THE USE OF ANABOLIC-ANDROGENIC STEROIDS IN SPORT AND THE PREVENTIVE ROLE OF THE PHARMACIST

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Anabolic Steroids (AS) as Doping Agents

The use of chemical substances to enhance physical activity is not a contemporary phenomenon; it goes back thousands of years. However, it has increased to alarming proportions in the last four decades and has created a serious problem in the world of sport, spreading many ramifications (Donohoe and Johnson, 1986). A broad array of pharmacological agents are employed to enhance athletic performance (i.e. doping). The most notorious of these drugs have been anabolic-androgenic steroids (AS). Abuse of AS by athletes constitutes just one aspect of doping of athletes (Wilson, 1988).

AS are a group of synthetic steroid compounds that are structurally related to the natural male sex hormone testosterone (Murad and Haynes, 1985). Testosterone was isolated in 1935 and its metabolic effects elucidated shortly after. In 1939, Boje suggested that the use of male sex hormones might enhance athletic performance (Yesalis, et al. 1989).

With the abrupt closure of the 1950s, an astounded world learned of widespread use of AS by weightlifters and bodybuilders (Wilson, 1988). Their use escalated over the following decades and culminated in the drug scandals of the 1988 Seoul Olympics. AS have permeated a myraid of sports, including endurance events. Even more disturbing however, is the fact that the use of these drugs is not limited solely to elite athletes, but has trickled down to the recreational and non-competitive athlete aspiring to increase his muscular strength and size and improving his appearance (Wright, 1980). This craze for AS as a potential short-cut to athletic achievement, has been created predominantly by our society's heavy emphasis on winning, appearance and quick results (Klein and Knapp, 1989).

Many athletes perceive a competitive edge in the use of these drugs. However, any reported benefits for the athlete are tempered by potential deleterious effects on health (Kibble and Ross, 1987). The level of fair play, a key issue in sport and the adverse effects of AS (especially the largely unstudied long term effects) are two worrying problems stemming from the non-medical use of AS (Yesalis, et al. 1989).

Survey on AS use among Male Maltese Bodybuilders and Weightlifters

Rumour of extensive non-medical use of AS by specific categories of local athletes, abounds. However, the prevalence of use of these drugs within

the Maltese athletic sphere, has never been documented by using appropriate epidemiological methods.

Therefore, in addition to detailing the various aspects of AS and their controversial use as ergogenics in sport, this study also attempted to provide a clear picture of the situation in Malta and to identify the prevalence of AS use among two categories of Maltese athletes. These were male amateur and recreational bodybuilders and weightlifters.

During September, 1991, (prior to two local bodybuilding championships), a questionnaire was mailed directly to the athletes making up the study population. This was taken from nine fitness centres around Malta. The athletes had to be engaged in serious training to qualify for participation in the survey. Anonymity was guaranteed. The participants were provided with self-addressed envelopes in which to return the self-completed questionnaire.

Results of the Survey

The overall participation rate was 53% (n=115). The study revealed several interesting points, SOME of which are summarized in Figures 1-4 and Tables 1-3.

Table 1: General results of the survey

	%	N
Potential Participants		217
Total responders		115
Overall participation rate	53.0	115
Prevalence of AS use (see Fig. 1)		
Non-users and against AS	52.2	60
Potential future users	15.7	18
Previous AS users	18.3	21
Users at time of survey	13.9	16

Mean Age of study population: 24 years (Range: 15-46 years)
Mean training years of study population - 4.54 years (Range: 6 months - 25 years)

Table 2: Some characteristics and perceptions of the study population as a whole (n=115)

	Non-Users 52.2% (n=60)		Potential Future users 15.7% (n=18)		AS users 32.2% (n=37)	
	%	n	%	n	%	n
Aware of drugs called anabolic steroids	100.0	60	100.0	18	100.0	37
Had a close friend using AS						
Yes	31.7	19	61.1	11	83.8	31
No	68.3	41	38.9	7	8.1	3
Not revealed	----	--			8.1	3
Aware of potential side effects of AS						
Yes	96.7	58	83.3	15	81.1	30
No	3.3	2	16.7	3	8.1	3
Not revealed	----	--	----	--	10.8	4
AS perceived as indispensable to athletic success						
Yes	45	27	77.8	4	78.4	29
No	53.3	32	16.7	3	16.2	6
Not revealed	1.7	1	5.6	1	5.4	2
Consultation with pharmacist on AS						
*Yes	11.7	7	27.8	5	40.5	15
No	88.3	53	72.2	13	54.1	20
Not revealed	----	--	----	--	5.4	2
*Pharmacist consulted and found knowledgeable about AS						
Yes	57.1	4	80	4	13.3	2
No	42.9	3	20	1	86.7	13

Table 3: Some aspects of AS among the athletes using these drugs (n=37)

	AS users (n=37)	
	%	n
Age at which AS use was initiated (Fig. 2)		
≤ 20 years	16.2	6
21-25 years	40.5	15
26-30	18.9	7
≥ 31 years	18.9	7
Not revealed	5.4	2
Combination of motives for using AS (Fig. 3)		
Increased strength/harder training	86.5	32
Competition	45.9	17
Appearance/Self-confidence	24.3	9
Not revealed	5.4	2
Combination of AS sources (Fig. 4)		
Gyms	48.6	18
Community pharmacies	29.7	11
Foreign sources	21.6	8
Government pharmacies	13.5	5
Black market	13.5	5
Not revealed	16.2	6
Convinced that AS enhance athletic performance		
Yes	94.6	35
No	----	--
Not revealed	5.4	2

Fig 1. Prevalence of anabolic steroid (AS) use by male Maltese bodybuilders and weightlifters

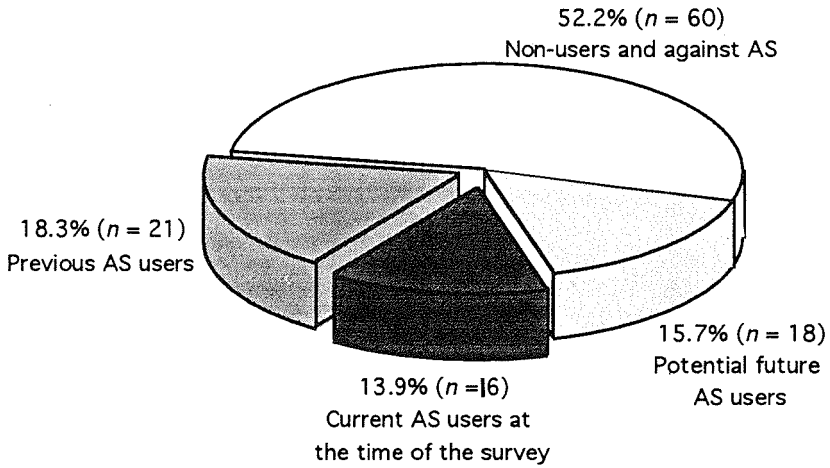


Fig 2. Age when anabolic steroid use was initiated

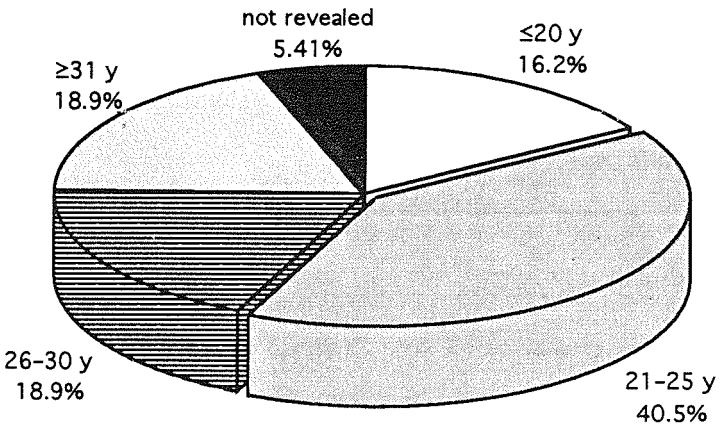


Fig 3. Motivating factors for anabolic steroid use

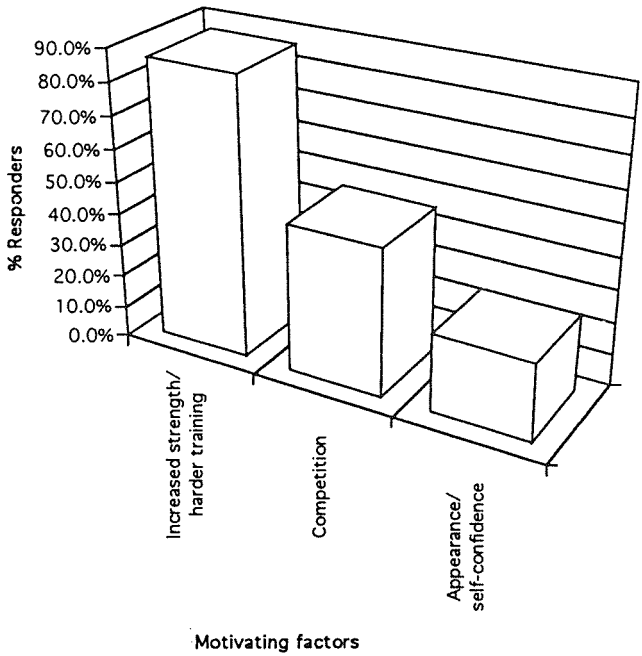
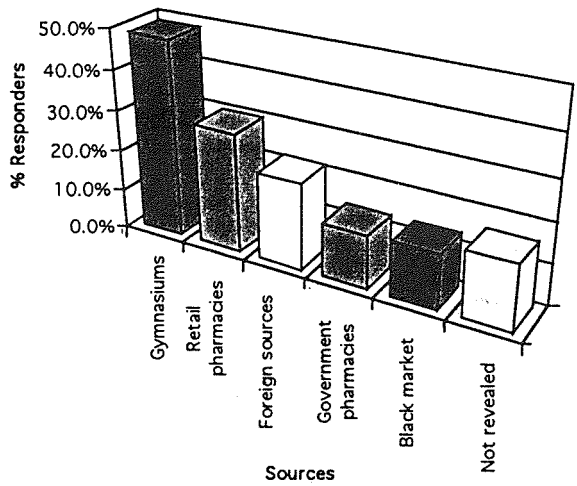


Fig 4. Sources of anabolic steroids



Completing the picture: personal interviews with the athletes and other persons concerned about this problem in Malta

Personal interviews with the above (including three foreign bodybuilders who were in Malta during that time), revealed other interesting points and clarified aspects of AS as revealed by the survey, including:

a. The fact that AS have been used by Maltese athletes since the late 1960s.

b. The 'cycling' and 'stacking' regimens of AS administration and the use of excessively high dosages of these drugs. Cycles of AS may extend anywhere from 4-18 weeks, with 'drug-holidays' of varying lengths. Some athletes were consuming an average of 92mg and 154mg weekly of oral and parenteral AS respectively, over a period of thirteen weeks.

c. The practice of 'polypharmacy' by some athletes. In addition to AS, some athletes were using mesterelone (Pro-Viron^{R}), tamoxifen (Nolvadex^{R}) and human chorionic gonadotrophin/HCG (Profasi^{R}) hoping to offset side effects of AS and a host of other drugs (including diuretics, appetite suppressants and thyroxine tablets to increase muscular definition) and also excessive dietary supplementation.

d. A thriving underground network, with AS being sold at exorbitant prices. An athlete embarking on a drug cycle of 13 weeks is expected to spend anywhere from Lm150-Lm250 ($470-$790) as AS ALONE. There are also reasons to doubt the quality of these illicit AS preparations. The stark reality is that athletes who believe that drugs make their sporting ambition come true, will do everything to obtain such preparations.

Conclusions and Recommendations

The need for a nationwide anti-doping campaign in Malta

The results of the study indicate the acute need for appropriate prevention and intervention policies to curb doping in Malta. There has been some sporadic attempts by individual bodies in the past, to curtail this problem, locally. However, these attempts have yielded poor

results because the essential components of an effective anti-doping campaign were not entirely utilised and because little was known about the problem.

Practical solutions to the problem as adopted by foreign countries are examined to ensure accuracy and clarity relevant to the local needs. A plan of action is outlined. This entails the setting up of a Central Anti-Doping Agency (CADA) to develop and implement an appropriate anti-doping programme in Malta. Initially, this central body should evaluate thoroughly the extent of doping in Malta through proper epidemiological methods. The factual information obtained during these preliminary stages dictates the anti-doping strategy. This need has been outlined to the appropriate body and positive action seems very promising.

Potential solutions to this problem lie in anti-doping legislation and administrative measures, drug testing and punitive measures on doping offences, drug education, intervention and treatment of athletes with a drug problem and provision of positive alternatives to drugs in sports.

Sport inevitably reflects the character of the society in which it is found. Doping in sport presents a challenge to society as a whole. Therefore, close cooperation and collaboration between the central anti-doping body and local organisations responsible for health, justice, culture and sport, as well as other local resources are a prerequisite for an effective anti-doping campaign.

The role of the Pharmacist in this sphere

Though sports pharmacy is a relatively new area, a ray of light may break through with the preventive role of the pharmacist in the use of AS and other illicit drug aids by athletes. Education, information retrieval and interpretation, drug testing, legislation, research and evaluation (Wagner, 1989) are potential routes for the pharmacist in his/her search for better implementation of health care in an athletic setting.

The old adage runs that prevention is better than cure. This is the golden rule to open wide the doors of this "scrooge" in sport. Preventive drug education and awareness programmes are the cornerstones in the struggle against drug misuse and abuse in sport and society in general (Isetts, 1989). However, emphasis must be laid on the diffusion of the right information

and the proper medium to reach the whole spectrum of the audience. Otherwise, half truths or the wrong information may lead some individuals to experiment with these chemicals and spoil the original purpose of drug education (Goldberg, 1991).

Therefore, in addition to factual drug information, an appropriate drug educational campaign should consider the development of attitudes and behaviours, such as building-up self-esteem, promoting decision-making and assetion skills and stress reduction (Tricker, 1990). More emphasis on alternative recreational options and education on better use of one's leisure time are also desirable. An educational approach should be a long term process. Greater mutual respect and trust between athletes and health care professionals is also expected. An educational pamphlet on AS for athletes is a priority on the researcher's agenda.

In addition to being health educators, pharmacists keen on sport and its pharmaceutical aspects can help athletes and coaches in revising their approach to athletic preparation.

In turn the pharmacist has to be wise enough to suggest ways how to avoid the use of ergogenic drugs. The pharmacist can help in this direction by encouraging athletes to seek safe and positive alternatives to drugs, including appropriate nutrition and training methodology, a reliable coach and development of psychological skills (e.g. mental rehearsal of events, positive self-talk, relaxation techniques) (Hemery, 1990).

A research agenda on doping and AS is also offered for possible future reference.

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