte de lado y usando sustancias ilícitas, es decir, las sustancias rechazadas por las entidades del deporte.

Palabras claves: Fraudes, sustancias ilícitas, salud.