has been modified by WADA and will be enforced in 2004. Any 2 of the following 3 criteria will make a substance or method eligible to be included in the list:

(i) Evidence or experience that the substance or method represents an actual or potential threat to the athlete.

(ii) Use of the substance or method would result in a significant potential for abuse.

(iii) Use of the substance or method would result in a significant potential for abuse.

The new categories of prohibited substances are given in Table I. One significant change is that certain stimulants which are found in common medications and resulted in many athletes having tested positive in the past, have been taken off the prohibited list — these include pseudoephedrine and phenylpropanolamine. Also removed from the list is caffeine, a ubiquitous stimulant. Phenylephrine and synephrine were removed a year ago. Ephedrine and methylephedrine remain on the list. The rationale for the removal of the abovementioned drugs is their seemingly mild stimulant, or beneficial effects, and their common usage increases the risk of inadvertent doping. Some of these will, however, continue to be monitored by WADA to detect abuse. These changes will allow a greater focus on those who deliberately cheat, using proven performance-enhancing drugs.

Corticosteroids have been retained on the prohibited list because of their dubious performance-enhancing effects. Oral, rectal, intravenous and intramuscular administration are prohibited. All other administration routes will now require a formal application for therapeutic use exemption (TUE).

The beta-2-agonists constitute another group of drugs widely used for therapeutic benefit, but abused in some sports. All beta-2 agonists remain prohibited except for salbutamol, formoterol, salmeterol and terbutaline, which are permitted by inhalation only and will require a TUE.

Beta-blockers are prohibited in specific sports.

Diuretics, which are prohibited in and out of competition because of their masking properties, will require TUE. In sports where weight limits are important diuretics are absolutely prohibited.

A medical review panel, consisting of at least three expert physicians, will assess applications for TUE. Criteria which will be considered in an application and which should be borne in mind when doctors compose such applications, include, inter alia, the following:

- The athlete would experience a significant impairment to health if the prohibited substance was to be withheld in the course of treating an acute or chronic medical condition.
- The therapeutic use of the prohibited substance would produce no additional enhancement of performance other than that which might be anticipated by a return to a state of health after the treatment of a legitimate medical condition.
- There is no reasonable therapeutic alternative to the use of the otherwise prohibited substance.

Importantly, except in cases where emergency medical treatment is necessary, a TUE will not be granted retrospectively.

It is clear that the physician bears a tremendous responsibility towards the athlete-patient. Knowledge of the prohibited list is a necessary step in this duty of care.

Further sources of information

- South African Institute for Drug-Free Sport, tel (021) 683-7129, fax (021) 683-7274, e-mail: drugfree@iafrica.com, website www.drugfreesport.org.za (a complete list of permitted and prohibited substances is available on the website).

The Athletes’ Handbook, detailing these substances and giving more useful information on doping, is also available from the organisation on request.

- Drug-free hotline. This call line is available during office hours and will answer any queries with regard to prohibited substances. Tel (021) 448-3888.


A PRACTICAL GUIDE TO THE USE OF NUTRITIONAL SUPPLEMENTS IN SOUTH AFRICA

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Sportspersons should ensure that the decision to use a dietary supplement is a safe one. Unlike medicines, which are regulated by the Medicines Control Council, there is no governing body to control and regulate the supplement industry in South Africa. As a result many supplements may contain banned substances and there is a chance that not all the ingredients are accurately listed on the label of a supplement product. National and international sporting bodies place the responsibility of using supplements on the sportsperson. The legal clause ‘strict liability’ means that the sportsperson is responsible for any and all substances appearing in their urine and blood. Thus to protect
Supplement use should be individual- and sport-specific. Certain nutritional supplements, if used correctly, can play a small but important role in enhancing sports performance. However, it is important that the use of nutritional supplements be based on a solid foundation incorporating other factors vital in achieving peak per-

### Table I. Classification system of nutritional supplements

<table>
<thead>
<tr>
<th>Supplement grouping</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Group A</td>
<td>This group includes supplements and sports foods that provide a performance benefit in sport-specific and individual-specific situations or provide a useful and timely source of energy and nutrients in an athlete’s diet or are of medical/therapeutic benefit: Bicarbonate, beta-hydroxy-beta-methylbutyrate (HMB), creatine, calcium, carbohydrate powders and gels, glucosamine and chondroitin, intramuscular iron, intramuscular vitamin B12, liquid meal replacements, melatonin, recovery formulas, sports energy bars, skim milk powder, sports drinks, specific vitamins and minerals.</td>
</tr>
<tr>
<td>Group B</td>
<td>This group includes supplements currently lacking substantial proof of beneficial effects or have no proof of beneficial effects in sportspersons. This group contains the majority of supplements including many herbs and herbal extracts* promoted to sportspersons. These supplements enjoy a cyclical pattern of popularity and use, but have not been proven to enhance sport performance. In some cases these supplements may impair sports performance or health: Arginine, bee pollen, branched chain amino acids (BCAAs), colostrum, CLA (conjugated linoleic acid), carnitine, cordyceps, cytochrome C, coenzyme Q10, chromium picolinate, choline, Echinacea, ferulic acid, ginseng, glycerol, glutamine, ginkgo biloba, gamma-oryzanol, intravenous iron, inosine, lysine, network marketing supplements, ornithine, pro-biotics, Protivity (Microhydrin), pyruvate, ribose, vitamin B12 injections, spirulina.</td>
</tr>
<tr>
<td>Group C</td>
<td>Supplements that are prohibited for use by the International Olympic Committee (IOC) and World Anti-Doping Agency (WADA). This list includes prohormone supplements (testosterone precursors such as DHEA, androstenedione, androstenediol, boldenone and nandrolone precursors) and stimulants such as ephedrine and strychnine, all of which have negative side-effects. Supplements and herbal products may contain these banned substances (e.g. Ma Huang is Chinese Ephedra and Sida herbs may contain ephedrine alkaloids) or inadvertently (via contamination). The effect of tribulus terrestris, herbal testosterone supplements, zinc magnesium antioxidant (ZMA), ecys-tosterone (sumo) on drug testing results are unknown.</td>
</tr>
</tbody>
</table>

• Caffeine has recently been removed from the banned IOC/WADA lists. However, it is still advisable to be familiar with the wide range of caffeine-containing foods, beverages (e.g. energy drinks, sports drinks, tea and coffee), sports gels and drugs to avoid any undesirable side-effects. Individuals respond differently to caffeine. Performance-enhancing effects may be found at doses as low as 1 - 3 mg/kg (50 - 200 mg caffeine). There is no additional benefit from taking a larger caffeine dose and larger doses are associated with greater risks of side-effects such as nervousness, anxiety, palpitations, headaches and dehydration which may negatively affect performance.

• Note that many herbals contain unstated ingredients on labels and may inadvertently contain ephedra or other alkaloid stimulants.
performance. If any of these factors are lacking, then any potential performance benefit from nutritional supplements will be lost.

CLASSIFICATION SYSTEM

(Table I)

Sportpersons can make use of a classification system to establish the benefit or risk to be gained from a nutritional supplement. This system is based on the weight of scientific evidence supporting that particular supplement and has been adapted from that currently used at the Australian Institute of Sport.

Note: new scientific evidence may emerge which could shift supplements between groups.

CONCLUSIONS AND RECOMMENDATIONS

Supplements should only be taken when there is proof that the diet cannot provide the quantities of nutrients needed. A nutritional evaluation by a dietician (with sports nutrition experience) should determine if any deficiencies are present in the diet and supplements can be supplied accordingly. This evaluation should take into account body composition goals, dietary and medical history, food practices and preferences, training and competition nutrition requirements and budgetary constraints.

Dosages of supplements need to be calculated to avoid overdose. Individuals may respond differently to supplements and this must be taken into consideration. For example, 30% of athletes may not respond to creatine supplementation and different persons may tolerate supplements differently. Try and test diet and supplement changes well before a major competition.

Supplements required in clinical situations need a proper medical diagnosis and again should only be prescribed, in writing, by the sports physician and dietician. Athletes are also reminded to request written prescriptions for supplements. Fitness coaches and conditioning staff should not prescribe any supplements. No persons under the age of 18 should take any sport-specific supplements without the advice of a sports physician or dietician.

All supplement labels should be carefully studied and the ingredients noted. Look for hidden relationships between ingredients (e.g. caffeine and guarana), unstated ingredients [e.g. fat-burning supplements that may contain hidden banned stimulant products] and avoid the prohormone supplements that are banned by sporting federations.

It is recommended that for every supplement purchased the athlete request the supplier to provide a quality control certificate (this should demonstrate that the product has been tested at an independent IOC-accredited laboratory and has been shown to be free of prohibited substances) as well as with legally binding documentation listing all contents of all the different products that they produce and that the company accepts full liability for a positive doping test as a result of the use thereof. This guarantee document should:
• be on a company letterhead
• be signed by management and dated
• include contact details for the person responsible for issuing the guarantee
• address the athlete directly by name, and not be addressed generally, e.g. ‘To whom it may concern’.

SINGLE SUTURE

LIFE AFTER THE TITANIC

An interesting paper in the Christmas edition of the BMJ asked the question — do people live to normal ages after a disaster? The authors say that studies have looked at post-traumatic stress in those surviving disasters, but none have looked at longevity. Looking at available information for survivors of the Titanic they found that their lives were not shortened when compared with those for whom 14 and 15 April 1912 were somewhat less memorable. Five of the woman survivors lived past 100, and the 3 survivors still alive are in their 90s. This is not simply a factor of socio-economic class either, since not all the survivors travelled in first and second class.