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ROYAL CANADIAN MOUNTED POLICE • GENDARMERIE ROYALE DU CANADA

DRUGS AND SPORT

HOME AWAY

THE SCORE

Royal Canadian Mounted Police

Gendarmerie royale du Canada

Canada

Royal Canadian Mounted Police
Gendarmerie royale du Canada

CCES Canadian Centre for Ethics in Sport
Centre canadien pour l'éthique dans le sport

Canadian Association of Chiefs of Police
Association canadienne des chefs de police

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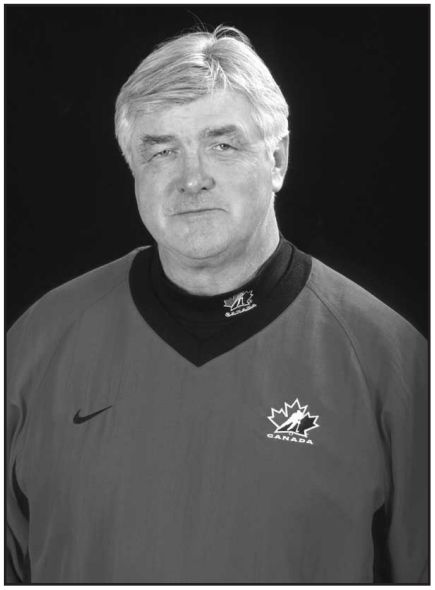


We live in ever-changing times. As things become more complex the young people of our nation are forced to make choices early in their lives that, now more than ever, impact their potential both physically and mentally. In many cases paths are chosen without any real regard for future consequence.

I strongly encourage all of our young people to design their own game plan. A plan that would enable you to become who and whatever you want to be in the future. No matter where life takes you, making a conscious choice to stay away from drugs is the smartest move you will ever make.

A reliance on drugs, whether for performance enhancement or recreation, continues to bring down successful, talented, wealthy and creative individuals. Using drugs quickly eats away at your potential and eventually kills the hopes and dreams you have for yourself – hopes and dreams that we all must keep alive. Experience the world and all the wonderful opportunities that go with it to its fullest. Choose to live smart, stay away from drugs and continue to be a winner in life.

Drugs and Sport: The Score provides coaches, parents and other leaders in sport with simple facts on performance enhancing substances and suggestions as to how to become an effective advocate for drug-free sport in youth programs. I encourage you to be a pivotal player in the promotion of drug-free sport and assist athletes to make healthy, ethical choices both on and off the field.

Pat Quinn
Head Coach, Men's Olympic Hockey Team
XIX Olympic Winter Games

ACKNOWLEDGEMENTS

Recent statistics show that the use of drugs in sport is still a problem, and an ever-increasing one at that. At great risk to their health, athletes are starting to experiment at younger ages with the different substances available in the sporting community. It is sad that the image of sport has been tarnished by the various doping-related scandals that have made headlines over the past few years. As a result, there is no longer the same respect for ethics in sport as there once was.

The use of steroids and other drugs in the world of sports is much more widespread than we might like to believe. It is crucial that we continue to work in partnership in an effort to implement strategies aimed at putting an end to this problem.

With the cooperation of its partners, the Royal Canadian Mounted Police has been able to produce this information booklet, which can be used as a tool by athletes and those who influence them, as well as by anyone involved directly or indirectly in sporting activities. We hope that the momentum will be maintained through this and other proactive initiatives.

On behalf of all members of the Royal Canadian Mounted Police involved in the prevention of drug use in sports, we would like to extend a special thank you to the Institut national de la recherche scientifique-Institut Armand-Frappier, as well as the Canadian Centre for Ethics in Sport, for their valuable contribution to this initiative.

Raf Souccar
Chief Superintendent, Director General
Drugs & Organized Crime

THE STARTING LINE

I. INTRODUCTION. 1

II. RULES OF THE GAME 2
What the law says 2
Controlled Drugs and Substances Act 2
Sports federations 2
Doping tests 2
Black Market. 3

III. THE SITUATION 4
Doping in sport. 4
Various substances and methods used. 4
Population at risk 4
Risk factors. 4

IV. THE LINE-UP 5
Prohibited substances 5
- Anabolic steroids. 5
- Clenbuterol, Zeranol 7
- Stimulants 8
- Beta-2 agonists 9
- Peptide hormones 10
- Narcotics 12
- Glucocorticosteroids 13
- Cannabinoids 13

Substances prohibited in particular sports 14
- Beta-blockers. 14
- Diuretics 15
- Alcohol. 15

Prohibited practices 16
- Blood boosting 16

- Administration of artificial oxygen carriers or plasma expanders 16
- Pharmacological, chemical and physical manipulation of urine 17
- Gene doping 17

Substances monitored at competitions 17
Supplements 18
- Amino acids and proteins 18
- Ergogenic aids 18
- Vitamins and minerals. 18
- Creatine. 18
- Other products 19

V. GAME REVIEW 20
Prevention 20

VI. THE GAME PLAN. 22
Mental preparation 22
Training. 23
Nutrition 24

VII. THE BENCH 26
The team 26
Where to turn for help 28

INTRODUCTION I

In recent years, scandals surrounding doping in sport have regularly made headlines. While the media have drawn our attention to the issue of substance abuse in elite and professional sport, they have really only uncovered the tip of the iceberg. Doping affects not only the sports elite, but also all youths who are closely or remotely involved in sports. In 1998, a provincial study on the attitudes of youth aged 12-17 towards doping in sport, conducted by the Royal Canadian Mounted Police (RCMP), revealed that one out of five youths uses doping substances to improve his/her athletic performance.

Over the years, the use, abuse, and misuse of various substances have had a profound effect on the spirit of amateur and professional sports. Nowadays, athletes in most disciplines have special pills, ointments, or injections tailored to their needs. Whether these substances are used to stimulate, relieve pain, heighten performance, or reduce stress, athletes have their magic potions and see no reason not to take full advantage of them.

Very little is known about the extent of the phenomenon, as doping in sport remains a taboo, controversial subject, never mentioned in sports circles. Yet it is obvious that the use and abuse of various medications and drugs is very widespread in sports, and that they are a threat to the safety, health, and life span of many athletes. The public must be made aware of this serious social problem, which raises ethical questions and impacts on public health.

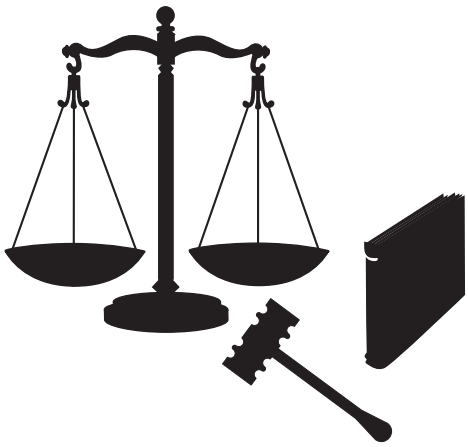
There is every indication that athletes who use steroids and other performance-enhancing substances hope, above all, to improve their performance. They believe it is the only way to even their odds of winning, no matter the risks involved. It appears that the performance standards in some disciplines can only be met by using some type of performance aid. Several performance-related reasons lead athletes to use such aids, the benefits of which include longer, more intensive training sessions, delayed fatigue, quicker reaction time, increased strength and speed, changes in weight and muscle mass, and greater competitiveness. As a result, athletes tend to brush aside the possible dangers and consequences of substance use, because they feel that the pros outweigh the cons.

Given the fact that some athletes may get their information from unreliable sources, it is important that people in contact with adolescents (parents, coaches, teachers, police officers, etc.) be able to provide them with as much information as possible on the various substances used in sports. The purpose of this booklet is to provide athletes and the people close to them with basic information on the various substances used in sports. It also suggests ways to avoid using ergogenic, or performance enhancing, substances and provides a list of resources people can turn to for help and information they need to deal with this problem. Early and continued action is required, both in terms of prevention and education, to protect the image of sports and the health of athletes. Young people will then be better prepared to face outside pressures and make informed decisions about the use of doping substances.

RULES OF THE GAME II

WHAT THE LAW SAYS

All performance-enhancing substances are not necessarily illegal drugs. In many cases, possession and use of some substances is perfectly legal. However, legality does not necessarily indicate that a substance is harmless. Substance abuse of any kind can involve various health risks.



Controlled Drugs and Substances Act

The *Controlled Drugs and Substances Act* regulates all medications and some illicit drugs. Anabolic steroids are dealt with in schedule 4 of the Act. Importation, trafficking, and possession with the intention of trafficking are all punishable offences. Some of the other illicit substances used by athletes (cocaine, cannabis, etc.) are also regulated under the *Act*, and possession, trafficking, importation, exportation, and production of these also constitute violations of the *Act*.

Sports federations

Many national and international sports federations prohibit doping in sport. The purpose of the regulations set out by these federations is: to promote fair play, to prevent athletes from taking unfair advantage of the edge doping substances give them, and to protect them from adverse health effects. Athletes who are found guilty of doping after a positive test result may be suspended, and may no longer be eligible for government grants and sponsorships.

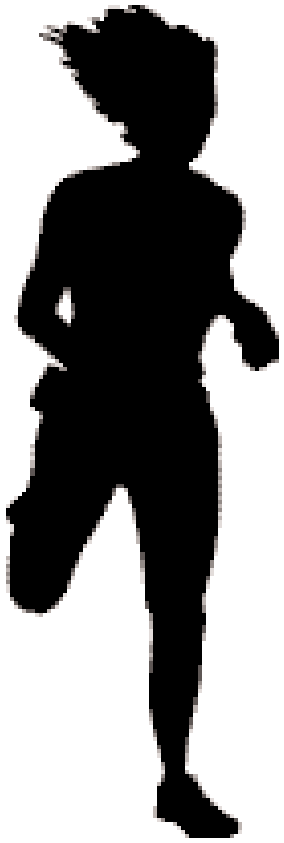
Doping tests

A doping test consists of the analysis, by a specialized laboratory which has been certified by the World Anti-Doping Agency (WADA), of urine, or in some cases, blood samples taken from selected athletes in order to detect any prohibited substances and practices. If the test is positive, the athlete is subject to disciplinary action. The purpose of these tests is to ensure the fairness of competitions for all athletes.

Black Market

In Canada, the only way to legally purchase anabolic steroids, amphetamines, and certain other substances is by prescription. It is unethical for doctors, pharmacists, and veterinarians to sell, administer, or prescribe these doping products for athletic or body enhancement purposes. To do so would make them subject to discipline by their professional associations in addition to prosecution in a court of law. Most of the steroids used by athletes are obtained illegally through black market sources. The main suppliers are dealers who usually hang out in training centres.

The products sold on the black market are imported illegally, or concocted in clandestine laboratories. The fact that the quality of these products may be uncertain does not appear to frighten potential users.



THE SITUATION III

DOPING IN SPORT

Doping in sport is the deliberate or inadvertent use, by an athlete, of prohibited and potentially hazardous substances and/or practices for the purpose of artificially enhancing his/her physical capabilities. The problem is complex with political, legal, and pharmacological ramifications, to name a few, which makes it difficult to give an exact, accurate definition of the term. Regardless of the definition given, the fact remains that the problem must be recognized and dealt with.

Various substances and methods used

Substances and techniques used by athletes generally fall into three categories: “street” or mood-altering drugs, ergogenic substances and methods used to improve athletic performance, and pain-relief medications. The substances and methods most commonly used are stimulants, narcotics, cannabinoids, anabolic agents, Peptide hormones, beta-2 agonists, masking agents, glucocorticosteroids, and prohibited practices. Supplements and vitamins are also used but not banned.

Population at risk

Research shows that those most at risk are young men aged 15 to 30 who take part in a sport or work in a field where a muscular appearance, strength and ruggedness work in their favour. Doping appears to be less frequent among women, but this segment of the population cannot be ignored, because according to the results of the latest studies on the subject, the use of anabolic agents has gone up among young girls. The people most at risk are adolescents who regularly take part in sporting activities and who intend to go onto higher-level competitions. These young athletes face several risk factors which they are ill-equipped to deal with. Often, they get their information from unreliable sources, and lack the basic knowledge they need to make informed decisions.

Risk factors

Several risk factors can push athletes to use ergogenic substances such as steroids: the frequency, duration, and intensity of training and competitions; unfavourable weather conditions; insufficient rest periods after training sessions, competitions, and travel; progress in scientific research; the desire to win at any cost; peer influences (parents, friends, coaches, etc.); finances, and the ever-present media.

THE LINE-UP IV

PROHIBITED SUBSTANCES

Anabolic steroids

Class: Prescription medication, ergogenic substance
Generic name: Boldenone, Nandrolone, Stanozolol, Testosterone...
Brand name: Andriol, Deca-Durabolin, Winstrol...
Form: Tablet, ampule
Method of administration: Orally or by intramuscular injection

Definition and desired effects

Androgenic anabolic steroids are derived from a male hormone called testosterone, and are designed to produce effects comparable to those of natural steroids. Testosterone produces "anabolic" results, i.e. muscle and strength-building, as well as "androgenic" or masculinizing effects. The effects of anabolic steroids on athletic performance continue to cause controversy, but one thing is certain: combined with intensive training and the right diet, steroids increase muscle mass and produce the desired results. Other factors such as genetic and psychological potential can also increase their effectiveness.

Availability

Steroids are dispensed by pharmacies through a doctor's prescription, and are used to treat certain illnesses such as anemia and osteoporosis. The use of steroids for athletic and body-enhancement purposes is medically unethical. It is illegal to prescribe steroids for the sole purpose of body-building. Importation, trafficking, and possession for the purpose of trafficking are all punishable offences.

Some steroids are also used in veterinary medicine.

Over 80% of illegal steroids come from black market sources.

Onset and duration of action

Anabolic steroids slowly accelerate and increase muscle development. The effects aren't noticeable for several weeks, but muscle development is still quicker than through regular training.

Usage

Combination: Use of steroid in conjunction with another substance.
On-and-off cycle: Regular cycle alternating periods of use with periods of abstinence (e.g. six to eight weeks on followed by an equal or longer period off).
Pyramiding: Gradual increase of dosage followed by a reduction
Random use: Technique whereby steroids are taken at random.
Stacking: Use of more than one type of steroid at a time.
Declining use: Gradual decrease of use.

Adverse health effects

Health risks vary depending on the person, the substance being used, its origin, the means of administration (orally or by injection), the dosage, the duration of use, the context, and the interaction with other drugs. The same is true for all other doping substances used in sports.

When athletes take steroids, the side effects are magnified, because dosages usually tend to be increased ten to a hundredfold over what would be prescribed for medical purposes. The short-term toxicity of steroids is relatively low, but prolonged use increases the risk of developing several serious illnesses. Overdose (especially orally), needles, and use by children, adolescents and people suffering from liver or heart problems are some of the more serious situations related to steroid use.

Table 1:
Side effects

ANABOLIC STEROIDS

In adult males

1. Higher level of bad cholesterol (LDL) and reduction of good cholesterol (HDL), leading to increased risk of heart attack and stroke
2. High blood pressure
3. Severe facial and body acne
4. Gynecomastia (abnormal breast enlargement)
5. Sexual dysfunction
6. Liver and kidney disorders
7. Premature baldness
8. Testicular atrophy
9. Immune system depression
10. Transmission of infectious diseases, such as hepatitis and AIDS
11. Psychological distress (aggressiveness, depression, mood swings, antisocial behaviour, paranoia)

In adult females

*In addition to effects 1, 2, 3, 5, 6, 9, 10 and 11 indicated above:

12. Masculinization (deepening of the voice, development of an Adam's apple, male pattern balding, redistribution of fat)
13. Increased hair growth
14. Abnormal or absent menstrual cycle
15. Risk of foetal malformation or masculinization in pregnancy

In adolescents

*In addition to the effects noted above :

16. Premature closure of the growth centres of long bones which may result in stunted growth

Addiction

Although physical dependency on steroids has never been reported, users can develop a psychological addiction to them. They need steroids to feel good about themselves, to feel they have more energy, to feel secure, to feel self-confident, and to regulate various hormonal interactions. Users sometimes fall into a deep depression when they stop taking steroids, due to loss of self-confidence, hormonal imbalances, and rapid loss of muscle mass and resistance.

Warning signs

The most obvious signs of steroid use are:

- rapid weight gain and increase in muscle mass and strength (5kg to 10 kg in 6 to 12 weeks combined with intensive training)
- yellow cast to the skin and the whites of the eyes (liver dysfunction)
- facial swelling
- severe acne on the upper back, shoulders, arms, and face
- increased appetite
- mood changes (mood swings, irritability, aggressiveness)
- excessive confidence
- abnormal chest development (breast enlargement in males and reduction of breast tissue in females)
- masculinization (in females)

Clenbuterol, Zeranol

Class: Medications
Generic name: Clenbuterol, Zeranol
Brand name: Ventipulmin...
Appearance: Tablet, gas, liquid
Method of administration: Oral, inhalation, injection

Definition and desired effects

Clenbuterol and Zeranol are anabolic agents used illegally in veterinary medicine to enhance lean body mass in meat animals. Clenbuterol is also similar to certain types of asthma medication, such as salbutamol, as it controls respiratory problems.

Adverse health effects

Several studies on the effects of Clenbuterol in humans have shown that use of this substance involves major health risks.

Table 2:
Side effects

Clenbuterol, Zeranol
1. Heart attack
2. Stroke
3. Shivering
4. Hemorrhaging
5. Tachycardia (increased heart rate)
6. Arrhythmia (irregular heart beat)

Stimulants

Class: Ergogenic drugs, medications, central nervous system stimulants
Generic name: Cocaine, Ephedrine, Amphetamine...
Brand name: Coke, Speed, Ripped Fuel...
Form: Tablet, capsule, ampule, powder, liquid
Method of administration: Oral, nasal or by injection

Definition and desired effects

Stimulants directly affect the central nervous system, accelerating thought processes, increasing alertness, and reducing or delaying fatigue. By using such substances, athletes can train longer and harder, but only over a short period of time, as this forces them to tap into their energy reserves, and requires more recovery time. Stimulants include various substances which make athletes feel more aggressive and competitive, thus giving them the impression that their performance has improved. Most of the substances which fall into this category do not actually improve athletic performance, but rather help the user to better resist the stress and fatigue of training and competition.

Availability

Certain stimulants, such as amphetamines, are available by prescription. Therapeutic uses include the treatment of attention deficit disorders and chronic fatigue. Other products are sold in sports nutrition, shops, on the Internet, and on the black market.

Onset and duration of action

Most stimulants take less than an hour to kick in. Depending on the substance used and the method of administration, they usually last anywhere from 30 minutes to 4 hours.

Since the action of stimulants does not last long, they are tested for only at the time of competition.

Adverse health effects

The side effects produced by stimulants are generally felt quickly. Toxicity is often due to abuse or overdose. However any use of illegal stimulants is hazardous for your health.

Table 3: Side effects

Stimulants such as ephedrine, amphetamines and cocaine

1. High blood pressure
2. Tachycardia (increased heart rate)
3. Dehydration
4. Shivering
5. Increased body temperature
6. Weight loss due to loss of appetite
7. Headaches
8. Arrhythmia (irregular heart beat)
9. Dizziness
10. Convulsions (violent and involuntary muscle contractions)
11. Psychological distress (nervousness, insomnia, anxiety, aggressiveness, paranoia)

Addiction

Generally speaking, physical addiction to stimulants is rare or non-existent. Strong psychological dependency is much more common. Stimulants give self-confidence and self-esteem a powerful boost. When athletes stop using them, they feel less confident, lack energy and quickly feel exhausted. This can lead to chronic fatigue and depression.

Warning signs

The most obvious signs of stimulant use are:

- weight loss
- loss of appetite
- aggressiveness
- excessive self-confidence
- longer recovery time
- overtraining
- tremors
- mood changes
- exaggerated sense of well-being
- sleep disorders

Beta-2 agonists

Class: Medication for asthma and respiratory ailment
Generic name: Formoterol, Salbutamol, Salmeterol, Terbutaline...
Brand name: Oxeze Ventolin, Serevent, Bricanyl...
Appearance: Tablet, gas, liquid
Method of administration: Oral, inhalation, injection

Definition and desired effects

The use of four different beta-2 agonists (by inhalation only) are permitted with a therapeutic use exemption.

Applications should be made at the time the prohibited medication(s) is/are recommended to the athlete by his or her physician. Athletes must contact their sport federation or the Canadian Centre for Ethics in Sport (CCES) to apply for a therapeutic use exemption.

The substances authorized are :

- salbutamol (Ventolin inhaler)
- salmeterol (Serevent inhaler)
- Terbutaline (Bricanyl inhaler)
- formoterol (Oxeze Turbuhaler)

All remaining beta-2 agonists are prohibited.

Adverse health effects

The toxicity of some of these substances is often due to abuse or inappropriate use.

Table 4:
Side effects

Formoterol, salbutamol, salmeterol, terbutaline
1. Chest pain
2. Nausea
3. Headaches
4. High blood pressure
5. Dizziness
6. Shivering
7. Tachycardia (increased heart rate)
8. Arrhythmia (irregular heart beat)
9. Psychological distress (nervousness, insomnia, agressiveness)

Peptide Hormones

Class: Medications and ergogenic substances
Generic name: Human Growth Hormone (hGH), Human Chorionic Gonadotropin (hCG), Insulin (IGF-1), Pituitary and Synthetic Gonadotrophins (LH), Erythropoietin (EPO)
Form: Tablet, ampule
Method of administration: Orally or by injection

Definition and desired effects

Peptide hormones stimulate bodily functions, sex drive and behaviour. Almost all of the body's organs depend on growth hormones to develop. Growth hormones are produced naturally by the pituitary gland, and, like steroids, can also be produced synthetically. As their name indicates, they act to stimulate muscle growth. Growth hormones are often combined with steroids. In humans, hCG stimulates natural steroid production and can lead to an increase in the level of androgenic steroids (masculine and sexual characteristics). The possibility of increasing one's size while reducing fat reserves is just one of the desired effects. Erythropoietin (EPO), a hormone produced by the kidneys, stimulates the production of red blood cells by the bone marrow, thereby increasing oxygen supply to the muscles.

Availability

Growth hormones are used to treat growth hormone deficiency (dwarfism), osteoporosis, obesity, and certain types of trauma, and are only available with a prescription. Like steroids, they are widely sold on the black market. EPO is sometimes used for the treatment of kidney failure and certain types of anemia. It should only be sold by prescription for therapeutic purposes, but apparently this is not always the case. EPO is also available on the black market.

Onset and duration of action

Growth hormones have both short-term and long-term metabolic effects. The former last 3 to 4 hours, while the latter are felt more slowly as they increase the size and strength of the affected muscles; as a result, they start to show only after several weeks.

Adverse health effects

Among athletes, the side effects of growth hormones used to increase athletic performance are often magnified as the recommended dosage is exceeded by as much as twentyfold. The abuse of growth hormones by athletes and their early use by children and adolescents can cause irreversible health problems.

Table 5:
Side effects

Growth hormones
1. Acromegaly (distorted bone and internal organ growth) **2.** Thickening of the skin **3.** Heart and thyroid problems **4.** Diabetes **5.** High blood pressure **6.** Giantism (excessive skeletal development) **7.** Stroke **8.** Transmission of infectious diseases such as hepatitis and AIDS **9.** Psychological distress (irritability, depression, fatigue)
Erythropoietin
*In addition to effects 7 and 8 Noted above : **10.** Blood clots **11.** Heart disease

Addiction

There is no evidence of physical addiction, but psychological dependency can occur.

Warning signs

The most obvious signs of growth hormone use are:

- rapid growth
- thickening of the skin
- fatigue
- mood changes

Narcotics

Class: Medication, central nervous system depressant
Generic name: Morphine, Oxycodone, Pethidine...
Brand name: Percodan, Demerol...
Form: tablet, ampule, liquid, suppository, powder
Method of administration: Oral, rectal or by injection

Definition and desired effects

The drugs in this category are used mainly to relieve pain, but are much stronger than the more common analgesics, such as acetaminophen. They can instill a false sense of invincibility which can lead athletes to ignore a serious injury and thus risk worsening it. These substances are normally only available by prescription but can also be purchased on the black market.

Once administered, these drugs act quickly, and their effects can last for many hours.

Adverse health effects

Most of these drugs have serious side effects. Physical and psychological addiction occur quickly.

Table 6:
Side effects

Narcotics
1. Respiratory depression
2. Irritation
3. Nausea
4. Convulsions
5. Dizziness
6. Constipation
7. Risk of further injury
8. Transmission of infectious diseases such as hepatitis and AIDS

Glucocorticosteroids

Class: Medication
Generic name: Hydrocortisone, Budesonide, Beclomethasone...
Brand name: Pulmicort, Prednisone, Propaderm...
Form: Tablet, liquid, capsule, cream, ampule, powder, suppository
Method of administration: Oral, rectal or by injection, topical, aural, ophthalmic

Definition and desired effects

Glucocorticosteroids have a wide range of therapeutic uses. Given their psychostimulant effects and anti-inflammatory properties, they are most often used to fight fatigue and relieve pain.

Glucocorticosteroids, are prohibited when administered orally, rectally, or by intravenous or intramuscular administration. All other administration routes require prior therapeutic use exemption.

Table 7:
Side effects

Glucocorticosteroids

1. Serious infections
2. Osteoporosis
3. Articulatory destruction
4. Heart attack (loss of potassium)
5. High blood pressure
6. Kidney failure
7. Diabetes
8. Ulcers
9. Aggravation of injury

Cannabinoids

Class: Hallucinogens
Generic name: Cannabinoids
Street name: Pot, Grass, Marijuana, Hashish...
Form: Herb, resin, oil
Method of administration: Oral, inhalation

Definition and desired effects

Cannabinoids are not used to improve athletic performance, but some athletes use them for recreational purposes or to relieve anxiety.

Onset and duration of action

It is important to consider the washout period, because even if cannabinoids are tested only at competitions, it takes a very long time for cannabinoids to wash out of the system. It varies depending on usage, and the substances may remain in those who take them for months.

Table 8:
Side effects

Cannabinoids
1. Less resistant immune system
2. Changes in the perception of time and space leading to increased risk of accident
3. Bronchopulmonary disorders
4. Reduced motor coordination
5. Drowsiness
6. Loss of concentration
7. Hallucinations

SUBSTANCES PROHIBITED IN PARTICULAR SPORTS

Beta-blockers

Class: Medication
Generic name: Beta-blocker
Brand name: Nadolol, Propanolol, Practolol...
Form: Tablet
Method of administration: Oral

Definition and desired effects

Beta-blockers act on the cardiovascular system, reducing not only bloodpressure and oxygen intake, but the effects of stress as well. They are most often used in sports such as archery and in biathlons, where it is important for athletes to keep their hands and arms still.

Beta-blockers are available with a prescription to control high blood pressure, cardiac arrhythmia, angina, and migraines.

Beta-blockers are prohibited in competition only in the following sports: Aeronautics, Archery, Autosports, Billiards, Bobsledding, Boules, Bridge, Chess, Curling, Gymnastics, Modern Pentathlon, Motorcycling, Nine-pin Bowling, Sailing (match race helms only), Shooting (also prohibited out of competition), Skiing (in ski jumping and freestyle snowboarding), Swimming (in diving and synchronized swimming), Wrestling.

Adverse health effects

Abusing Beta-blockers can lead to serious health problems, such as the following:

Table 9:
Side effects

Beta-blockers
1. Reduced endurance **2.** Heart failure **3.** Asthma **4.** Sexual dysfunction **5.** Psychological distress (depression, insomnia)

Diuretics

Class: Medication
Generic name: Diuretic
Brand name: Acetazolamide, Amiloride, Furosemide
Form: Tablet, liquid
Method of administration: Oral

Definition and desired effects

Diuretics decrease the volume of body fluid by fostering the elimination of salt and water through the production of urine. They are used to achieve rapid weight loss, especially in sports where weight classification is a factor. They are also used to reduce the concentration of other substances in the urine through rapid production of a large quantity of urine in order to get around a doping test.

Diuretics, are prohibited in all sports as masking agents. However, in the following weight-classified sports and sports where weight loss can enhance performance, no Therapeutic Use Exemptions shall be granted for use of diuretics.

Body-building, Boxing, Judo, Karate, Powerlifting, Rowing (lightweight), Skiing (for Ski jumping only) Taekwondo, Weightlifting, Wrestling, Wushu.

Adverse health effects

The use of diuretics can be harmful to one's health. The possible effects depend on the substance used and on its action.

Table 10:
Side effects

Diuretics
1. Dehydration **2.** Muscle weakening **3.** Cramping **4.** Drop in blood pressure **5.** Arrhythmia **6.** Weight loss

Alcohol

Class: Central nervous system depressant
Generic name: Alcohol
Common name: Beer, wine, spirituous liquor...
Form: Liquid
Method of administration: Oral

Definition and desired effects

Alcohol is not used to improve athletic performance, but some athletes drink for recreational purposes or to relieve anxiety. It can also be used as a masking agent.

For safety reasons alcohol is prohibited in competition in the following sports.

Aeronautics (0.05 g/L), Archery (0.10 g/L), Autosports, Billiards, Boules (0.50 g/L), Gymnastics (0.10 g/L), Karate (0.40 g/L), Modern Pentathlon (0.10 g/L), Motorcycling, Roller Sports (0.02 g/L), Skiing, Triathlon (0.40 g/L), Wrestling.

Adverse health effects

Alcohol abuse is unhealthy. When taken along with drugs or medication, alcohol can have serious health risks.

Table 11:
Side effects

Alcohol
1. Tachycardia (increased heart rate)
2. High blood pressure
3. Reduced level of testosterone
4. Reduced motor coordination
5. Changes in perception of time and space, leading to increased risk of accidents
6. Less resistant immune system
7. Liver dysfunction
8. Sexual dysfunction
9. Stomach ulcers
10. Psychological distress (depression, anxiety, tremors, irritability, aggressiveness)

PROHIBITED PRACTICES

Blood boosting

Class: Doping method
Generic name: Transfusion or autotransfusion of whole blood or red blood cells
Form: Liquid or powder for reconstitution
Method of administration: Injection

Administration of artificial oxygen carriers or plasma expanders

Class: Doping method
Generic name: Perfluorocarbons (PFC), Pentaspan (pentastarch), Gentran-40, -70 (dextran), Hydroxyethyl starch (HES)

Definition and desired effects

Blood boosting is the transfusion or autotransfusion of whole blood or red blood cells, which improves oxygenation and muscular endurance.

These doping methods are used by athletes who practice aerobic sports, such as track and field, cross-country skiing, and cycling. The goal is to increase the athlete's maximum cardio-respiratory efficiency by increasing the flow of oxygen to working muscles.

Onset and duration of action

For blood boosting, two units of blood are withdrawn from the athlete or from another person four to eight weeks prior to the sporting event.
The red blood cells are then carefully preserved in order to be administered to the athlete one to seven days before the competition.

Adverse health effects

These doping methods involve serious health risks.

Table 12:
Side effects

Blood boosting
1. Circulation overload **2.** Fever **3.** Blood clots **4.** Allergic reactions **5.** Metabolic shock **6.** Transmission of infectious diseases such as hepatitis and AIDS

Addiction

No physical or psychological dependency.

Warning signs

No outward signs of use.

Pharmacological, chemical, and physical manipulation of urine

Using substances or methods to modify the integrity and validity of urine samples used for doping control is prohibited.

Ex.: catheterization, use of masking agents, urine substitution, inhibition of renal function, etc.

Gene doping

Gene or cell doping is defined as the non-therapeutic use of genes, genetic elements and/or cells that have the capacity to enhance athletic performance. Gene doping is prohibited.

SUBSTANCES MONITORED AT COMPETITIONS

Pseudoephedrine and caffeine

Pseudoephedrine, a stimulant found in several flu decongestants, and caffeine have been dropped from the list of banned substances. However, they are part of a monitoring program to determine signs of misuse in sport. Abuse of these substances is also a health hazard.

Other substances on the Monitoring List: Phenylephrine, Phenylpropanolamine, pipradrol, synephrine, morphine/codeine ratio.

SUPPLEMENTS

The term “supplement” includes a wide variety of non-pharmaceutical products such as vitamins, protein powders, ergogenic aids, amino acids, minerals, etc.

Unlike medications and pharmaceuticals, the regulation of the manufacturing of supplements in Canada and elsewhere is limited. Supplements can, and often do contain prohibited substances. Research has demonstrated that as many as one in six products are tainted with prohibited substances that are not indicated on the product label. Because the content of many supplements is uncertain, it is very difficult for athletes to distinguish clean, sage, and reliable products from those products which may contain prohibited substances.

Amino acids and proteins

Amino acids such as arginine, carnitine, and orthinine are thought to stimulate the body’s release of growth hormones which in turn would enhance muscle tissue development. However, there is no evidence to support this claim. In fact, muscle protein synthesis cannot be stimulated by taking large amounts of amino acids or by high protein diets. Extra protein, whether through food or supplements, is burned as energy, or stored as fat.

Ergogenic aids

In their quest for the ultimate performance-enhancing aid, athletes will often turn to pseudoscientific or even mystical approaches.

An endless array of nutritional supplements, such as ginseng and queen bee jelly are marketed to vulnerable athletes trying to attain their goals. These products are generally promoted as “safe alternatives” to drugs such as anabolic steroids. The use of these products remains widespread despite the lack of any scientific evidence to support claims of their effectiveness.

Vitamins and minerals

Most athletes take vitamin and mineral supplements in addition to their daily diet. They believe, often without proof, that this will increase their endurance, reduce fatigue, or prevent infection. Although these substances do have certain properties, they must be taken properly. No supplement, no matter how many vitamins or minerals it contains, will make up for a poor diet. Everyone should be aware of the risks associated with an excessive intake of vitamins or minerals. Abuse of these substances can result in various health problems, such as cramps, nausea, diarrhea, headaches, and muscle pain.

Creatine

Creatine is a very energy-rich molecule made up of amino acids. It is naturally synthetized by the person taking it and stored in muscle in the form of creatine phosphate. Red meat and fish are good sources of creatine, but do not contain as much as supplements. Creatine is a very popular substance with athletes, because it helps them recover more quickly between training sessions and train longer by countering the build-up of lactic acid in the muscles. It acts in ATP synthase (adenosine triphosphate), which gives energy to muscles. Increasing creatine reserves in muscles makes it possible to hold on a few seconds longer while exercising, hence its widespread use in strength sports such as hockey and football. Creatine is also used to increase muscle fibre and mass; it is stored with water in muscles. That is why creatine users have to drink a lot of water to avoid dehydration. Many studies are underway to learn more about this substance, and some side effects have been noticed in users. As it provides a boost in energy and makes it possible for athletes to push themselves, creatine increases the risk of injuries. And athletes who take high doses of creatine (20 to 30 grams for more than two months) are more likely to suffer from muscle cramps, nausea and digestive problems. The amount of creatine consumed by some users is the equivalent of 10 kilos of raw meat a day, which makes the kidneys and liver work very hard, as muscle can store only so much creatine. The excess makes its way to the kidneys, which then have to flush it out.

Other products

Nutritional supplements are very trendy and the list is constantly changing. When athletes are convinced that certain foods or substances improve performance, they often develop a psychological addiction to them. If these substances do not produce the desired results, as is often the case, athletes sometimes turn to more effective products, such as steroids, which involve greater health risks. Caution must be exercised in choosing among the various products on the market. Some are very expensive. Also, the quality of the product may be unknown. There are no magic potions, and each substance has its limits.

GAME REVIEW V

PREVENTION

Early and sustained intervention is required, both in terms of prevention and education, to protect the image of sports and the health of athletes. We need to focus on the beliefs, attitudes, basic knowledge, and values of athletes and those around them (parents, coaches, teachers, etc.). Thus, young people will be better prepared to deal with outside pressures and make informed decisions as to the use of performance-enhancing substances.

To help athletes make the right choices, sports professionals have to be able to cover the five major issues dealing with the problem of drugs in sport.

These five issues are as follows:

Performance: Can this substance or technique improve performance?

Ethics: Are we breaking any sport or sportsmanship rules by using this substance?

Legislation: Is it legal to buy, sell, import or export this substance?

Health: Is it bad for physical or mental health? Can we jeopardize the safety of others?

Cost: How much does the substance cost?

Know your stuff

A credible source must have a good basic knowledge of the substances being used by athletes. If you provide false or exaggerated information to users, you risk losing all credibility in their eyes. The idea is not to preach, but to suggest alternatives to doping in sport (nutrition, specialized training, mental preparation, etc.) and provide the correct information on the various substances used.

Set a good example and take a stand against doping in sport

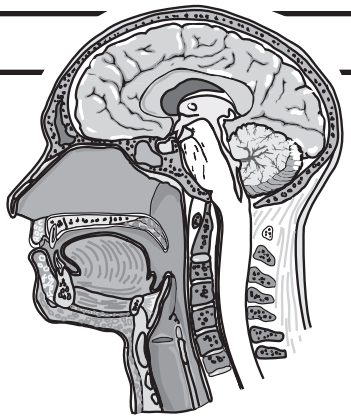
Coaches have a lot of influence over athletes and play a central role in their moral and ethical behaviour. A coach's attitude towards doping will have long-term effects on an athlete's decision whether or not to use performance-enhancing drugs or other substances. It is important that coaches support the fight against doping in sport and encourage sportsmanship. By their actions, opinions and values, coaches who take a stand against doping in sport will have a positive impact on athletes.

The solution to the problem does not lie solely in the hands of health and sports professionals. Parents have to step in as well, as it is the physical and moral health of their children that is at stake. Many parents still do not become sufficiently involved in their children's sporting activities, leaving much of the responsibility to the coach. Often, they also avoid talking about drugs, either out of fear or lack of information. Ignorance often leads to silence, which young people can construe as approval. Parents need to be informed about doping, and take a clear stand on the issue.

Provide a healthy atmosphere

Efficient management of travel and game schedules, sport-specific training, high-tech methods and techniques, appropriate equipment, a healthy diet, and mental preparation techniques can help to ensure that every athlete has the foundation upon which to improve performance. It is important that realistic, individualized goals be continually defined and redefined.

THE GAME PLAN VI



MENTAL PREPARATION

Mental preparation is of prime importance to all athletes. It allows them to set goals and find ways meet these goals. An "objective" can be defined simply as a task one endeavours to accomplish. The more difficult the tasks and objectives are, the more they require superior knowledge and ability. Short, medium, and long-term objectives form an integral part of athletes' careers, and as such, they impact on their training, competitions, season objectives, and overall career.

In order to reach their goals, athletes must be able to envision their performance. They must have the ability to imagine emotional states or physical events. Being mentally prepared for a sports activity has a positive influence on an athlete's performance. By visualizing their performance, athletes will be able to develop specific thought processes to overcome defeatist, stressful attitudes.

Improving athletic performance requires a certain level of feedback, in order to evaluate the quality of performance against the defined objectives. Support from others, the coach for example, can also be helpful, especially if he or she can adequately compare and analyze good and bad performances.

Learning how to relax

Over the years, various relaxation techniques have been developed, based on gradual relaxation methods, such as sophrology, meditation, and Zen.

Most relaxation training techniques are based on muscle relaxation. Athletes learn to determine which muscles are tense, and then relax them.

Sophrology: A relaxation technique used to overcome pain and psychological distress.

Meditation: The ability to absorb oneself in deep thought for a long period of time. Reflecting on positive past situations and on optimal performances can help to reinforce the idea of achieving excellent performance or results in the future.

Zen: A meditation technique which helps individuals to go beyond themselves, beyond their apparent abilities.

The mental preparation of an athlete requires positive thinking, effective self-control, and well-defined objectives, all of which must be grounded in a solid sense of self-confidence.

TRAINING

Muscular training is an essential part of an athlete's preparation. Athletes must be in peak physical condition to give their all during a competition. The purpose of a training program is to optimize an athlete's performance by coordinating his/her physical development and abilities with changes wrought through training, so as to achieve maximum results during a competition.

Athletic training requires long-term planning based on specific goals and objectives. Exercise sessions must be properly planned and organized. Exercises must be tailored to the sport in question, as much as possible. It is also important to determine the number of sets and repetitions in order to reach the defined objectives gradually.

Variety is also important. Exercise sessions can be changed every two to four weeks. Variation of the exercises, the order in which they are performed, and the intensity of the program will foster muscle growth.

All athletes must realize that several factors impact on how quickly muscle mass and strength will increase: age, sex, flexibility, speed, training equipment used, and genetic makeup. Each athlete's genetic potential is equal to the muscle size and strength he/she is able to attain. Some people have to train harder than others to get to the same level. Others never attain the level they desire.

Athletes should not rush through the stages of their training program. Excessive weights and overly intensive training sessions can quickly lead to exhaustion and overtraining, which can in turn increase the risk of injury. Rest periods are important, as muscle tissue normally requires 48 to 72 hours to recover fully from a training session.

Practice and competition

Regular practice and training help athletes to gain, develop, and refine certain abilities specific to a given sport. Practice, in individual or team sports, allows athletes to increase their effectiveness and self-confidence.

Where team sports are concerned, practice helps athletes to develop a team strategy and specific moves in preparation for a competition. During exercises, athletes define, prepare, and test their strategies, thus anticipating their performance during the actual competition. Regular, well-planned exercise enables athletes to prepare themselves adequately for a competition and to increase their chances of reaching or surpassing the objectives they have set for themselves.

NUTRITION

Regardless of the sport or exercise, athletes can improve their performance by making a few changes to their diet. A well-balanced diet is important for all athletes, whether they are high-level athletes or simply someone who wishes to stay in shape. What we eat every day impacts on our energy level, our performance, and our health in general.

Like physical fitness and training, a perfectly balanced diet involves long-term planning based on specific goals and objectives.

Athletes get their energy from three main sources: carbohydrates (glycogen), fats, and proteins. The quantity and proportion of each type of food energy burned depends on the type, duration, and intensity of physical exercise, on the athlete's level of physical fitness, and his/her diet.

In all sports, carbohydrates are the most important source of food energy, because the level of glycogen in the muscles determines the duration and intensity of physical activity. If the glycogen level is low, the athlete will tire quickly and his/her performance will be poorer. When exercise is intensive and lasts more than 60 minutes, consumption of 30 to 60g of liquid or solid carbohydrates can enable an athlete to keep going longer. In order to recover from their exercise sessions more quickly, it is recommended that athletes fill up on glycogen immediately after each session. Their diet must be comprised mostly of carbohydrates with adequate nutritional content, such as bananas, dry fruit, certain vegetables, starches, bread, grains, and skim milk products.

Proteins make up part of each cell of an organism and about 3/4 of the dry mass of muscles, which are 70% water. Proteins are essential to the formation and maintenance of tissue such as skin and tendons, as well as to the repair of damaged tissue. Not everyone has the same protein requirements, as these depend on each athlete's sport and training program. Rougher sports require more protein. Protein supplements are useless to almost all athletes and do not instantly enhance performance, yet they can be appropriate when diet alone does not suffice to meet an athlete's energy and protein needs. Proteins can be found in various foods, such as red meat, chicken, fish, eggs, dairy products, and legumes (lentils, kidney beans).

Fats also have their place in every athlete's diet, albeit a limited one. Too much fat is a handicap in most sports, as it reduces strength, speed, and performance, but a diet containing almost no fat does not guarantee enhanced performance either. In fact, very low body fat can result in hormonal imbalances, fatigue, and reduced bone density, which in turn increases the risk of osteoporosis. The minimum recommended percentage of body fat is 5% for men and 10% for women, but to be in good

health, men's level of body fat should be somewhere between 13% and 18% , and women's, between 18% and 25%. The recommended fat intake for athletes and active individuals is 15% to 30% of total calories. Most of this intake should come from unsaturated fats such as vegetable oils (olive or sunflower oil), seeds (sesame, sunflower), nuts, fatty fish (salmon, sardines), and peanut butter.

Liquids are also important to all athletes. Dehydration reduces performance and impacts on health. The loss of liquid during exercise depends on the duration and intensity of the training, the temperature and level of humidity, and the athlete. To keep an eye on fluid loss, athletes must weigh themselves before and immediately after each exercise session. Dark urine produced in low quantities is an indication of lack of fluid. When beginning an exercise session, athletes should be well hydrated, and they should continue to drink one litre of water for each kilogram of weight lost during sporting activities. When exercise is more intensive and lasts for over an hour, sport drinks containing sodium and carbohydrates help to absorb water more quickly and provide additional energy.

Losing or gaining weight

Four factors influence weight gain: genetics, exercise, diet, and rest. Genetics impact on the other three factors. Weight gain takes time. A person will rarely gain more than five kilograms of muscle in a year.

People who want to gain weight should choose high-energy foods, as well as eat and drink more. To gain weight, it is necessary to eat often during the day, i.e. at least three meals and three snacks. The drinks recommended are fruit juice and milk, and it is important to drink them as often as possible between meals.

Athletes who want to lose weight should reduce their body fat and maintain their muscle mass. Their diet must allow for normal growth and recovery, and provide them with sufficient energy for training and normal metabolic functions, while creating a slight calorie deficit. Athletes must be sure to consume sufficient nutrients and liquids. Rapid weight loss can result in an excessive loss of lean body mass and lead to reduced strength and muscle endurance and dehydration. To lose weight, it is important to set realistic goals and deadlines.

THE BENCH VII

THE TEAM

Royal Canadian Mounted Police Drug Awareness Service

The Royal Canadian Mounted Police (RCMP) promotes a balanced approach between drug enforcement and demand reduction. The Drug Awareness Service focuses on demand reduction through prevention and education, via concerted efforts with government and non-government agencies such as the Canadian Centre for Ethics in Sport and the Sport Medicine Council of British Columbia. Members in Drug Awareness Service provincial offices provide information on illicit substances and their damaging effects during information sessions or at RCMP kiosks. These information sessions are offered to non-government agencies, other police departments, educational staff, addiction prevention groups, as well as private and public corporations. Furthermore, specific topics are being researched and analyzed in order to develop new programs and prevention tools. Many RCMP members are athletes as well as police officers. They work with parents, coaches, teachers, the media and other stakeholders in the sporting community in an effort to address the problem of drug use in sport.

Canadian Centre for Ethics in Sport (CCES)

The mission of the Canadian Centre for Ethics in Sport (CCES) is to promote ethical conduct in all aspects of sport in Canada. A recognized world leader in sport ethics, the CCES is an independant, national, non-profit organization commited to the principles of drug-free sport, equality, fair play, safety and non-violence. Through its programs and services CCES helps to ensure that ethics and moral conduct are woven into the fabric of Canadian sport. The CCES accomplishes its work through partnerships with sport, public- and private-sector organizations and through its leading role in the formulation of ethics and sport strategies, policies and procedures.

Institut national de la recherche scientifique-Institut Armand-Frappier (INRS)

Since 1975, the INRS has been accredited by the International Olympic Committee and international sporting federations to carry out doping tests using samples taken from both Olympic and non-Olympic athletes. The main mandate of Dr. Christiane Ayotte and her team is to do research on the identification and detection of medications and drugs in athletes. The INRS also works in partnership with other agencies in an effort to prevent the use of drugs in sport, and answer questions from the media about this problem.

Sport Medicine Councils

Provincial sport medicine councils are the umbrella organizations for sport-related medical, paramedical, and scientific activities in their respective provinces. Depending on the province, a variety of programs are available, including sports first-aid and injury prevention education programs, sport nutrition workshops, safety and event medical coverage programs, and drug-free sporting initiatives.

Creating supportive environments in which young people can train and develop their skills without the use of performance-enhancing substances requires the cooperation of a number of key organizations and stakeholders. Sport medicine councils offer medical and scientific assistance in support of different anti-drug programs, and provide information to help maximize said programs.

WHERE TO TURN FOR HELP

British Columbia

RCMP - "E" Division
Drug Awareness Service
657-37th Avenue West
Vancouver, British Columbia
V5Z 1K6
Phone: (604) 264-3029

RCMP Prince George
Drug Awareness Service
1323 - 5th Avenue
Prince George, British Columbia
V2L 4S1
Phone: (604) 561-3128

Sport Medicine Council of
British Columbia
#3 - 6501 Sprott Street
Burnaby, BC V5B 3B8
Phone: (604) 473-4850
Fax: (604) 473-4860
www.sportmedbc.com
info@sportmedbc.com

Alberta

RCMP - "K" Division
Drug Awareness Service
11140-109th Street
Edmonton, Alberta T5G 2T4
Phone: (780) 412-5461

RCMP - South District
Drug Awareness Service
920-16th Avenue NE
Calgary, Alberta T2E 1K9
Phone: (403) 230-6533

Sport Medicine Council of Alberta
11759 Groat Road
Edmonton, Alberta T5M 3K6
Phone: (780) 415-0812
Fax: (780) 422-3093
smca@connect.ab.ca
www.sportmedicine.councilofalberta.ca

Saskatchewan

RCMP - "F" Division
Drug Awareness Service
P.O. Box 2500
6101 Dewdney Avenue
Regina, Saskatchewan S4P 3K7
Phone: (306) 780-7499

Sport Medicine Council of
Saskatchewan
1860 Lorne Street
Regina, Saskatchewan S4P 2L7
Phone: (306) 780-9208
Fax: (306) 780-9416

Manitoba

RCMP - "D" Division
Drug Awareness Service
P.O. Box 5650
1091 Portage Avenue
Winnipeg, Manitoba R3C 3K2
Phone: (204) 983-5735

Sport Medicine Council of Manitoba
200 Main Street
Winnipeg, Manitoba R3C 4M2
Phone: (204) 925-5750
Fax: (204) 925-5624

Ontario

RCMP Headquarters
National Coordinator, Drug Awareness Service
Drug Enforcement Branch
1200 Vanier Parkway
Ottawa, Ontario K1A OR2
Phone: (613) 993-2501

RCMP - "A" Division
Drug Awareness Service
155 McArthur Avenue
Ottawa, Ontario K1A OR4
Phone: (613) 998-1755

RCMP - "O" Division
Drug Awareness Service
P.O. Box 3240, Station "B"
130 Dufferin Avenue
London, Ontario N6A 5R2
Phone: (519) 645-3893

Canadian Memorial Chiropractic College
1900 Bayview Avenue
Toronto, Ontario M4G 3E6
Phone: (416) 482-2340
Fax: (416) 488-0470

Canadian Centre for Ethics in Sport (CCES)
2197 Riverside Drive
Suite 202
Ottawa, Ontario K1H 7X3
1-800-672-7775

Quebec

RCMP - "C" Division
Drug Awareness Service
5000 Chemin de l'aéroport
St-Hubert, Quebec J3Y 5K2
Phone: (450) 926-6450

RCMP - "C" Division
Drug Awareness Service
925 9th Avenue
Ste-Foy, Quebec J2E 5W1
Phone: (418) 648-3653

Conseil de médecine du sport du Québec
4545 Pierre-de-Coubertin Avenue
P.O. Box 1000, Station "M"
Montreal, Quebec H1V 3R2
Phone: (514) 252-3114
Fax: (514) 254-9621
medsport@sportquebec.com
www.sportsquebec.com

Institut national de la recherche scientifique-Institut Armand-Frappier (INRS)
245 Hymus Boulevard
Pointe-Claire, Quebec H9R 1G6
(514) 630-8800

New Brunswick

RCMP - "J" Division
Drug Awareness Service
P.O. Box 3900
1445 Regent Street
Fredericton, New Brunswick
E3B 4Z8
Phone: (506) 452-2034

Sport Medicine Council of New Brunswick
Sports Medicine Clinic
Université de Moncton
Moncton, New Brunswick E1A 3E9
Phone: (506) 858-4442
Fax: (506) 858-4058

Nova Scotia

RCMP - "H" Division
Drug Awareness Service
P.O. Box 2286
3139 Oxford Street
Halifax, Nova Scotia B3J 3E1
Phone: (902) 426-6677

Sport Medicine Council of Nova Scotia
P.O. Box 3010 South
Halifax, Nova Scotia B3J 3G6
Phone: (902) 425-5454
Fax: (902) 425-5606

Prince Edward Island

RCMP - "L" Division
Drug Awareness Service
P.O. Box 1360
450 University Avenue
Charlottetown, PEI C1A 7N1
Phone: (902) 566-7777

Sport Medicine Council of PEI
Attn. Recreation Resource Branch
Department of Tourism and Parks
P.O. Box 2000
Charlottetown, PEI C1A 7N8
Phone: (902) 368-4784

Newfoundland

RCMP - "B" Division
Drug Awareness Service
P.O. Box 9700, Station "B"
St. John's, Newfoundland A1A 3T5
Phone: (709) 772-4381

Sport Medicine Council
Memorial University of Newfoundland
St-John's, Newfoundland A1C 5S7
Phone: (709) 737-3408
Fax: (709) 737-3979

Northwest Territories

RCMP - "G" Division
Drug Awareness Service
5010 - 49th Street
Yellowknife, NWT X1A 2R3
Phone: (867) 669-5277

Sport Medicine Council of NWT
5603 - 50A Avenue
Yellowknife, NWT X1A 1G6
Phone: (867) 920-4111 (ext. 182)
Fax: (867) 873-8299

Yukon

RCMP - "M" Division
Drug Awareness Service
4100-4th Avenue
Whitehorse, Yukon Y1A 1H5
Phone: (867) 667-5530

Sport Medicine Council of Yukon
P.O. Box 5569
Whitehorse, Yukon Y1A 5H4
Phone: (867) 669-5277
Fax: (867) 633-6034

Nunavut

RCMP - "V" Division
Drug Section
Bag 500, 969 Federal Rd, Iqaluit
Nunavut, X0A 0H0
Phone: (867) 975-4423

Important Internet sites:

www.cces.ca
www.deal.org
www.rcmp-grc.gc.ca
www.substanceuse.ca
www.wada.ama.org


DRUGS AND SPORT
HOME
AWAY
GAME OVER