

**SECTION II**

**SPORT AND HEALTH**



## CHAPTER THREE

### HEALTH CONCERNS OF SPORTS DRUG ABUSE

#### THE IOC BANS

3.1 At the commencement of this Inquiry, five doping classes were recognised by the International Olympic Committee. Since that time an additional banned class, polypeptide hormones, has been added (See Appendix 6). The banned classes, then, are as follows:

1. Stimulants, which are used at the time of competition, increase alertness, reduce fatigue and may increase competitiveness and hostility. Amphetamines are the most notorious of the stimulants, but also included in this category are substances such as pseudoephedrine which are present in cold or hayfever preparations. Caffeine is another stimulant.
2. Narcotic analgesics such as morphine and its derivatives are used to manage pain. They have been used in sports such as boxing and cycling.
3. Anabolic steroids are related in structure to the male hormone testosterone. They are used to increase muscle bulk, strength and power. They promote muscle development (the anabolic action) but cause associated androgenic changes (the development of secondary sex characteristics). Anabolic steroids are not taken at the time of a competition, because their major benefits relate to the pre-competition, training phase. For this reason drug taking at competitions is unlikely to provide an accurate estimate of the extent to which they are being used. Anabolic steroids are now the most commonly used sporting drugs and they are used, to a varying extent, in most sports.

4. Beta-blockers are used clinically to control high blood pressure, cardiac arrhythmias and migraine. They are used by sportspeople to reduce the heart rate and to reduce pre-competition tension. The sports in which they are used include the target sports (shooting, archery, darts, golf), some combat sports (e.g. fencing) and sports with a danger element, (e.g. show jumping) as these all require relaxation and the attention to be focused on the skill required.
  
5. Diuretics are used by sportspeople to reduce weight quickly in sports where weight categories are employed. They are also used to help minimise the detection of anabolic steroid use because by producing more urine they reduce the concentration of the drug in the urine. (Interim Report, pp. 25,26)
  
6. Polypeptide hormones. This latest class of banned drugs includes one of the newest doping agents, human growth hormone. This hormone is secreted by the pituitary gland and is responsible for linear growth throughout childhood and adolescence. It also has a major effect on the growth of connective tissues including cartilage. Growth hormone may also affect the growth of muscles.

There are potentially serious side effects related to growth hormone use. It can produce physical deformities when taken in adulthood including the unnatural enlargement of the bones of the jaws, hands and feet. This condition is known as acromegaly. In addition it can result in cardiomegaly - an often fatal enlargement of the heart. Other side effects include hepatitis, diabetes, joint pain and arthritis. The use of growth hormone in normal children can result in excess growth resulting in gigantism.

3.2 In the Interim Report, the Committee concluded:

that performance enhancing drugs should not be used because of their potential to damage the health of those using them and because, in the case of contact sports, persons rendered overly-aggressive through the use of anabolic steroids and stimulants can cause injury to opponents. (Interim Report, p. 44)

3.3 The Committee has received substantial evidence concerning the damage that can occur from the abuse of sports drugs, particularly anabolic steroids and diuretics.

#### **ANABOLIC STEROIDS**

3.4 The view that it is possible to use anabolic steroids without abuse was challenged before the Committee. Dr Nicholas Keks, an Associate at the National Health and Medical Research Council, advised the Committee:

I do not think that the use of anabolic steroids to enhance athletic performance can be really anything but abuse. (Evidence, p. 3278)

#### **Steroid 'Stacking'**

3.5 The practice of 'stacking' was noted in the Interim Report. There a table was presented (Table 4.1, p. 171) showing the steroid dispensing history of a Tasmanian bodybuilder who had visited four different doctors to obtain prescriptions for anabolic steroids over a period of six months:

In a period of six months, a 19 year old male had received prescriptions for 4 different oral steroids, totalling 2016 tablets. In the same period he was also prescribed 3 different injectables totalling 37 ampoules in all. (Evidence, p. 1307)

3.6 The Committee has found that there is a number of ways in which steroid 'stacking' may occur. First, as in the case of the Tasmanian bodybuilder, users may consult any number of

doctors pretending that they are not acquiring steroids from any other source. Second, users may 'stack' black market steroids on top of those acquired legitimately by prescription. This can be done in a number of ways. Steroids can be purchased on the black market in the most available form - orals and veterinary steroids, or prescriptions can be filled for a patient who then retails the steroids to someone else. Mr Nathan Jones acquired steroids in this manner. (Evidence, p. 2166) And the Brisbane pharmacist, Mr Leon Azar, advised that:

One guy, in particular, after having had some repeats dispensed over a few months was every bit as skinny as he was in the first place. He did not even look to me as though he had been lifting any weights at all. He was a curious character, in that one of my staff assured me he had a rather fancy sports car. (Evidence, p. 2487)

Mr Azar continued:

We had a couple of situations where the people having the prescriptions dispensed in their names did not look as though they were involved in lifting weights, or whatever they might be doing. That made me wonder. The fellow with the sports car which I did not see came in one night with a prescription that one of my pharmacists believed had an item added to it. It was certainly not quite the doctor's handwriting. (Evidence, p. 2487)

3.7 Whatever the means used to acquire drugs for 'stacking', it is clear that 'stacking' is a widespread practice. Huge doses of steroids are consumed in many cases. Mr Grant Ellison, for example, advised the Committee that he had consumed up to 3000mg per week on steroid courses. (Evidence, p. 3878) And a female bodybuilder, Sue-Ellen Law, admitted in a magazine article that she had taken up to 1200 milligrams a week. (New Idea, 5 March 1988; Evidence, p. 3317) Mr Nathan Jones admitted to taking up to 20 times the maximum steroid dose available from a doctor and confirmed that that sort of dosage was commonplace in his experience. (Evidence, p. 2178)

## Physical Effects of Steroids

3.8 Dr Keks confirmed that there are legitimate therapeutic purposes for anabolic steroids:

Anabolic steroids are extremely useful for their effects in correcting the problems with sexual development of hypogonadal males - that indication is extremely common and perfectly reputable - and also in inducing erythropoiesis or red blood cell formation in selective patients with bone marrow failure. There is also some evidence of benefit in hereditary angioneurotic oedema, a rare condition. So there are some definite indications for their proper use. (Evidence, pp. 3282-3)

3.9 As has been noted, however, the Committee was advised by Dr Keks of the possibility of steroid abuse. This was supported by other medical experts including Dr Brian Corrigan, Chairman of the Anti-Drugs Campaign. Further, a technical review paper on anabolic steroids was provided to the Inquiry as a submission from the Centre for Sports Studies, Canberra College of Advanced Education (CCAЕ - now the University of Canberra); it summarised the common effects associated with the use of anabolic steroids. The following table closely corresponds with that in the Centre's submission:

1. hypertension (high blood pressure)
2. acne
3. oedema (salt and fluid retention)
4. mild abnormalities in liver function tests (jaundice and liver failure)
5. psychological disturbances
6. alterations in the menstrual cycle in women
7. penile enlargement in men; clitoral enlargement in women
8. increased or decreased libido, (sex drive)
9. viral illness after cessation of the drugs
10. epistaxis (nose bleeding)
11. changes in hair growth or distribution pattern
12. alopecia or baldness of some type
13. increased oil production in the sebaceous glands

14. disturbances in sleeping patterns, lack of ability to fall asleep, nightmares
15. increased appetite
16. testicular atrophy and impotence in men
17. gynecomastia (breast enlargement in men)
18. reduction of breast tissue in women
19. deepening of the voice
20. other complaints including:-
  - diabetes
  - precocious puberty
  - growth retardation
  - increased aggression/irritability
  - muscle spasm
  - skin rashes
  - increased urination
  - scrotal pain
  - foetal abnormalities
  - cancer/tumours
  - loss of tendon strength
  - lower immunity
  - increased risk of cardiovascular disease
  - increased calcium excretion

(Based on Centre for Sports Studies, CCAE, Submission No. 22, p. 35)

3.10 This extensive list includes some physical effects that would not be regarded as serious. Others, however, are of considerable concern. The report notes that some of the dangers associated with high blood pressure are stroke, kidney failure and congestive heart failure.

3.11 With regard to heart failure, an article in The New England Journal of Medicine of 15 February 1990 (page 476) reported the case of a 22 year old college athlete using androgenic steroids who died suddenly. Dr G. Ferenchick of Michigan State University concluded the article:

Although caution is needed in extrapolating conclusions from indirect data to normal subjects (ie athletes using androgens), these findings do provide some insight into possible mechanisms of androgen-associated thrombosis ... The abuse of androgens may diminish if acute thrombotic complications become clearly associated with their uncontrolled use among athletes.



This article is reproduced as Appendix 7.

3.12 A review of the medical literature concerning the risks associated with anabolic steroid use also gives examples of the early onset of atherosclerosis (fat deposits in arteries):

1. A champion bodybuilder suffers a stroke at age 33. His heart arteries are almost totally blocked and he is given 3 months to live without an operation and undergoes a quintuple heart bypass.
2. Another champion bodybuilder, within two months of the previous example almost dies from advanced atherosclerosis at age 35 - with two arteries 70% blocked and another 99.9% closed. (Submission No. 22, p. 46)

3.13 A link between anabolic steroids and diabetes is also noted:

As early as 1941 glucose intolerance was reported with the use of oral synthetic methyl testosterone (i.e. insulin secretion was impaired). Since then glucose intolerance and insulin resistance have been reported with the use of Dianabol ... while in 1981, a positive relationship was demonstrated between the use of oxymetholone (trade names Adroyd and Anadrol) and clinical diabetes. (Submission No. 22, p. 47)

There is also the possibility of musculo-skeletal damage:

An increased frequency of muscle/tendon injury is thought to occur perhaps due to strength and motivation developing faster than the strength of associated tendons and connective tissue. In weightlifters the two commonest sites of rupture are the biceps tendon at its insertion at the forearm and the quadriceps/patellar tendons. Two reasons are advanced. One is that use of steroids encourages larger increments in workstage, not allowing the structures to adapt adequately between increments. The second is that the administration of corticosteroids to reduce inflammation also has an inhibitory effect on healing and the production of new collagen (the substance holding tendons and ligaments

together). Although repeated injections might allow the athlete to return to competition more quickly, they can also lead to a decrease in stability/strength of the joint and put the athlete out of competition sooner than otherwise might be the case. (Submission No. 22, p. 50)

3.14 The literature on the adverse health consequences of anabolic steroid use also notes an association with severe liver and kidney disorders:

Of all the diseases and abnormalities associated with the prolonged use of steroids, liver and kidney dysfunction or tumour growth are perhaps the most severe or life-threatening. These disorders are associated with the use of oral compounds which have a modification at the alpha position - usually a methyl or ethyl group. Orally administered steroids pass from the stomach to the liver where most of the deactivation occurs. Injectable steroids have not been significantly linked to these disorders:

- (a) liver - the first signs of steroid effects are abnormal liver function tests which have been reported in a number of athletes using anabolic steroids. In one comprehensive review of the literature ... 47% of the athletes involved in the 13 studies under review, had abnormal liver function tests. Thirty-eight percent of the athletes recorded abnormal non-specific liver function tests, involving the enzymes serum glutamic oxalacetic transaminase (SGOT), serum glutamic-pyruvic transaminase (SGPT) and lactic dehydrogenase (LDH). Another nine percent recorded abnormal values for specific liver function tests - specifically for the liver iso-enzyme of LDH and alkaline phosphatase. As exercise itself can elevate the levels of the non-specific liver enzymes, it has been suggested that only liver function tests involving the liver iso-enzyme of LDH and alkaline phosphatase be used to monitor liver function in athletes taking anabolic steroids. The changes indicated by these tests can be reversed on cessation of steroid treatment.

Continued steroid administration may lead to obstruction of the bile canals (cholestasis) and jaundice. Bile accumulates in the blood and in liver cells leading to a 'feathery' degeneration of the liver cells. There is also yellow discoloration of the skin and eyes, itching, and brown urine. A number of particular steroids have been implicated in this disorder, too many to list, but involving 5 types and more than 18 brand names. Usually the condition disappears within three months of discontinuing steroid treatment. Hepatic cholestasis has resulted in a small number of deaths.

Liver tumours, both benign and malignant have been associated with the therapeutic administration of anabolic steroids over a long period of time - in patients with aplastic anaemia for example. This is one of the few clinical conditions in which large doses of anabolic steroids are used (to promote red blood cell production), which are comparable to dosages used by athletes. At least 36 cases of liver cancer have been reported associated with this type of treatment.

Cases are now coming to light of liver cancer (heptocellular carcinoma) in apparently healthy athletes. In one case, a 26 year old white male bodybuilder was hospitalised on 6 July 1983 for investigation of weight loss and general malaise. He had no history of liver disease, had competed in bodybuilding contests for many years, and took anabolic steroids to increase muscle mass and strength for at least 4 years. The investigation showed advanced liver cancer. On diagnosis he weighed 81.6kg, refused chemotherapy, and died barely 2 1/2 months later on 27 September 1983 weighing 45.3kg. Autopsy revealed his entire liver had been overtaken by the tumour, together with other circulatory and intra-abdominal tumours. (Submission No. 22, pp. 51-3)

3.15 While this litany of potentially fatal consequences of anabolic steroid use has been well documented for some years and popularised in books such as Death in the Locker Room (1984), many self-confessed steroid users giving evidence to the

Committee either did not acknowledge the potential adverse health consequences or trivialised those that they had experienced. One steroid user when asked about side effects responded:

I have never had a side effect from them. (In Camera Evidence, p. 293)

When asked whether his aggression had increased, he responded:

No. Maybe marginally, you would hardly notice it. (In Camera Evidence, p. 293)

Then, when asked whether there had been variation in testicle size:

They shrunk, but they grow again. (In Camera Evidence, p. 794)

However, when asked about the types of steroids that he had used, he responded:

Over the years I have tried them all, I think. Now - with the testing in - you have to use orals, which are more dangerous. That is the way it is. If you are going to keep competing, you keep using them. (In Camera Evidence, p. 794)

And, in answer to the question whether he was discouraged from using them, responded:

I have not seen any side effects from them. (In Camera Evidence, p. 795)

Finally, in response to a question why some people do not use steroids, the witness suggested:

I am just saying that if they do or they do not, that is their choice. (In Camera Evidence, p. 796)

3.16 The Committee finds this kind of attitude incomprehensible and quite disturbing. It is incomprehensible because it is an attitude maintained by individuals self-

administering potentially lethal drugs; the same individuals are often of the conviction that smoking and drinking alcohol are against the interests of good health. For example, following his advice to the Committee that he was taking up to 200 milligrams a day of anabolic steroids including injectable Deca-Durabolin and 50-60 milligrams a day of amphetamine, Mr Nathan Jones advised that he did not drink alcohol. (Evidence, p. 2184)

3.17 Mr Jones' attitude was shared by the majority of a sample of steroid users surveyed by medical researchers in the United States. In a study by Harrison Pope and David Katz published in the American Journal of Psychiatry in 1988, 41 steroid using subjects were surveyed for psychological effects. The article noted that:

Most subjects were very concerned with maintaining good health: only four (9.8%) smoked cigarettes and only six (14.6%) drank more than four alcoholic drinks (1 1/2 oz of liquor, four oz of wine, or 12 oz of beer) per week. (Harrison G Pope, and David L Katz 'Affective and Psychotic Symptoms Associated with Anabolic Steroid Use' in American Journal of Psychiatry Vol. 145 No. 4, April 1988)

3.18 As has been noted, the Committee also found the steroid-user attitude disturbing. It is disturbing because individuals who use steroids appear to value their present appearance and immediate prospects of success above their short and long term health and, indeed, their longevity. It results in a denial of the threat of damage to health from steroids.

3.19 This attitude is exploited by the retailers of anabolic steroids. A booklet on anabolic steroids was published (about 1987) by such a retailer, SAA Research, based at North Beach, Western Australia. That booklet advised that:

On side effects, probably the worst side effects noted to date are incredible increases in muscle strength, stamina and if proper training is applied massive increases in muscle size. It can be very tough living with side effects like these. It may result in

athletic or body building fame, then you become public property. What could be worse ... Seriously folks, if you go overboard you may come up with some unwanted breast tissue in males or some facial hair in women, but gee whiz, all those mistakes have been made. We know how to avoid all the undesirables and stimulate the desirables ... Our bodies recognise these substances and invite them in to party. (For the Proper Use and Understanding of Anabolic Steroids, In Camera Evidence, p. 1356)

It is difficult to imagine a more reprehensible misrepresentation of a product for sale.

### Psychological Effects of Steroids

3.20 A review 'Anabolic Steroids' by Haupt and Rovere published in The American Journal Sports Medicine, Vol. 12 No. 6, 1984, notes that anabolic steroids are psychoactive compounds as evidenced by their well-documented effects on behaviour and psychological functioning. Neuronal androgen (anabolic steroids) receptors have been identified in the brain, suggesting a basis for their psychoactive effect.

3.21 A paper published in the Journal of Clinical Psychiatry, January 1989, presented a case study of a weightlifter who became dependent on anabolic steroids (see Appendix 8). The question of substance dependence in this case is examined later in this Chapter. Here we note the general psychological effects of anabolic steroids on that athlete. The Journal article, by Brower, Blow, Beresford and Fuelling reported:

A 24-year-old man, a noncompetitive weight lifter, came to the psychiatric emergency room. He complained chiefly of depression and increased outbursts of anger, which he associated with his use of anabolic-androgenic steroids. He requested professional help to discontinue the steroid use because he felt controlled by the steroids and was unable to stop on his own. On the night before he came to the emergency room, he had fleeting suicidal thoughts of crashing his car. He was admitted to a psychiatric inpatient unit, where further assessment could be quickly

provided. He had no prior psychiatric history or treatment for chemical dependency. He had a family history of drug abuse but not of mood disorders.

3.22 Dr Nicholas Keks advised the Committee about the results of the Pope and Katz study (see para. 3.17) concerning the psychological effects of anabolic use. Dr Keks stated that of the 41 subjects who had used anabolic steroids, sixty-five per cent had experienced significant psychiatric disturbance:

Twelve per cent had experienced definite psychosis, which means a state characterised by delusions or hallucinations or distorted thinking, and the instances are described. A further 10 per cent had milder psychotic experience. Twelve per cent also had mania, a state characterised by elated mood, inflated self-esteem, rapid speech and thinking, little need for sleep, poor judgement and a tendency to self-destructive behaviour. For instance, the authors described a man who bought a second expensive sports car in a couple of years and drove it into a tree at 60 kilometres per hour whilst a friend was videotaping the incident. In a further 20 per cent, a near manic state had been present. Major depression was present in yet another 12 per cent of subjects, and of course major depression is associated with a serious risk of suicide. (Evidence, p. 3278)

3.23 The Committee notes the advice in the study that:

All users who experienced psychotic symptoms were 'stacking' between two and four steroids, including at least one orally active 17-alkylated steroid, such as methandrostenolone or oxandrolone (known to users as 'orals') plus at least one parenteral preparation, such as a testosterone ester or nandrolone decanoate (known as 'injectables'). (Evidence, p. 3296)

In his evidence Dr Keks confirmed that:

Of the studies I have reviewed, there does not appear to be a record of cases of actual psychosis at low or near therapeutic doses. (Evidence, p. 3287)

3.24 Importantly, the psychoses resulting from steroid 'stacking' as observed in the Pope and Katz study were also reflected in cases presented to the Committee. Ms Law, for example, was reported in a magazine article to have claimed:

I tried to forget how the steroids were making me aggressive. I would plunge into horrible black moods. Little things going wrong would send me crazy. My boyfriend was also on big steroid doses and we fought all the time. We were like wild animals - screaming, punching, hitting each other. It was like two men fighting each other.

One day a young guy made a remark about me. I chased him, caught him, and left him bleeding and battered in the gutter. (New Idea, 5 March 1988; Evidence, p. 3317)

3.25 Mr Nathan Jones described his psychoses which he suggested resulted from large steroid doses; he advised that he suffered aggressiveness and paranoia:

If you are sitting in a room and across the room someone is laughing then you think they are laughing at you and you get really upset for some reason. It is just silly, but that is the type of paranoia you get. (Evidence, p. 2173)

Mr Jones also confirmed that he experienced feelings of invincibility and, when involved in a fight, tended to lose self-control. In his evidence, Dr Keks suggested that anabolic steroids tend to induce euphoria, reduce fatigue and cause irritability as well as increased aggressiveness. (Evidence, p. 3278)

3.26 Dr Keks further advised that one can progress from feelings of euphoria and invincibility through to a manic syndrome with very self-destructive behaviour. In commenting generally about cases such as that involving Nathan Jones, Dr Keks advised that there was a very considerable likelihood that the combination of drugs consumed by Mr Jones was a major contribution to Mr Jones' mental state when he committed multiple



armed robberies including a shooting incident, and multiple car theft. Dr Keks added:

As to whether he was psychotic at the time or whether he was merely spurred on, if you like, by these influences, that would be a finer judgement. Either is possible. But I think the likelihood is that he may well have been affected. (Evidence, pp. 3312-13)

3.27 Dr Keks also advised the Committee of his concern that the psychological effects of steroid abuse may be irreversible. In noting that certain physical effects of steroid abuse were irreversible, Dr Keks suggested:

If physical effects are going to be irreversible given that the effects on the brain are probably mediated through chemical change, on the face of it there might be little reason to expect that that might not also occur there. (Evidence, p. 3314)

Dr Keks considered that, as with the effects of long term alcohol abuse, the damage can reach a threshold level where there is no going back - the condition may persist. (Evidence, p. 3314)

3.28 Finally, the Committee was advised by Dr Keks that the threshold of arousal to violence for steroid abusers could be very low:

I think the potential for very major problems is certainly there. For instance, there may not be a recognition of the consequences or the seriousness of the severity of what is being done ... In a situation of very major emotional arousal with the potential for violence, injury, threat to life and all that kind of stuff ... even very subtle phenomena can be very substantially magnified. (Evidence, p. 3320)

3.29 One witness, Mr Kriss Wilson, advised the Committee of his inexplicable reactions to steroid doses of up to 600 milligrams per week, less than half the dosage Mr Jones claimed to have taken. Mr Wilson described the psychological effects following only his second course of steroids:

Similar to a Dr Jekyll and Mr Hyde personality: I could be normal one minute and then a terrible person the next. I used to snap at people; I was very moody, and depressed for weeks on end. I was just impossible to live with. (Evidence, p. 2200)

Mr Wilson also described how, in addition to an increase in libido, he experienced paranoia, insecurity, increased aggression, and a feeling of invincibility. (Evidence, p. 2202)

3.30 Mr Wilson was not the only person to advise the Committee of the significant personal cost of steroid abuse. In his case, Mr Wilson confirmed that:

While I was on the third course, my wife, my girlfriend at the time, conceived our first child. That led to tremendous pressure on the two of us, and I was on the steroids at the same time. The marriage suffered tremendous pressure and a temporary breakdown of the marriage occurred. At that time I had sought medical help from a doctor. (Evidence, p. 2202)

When asked how long the emotional side effects lasted, Mr Wilson stated:

About twelve months. It was just sheer hell. (Evidence, p. 2203)

### Dependence

3.31 It is significant that the report published in the Journal of Clinical Psychiatry in January 1989 (see para. 3.21) documented the first published case of a patient whose dependence on a combination of anabolic steroids met the criteria for psychoactive substance dependence. Tolerance, withdrawal symptoms and the use of steroids to alleviate withdrawal symptoms occurred. An uncontrolled pattern of steroid use continued, despite adverse consequences, such as severe mood disturbance, marital conflict, and deterioration of the patient's usual values. The authors of this paper, Brower, Blow, Beresford and

Fuelling advised clinicians to suspect steroid use among athlete patients who have mood or psychosocial disturbances. This paper is reproduced as Appendix 8; its conclusion is as follows:

#### CONCLUSION

Our patient developed a dependence on a combination of anabolic and androgenic steroids that was strikingly similar to dependencies seen with other substances. Clinicians should be alerted to the possibility of dependence when asked to prescribe anabolic or androgenic steroids and should suspect steroid use among athletes with mood disturbances, psychoses, or psychosocial disturbances. Further study of the prevalence, the course, and the optimal treatment of those syndromes is warranted.

3.32 The results of that study were supported by a paper in the December 1989 Journal of the American Medical Association. That paper reported a study by the Yale University School of Medicine which examined dependence complications from anabolic steroids similar to those accompanying cocaine, alcohol or opiate use. The Yale researchers said that this addiction theory is speculative and needs further investigation. But, if proven:

we must add the complication of substance dependence to the known risk of physical damage from long-term use of high-dose sex steroids. (Reuter, 7 December 1989)

#### Conclusions about Steroid Abuse

3.33 The Committee received evidence both from medical experts and from those who had suffered physical and psychological effects associated with anabolic steroid abuse. On the basis of this evidence the Committee has concluded that steroid use can produce significant adverse physical and psychological symptoms.

3.34 While it is clear that steroid abuse has significant adverse effects, both physical and psychological, the Committee's concern projects far beyond the harm that can be suffered by the

individual users. The damage extends to personal relationships, family breakdown, financial loss, criminal assault and violence at social venues such as night-clubs. Many of these issues are pursued in Chapters Ten and Eleven of this Report.

3.35 Importantly, steroid use is now proscribed in most sports and is banned by the IOC. The deleterious effects of steroid abuse are affecting Australian society to a noticeable extent and could escalate in the future unless effective controls are put in place at both Commonwealth and State level. The potential deleterious effects of steroids are compounded by the significant number of people consuming them. Usage rates vary, but are very high among the high-risk activities of weightlifting, powerlifting and bodybuilding. Among nationally competitive bodybuilders, usage would be about 100 per cent.

#### DIURETICS

3.36 One of the frequent effects of anabolic steroid use is fluid retention. This is of some concern to bodybuilders during a competition as excess body fluid compromises optimal muscle definition. Bodybuilders therefore attempt to shed body fluid. One way of achieving this is to ingest diuretics. These drugs result in increased urine production. Associated with increased urine production is the loss of essential body electrolytes including potassium. Potassium levels in the blood are controlled within very tight limits. If the potassium level rises or falls outside these limits, normal cardiac function is compromised.

3.37 Diuretics are not only used by bodybuilders. The International Olympic Committee List of Doping Classes and Methods notes:

Diuretics are sometimes misused by competitors for two main reasons, namely: to reduce weight quickly in sports where weight categories are involved and to reduce the concentration of drugs in urine by producing a more rapid excretion of urine to attempt to minimise detection of drug misuse. Rapid reduction of weight in sport cannot be justified medically.

Health risks are involved in such misuse because of serious side-effects which might occur.

Furthermore, deliberate attempts to reduce weight artificially in order to compete in lower weight classes or to dilute urine constitute clear manipulation which are unacceptable on ethical grounds. Therefore, the IOC Medical Commission has decided to include diuretics on its list of banned classes of drugs. (List of Doping Classes and Methods, set out in the Interim Report, pp. 517-518)

3.38 In the course of the inquiry the Committee heard evidence concerning the death of a Sydney bodybuilder, Mr Maurice Ferranti. Mr Ferranti, a 23 year old university student, had been preparing for a competition on 21 October 1989 - the middleweight division of the International Federation of Body Builders' Championships. According to the police report to the Coroner, Mr Ferranti awoke at about 2.30am on 21 October and complained to his girlfriend about being unable to move. He soon lost total movement of his limbs. Mr Ferranti was conveyed to hospital where he had a cardiac arrest and died.

3.39 The police report of Mr Ferranti's death is at Figure 3.1. It recorded that Mr Ferranti admitted to hospital staff that he had consumed 8 Aldactone tablets, 3 Moduretic tablets and 20 Potassium Chloride tablets. In addition to the diuretic 'Aldactone', Mr Ferranti had in his possession the steroid 'Testomet 25'.

3.40 In commenting on Mr Ferranti's death, the Committee heard from Mr Steve Haynes, Chief Executive of the Australian Sports Drug Agency. Mr Haynes advised that:

A side effect of using diuretics of that description is that you get rid of most of your body potassium, so the guy obviously got on potassium to try to rectify that and he got the dose dreadfully wrong. Potassium is required in the body with very tightly controlled limits and an excess of it induces

FIGURE 3.1

REPORT OF DEATH TO CORONER

Cronulla  
21 October

Police Station  
19 89

The Coroner, Glebe

SUBJECT: Death of Maurice PERAZITI Age 23  
 Marital state Single Address 17 Dover St, Summer Hill

Time and date of death: 5.40am 21.10.89  
 Place of death: Casualty Sutherland Hospital

By whom found: \_\_\_\_\_ Address \_\_\_\_\_  
 By whom reported to Police Sister HONNER Address Sutherland Hospital  
 By whom last seen alive Drs Petersen & Linka Address Sutherland Hospital  
 When last seen alive: 5.39am 21.10.89  
 Deceased a native of (County and District) Italy  
 Occupation University Student  
(If pensioner state type and include whether appropriate authorities informed)  
 If Military or Invalid pensioner, state disability: Nil  
 Name and address of nearest relative and relationship: \_\_\_\_\_  
 \_\_\_\_\_ (Father)  
 Name and address of identifying person: \_\_\_\_\_  
 \_\_\_\_\_ (Brother)

Police present when deceased identified Constable MAGIN  
 Did deceased leave a will? No  
 By whom burial or cremation is being arranged: Parents  
 Property and clothing found on and with the deceased (Attach inventory if space insufficient): Nil

Miscellaneous Property Book Reference Nil  
 How property and clothing disposed of and on whom authority: To be destroyed on authority of Father

Circumstances under which death took place. (If any previous illness, and deceased seen by doctor, particulars should be given. Where treated by a doctor a note should be obtained giving particulars of treatment from such doctor).  
 Deceased was staying overnight at girlfriends place. He had been feeling weak and slept for most of the day. About 1.30pm on 20.10.89 deceased awoke and vomitted he then went back to bed. He awoke about 2.30am on 21.10.89 and complained to girlfriend about not being able to move. A short time later he lost total movement of limbs. His girlfriend contacted C.D.A. and he was conveyed to Sutherland Hospital. A short time later he had a cardiac arrest and was worked on for approximately 40 minutes without success. Life was pronounced extinct at 5.40am by Dr Petersen.  
 The Deceased was a body builder and had been preparing himself for a competition to be held on 21.10.89. He had been on a special diet and had consumed a quantity of several types of medication. He had admitted to Hospital staff that he had consumed 8 Aldactone tablets, 3 Moduretic table and 20 Potassium Chloride tablets. Hospital staff suggested that the build up of potassium bought on the cardiac arrest.

The following medication was in the possession of the deceased:  
 Testomet '25'  
 Aldactone  
 Potassium Chloride  
 Nolvadex

ALL OF ABOVE MEDICATION ARE PRESCRIPTION ONLY AND IT WOULD APPEAR THAT THEY HAVE BEEN PURCHASED WITHOUT PRESCRIPTION  
 P. Dearing

Const David  
 Annual leave from 5.11.89 to 27.11.89

NOTES: \_\_\_\_\_

cardiac arrhythmia, that is, irregular heartbeats, and cardiac arrest. (Evidence, p. 2915)

The medical academic, Dr Nicholas Keks agreed:

With my general practice qualifications, I would agree with the hospital staff that the 20 potassium chloride tablets in combination with a potassium sparing diuretic, that is spironolactone, or Aldactone, would probably be sufficient to cause a cardiac arrest. (Evidence, p. 3281)

3.41 Importantly, as the police report noted, the diuretic Aldactone and the Potassium Chloride tablets are only available by prescription, yet Mr Ferranti appeared to have acquired them without prescription. There are two dimensions here that are examined in other Chapters: the ethics of the medical professions (Chapter Nine), and the acquisition of drugs on the black market (Chapter Ten).

3.42 The NSW Coroner has provided the following report on the death of Maurice Ferranti:

This inquest concerns the death of a young man, MAURICE FERRANTI, who died aged 23 on 21 October, 1989. Mr Ferranti became suddenly and unexpectedly ill at the home of his girl friend, Miss Cogan. He was taken to Sutherland Hospital where he suffered a cardiac arrest and passed away.

Miss Cogan and the deceased had acted responsibly in taking with them to the hospital substances recently ingested by the deceased, and as it transpired it was those very substances which caused his death.

Mr Ferranti was a man who had taken up the sport of body-building, and as the evidence shows, had become quite fanatical about it. Sports like body-building and weight-lifting have become notorious in recent times for the fact that their practitioners frequently take steroids to build muscle and enhance performance in that way. As I have said, who cares who is the best drug-affected athlete? But the desire for success is such that people risk the criticism, and the dangers,

associated with drug-taking in order to be thought the best.

Mr Ferranti was one of these. He has clearly been using steroids for a long period of time. The drug builds muscle, but has certain damaging side effects. There are long-term side effects like cancer and liver damage which should put people off taking the substances, but unfortunately Mr Ferranti did not get that far. Steroids increase fluid in the body, and the athletes then ingest diuretics in order to eliminate the fluid, and increase muscle definition. Some diuretics, like Lasix, eliminate both fluid and salts including potassium from the body. The practise is to then take potassium to replace that chemical. However, Mr Ferranti used aldactone as a diuretic, which is "potassium-sparing" that is, it retains the potassium. Miss Cogan, at the request of the deceased, purchased potassium tablets for him as he no doubt believed that he had lost that substance through use of his diuretic. Having ingested a large number of the potassium tablets, he suffered in effect potassium poisoning, which led to his physical distress and, finally, cardiac arrest.

The irony was, that Mr Ferranti died on the day of his competition, and if tested, as he should have been had he won, he would have been disqualified because his body contained the steroids which are illegal.

The case is a stark reminder to people that there are great dangers involved in taking drugs to improve performance. They are rightly banned by all sporting organisations. Their long term effects are very serious, as is demonstrated in this case by the fact that already Mr Ferranti was suffering atrophy of the testes, another nasty side effect. He was probably infertile, Dr Duflou said.

The evidence has not clearly established just who provided the steroids to Mr Ferranti, although an admission by Mr Domanski the day following the death leads to a suspicion that he may have been involved. However, it was the potassium tablets, able to be purchased without prescription, which were the final agent of death. However, there was no necessity to take these unless the steroids and diuretics had also been taken. Mr Domanski denies supplying the substances. It is clear from the evidence that they are freely available throughout gymnasiums ... if you



want them, a supplier can easily be found. Both steroids and diuretics are only available upon doctor's prescription, and it is an offence to deal in them without.

The purpose of this inquest was to warn possible users of the great danger of both short term disaster, and long term illness, which may arise from the use of steroids, diuretics and indeed any substance for the purpose of enhancing sporting performance. Every drug carries with it the possibility of unpleasant and health menacing side effects. No drug should be taken except under medical supervision. The result of misuse in this case has been the loss of a young and promising life, no doubt a very sad blow to his family and friends.

The court expresses its sympathy to the family.

K.M. Waller  
State Coroner

(Letter to Committee Secretary, 17 April 1990)

The post-mortem report for Mr Ferranti is reproduced at Appendix 9.

3.43 Despite the obvious health risks associated with using diuretics, their prohibition has not received universal support. The following exchange took place between the Channel 10 commentary team (which included Mr Sam Coffa) at the 1988 Seoul Olympic Games during the 82.5 kg weightlifting competition - the day following positive drug tests for diuretics on Bulgarian weightlifters. Mr Coffa is President of the Australian Weightlifting Federation.

Sam Coffa: ... diuretics ... its not a drug enhancing substance ... of course ... but of course its banned by the IOC and for that reason they've been disqualified.

Mike Gibson: It seems an awful pity. They (the Bulgarians) began these games with such a bang. Now they're having gold medals peeled off them almost by the day.

Sam Coffa: Well I am wondering whether the effects these drugs are having is one of the principle factor.

...

Bruce McIlvaney: Sam, both you and your brother Paul have been heavily involved with the Bulgarians - we've seen them in Australia on a number of occasions. Does this put you in a rather awkward situation now because they have been a great attraction of your Moomba Festivals?

Sam Coffa: Yes they have and I don't know that I really worry too much about it. I think it has to be emphasised the drug which has been detected, that is diuretics, is really a drug which is brought in in this particular Olympics as a banned substance - prior to that it was not. Now as we all know I think medical science and medicine has gone up in leaps and bounds and I was one of those who disagreed with that particular drug being listed on the banned list. However as I say having been listed, well one has to comply. I think I believe anyway that the old sauna technique does more harm to the body than a diuretic. [sic] (ASDA Submission No. 81)

3.44 The Committee sought confirmation from Mr Sam Coffa about this matter. Mr Coffa replied:

Your letter of the 23rd January relating to my exchange during the Olympic Games commentary on the subject of my views about diuretics, I believe, as I said to you by phone, that from my own experience long periods in sauna rooms are harmful and studies have confirmed that both male and female could suffer permanent damage. The use of diuretics under strict medical supervision to lower bodyweight was one of the better ways, however, the drug is on the prohibited list and that is the end of the argument. It should not though prohibit me to have an opinion and/or express it.

(Letter to Committee Secretary, 19 March 1990)

3.45 The Committee is most concerned that one of the leading Australian weightlifting officials would express such a view about diuretics, a dangerous and potentially lethal sports drug. This matter is further noted at para. 7.125 of this Report.