

Nº de Abstracts = 30

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### **Blood testing in sport: hematological profiling**

Kuipers H, Dubravcic-Simunjak S, Moran J, Mitchell D, Shobe J, Sakai H, Ambartsumov R.: International Journal of Sports Medicine, 2010, 31(8):542-7

Language: eng

Country: Germany

University Maastricht, Human Movement Sciences, Maastricht, The Netherlands. Harm.

Hemoglobin concentration and percent reticulocytes (%retics) were analyzed in blood samples taken pre-competition, post-competition, and during out of competition testing in elite speed skaters. Percent reticulocytes during screening was not different from the values obtained post-race, and no significant gender difference was found. Mean hemoglobin concentration both in males and females was slightly higher at 1 425 m altitude compared to 0.05) of caffeine ingestion on EMG/M(SUP), V/M(SUP), MVIC or M(SUP). The central neural modulation (EMG/M(SUP) and V/M(SUP)) and voluntary strength changes followed a similar time-course with a substantial reduction 20 s post-fatigue and a gradual return towards baseline values.

## **Anabolics and cardiomyopathy in a bodybuilder: case report and literature review.**

Ahlgrim C, Guglin M.: Journal of Cardiac Failure, 2009, 15(6):496-500. University of South Florida, Tampa, FL, USA.

Background: Athletes use androgenic-anabolic steroids to increase strength and muscle mass. Several case reports suggest that it may lead to dilated cardiomyopathy. Methods and results

: We report a case of a 41-year-old bodybuilder with severe systolic dysfunction and Class IV heart failure despite maximal medical therapy. He used anabolic steroids and insulin growth factor, and did not have any other risk factors for cardiomyopathy. We briefly review the literature and summarize other reported cases with similar scenarios. In most of them cardiomyopathy was at least partially reversible after discontinuation of anabolics.

Conclusions

: Abuse of anabolic steroids may be an uncommon cause of cardiomyopathy in young and otherwise healthy individuals.

## **Dehydroepiandrosterone to enhance physical performance: myth and reality.**

Hahner S, Allolio B.: Endocrinology and Metabolism Clinics of North America, 2010, 39(1):127-39, x. Department of Medicine I, University of Würzburg, Würzburg, Germany.

Dehydroepiandrosterone (DHEA) is secreted by the zona reticularis of the adrenal cortex and is converted into potent sex steroids in peripheral target cells. As oral DHEA administration can lead to dose-dependent increases in circulating androgens, which may reach high

supraphysiologic levels in women, it has been included in the list of prohibited substances by the World Anti-Doping Agency (WADA). However, evidence for an ergogenic activity of DHEA is still largely nonexistent. Randomized trials in elderly subjects with an age-dependent decrease in DHEA have provided little or no evidence for enhanced physical performance after long-term administration of DHEA, 50 mg/d, and smaller short-term studies in healthy male athletes using higher doses were completely negative. Thus the widely perceived performance-enhancing activity of DHEA is still more myth than reality. However, because studies in female athletes are still lacking, an ergogenic activity of high-dose DHEA in this population cannot be excluded but is expected to be associated with adverse events like hirsutism, acne, and alopecia.

### **Ergogenic effects of inhaled beta2-agonists in non-asthmatic athletes.**

Wolfarth B, Wuestenfeld JC, Kindermann W.: Endocrinology and Metabolism Clinics of North America. 2010, 39(1):75-87, ix. Department of Preventive and Rehabilitative Sports Medicine, Technical University Munich, Munich, Germany.

The potential ergogenic effects of asthma medication in athletes have been controversially discussed for decades. The prevalence of asthma is higher in elite athletes than in the general population. The highest risk for developing asthmatic symptoms is found in endurance athletes and swimmers. In addition, asthma seems to be more common in winter-sport athletes. Asthmatic athletes commonly use inhaled beta2-agonists to prevent and treat asthmatic symptoms. However, beta2-agonists are prohibited according to the "Prohibited List of the World Anti-Doping Agency" (WADA). Until the end of 2009 an exception was only allowed for the substances formoterol, salbutamol, salmeterol, and terbutaline by inhalation, as long as a so-called therapeutic use exemption has been applied for and was granted by the relevant anti-doping authorities. From 2010 salbutamol and salmeterol are allowed by inhalation requiring a so called declaration of use.

### **Glucocorticoids: a doping agent?**

Duclos M.: Endocrinology and Metabolism Clinics of North America, 2010, 39(1):107-26, ix-x.

Department of Sport Medicine and Functional Explorations, University-Hospital (CHU), Hôpital G. Montpied, Clermont-Ferrand, France.

Certain international sports federations are requesting that glucocorticoids (GCs) be removed from the World Antidoping Agency's list of banned products. Their arguments are based on the fact that GCs are in widespread use in sports medicine and have no demonstrated ergogenic activity. This article shows that there is scientific evidence that GCs mediate ergogenic effects in animals and humans. Moreover, the health risks of using GCs are well characterized. GCs are doping agents and should remain on the World Antidoping Agency's list of banned products.

### **Growth hormone administration: is it safe and effective for athletic performance.**

Birzniece V, Nelson AE, Ho KK.: Endocrinology and Metabolism Clinics of North America, 2010, 39(1):11-23, vii. Pituitary Research Unit, Garvan Institute of Medical Research, Darlinghurst, New South Wales, Australia.

Human growth hormone (GH) is widely abused by athletes; however, there is little evidence that GH improves physical performance. Replacement of GH in GH deficiency improves some aspects of exercise capacity. There is evidence for a protein anabolic effect of GH in healthy adults and for increased lean body mass following GH, although fluid retention likely contributes to this increase. The evidence suggests that muscle strength, power, and aerobic exercise capacity are not enhanced by GH administration, however GH may improve anaerobic exercise capacity. There are risks of adverse effects of long-term abuse of GH. Sustained abuse of GH may lead to a state mimicking acromegaly, a condition with increased morbidity and mortality.

## Would you dope? A general population test of the Goldman dilemma

[J M Connor](#) , [J Mazanov](#) : *Br J Sports Med* 2009;43:871-872.

**Objective:** To test Goldman's dilemma on a general population sample by asking whether they would take the Faustian bargain of a drug that guaranteed sporting success but would result in their death in 5 years' time. Between 1982 and 1995 a bi-annual survey using this dilemma suggested half of all elite athletes would take the drug. **Design:** A random telephone survey of 250 members of the Australian general public, with counterbalanced presentation of success and death.

**Main outcome measures:**

Respondents gave age, gender, sports engagement and response to the dilemma (yes/no).

**Results:**

Only two of a sample of 250 reported they would take the bargain offered by the dilemma.

**Conclusions:**

Athletes differ markedly from the general population in response to the dilemma. This raises significant practical and ethical dilemmas for athlete support personnel. The psychometry of the dilemma needs to be established more comprehensively for general and athlete populations.

## Steroid profiles of professional soccer players: an international comparative study

[E Strahm](#) , [P-E Sottas](#) , [C Schweizer](#) , [M Saugy](#) , [J Dvorak](#) , [C Saudan](#) . *Br J Sports Med* 2009;43:1126-1130 .

Background and objectives: Urinary steroid profiling is used in doping controls to detect testosterone abuse. A testosterone over epitestosterone (T/E) ratio exceeding 4.0 is considered

as suspicious of testosterone administration, irrespectively of individual heterogeneous factors such as the athlete's ethnicity. A deletion polymorphism in the UGT2B17 gene was demonstrated to account for a significant part of the interindividual variability in the T/E between Caucasians and Asians. Here, the variability of urinary steroid profiles was examined in a widely heterogeneous cohort of professional soccer players. Method: The

steroid profile of 57 Africans, 32 Asians, 50 Caucasians and 32 Hispanics was determined by gas chromatography–mass spectrometry.

Results:

Significant differences have been observed between all ethnic groups. After estimation of the prevalence of the UGT2B17 deletion/deletion genotype (African: 22%; Asian: 81%; Caucasian: 10%; Hispanic: 7%), ethnic-specific thresholds were developed for a specificity of 99% for the T/E (African: 5.6; Asian: 3.8; Caucasian: 5.7; Hispanic: 5.8). Finally, another polymorphism could be hypothesised in Asians based on specific concentration ratio of 5

$\alpha$

-/5

$\beta$

-androstane-3

$\alpha$

,17

$\beta$

-diol in urine.

Conclusion:

These results demonstrate that a unique and non-specific threshold to evidence testosterone misuse is not fit for purpose. An athlete's endocrinological passport consisting of a longitudinal follow-up together with the ethnicity and/or the genotype would strongly enhance the detection of testosterone abuse. Finally, additional genotyping studies should be undertaken to determine whether the remaining unexplained disparities have an environmental or a genetic origin.

**Effect of a small dose of alcohol on the endurance performance of trained cyclists.**

**Lecoultre, V., Schultz, Y.: Alcohol and alcoholism (Oxford, Oxfordshire), 44(3):278-83, 2009.**

Department of Physiology, Faculty of Biology and Medicine, University of Lausanne, Lausanne, Switzerland.

**AIM:** The aim of this study was to investigate the effect of an acute small ethanol (EtOH) dose (0.5 ml EtOH/kg fat-free mass, combined with carbohydrate) in a drink on endurance performance of trained cyclists.

**METHODS:**

Thirteen well-trained male cyclists took part in this study. A 60-min cycling endurance performance test (time trial) was performed in a calorimetric chamber after drinking an EtOH (30 +/- 1.8 ml) or a non-EtOH control (C) drink.

**RESULTS:**

Overall, EtOH induced a significant decrease in the average cycling power output (PO) (EtOH: 233 +/- 23 W versus C: 243 +/- 24 W, P

**CONCLUSIONS:**

These results show that the acute low dose of EtOH decreased endurance performance. An increase of cardio-vascular strain and psychobiological mechanisms may explain this decrease of endurance performance.