Drug problem in American athletes —The psychological background—

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Abstract

Drug use in athletes is one of the more serious problems in the United States. The purpose of this study is to clarify American athletes' psychological and psycho-social tendencies in competition as well as in every day life in relation to drug use and then to try to discuss the solution to drug problems in athletics. After the nature of drug use by American athletes is introduced, the following two main areas are discussed: stress (competition and life situations) and additional psychological factors (American pharmacopoeia, sensation seeking, aggression, suspicion against opponent, and immaturity of athletes). Finally drug testing, education, and psychological management (counseling, psychiatric treatment and stress management) are emphasized as methods of coping with drug problems in athletes.

(Koji Takenaka, "Drug problem in American athletes —The psychological background—", *Japan J. Phys. Educ.*, 34—1 : 1—13, June, 1989)

Introduction

Drug use has been one of the most serious problems in the United States where drug use problems are surprisingly larger than those in other countries. For example, in 1985, the drug problem in this country was ten times greater than the Japanese drug problem⁷⁵⁾.

Although drug use has penetrated most facets of United States society, athletes may have a slightly different attitude from general drug users. In general, there are two kinds of drugs used by athletes: recreational drugs and ergogenic aid drugs. Even though athletes may have used some drugs as recreational drugs for the same reason as non-athletes, ergogenic aid drugs have been taken to enhance their athletic performance.

The use of drugs in sports is not new. According to Cooper (1972)²⁰⁾, the first recorded death from drug usage in sports occurred in the 1890s when a British cyclist who was using ephedrine to improve his performance died as a result. Although some drug use among athletes has been known, drug abuse by athletes has been increasing rapidly thereby becoming a major social problem as evidenced by the recent successive tragedies including several deaths among professional and collegiate athletes^{10),32),59),107)}. Studies show statistically that drug use has penetrated not only professional and collegiate athletics but also high school athletics. According to a 1979 State of Minnesota Department of Public Welfare report⁹⁰⁾, 80% of student athletes used alcohol at least once a year, 30% used alcohol at least once a week and 17% used marijuana regularly. There are many controversies in relation to not only athletes' drug use itself but also in relation to the prescription of drugs for non-medical usage. For example, concerning drug use by athletes, topics such a drug overdose in professional football¹¹¹⁾ and steroid use by athletes in contact sports^{55),99)} have frequently been discussed in magazine articles. Additionally, some physicians have been criticized for prescribing drugs such as anabolic steroids to athletes for non-medical reasons^{31),69),99)}. It seems very strange that in spite of increased drug awareness in society in general, discussion of drug problems in athletics still continues. The main reason may be the fact that many athletes are still using drugs even though they know of the negative side effects^{13),21),31),58),60),61)}. However, their incentive to use drugs is very difficult to clarify because of the complexity of their physical, psychological and social

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environments. Thus, much effort may be necessary to solve this problem.

There have been many scientific studies investigating the effect of drug use on performance. The results have been very useful in defining the behavioral and physiological influences of drug usage. Furthermore, screening of athletes for drugs^{29),83)} has frequently been performed. However, the results may also be insufficient to remedy the problem because the findings merely reconfirm the facts. Thus, it is necessary to search for the basic reasons for drug use by athletes from various points of view and then those results must be put together into drug education programs for athletes.

The lack of a psychological approach to the drug use problem in athletes is clear. Heyman (1986)⁴⁶⁾ described, from his experience in clinical psychology, some of the more common problem patterns he had found in working with athletes. He not only presents two factors concerning athletes' drug abuse—peer pressure and sensation seeking—but also emphasizes the need for psychological treatment for athletes. A psychological approach to athletes' general problems should also prove useful in the search for an application to widespread drug abuse. The purpose of this paper is to clarify athletes' psychological and psycho-social tendencies in competition as well as in every day life in relation to drug use and then to try to contribute to the solution to this problem. Therefore, literature concerning not only drug use but also psychological considerations in athletics will be reviewed in this paper.

Nature of drugs used by athletes

In this section, two types of drugs classified by the purpose will be discussed: drugs for non-competitive purposes and drugs for competitive purposes¹⁶⁾. The application of this classification is suitable to the study of drug usage by athletes. However, many non-athletes also use these kinds of drugs although their reasons for use may differ. For example, a drug user may recreationally use stimulant drugs such as amphetamine and caffeine. Thus, this classification is defined as the range of drug use in athletics.

A. Drugs for non-competitive purposes

According to a 1985 National Collegiate Association survey of 2,048 athletes¹⁶⁾, analgesic use was the third highest after alcohol and caffeine use. Although alcohol and caffeine contained in some beverages has been used for recreational reason, the high percent of analgesic use indicates the fact that pain is commonly associated with athletic achievement. Marshall (1979)⁶⁴⁾ reported that in the National Football League, an antiinflammatory analgesic was first in per capita consumption. Even though these drugs may diminish the perception of pain and help athletes to continue to compete in spite of their injuries, this custom leads to the termination of athletic achievement.

Additionally, drug use by athletes should be considered as a tool of escape from the competitive pressure. While many kinds of drugs have been used in society, the nature of athletes' recreational drug use seems limited to cocaine because the tragedies to society was exposed to very shocking and most were caused by cocaine abuse. It is well known that cocaine was implicated in the tragic deaths of some famous athletes^{32),59),107)}. Thus, cocaine will be at the center of discussion in this part.

Cocaine is an old drug that has found great popularity among drug users. Cocaine is derived from the leaf of the *Erythroxylon coca* plant. It can be sniffed, smoked or injected. Crack is another form of cocaine. According to the National Institute of Drug Abuse (1983)⁹⁷⁾, an estimated 28% of adults between the ages of 20 and 40 have tried cocaine. Estimates are that 16% of high school seniors have tried it and that 0.2% use the drug regularly. Cocaine problems among athletes have also been reported regularly.

It is obvious that such drug use is detrimental to athletes' performance. Its main effects are as a local anesthetic and as a stimulant of the cardiorespiratory and central nervous system⁶¹⁾. Effects that impair athletic performance include accelerated mental processes, euphoria, a feeling of increased mental and physical power, and paranoia. Cocaine overdose can lead to arrhythmias, coma, seizures, hyperthermia and death¹⁰⁴⁾. By focusing on the incidence of myocardial infarction after using cocaine, Cantwell and Rose (1986)¹³⁾ concluded that cocaine abuse can cause a variety of cardiovascular problems.

B. Drugs for competitive purposes

The competitive purposes for using drugs involve the search for an "edge" that will enable the athlete

to win or perform beyond the bounds of normal human ability¹⁶⁾. The term “ergogenic aid” corresponds the meaning. Williams (1983)¹⁰⁵⁾ considers the term “ergogenic” as the following. “When special substances or techniques beyond training regimens are employed to improve performance, the term ergogenic aids has been used to categorize these diverse methods. The term ergogenic means tending to increase work, or work producing”. Furthermore, Lambardo (1986a)⁶⁰⁾ also defines ergogenic aids as substances that help an athlete generate increased force or endurance. However, although ergogenic aids are sometimes effective, they are often illegal in various organized sport areas, such as the International Olympic Committee. In spite of this dilemma the use of chemical ergogenic aids has been firmly established in sports society.

There are two main kinds of chemical ergogenic aids: the stimulants, such as amphetamines, caffeine and nicotine, and substances that enhance body or performance, such as anabolic steroids. The former have been used by athletes to increase at an alarming rate²¹⁾, to mask, delay, or alter the athlete's perception of fatigue⁶⁰⁾, and to increase endurance³⁴⁾, while the latter have been prescribed to promote tissue growth, presumably to increase muscle mass and to improve strength and power for athletics^{31),58)}. However, the effects of these substances on athletic performance are still unclear.

1. Stimulants

a. Amphetamines

Amphetamines have been used therapeutically to treat obesity, narcolepsy, minimal brain dysfunction (hyperkinesis) and depression⁶⁰⁾. However, since amphetamines have much potential for abuse, other medications have replaced them in treating these conditions⁶⁸⁾. Amphetamines, indirect sympathomimetic amines, are central nervous system stimulants which increase alertness, mask fatigue, and produce a false sense of well-being. Peripheral changes include an increase in systolic and diastolic blood pressure, weak bronchodilator action, increased blood sugar, and increased metabolism and oxygen uptake at rest and during work performances. The greatest hazard during physical activity may be the inability to evaluate performance accurately¹⁾. Therefore, an athlete who uses amphetamines may not be able to relate perception to actual performance. There has been a high possibility of injuries because, in addition to the imbalance between perception and performance, amphetamine abuse tends to cause overaggressiveness¹⁰¹⁾.

b. Caffeine

Caffeine is a plant alkaloid and is included in beverages such as cocoa, coffee and tea. It is clinically used primarily to increase alertness during states of fatigue and as an additive in analgesic mixtures and in some diet pills⁶⁰⁾. Caffeine influences the cardiovascular, respiratory, metabolic, gastrointestinal, renal, and central nervous system. Especially, caffeine produces many effects on the central nervous system. It can affect psychomotor coordination, sleep, mood, behavior, and cognition. Furthermore, caffeine increases vigilance and decreases the time of motor reaction to visual and auditory stimuli³⁴⁾. Therefore, many athletes have used caffeine to enhance athletic performance. It is known that distance cyclists and cross-country skiers use caffeine before competition¹²⁾. Although many athletes believe that caffeine increases performance such as endurance ability, the real effect is very doubtful. While some studies found positive effects in performance^{23),35),50)}, many investigations confirmed the negative effects^{12),14),80)}. For example, Butts and Crowell (1985)¹²⁾ showed that caffeine did not enhance brief maximal or submaximal effort. However, it may be true, similar to other stimulants' effect, that the psychological effect of caffeine could have played a role. For instance, drinking coffee might usually induce a placebo effect¹⁴⁾. The adverse effects of caffeine, such as headaches, tremors, nervousness, diuresis and arrhythmias, have been reported in relation to the amount of doses. Thus, athlete's overuse in competitive situations may lead to some dangerous outcomes such as not only the side effects but also other serious injuries.

c. Nicotine

Although Remington et al. (1985)⁸¹⁾ report that all age groups have decreasing trends in cigarette smoking, the use of smokeless tobacco has increased. Especially, it is reported that football and baseball players use smokeless tobacco^{33),72)}. Nicotine is an alkaloid that affects both the sympathetic and parasympathetic nervous system. Many studies have investigated the effect of smoking on various parameters related to performance as well as subsequent diseases. For example, concerning performance,

Table 1. Generic names of anabolic steroids in common use (Haupt & Rovere, 1984).

Method	Classification	Generic name
Oral	17-Alpha-methyl derivatives of testosterone	Methyltestosterone
		Fluoxymesterone
		Methandrostenolone
		Oxandrolone
		Oxymetholone
		Stanozolol
	17-Alpha-ethyl derivatives of testosterone	Ethylestrenol
		Norethandrolone
	1-Methyl derivatives	Methenoloneacetate
		Mesterolone
Intramuscular	Esters of testosterone	Testosterone propionate
		Testosterone enanthate
		Testosterone cypionate
	Esters of 19-nortestosterone	Nandrolone decanoate
		Nandrolone phenpropionate

the oxygen cost of ventilation is higher in smokers than nonsmokers during vigorous exercise^{63),82)}. Furthermore, Klausen et al. (1983)⁵⁶⁾ found that smoking results in increased resting heart rate and in decreased maximal heart rate and maximum oxygen intake. In smokeless tobacco, although Edwards et al. (1987)³³⁾ also obtained similar results in heart rate to smoking, they were not able to find the negative effects on reaction and movement times. On the other hand, smoking is considered a major risk factor in the development of serious diseases such as cardiovascular⁶⁸⁾, pulmonary, and oral diseases⁶¹⁾.

While some athletes use nicotine for a stimulating effect before their contest, others paradoxically use the tobacco for the calming effect before competition. However, since many investigations found the negative effects, the significance of nicotine in athletic performance may be doubtful.

2. Body/performance enhancing substances: anabolic steroids

Although it is impossible to accurately confirm the numbers of athletes who use anabolic steroids in sports, most of the athletes who need muscular power to overcome inertia (a weight lifter and track/field athletes) and opponents (a wrestler and football linemen) might have used it^{7),20),58),102)}. There are many kinds of anabolic steroids in common use as shown in Table 1⁴⁵⁾. However, the fact is that most of the anabolic steroids used by athletes are probably not prescribed by physicians but are mostly obtained on the black market^{24),31),58),76),96)}.

It is obvious that androgenic-anabolic steroids promote the synthesis of protein in skeletal muscles and other tissues in certain situations. This effect has been examined in animal and human experiments^{45),57),58)}. Thus, the positive effect of anabolic steroids is presumed to be beneficial to athletic performances which heavily need muscular power. However, the results of the experiments in athletes are still ambiguous.

According to Taylor (1987)⁹⁶⁾, the experiment with steroids started in the 1950s and pharmaceutical companies began to advertise the tissue-building effects of steroids in the early 1960s. After that, many researchers have studied the effects of steroids on muscle strength and athletic performance. For example, in body weight, whereas some studies showed that body weight gains during weight training were significantly greater with steroid treatment than under the placebo condition^{4),15),52),62),91),103),106)}, other studies were not able to find the significant effect of steroids treatment^{36),39),43),54),92)}. Furthermore, concerning performance, even though the testimonial evidence in the gymnasium and on the field showed that steroids produced remarkable gains in performance¹⁰²⁾, scientific experiments were divided into positive^{4),52),53),91),103),106)} and negative results^{15),25),36),39),43),62),92)}. There is no common factor such as drug type (Table 1) or dose, or duration of study and diet that can explain these differences. While the quantity of steroids used in the experiments has been small because of ethical considerations, most athletes who take steroids really use large doses^{31),95)}. Thus, it may be difficult to compare the results of the experiments with

those of real anabolic steroids use in athletes. In such steroids experiment, the double-blind protocol has been performed so that neither subjects nor drug administrators knows whether drug or placebo was being used. Unfortunately, this protocol may not be useful to examine the real effect of anabolic steroids in performance because subjects can become aware of the protocol due to side effects such as libido enhancement or a sense of euphoria.

Taylor (1987)⁹⁶⁾ presents the side effects of anabolic steroids use as the following items: libido enhancing, euphoric effects, aggression and violence, induced polypharmacy (combination effect with some kinds), cardiovascular diseases and stature alterations. For children, stature alterations might become a serious problem. Lamb (1984)⁵⁸⁾ suggests that steroids use by prepubertal children may cause premature fusion of the epiphyses of long bones, leading to permanent short stature. He also describes that using steroids results in liver disorders of abnormal liver function. Annito and Layman (1980)²⁾ described an acute schizophreniform illness as a side effect. Since some athletes do not use large amount of doses frequently, but do use oral and injectable steroids simultaneously^{91),95)}, the side effects can not be predicted. Furthermore, at present nobody knows the long term effect of using steroids. Therefore, more severe side effects may be found in the future.

Psychological background of drug abuse by athletes

There are a lot of psychological factors which have lead athletes to drug use. However, the most certain reason may be their stressful environment. Therefore, in this section, the psychological background of athletes who use drugs will be discussed, and two main areas will be considered: stress and other psychological factors.

A. Psychological factor: stress

1. Stress in athletics

McGrath (1970)⁶⁷⁾ defines stress as occurring when there is an imbalance between the perceived demand and the perceived response capacity of the organism. However, Spielberger (1972)⁹⁰⁾ presents a somewhat different conceptualization of stress. Stress in his model is limited to the magnitude of objective danger that is associated with the stimulus properties of a given situation. He proposes that the term stress be used exclusively to denote environmental conditions or circumstances that are characterized by some degree of objective physical or psychological danger.

In athletic competition, there are both physical and psychological stresses. Most athletes experience far more physical stress than others do because they are required to train and to compete regularly⁴⁶⁾. Although psychological stress often accompanies physical injury or precedes it¹¹⁾, in general it occurs when athletes perceive their incapability of successfully meeting the demands of the competition. Furthermore, the negative consequences of this perceived imbalance between demand and capability can include feelings of failure or the threat of incurring negative evaluations from significant people⁸⁶⁾.

In addition to stress under athletic competition, athletes have other stresses such as life stress, which may become more serious before the beginning of the competitive season⁴⁷⁾. For professional athletes, fear of injury may be one of the most serious problems because an injury can immediately end a carrer. Some studies report that certain forms of stress may make it more likely that particular groups of individuals are injured or reinjured^{5),17),65),78)}. Furthermore, college and high school athletes face not only stress due to the pressures of training and competition but also due to other demands such as academic and personal problems.

From the discussion of stress, it is obvious that some athletes will become tired of the constant pressure and stress, and wish to withdraw. In some cases the result may be ceasing to be involved in athletics³⁷⁾. In other cases different pattern of dealing with stress may exist. There may be continuing psychosomatic problems or hypochondriacal complaints in some cases⁴⁶⁾.

2. The relation between stress and drug abuse

Drug use itself has been considered a problem. However, there may be other problems that provoke drug use. For example, in school counseling, Singer (1972)⁸⁹⁾ emphasized that drugs were rarely the

abuser's real problem, but were symptomatic of a more deep seated disorder. Fejer and Smart (1973)³⁸⁾ also reported that drug sniffers had been treated for family and school problems more often than non-sniffers did. Thus, drug problem can not be discussed without the clarification of the real problem.

Tension Reduction Theory¹⁸⁾ has been proposed to account for not only drug abuse but also other addictive behavior such as bulimia, anorexia, nervosa, cigarette smoking and drinking. The theory indicates that drug use reduces tension, typically defined as some sort of stress. However, since it has been reported that drug abusers have higher perceived stress in social areas than non-abusers do^{70),71)}, it is obvious that drug use does not fundamentally contribute to the elimination of the abuser's stress.

In terms of the relationship between stress and drug abuse, theories concerning alcohol use may also be useful in accessing the drug problem because of the similar situation. Pearlin and Radebaugh (1976)⁷⁹⁾ presented data suggesting that alcohol use among adults may serve as a buffer against the effects of stress³⁾. Husaini et al. (1979)⁴⁸⁾ also reported that drinking and drug problems have been related to stressful life events and to job related stress. Thus, drug use may mainly be related to stress which athletes experience under athletic competition or in every day life.

3. Drug use by athletes under stress

The most important time to deal with problems of stress in sports is at the earliest level, with children in sports. According to the 1985 National Collegiate Athletic Association study on drug use in college sports, the first nationwide study, it appears that schools with the most pressure to win are the ones in which ergogenic aids are used most. Respondents from two Division-I football teams reported a 20% to 30% usage rate of steroids, whereas at Division-III schools steroids were nonexistent³⁰⁾. Furthermore, a 1987 Drug Enforcement Administration's report (U.S. Department of Justice)²⁷⁾ explained the reasons for young athletes' drug use as the existence of the following pressures: pressure to win, pressure to perform well and pressure to earn esteem. These results indicate that stress facilitates the increasing drug use by young athletes.

On the other hand, for professional and collegiate athletes, the attitude may be somewhat different from young athletes. It is known that they tend to search the bizarre methods to gain a competitive "edge"¹⁶⁾.

This is a shocking fact in international level athletics. Ryan (1984)⁸⁵⁾ described that possible reasons for misuse might include a recommendation or order to take a drug by an authoritarian figure, advice from another athlete, learning about a drug from reading about it, personal uncontrolled experimentation with a drug, feelings of personal inadequacy, or feeling a need for some external source of motivation. Such recommending or prescribing drugs for athletes pushes athletes to stressful circumstance and furthermore this tendency is enhanced.

B. Other psychological factors

As is the case with other psychological factors, the following elements may be considered as the reason for drug use by athletes: American pharmacopoeia, sensation seeking, aggression, suspicion against opponent, and immaturity of athletes.

1. American pharmacopoeia

There is historically a tendency for athletes to believe that some drugs aid athletic performance. According to Edwards (1986)³²⁾, the stimulant drugs such as amphetamines first came into general use during World War II in response to a perceived need for hyperactive, aggressive and even paranoid types on the battlefield. On the other hand, performance drugs such as anabolic steroids were developed as restorative aids for geriatric patients, the chronically ill and people recovering from debilitating accidents or infirmities. These uses may be perceived as similar to the application for athletic aid.

Furthermore, Americans consume more drugs in greater variety than any other people on earth. Each year Americans consume hundreds of millions of pills and tens of thousands of pints of opiate-laden and chemical-laced elixirs obtained legally through prescription and over the counter sales³²⁾. People are exposed numerous commercials through the broadcast media^{20),32),85)}. This widespread drug use and the frequent commercials may have contributed as a psycho-social factor to drug use by athletes.

2. Sensation seeking

Drug use has been discussed in relation to the sensation seeking^{112),113)}. Zuckerman (1979)¹¹²⁾ showed that high sensation seekers are more likely to try any drug. He identified the aspects of drug use that attracted sensation seekers as the following: social unconventionality, high risks and new kinds of experience. Athletes generally tend to need great amounts of sensory input and stimulation⁴⁶⁾. Thus, their sensory seeking tendencies may have caused drug use. After that, they may become convinced that a particular drug may be helpful to them⁸⁵⁾.

3. Aggression

Athletes, particularly contact-sport athletes, are likely to belong to a subgroup that is allowed to express physical aggression and that may even demand it although in most other social setting, the behavior would be considered inappropriate^{47),49)}. There are two types of aggressions in sport: physical aggression that the play unfolds and verbal aggression that many athletes use to attempt to intimidate opponents on another level¹¹⁾. Furthermore, aggressive behavior can be classified into extropunitive —against another person— and intropunitive —against the self⁴⁹⁾—. These aggressions are psychologically and physiologically effective to aid athletic performance.

Although aggression may be reinforced by many athletic situations, it sometimes becomes a problem in society because some athletes cannot maintain appropriate controls over the related feelings and behaviors or they fear a loss of control⁴⁷⁾. Thus, there may be a possibility that they use some drugs to calm excessive aggression. Contrarily, it is also known that athletes paradoxically use drugs such as stimulants so that they would be aggressive under athletic competition²¹⁾.

4. Suspicion against opponent

Murray (1984)⁷⁴⁾ accurately reflected the athlete's dilemma before the Olympics in Los Angeles. In athletic competition, there is always the suspicion that one's winning opponent has gained unfair advantage through some new or powerful potion¹¹⁾. Therefore, if athletes do not take steroids, they feel competitive disadvantage in spite of their unwillingness to use steroids. Interestingly, Murray expressed the pressure to use steroids as the pressure that drives the arms race.

5. Immaturity of athletes

There are some interesting observations concerning athlete's immature social attitude. Brandmeyer and Alexander (1984)⁶⁾ introduce the case of young professional baseball player and report that a major manifestation of the disabling effects of sudden wealth and stardom on the personalities and off-field behavior of modern professional athletes is alcohol and drug use. Heyman (1986)⁴⁶⁾ presents a somewhat different observation concerning athlete's attitudes. According to his observation, since other activities and relationships outside of the athletic environment have a secondary role for athletes, they float into young adulthood, and their immature views and behaviors in society may not be improved easily. As a result, they have problems in relationships with other people. Drug problem in athletes may be attributed to their immature psychological attitude in society.

Future approaches to drug problem in athletes

There has been much discussions about the possible solution of the drug problem in athletics. For example, Butt (1987)¹¹⁾ suggests three ways to deal with the problem: education programs and counseling, crack-downs on drug users and peddlers within sports, and the encouragement of experiencing competition in sports. While the first two ways require an externally controlled procedure, the last way may require internal control of the athlete's psychological management through experience.

On the other hand, at the practical athletic level, some excellent drug prevention programs have been developed^{29),83)}. For example, the Wake Forest University athletic department's program has three objectives: to educate the athletes about drug abuse —education—, to deter drug use —counseling—, and to maintain the integrity of the athletic program by identifying drug users —screening⁸³⁾—. It is obvious that the prevention program must consist of various approaches. In this section, the following three items will be addressed: drug testing, drug education, and psychological management.

A. Drug testing

At present, there are some sport organizations at the amateur and professional levels that test athletes for drug use⁴⁰⁾. Characteristics of the testing program, such as drug policy, banned drugs, testing time and penalties, depend on the specialty of a sports organization with attention paid to particular circumstances. For example, concerning banned drugs, whereas the National Football League emphasizes ergogenic aid drugs such as anabolic steroids and stimulants, the Major League baseball (MLB) stresses generally recreational drugs such as cocaine, marijuana, heroin and morphine.

The testing method has developed into random drug testing not only during competition but also during the training period because of its superiority as a device to detect drug abusers^{29),32),58),83)}. For example, the National Collegiate Athletic Association considers that random on-campus testing of athletes should be performed along with testing at championship events²⁹⁾.

Historically drug testing was initiated for the purpose of eliminating unfair competition⁸⁵⁾. The purpose was for positive results to lead to penalty or punishment. However, this policy should be included in the educational procedure because punishment has never resulted in real prevention of drug use. There is a successful example. The MLB's testing program includes evaluation, education and rehabilitation. If a baseball player is convicted of a criminal charge of possession and use of drugs, or gets a positive result in the testing, he is subject to disciplinary action by the commissioner. Players in rehabilitation for baseball's specified substances can receive salary under certain conditions²⁹⁾. In this case, the testing itself does not lead to punishment. Thus, the program may be effective in the prevention of drug use by athletes.

In addition to the debate concerning athlete's individual right¹⁶⁾, athletes may be reluctant to participate in drug testing for other reasons. For example, some athletes may still believe that drug use is to their advantage. Gaskins and DeShazo (1985)⁴¹⁾ reported that a greater number of athletes did not support the screening program in comparison with non-athletes. Another reason for this reluctance is that some athletes may want to conceal their drug use. In fact, athletes and their advisors are quite adept at overcoming such barriers to drug use⁵⁸⁾. Therefore, drug testing only cannot solve the drug problem in athletics.

B. Drug education

The most effective method of prevention may be education. However, if only athletes are the subjects of these educational programs, sufficient effects cannot be expected to control or prevent drug abuse.

At the international athletic level, coaches, sports trainers and others connected with the supervision and control of athletes have recommended or provided drugs although athletes were reluctant to use them⁸⁵⁾. Therefore, these parties in athletics should also participate in the program. According to Chappel (1987)¹⁶⁾, Norway has had an educational program designed to change attitudes toward the use of chemical or other artificial aids in competition. The targets of attitudinal education are not only athletes but also coaches, trainers, physicians, sports federations and the public.

Contrarily, at a broader athletic level, such as high school, the closest person to an athlete in athletic circumstances is a coach. For years, many coaches may have suspected that some athletes used drugs. However, they have not known for certain the extent of the problem. In some cases, they have ignored the fact of athlete's drug use because they also believed that some drugs enhance athletic performance. Thus, their existence or participation in a drug education program can massively contribute to the success of the program. The United States Department of Justice's handbooks^{27),28)} point out that athletic coaches have the responsibility to provide a drug prevention program for student athletes. They also show the concrete example of drug prevention program by using a step-by-step method.

There are some discussions concerning the contents of drug education programs. Edwards (1986)³²⁾ suggests that in addition to the emphasis on education for young athletes, the education program should include regular and routine teaching of the side effects and ethics of drug use. He especially stressed the necessity of instruction and even propagandization in a clear and consistent line of constraining moral ideals such as criticism against physician's drug prescription for non-medical purposes. Chappel (1987)¹⁶⁾ also suggests more concrete content in educational programs. He described three items in education: small

group discussions, establishment of abstinence role models, and values clarification.

C. Psychological management

As described in the previous section, it is obvious that drug use behavior is accompanied by some psychological problems. Therefore, the elimination of the psychological problems is useful for athletes in order to prevent drug use. There are two kinds of psychological managements: 1) clinical —psychiatry or counseling treatment—, and 2) general —stress management—. While the former means the treatment of mental disorders that accompany drug abuse, the latter can generally be considered as non-clinical treatment.

Although athletes have the same range of emotional illnesses as non-athletes, the problem may sometimes be complicated by an athlete's self image. The most common emotional problem among athletes is depression, followed by abuse of alcohol or other drugs⁸⁴⁾. Various psychosomatic illnesses may also be attributed to a concern about their bodies. Therefore, the opportunity to get psychiatric or psychological counseling should be increased for athletes⁴⁷⁾. The United States Olympic Committee (1983)¹⁰⁰⁾ has recognized the need for specialized counseling and psychotherapy. Movement in this direction may contribute to drug use prevention.

Although there are numerous methods of stress management in society^{8),42),73)}, in athletics, successful stress management can provide multiple means of achieving non-chemical relief from symptoms that interfere with training or competitive focus¹⁶⁾. According to Zaichkowsky and Fuchs (1986)¹¹⁰⁾, techniques which have been used in athletic stress management include the following items: progressive relaxation training⁵¹⁾, autogenic training⁸⁷⁾, systematic desensitization, meditation, hypnosis, imagery and cognitive behavior modification. These techniques have developed around relaxation training because athletes usually have excessive tension under competitive stress.

It is well known that under stress, various physiological indices in the human body are affected, such as increased heart rate, perspiration, and respiration rate. Connor (1977)¹⁹⁾ demonstrated the significance of relaxation training. In his experiment, subjects given only brief progressive relaxation training showed smaller skin conductance and heart rate responses when exposed to a stressful stimulus than the control subjects did.

One of the newest techniques in athletic stress management is biofeedback training. In this area, biofeedback was introduced in relation to relaxation^{108),109)}. After that, many studies in biofeedback have been reported in athletic competition situations^{22),26),44)}. Since the effect of stress and anxiety management has been demonstrated in clinical psychology or psychiatry^{66),77),88)}, biofeedback training will be expected as a more beneficial technique for athletic stress management in the future^{93),94)}.

In conclusion, although practical treatment such as drug testing has received attention, an athlete's psychological background paralleled by drug use has not been examined. This background may be one cause of drug use by athletes and therefore the examination of this issue may indirectly contribute to the solution. Finally, athletic competition should not be considered the same as horse racing, as suggested by Cooper (1972)²⁰⁾. The athlete, the human being, exists. If the principles of athletic competition are earnestly discussed, the possibility of finding a solution to the drug problem in athletics will be greatly enhanced.

北米アスリートにおけるドラッグ問題 —その心理的背景—

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(昭和63年 8 月 8 日 受付)

アスリートのドラッグ使用問題は、今やアメリカ社会における大きな社会問題の一つとなっている。本論文の目的は、これらアスリートのドラッグ使用問題に関連して、彼等の日常生活および競技場面における心理・社会的傾向を明らかにすることである。最初に、現在アスリートによって使用されているドラッグの種類が述べられ、その心理的要因として、日常生活および競技におけるストレス、さらに他の心理的要因（北米における薬品使用過多、センセーション・シーキング、怒り、ライバルへの疑い、アスリートの社会的未熟）が議論される。最後に、アスリートのドラッグ使用の将来の課題として、ドラッグ検査、ドラッグに関する教育、心理的マネジメント（カウンセリング、心理療法およびストレス・マネジメント）の必要性が強調される。

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