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HIV and athletes : educational information for athletic trainers

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HIV AND ATHLETES:
EDUCATIONAL INFORMATION FOR ATHLETIC TRAINERS

A Project Report
Presented to
The Faculty of the Department of Human Performance
San Jose State University

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

By
Rachel A. Blakeman
December 1999

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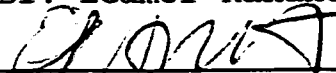
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ABSTRACT

HIV AND ATHLETES:

EDUCATIONAL INFORMATION FOR ATHLETIC TRAINERS

by Rachel A. Blakeman

Presented in this project is HIV/AIDS information for athletic trainers so athletic trainers have access to pertinent information, via the World Wide Web (<http://www.geocities.com.rbatc/>). HIV education of athletic trainers has been identified in the research as substandard. Even though HIV/AIDS continues to be a substantial risk to those aged 20 to 29 years, athletes are known to participate in risky lifestyle behaviors. These behaviors place athletes at greater risk of contracting HIV than those in the general population. Athletic trainers need to be more educated than they are about HIV/AIDS so they will be able to inform athletes of risks.

Specifically, addressed is HIV/AIDS information of concern to athletic trainers and athletes, including: HIV pathophysiology and epidemiology, HIV testing, modes of HIV transmission, HIV transmission in athletics, factors that increase risks, and risk reduction. Universal precautions are reviewed, and referral services and additional web links are provided.

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Chapter I

INTRODUCTION

Athletes are known to engage in riskier lifestyle behaviors than non-athletes (Anderson, Albrecht, & McKeag, 1993; Kokotailo, Henry, Kosciak, Fleming, & Landry, 1996; Nattiv & Puffer, 1991; Nattiv, Puffer, & Green, 1997). These risky behaviors may include increased number of sexual partners, failure to use condoms, and intravenous (IV) or intramuscular (IM) drug use for ergogenic aid injection; thus, athletes incur a greater risk of contracting human immunodeficiency syndrome (HIV) and acquired immunodeficiency syndrome (AIDS) than do non-athletes. Because athletic trainers are usually the first caregivers to encounter injured or sick athletes, athletic trainers must be knowledgeable about HIV/AIDS information, and be able to educate athletes who are infected or are concerned with potential infection. Currently, there are no guidelines to aid athletic trainers in the education of athletes with HIV and AIDS concerns. Addressed in this project is the lack of HIV and education provided to athletic trainers. Consequently, a primary objective of this project was to develop HIV educational information for athletic trainers.

In 1990, the Centers for Disease Control and Prevention

(CDC) estimated that roughly 1 in 250 adults in the total United States population is infected with HIV, a virus which affects the immune system. Seltzer (1993) stated that AIDS, the illness caused by HIV, is the second leading cause of death, following accidents, among males aged 25 to 44 years, and the fourth leading cause of death among females in the same age group.

According to the Joint United Nations Programme [sic] on HIV/AIDS (UNAIDS), as of December 1997, approximately one in every 100 adults worldwide aged 15 to 49 years was infected with HIV. UNAIDS estimated that as of December 1997, 30.6 million people worldwide were HIV infected. The CDC reported that as of June 1997 there had been 612,078 reported cases of AIDS in the United States. Of the reported cases in the United States, 84% were males aged 13 years or older, 15% were females aged 13 years or older, and 1% were children under the age of 13 years.

The fastest growing demographic group are those aged 20 to 29 years (Hunt & Pujol, 1994). To date, no studies have established the number of athletes infected with HIV; however, the growing magnitude of HIV infection in the general population suggests that the numbers of HIV-positive athletes will also continue to grow (Hamel, 1992; Thomas, 1996).

Studies by Anderson et al. (1993), Kokotailo et al. (1996), Nattiv and Puffer (1991), and Nattiv et al. (1997) have demonstrated that athletes are more likely to engage in risky lifestyle behaviors than are non-athletes. Due to a risky lifestyle, athletes may be placed at a higher risk for HIV infection than non-athletes (Brown, Drotman, Chu, Brown, & Knowlan, 1995; Brown, Phillips, Brown, & Moyer, 1994; Nattiv & Puffer, 1991; Nattiv, et al, 1997.). In particular, athletes have been found to take more risks with sexual activity and IV and IM drug use to inject ergogenic aids than non-athletes (Anderson, et el., 1993; Kokotailo, et al., 1996; Seltzer, 1993).

In traditional settings, athletic trainers may be the most accessible healthcare providers to athletes (Calabrese & Kelley, 1989). The probability that athletic trainers will encounter HIV-positive athletes is ever increasing, as is the probability that any athletic trainer may be faced with answering questions about sexually transmitted diseases (STDs) (Boyle, Sitler, Rogers, Duffy, & Kimura, 1997; Hunt & Pujol, 1994).

Athletic trainers lack guidelines to educate and/or advise athletes who have concerns or questions about HIV/AIDS transmission, risk reduction, and testing. Thus, the specific needs of the athlete regarding HIV/AIDS

transmission, risk reduction, testing options, appropriate referrals, and education should be addressed.

HIV/AIDS was rarely addressed in the athletic population until November 7, 1991 when Earvin "Magic" Johnson announced he was retiring from playing basketball due to his HIV-positive status (Cohn, Miller, Yamaguchi, & Douglas, 1992; Johnson, 1992). Johnson's announcement alerted those associated with athletics, i.e., athletes, coaches, and governing bodies such as the National Collegiate Athletic Association (NCAA), National Football League (NFL), and National Basketball Association (NBA) that athletes are not immune to HIV and the potential health risks associated with HIV.

The first official diagnosis of AIDS was in 1981 (Calabrese, & LaPerriere, 1993; Sankaran, 1999; Ward, 1999); however, until high-profile athletes such as Johnson, Olympic diver Greg Louganis, tennis star Arthur Ashe, and boxer Tommy Morrison were identified as HIV-positive, HIV and AIDS were not associated with sports and athletes (Bitting, Trowbridge, & Costello, 1996; Brown, et al., 1994; Strukel, 1993; Volkwein, Sankaran, & Bonsall, 1996). Johnson's decision to come out of retirement to join the 1992 Olympic basketball team prompted a recommendation by the senior medical officer of the Australian Olympic

Federation for a boycott of play against the United States team (Gray, 1992; Seltzer, 1993). Subsequently, Johnson's first attempted return to NBA competition in 1992 was aborted because of opposing player's concerns of HIV exposure (Keyser, 1999; Mitten, 1994; Newman, 1993).

This concern by athletic associations has raised issues regarding the potential risks of HIV transmission in the athletic setting, as well as possible risks to healthcare personnel, particularly because of the potential for bodily fluid exposure in athletics, most significantly blood (American Academy of Pediatrics [AAP], 1991; Calabrese & LaPerriere, 1993; Hamel, 1992; Izumi, 1991; Whiddon & Horodyski, 1996; Whitehill & Wright, 1994). Questions associated with HIV/AIDS and athletics include: 1) mandatory HIV testing of athletes, 2) disqualification from participation of any HIV-positive athlete, and 3) establishment and implementation of HIV/AIDS policies and universal precautions (CDC, 1985; Johnson, 1992; McGrew, Dick, Schniedwind, & Gikas, 1993; NCAA, 1994; Occupational Safety and Health Administration [OSHA], 1991; Seltzer, 1993; Strukel, 1993). The potential for discrimination against athletes who are HIV-positive impede the resolution of these issues. Confidentiality and right to privacy issues, and lack of HIV/AIDS education for healthcare

personnel add to the difficulty of implementing HIV/AIDS policies (Arnold, 1995; Calabrese & Kelley, 1989; Thomas, 1996).

The CDC (1985) and OSHA (1991) have established guidelines to reduce occupational exposure to bloodborne pathogens; however, guidelines have not been established for athletic trainers to educate athletes about HIV/AIDS concerns. Seltzer (1993) addressed HIV counseling of athletes by team physicians in respect to on-field transmission, basic background of HIV/AIDS (i.e., pathophysiology and epidemiology), methods of transmission and risk reduction, and testing. Although athletic trainers are often the first medical personnel approached by an athlete who has health concerns, athletic trainers often lack HIV training (Boyle, et al., 1997).

As part of the sports medicine team, it is the athletic trainer who establishes the closest relationship with an athlete (Arnheim & Prentice, 1993). The athletic trainer is recognized as an allied health professional and primary healthcare provider. Athletic trainers are responsible for overseeing all aspects of an athlete's health. Consequently, conditions exist which typically promote interaction and trust (Moulton, Molstad, & Turner, 1997). Due to the nature of the athletic training profession, and

the relationships with athletes, athletic trainers are in an ideal position to educate athletes about HIV and AIDS (Hunt & Pujol, 1994; Moulton, et al., 1997). To best provide education, athletic trainers must first be knowledgeable. Specifically, athletic trainers must be aware of questions and/or concerns that may arise regarding HIV/AIDS and the athletic population, and must be able to provide guidance in such a situation. Athletic trainers must also have knowledge of, and provide referral to, organizations that can provide more in-depth counseling, should there be a need.

The National Athletic Trainer's Association (NATA) described five domains in which an individual must prove competent in order to become a certified athletic trainer (ATC): 1) prevention of athletic injury, 2) recognition and evaluation of injury, 3) rehabilitation, 4) healthcare administration, and 5) professional education and responsibility. HIV and AIDS education is included in all five domains, yet studies have indicated that athletic trainers are not necessarily, nor do they feel, adequately trained to counsel athletes (Boyle, et al., 1997; Misasi, Davis, Morin, & Stockman, 1996; Moulton, et al., 1997).

Because athletic trainers may be the only medical professional with which an athlete has regular contact, it

is imperative that these individuals are able to provide the athlete with clear, accurate information about HIV (Hunt & Pujol, 1994; Seltzer, 1993). Athletic trainers must be educated about HIV/AIDS transmission and referral services; thus, the creation of uniform HIV educational information for athletic trainers is essential. The lack of HIV/AIDS educational information for athletic trainers, and the increasing likelihood that athletic trainers will be faced with counseling athletes about HIV/AIDS, suggests a need for standard HIV/AIDS educational information to address issues pertinent to the athlete. This information addresses questions athletes may ask of athletic trainers, such as questions regarding transmission, risk factors, competing with or against someone who is HIV-positive, precautions which should be taken to reduce the potential for infection, and significance of HIV testing. In addition, athletic trainers are provided with referral services appropriate for the athlete who requires extensive counseling.

Project Tasks

Accomplished in this project were certain tasks related to HIV/AIDS educational information for athletic trainers, including information construction, content validity, and distribution. Information construction consisted of determining which items from current HIV education for the

general public would be applicable for inclusion in HIV Educational Information for Athletic Trainers. Items were chosen based upon known and perceived risk factors that can be applied in athletic settings.

Factors that apply to athletes include addressing the risky behaviors of athletes, current concerns in athletics such as mandatory HIV testing of athletes, disqualification of HIV-positive athletes from participation, and the establishment and implementation of HIV/AIDS policies and universal precautions. The selected HIV/AIDS educational elements applicable to athletes were compiled into HIV educational information for athletic trainers. The HIV educational information developed for athletic trainers has nine sections: 1) pathophysiology, 2) epidemiology, 3) modes of transmission, 4) factors that increase risks, 5) reducing risks, 6) universal precautions, 7) testing information, 8) referral services, and 9) references for further reading.

Content validity was necessary to establish in order to confirm that the information contained on the HIV Educational Information for Athletic Trainers web page was valid, accurate, and appropriate for the target population. This was accomplished via peer and HIV expert review. An anonymous survey was mailed to reviewers to assess the content validity, accuracy of guideline elements, and

appropriateness for the population (see Appendices A and B). A letter explaining this project and survey protocols was enclosed with the survey (see Appendices C and D).

The final task of this project was the distribution of HIV Educational Information to athletic trainers. An internet web page was constructed, and is accessible directly at <http://www.geocities.com/rbatc>, and through the San Jose State University Graduate Athletic Training Program web site.

Limitations

This project was limited to the creation of uniform HIV educational information for certified athletic trainers in a traditional setting, and may not apply to all situations. This information may not be all-inclusive, and is limited to HIV/AIDS information available through October 1999. Because HIV/AIDS information is continually changing, HIV educational information for athletic trainers will need to be regularly updated.

Further, those who completed the survey did not view the actual web page. A copy of the web page was sent for review, so usability of the web page was not assessed. Finally, both surveys only had a two-item response; therefore, the instrument may not have been discriminating enough.

Delimitations

HIV Educational Information was created specifically for certified athletic trainers in a collegiate setting, and can be applied in situations that may arise where an athlete has questions and/or concerns about HIV/AIDS transmission, infection, and testing. This information is not intended to be a substitute for more in-depth counseling which may be required; however, referral services for HIV counseling are provided within these guidelines.

Assumptions

Assumptions for the purposes of this project included:

- 1) elements of HIV educational guidelines which exist for the general population can be applied to athletes;
- 2) athletic trainers will be able to utilize this information;
- 3) the majority of certified athletic trainers have not received an adequate HIV education;
- 4) HIV guidelines for the general population are directed primarily at homosexual males and IV drug users of illegal drugs; therefore, the information often does not reach athletes who do not identify with these populations;
- and 5) HIV educational guidelines for the general population which were used to create these guidelines are valid and reliable.

Definition of Terms

AIDS. Acronym for acquired immunodeficiency syndrome, which is the advanced stage of HIV disease when the affected individual is symptomatic. At this stage, the individual is likely to acquire infections such as Kaposi's sarcoma and Pneumocystis carinii, and other opportunistic infections.

Athlete. An athlete is one who engages in sporting activities and competition.

Athletic Trainer. An allied healthcare professional who is responsible for the injury prevention, care, and rehabilitation of athletes.

HIV. Acronym for human immunodeficiency virus, which is the virus that causes HIV disease and AIDS. To date, there is no known cure for HIV.

NATA. Acronym for the National Athletic Trainer's Association, which is the national governing body for athletic trainers. The Board of Certification (BOC) provides certification testing for those athletic trainers who have met all requirements to become certified.

Traditional Setting. High school, collegiate, and professional athletic training rooms are considered to be traditional athletic training settings.

Transmission. Transmission of HIV is the passing of HIV from one person to another.

Virus. A virus is an infectious agent that cannot grow or replicate outside of living cells (Ward, 1999).

Chapter II

REVIEW OF LITERATURE

There is a paucity of published literature about Human Immunodeficiency Virus (HIV) education related to athletes and athletic trainers. Less has been published about the need of HIV educational information for athletic trainers. However, there is an abundance of literature pertaining to other aspects of HIV such as pathophysiology, epidemiology, testing, modes of transmission, risk factors, pre and posttest counseling, and prevention strategies. The literature review provided here is divided into seven sections: 1) HIV pathophysiology and epidemiology, 2) HIV testing, 3) modes of HIV transmission, 4) HIV transmission in athletics, 5) Occupational Safety and Health Administration (OSHA) standards and Centers for Disease Control and Prevention (CDC) universal precautions, 6) HIV education of athletic trainers, and 7) counseling preparation of athletic trainers.

Discussed in section one is HIV pathophysiology and epidemiology so that athletic trainers may better understand the mechanics of the disease. As healthcare professionals, athletic trainers need to be aware that HIV affects immune function. More specifically, the CD4+ helper T-cells are depleted, and it is the CD4+ T-cell count that indicates

which stage of HIV disease a person is at (Sankaran, 1999; Ward, 1999). It is also important that athletic trainers are aware all populations, not just homosexual males and IV drug users, are affected by HIV and need to relate this information to athletes.

Discussed in section two is HIV testing. Mandatory versus voluntary testing of athletes has become a concern in athletics, and the athletic trainer should be informed about recommendations of governing bodies concerning mandatory HIV testing. The athletic trainer also needs to be able to refer the athlete to testing services, and communicate the importance of incremental testing since false positives and false negatives can occur (Sankaran, 1999; Seltzer, 1993).

Described in section three are modes of HIV transmission so that athletic trainers may better relay this information to athletes. There is concern in athletics that contact with infected blood or mucous membranes can result in HIV transmission; however, studies will be cited which dispute these assumptions so that athletic trainers can communicate this to athletes (Henderson, et al., 1990).

Reported in section four is HIV transmission in athletics: athletic competition, athletes and sexual activity, and athletes and injection of ergogenic aids. There is concern for HIV transmission via sport

participation; however, there have been no documented cases of HIV transmission via athletic participation. Athletic trainers must be aware of this, as well as off-field behaviors such as sexual activity and ergogenic aid injection that can place athletes at risk for HIV. These factors will be presented so that athletic trainers can better understand factors that may place athletes at risk of HIV.

Outlined in section five are OSHA standards and CDC universal precautions of bloodborne pathogen control so that athletic trainers will better understand these precautions, and the necessity to comply with them. Studies suggest compliance has been lacking, and athletic trainers should adhere to these guidelines not only to protect themselves and athletes, but also to convey disease prevention methods to concerned athletes.

In order to demonstrate the need for more formalized HIV education of athletic trainers, section six entails a discussion of HIV education for athletic trainers. Lastly, outlined in section seven is counseling preparation of athletic trainers in order to substantiate the need for instruction of athletic trainers in the role of educator.

HIV Pathophysiology and Epidemiology

AIDS is the result of HIV, a virus, or disease causing organism, which compromises the immune system, particularly CD4+ T-cells, one type of white blood cell (Calabrese & Kelley, 1989; Calabrese & LaPerriere, 1993; Hamel, 1992; LaPerriere, Klimas, Fletcher, Ironson, & Schneiderman, 1997; Lawless, Jackson, & Greenleaf, 1995; MacArthur, Levine, & Birk, 1993; Seltzer, 1993). The virus binds to receptors located on white blood cells and epithelial cells, and can then effectively assimilate into cell DNA, leading to subsequent cell death (Lawless, et al., 1995; Strukel, 1993).

Acquired immunodeficiency syndrome (AIDS) was first identified in 1981 (Calabrese & LaPerriere, 1993; Ward, 1999), and was thought to primarily affect homosexual males. In 1982 AIDS was labeled the "gay cancer"; however, it was not long before health officials discovered that AIDS is not limited to homosexual males (Volkwein & Bonsall, 1999; Ward, 1999).

In the United States, the most affected group is homosexual or bisexual males (58% of US AIDS cases), followed by intravenous (IV) drug users (23%), pre-1985 blood transfusion recipients, and heterosexual transmission (6%) (Seltzer, 1993). The percentage of heterosexual

transmission of HIV is larger worldwide, a number Quinn reported in 1996 to be 75% of all adult HIV cases. These numbers continue to change, and the fastest growing population of those who contract HIV in the United States are heterosexual females (CDC, 1996).

HIV Testing

HIV affects every demographic: heterosexual and homosexual, male and female, young and elderly, athlete and non-athlete, and each ethnic group. Because of the extent of HIV in the general population, implementation of mandatory HIV testing of athletes has been suggested; however, this is not advocated by such organizations as the World Health Organization (WHO, 1989), CDC (1997), the National Football League (NFL, 1992), and the National Collegiate Athletic Association (NCAA, 1994) because of the minute possibility of HIV transmission in athletics. In the event an athlete chooses to be tested, it is important the athletic trainer be able to answer questions regarding testing, and refer the athlete accordingly if necessary.

It is possible to obtain a false positive or false negative on an HIV test. A person will test negative for HIV until antibody production begins; therefore, it is recommended that testing take place at 6 weeks, 3 months, 6 months, and 1 year following potential exposure (Seltzer,

1993). If tests at these increments are all negative, the patient is considered to be HIV-negative (Seltzer, 1993).

A person who contracts HIV may appear healthy and not realize they have been infected (Calabrese & Kelley, 1989; Lifson, Rutherford, & Jaffe, 1988; Seltzer, 1993; Volkwein, et al., 1996). In fact, most infected individuals are asymptomatic, and may experience a latent period of 10 or more years (Hamel, 1992); therefore, if one suspects exposure to HIV they should be advised of the importance of incremental testing. These issues may be of concern to athletes, and thus must be considered by athletic trainers who are approached with questions regarding HIV testing.

Modes of HIV Transmission

Modes of HIV transmission, the passing of the virus from one person to another, have been established to be sexual intercourse, exposure to contaminated blood, and perinatal transmission (HIV transmission from mother to newborn) (Friedland & Klein, 1987; Volkwein, et al., 1996). HIV has been found in blood, semen, saliva, tears, breast milk, and urine (Calabrese & LaPerriere, 1993; CDC, 1987; Hamel, 1992; Izumi, 1991; Landesman & Vieira, 1983; Mast & Goodman, 1997; Mitten, 1994; Seltzer, 1993; Sutliff & Bomgardner, 1994; Welch, Sitler, & Horodyski, 1989; Whiddon & Horodyski, 1996). The two most prevalent ways of

contracting HIV are through unprotected sexual intercourse and IV drug use (Calabrese & Kelley, 1989; CDC, 1985; Seltzer, 1993; Strukel, 1993). HIV is not readily transmitted in other manners, and there is no evidence that casual contact can cause infection (Calabrese & Kelley, 1989; Hamel, 1992; Strukel, 1993; Volkwein, et al., 1996).

Concerns of HIV transmission are raised in the athletic community due to contact with bodily fluids (Arnold, 1995; Hamel, 1992). The main concerns in athletics are exudate and blood. Lacerations, abrasions, and aspirations, which all yield blood and/or exudate, are commonplace in athletics, prompting concerns about bodily fluid contact between caregivers and other athletes (Izumi, 1991).

The possibility of HIV transmission via contact with mucous membranes of an HIV infected person, or when contaminated blood comes into contact with a person's mucous membranes have been cited as means of infection (American Medical Association [AMA] and American Academy of Sports Medicine [AASM], 1995; Izumi, 1991; Whiddon & Horodyski, 1996). However, Henderson et al. (1990) have disputed claims of HIV transmission via mucous membrane contact. In their prospective epidemiological study of over 1,000 healthcare workers, Henderson et al. found that exposure to

infected blood from topical means (i.e., skin and/or mucous membrane) failed to document a single case of infection.

Epidemiological evidence strongly supports that there is minimal risk of contracting HIV via topical means. A theoretical risk has existed; therefore, athletes who have tested HIV-positive have been disqualified from athletic participation solely for this reason (McGrew, et al., 1993; Odom & Strobel, 1999; Zeigler, 1997). Individuals involved in athletics should recognize that an HIV-positive athlete should not be disqualified from participation due to their seropositive status.

Athletes may have questions or concerns about HIV transmission via sport participation, or may have concerns that they have engaged in activities that placed them at risk of HIV infection. Because athletes may have questions and/or concerns about HIV transmission, athletic trainers need to understand modes of HIV transmission so they can relay this information to athletes.

HIV Transmission in Athletics

There is a lack of documented cases in which athletes became infected with HIV via sport participation (American Association of Pediatrics [AAP], 1991; Garl, 1993; Gray, 1992; Gunby, 1988; Hamel, 1992; Thomas, 1996; Whitehill & Wright, 1994). The WHO estimates HIV cases in the general

population will reach 40 million by the year 2000 (Hamel, 1992); therefore, the lack of documented cases of HIV transmission via athletic participation becomes even more significant since HIV-positive athletes are considered a risk to other athletes, in terms of HIV transmission (Brown, et al., 1994; Thomas, 1996). In reality, there has not been one established, documented case of HIV transmission through athletic competition (AAP, 1991; AMA & AASM, 1995; Erickson & Rich, 1996; Hamel, 1992; Seltzer, 1993; Sutliff & Freeland, 1995). Calabrese and LaPerriere (1993) concluded that no reasonable risk of HIV transmission is posed among athletes and healthcare personnel. Athletic trainers must be able to convey this information to athletes who are concerned about competing with or against an HIV-positive individual; however, if athletic trainers do not know this information themselves, athletes will not benefit.

Brown et al. (1995) examined blood exposures related to on-the-field injuries during NFL competition and concluded that the potential risk of HIV transmission to each player is less than 1 per 80 million games. In fact, most AIDS authorities have expressed the minimal risk of HIV transmission via contact in athletic competition (Hamel, 1992). The evidence suggests there is little to no risk of contracting HIV from athletic competition; however, the risk

of HIV transmission during athletic competition theoretically exists (AAP, 1991; Hamel, 1992; NCAA, 1994). Because of the hypothetical risk for HIV transmission in a normal athletic setting (i.e., sports competition and athletic treatment room), athletic trainers should be aware of modes of transmission and prevention strategies to reduce athletes' risk of exposure to bloodborne pathogens.

Although there is minimal risk of HIV infection via athletic participation, athletes may place themselves at increased risk of HIV infection with their off-field activities. Studies have demonstrated that athletes are more likely to engage in risky lifestyle behaviors than are non-athletes (Anderson, et al., 1993; Kokotailo, et al., 1996; Nattiv & Puffer, 1991; Nattiv, et al., 1997). Anderson et al. reported that over 26% of male and about 6% of female athletes (N = 2,505; 1,719 males and 786 females) reported having at least four sexual partners within the past year. Of those, 21.4% of the males and 21.8% of the females reported they rarely or never used a condom.

Nattiv and Puffer (1991) studied lifestyle and health risks of collegiate athletes by comparing athlete and non-athlete groups (N = 216). The authors reported the following behaviors as placing the athletes at significantly higher risk than non-athletes: 1) less frequent use of

contraceptives (athletes, 40%; non-athletes, 26%; $P < .032$); 2) increased frequency of sexually transmitted diseases (STD's) (athletes, 11.6%; non-athletes, 2.8%; $P < .018$); and 3) more sexual partners (athletes, 28%; non-athletes, 12.7%; $P < .018$).

Nattiv et al. (1997) conducted a multi-center study of collegiate athletes to determine if collegiate athletes ($N = 2,298$) engage in greater lifestyle risks than non-athletes ($N = 683$). The authors reported that athletes engaged in significantly higher risk-taking behaviors than non-athletes. Behaviors reported included: 1) greater frequency of anabolic steroid use (athletes, 3%; non-athletes, 1%; $P < 0.032$); 2) less-safe sex (athletes, 75%; non-athletes, 81%; $P < 0.0002$); 3) greater number of sexual partners (athletes, 26%; non-athletes, 14%; $P < 0.001$); and 4) less contraceptive use (athletes, 62%; non-athletes, 76%; $P < 0.001$).

Because athletes are more likely to engage in risky sexual behaviors, they are at increased risk for contracting sexually transmitted diseases. In general, risky lifestyles of athletes elevates the possibility that athletic trainers will encounter HIV-positive athletes, and will be in the position of addressing concerns of the HIV-positive athlete,

or concerns of athletes with questions about HIV risk and/or exposure (Boyle, et al., 1997; Hunt & Pujol, 1994).

Injecting ergogenic aids is another off-field activity that may place athletes at increased risk of HIV infection (Chitwood, et al., 1995; Seltzer, 1993). IV drug users are the second most likely group to contract HIV (Strukel, 1993). It has been reported that some athletes who use anabolic steroids indicate they share needles (DuRant, Rickert, Ashworth, Newman, & Slavens, 1993; Middleman & DuRant, 1996). Sklarek et al. (1984) reported the case of a bodybuilder who became infected after needle sharing. Thus, athletes who share needles are placing themselves at greater risk of contracting HIV (Seltzer, 1993).

Due to the use of ergogenic aids in athletics, athletic trainers may encounter athletes who inject these substances. Athletic trainers need to be able to educate athletes who are at risk of HIV infection regarding all potential means of transmission, particularly off-field activities.

Standards and Universal Precautions

The CDC and OSHA have clearly established guidelines pertaining to bloodborne pathogen control that include instructions for handling and disposal of contaminated items. Also included are policies for attending wounds, personal hygiene, and disinfecting of areas that may have

become contaminated. These guidelines are important to follow in the athletic training setting in order to decrease the incidence of disease transmission due to bloodborne pathogens.

In 1985, the CDC published guidelines for the cleaning and disposal of bodily fluids. Precautions include the use of latex gloves when treating wounds and when handling contaminated materials; disinfecting of areas that may have become contaminated; and personal hygiene such as hand washing before and after attending a wound (Whiddon & Horodyski, 1996).

In 1991, OSHA instituted standards to reduce occupational exposure to bloodborne pathogens (McGrew, et al., 1993), defining occupational exposure to include skin, eye, and mucous membrane contact with blood or other bodily fluids which may occur due to the nature of the employee's responsibilities (Keesing, 1994). OSHA standards require that employers establish a written exposure plan. In addition, OSHA standards require that labeled hazardous waste containers and sharps containers for disposal of sharp objects be provided on site. OSHA standards can be applied to the athletic training profession, as athletic trainers can be exposed to potentially infectious bodily fluids (Izumi, 1991). Furthermore, collegiate programs that are

governed by the NCAA and National Association of Intercollegiate Athletics (NAIA) require compliance with OSHA standards (Odom & Strobel, 1999).

Following CDC universal precautions, the NCAA (1994) made modified recommendations applicable to athletics, and stated that personnel managing a bleeding wound must follow these guidelines. The NCAA further stated that early recognition of uncontrolled bleeding is the responsibility of all game personnel, i.e., officials, coaches, and healthcare personnel. In addition, the NCAA suggests that all involved personnel be trained in basic first aid and infection control. Guidelines have been created to reduce exposure to bodily fluids to athletes and caregivers; however, no guidelines have been developed to educate athletes seeking information about HIV and/or AIDS.

Because athletic trainers are responsible for the health of the athletes in their care, they must follow universal precautions and be able to explain to athletes the bases behind such precautions so that athletes feel confident the likelihood of HIV transmission in athletics is minimal. Just as the athlete should be educated about risk factors, so too should the athletic trainer be educated about reducing risk of exposure to bodily fluids that may be contaminated.

Even though OSHA standards and CDC guidelines have been adopted, compliance has been lacking. Guidelines for HIV prevention have been endorsed by such organizations as the NBA, NFL, and NCAA; however, Boyle et al. (1997) reported 75.1% (N = 410; males = 241, females = 169) of study respondents reported having an OSHA bloodborne pathogen control plan. It has also been reported that a substantial percentage of the state departments of education did not require full compliance with the OSHA and CDC guidelines (Whiddon & Horodyski, 1996).

Izumi's (1991) study, which included athletic training curriculum schools, revealed that 62.9% (22 of 35) have some type of HIV/AIDS prevention policy, and 50% (17 of 34) have established guidelines designed to limit exposure to bloodborne pathogens. Upon examination, discrepancies existed in equipment provision for OSHA compliance. Gloves were provided to the staff and student athletic trainers in 30 of the 35 (88.6%) settings; mouth shields for cardiopulmonary resuscitation (CPR) were provided in only 13 of 33 (39.4%) of the settings. Out of the 35 settings, only 15 (42.9%) provided biohazard containers. Thirty of 35 (85.7%) of those surveyed used some type of skin and instrument cleaning/disinfectant agent (see Table 1).

Table 1.

Curriculum Schools' Guidelines and Compliance

<u>OSHA Equipment Provisions</u>	<u>Yes</u>	<u>No</u>
HIV/AIDS		
Prevention Policy	22	13
Preventative Guidelines	17	17
Gloves Provided	30	5
Mouth Shields Provided	13	20
Biohazard Containers Provided	15	20
<u>Disinfectant Agent Used</u>	<u>30</u>	<u>5</u>

The lack of compliance with universal precautions and lack of equipment provision for OSHA compliance demonstrates the need for athletic trainers to be fully educated about bloodborne pathogen risk and prevention strategies in athletic training settings. While the importance of establishing and adhering to guidelines designed to limit exposure to bloodborne pathogens has been substantiated, it is apparent that adherence to preventative guidelines is substandard (Brown, et al., 1994; Izumi, 1991; Mast & Goodman, 1997; McGrew, et al., 1993; NCAA, 1994; Webster & Kaiser, 1991; Welch, et al., 1989; Whiddon & Horodyski, 1996; Whitehill & Wright, 1994). Failure to adhere to universal precautions raises concerns about the knowledge

athletic trainers have regarding HIV prevention, as well as their ability to educate athletes about bloodborne pathogens.

As the HIV/AIDS epidemic expands, it is increasingly likely that athletic trainers will need to provide athletes with answers about risks of HIV transmission. As a healthcare provider, the athletic trainer needs to be able to convey precautions that are being taken to reduce exposure; therefore, the athletic trainer must be aware of, implement, and adhere to universal precautions if they are to exemplify HIV safety.

HIV Education of Athletic Trainers

How much formal HIV/AIDS education do athletic trainers receive? Few studies have examined this question. Boyle et al. (1997) found that only 18.5% of 410 questionnaire respondents had received any formal HIV/AIDS education as an undergraduate. Most HIV/AIDS education was obtained via seminar (49.3% of respondents), and 27.6% (113) had no formal AIDS education at all (see Table 2).

Table 2.

HIV/AIDS Education of Athletic Trainers (N = 410)

	Yes	No
Formal HIV/AIDS Education Received as Part of Academic Course Work	76	113
Attended Seminar on AIDS Education	202	--
OSHA Control Plan at Place of Employment	308	94
Referral System for HIV+ Athletes	119	291

Note. Dashes indicate the number of responses was not reported.

Boyle et al.'s (1997) study also examined athletic trainers' knowledge on HIV and AIDS, finding that athletic trainers were very informed about general HIV/AIDS information (i.e., a person can be HIV-positive without having signs or symptoms), but less informed about more specific HIV/AIDS matters (i.e., OSHA guidelines do not apply in all 50 states). A majority 63.9% (262) of respondents did not feel athletic trainers are adequately educated to meet the needs of HIV-positive athletes.

Athletic trainers are expected to be knowledgeable in prevention, recognition, management, and rehabilitation of athletic injuries. The NATA also requires that athletic trainers be proficient in education and counseling. As the numbers of HIV infected individual grows, it is conceivable that athletic trainers will encounter HIV-positive athletes, as well as athletes who have questions and/or concerns about HIV. The data indicate that athletic trainers are not being adequately educated to meet these requirements. Educational information which addresses questions and concerns about HIV can help prepare athletic trainers to properly answer questions, and advise or refer athletes as needed

Counseling Preparation of Athletic Trainers

Moulton et al. (1997) suggested that athletic trainers felt their roles extended to counseling athletes; however, the athletic trainers who participated in the study did not feel qualified to provide such counseling. Moulton et al.'s study did not involve a large sample size (N = 14); however, results indicate the need for athletic trainers to receive more formalized education in the area of counseling athletes. Only five (36%) of the athletic trainers surveyed felt they had received satisfactory counseling instruction in order to advise athletes regarding personal issues, such as STD's, eating disorders, sexuality, family related

issues, and drug and alcohol problems. In Moulton et al.'s study, health concerns relating to STD's ranked second in issues that athletes approached athletic trainers about. Boyle et al. (1997) found that 68.8% (282) of athletic trainers included in their study did not feel capable of handling the psychological needs of the HIV-positive athlete. Still, only 29.0% of respondents reported the existence of a referral system for HIV-positive athletes to receive counseling.

The finding that STDs rank second in issues athletic trainers are approached about by athletes suggests that athletic trainers need to be well educated about STDs. The fact that athletes often approach athletic trainers with questions regarding STDs, coupled with poor HIV education for athletic trainers, clearly demonstrates the need for more formalized training regarding STDs, as well as HIV.

Summary

With a basic understanding of the pathophysiology, epidemiology, transmission routes of HIV, and testing options, an athletic trainer is better prepared to educate athletes who may have questions and concerns. However, athletic trainers must also be knowledgeable about risk reduction and be able to disseminate this information to athletes.

The primary methods of HIV transmission are through unprotected sexual intercourse and use of contaminated needles. Athletes must understand that they take more of a risk of contracting HIV from their off-field activities (i.e., risky sexual behavior and/or sharing needles to inject ergogenic aids) than they do from their participation in sports (Brown, et al., 1994) when competing against, or having casual contact with, an individual who may be HIV-positive.

With the growing epidemic of HIV/AIDS, it is likely that athletes will seek guidance if they have concerns that they may be at risk. It has been demonstrated that athletic trainers not only are in an ideal position to provide this guidance, but the NATA and athletic trainers themselves consider education and counseling to be essential competencies. Few athletic trainers feel adequately prepared to provide counseling of a personal nature, particularly when it is of a sexual nature (Moulton, et al., 1997). Thus, HIV educational information specifically for the athletic trainer was developed. This project is intended to provide athletic trainers with essential HIV/AIDS information to better educate athletes.

Chapter III

METHODOLOGY

HIV education for athletic trainers is lacking; therefore, educational information for athletic trainers was developed so athletic trainers can become proficient in addressing questions and/or concerns that athletes may have about human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS). The HIV educational information provided for athletic trainers addresses concerns about exposure to HIV/AIDS via sexual activity, injectable ergogenic aid use, competing with or against an athlete who may be HIV-positive, general questions about HIV and/or AIDS, and questions regarding HIV testing. The HIV educational information for athletic trainers is in the form of an outline, and will serve to provide facts about HIV so the athletic trainer can be better prepared to advise the athlete.

To develop HIV educational information for athletic trainers, existing HIV education for the general population was examined and modified accordingly for the athlete. Pertinent elements of HIV/AIDS education were compiled into an educational outline for athletic trainers' reference when approached by an athlete who has questions and/or concerns about HIV. This chapter contains current HIV educational

guidelines for the general population that are used by HIV counseling and education centers, development of HIV educational information for athletic trainers, and distribution of HIV educational information for athletic trainers.

Current HIV Educational Guidelines

Current HIV educational programs which exist for the general population stress the importance of preventing infection and transmission to others, and alleviating irrational fears of infection (American College Health Association [ACHA], 1988, 1989; Centers for Disease Control and Prevention [CDC], 1994; HIV Positive, 1998; Ward, 1999). Preventing HIV infection and transmission, and alleviating irrational fears of infection are valid points to consider. However, components of current HIV educational guidelines include: 1) general recommendations for preventing sexual transmission via abstinence and condom use; 2) reduction of transmission risk via contaminated needles, i.e, bleaching shared needles and syringes and information about needle-exchange programs; and 3) prevention of transmission to healthcare workers via percutaneous exposure (CDC, 1993, 1994; HIV Positive, 1998; Ward, 1999).

Information about bleaching shared needles and syringes and needle-exchange programs are not appropriate for the

athletic population. Information about prevention of transmission to healthcare workers via percutaneous exposure is also not appropriate for athletes, as athletes do not generally encounter situations such as healthcare workers do in relation to accidental needle-sticks.

Other topics addressed include components of pre and posttest counseling, consisting of general HIV information, HIV transmission and prevention strategies, risk history and exposure, testing options, benefits of testing, and implications of positive and negative test results (CDC, 1993, 1994; HIV Positive, 1998; Ward, 1999).

Some, but not all, components of HIV educational programs for the general public can be applied to athletes since off-field activities place athletes at risk of HIV infection. Because general population guidelines and information are directed primarily at homosexual males and IV drug users, the information may not reach athletes who do not identify with these populations; therefore, general population guidelines must be modified to meet the needs of the athletic population. Specific details related to current guideline modification for the athletic population is expanded upon in the next section.

Development of Educational Information

To determine which current HIV educational elements were appropriate for inclusion in educational information for athletic trainers, HIV/AIDS concerns in athletics were considered. Relevant HIV/AIDS concerns in athletics were based upon known risk factors such as risky sexual activity and injectable ergogenic aid use, transmission concerns such as blood exposure, and questions regarding HIV testing, such as benefits of being tested, and possibility of a false positive or false negative result. Modifications were made to HIV educational guidelines for the general population to better reflect educational considerations needed for athletes.

Evaluation Procedures

Once HIV educational guidelines were modified for athletic trainers, four certified athletic trainers (ATCs) and four HIV educators assessed the guidelines for content, applicability, and quality. HIV Educational Information for Athletic Trainers was distributed to five certified athletic trainers and five experts in the field of HIV education. ATCs were selected from the 1998 National Athletic Trainer's Association (NATA) Membership Directory. Athletic trainers selected were employed in collegiate athletic training sites in the state of California, and have been employed as such

for a minimum of 5 years. HIV education experts from establishments in the state of California were selected through personal reference. Their critical observations have been instrumental in establishing HIV educational programs or guidelines. Distribution to ATCs was for the purpose of establishing guideline applicability, and distribution to HIV educators was for the purpose of establishing guideline content validity.

To evaluate HIV Educational Information for Athletic Trainers, ATCs and HIV educators were mailed an anonymous survey which was developed for the purpose of this project (see Appendices A and B). Enclosed with the survey was a letter explaining this project, as well as the survey protocol (see Appendices C and D). Reviewers assessed the following: 1) accuracy of HIV information included, 2) clarity of terms, 3) applicability of guidelines to athletes, 4) clarity and comprehension of information, and 5) clarity and conciseness of language. A space was also provided for the reviewers to add comments or suggestions.

Distribution of HIV Educational Information

Upon completion, HIV Educational Information for Athletic Trainers was posted on an internet web page. Included on this web page are: 1) HIV educational information for the athletic trainer; 2) OSHA standards;

3) CDC universal precautions; and 4) HIV/AIDS resources (referrals for education, counseling, and testing services).

The web page is accessible directly at

<http://www.geocities.com/rbatc>, and from the San Jose State University Graduate Athletic Training Program home page.

Chapter IV

PROJECT SUMMARY

HIV Educational Information for Athletic Trainers was developed from existing HIV education for the general population. To establish guideline applicability, the HIV Educational Guidelines for Athletic Trainers was distributed to five certified athletic trainers (ATCs) in the state of California who were employed in Division I collegiate, Division II collegiate, or Junior College settings for a minimum of 5 years.

Content validity was established by distributing HIV Educational Information for Athletic Trainers to five HIV educators in the state of California who were instrumental in establishing HIV educational programs for the general population. ATCs and HIV educators were provided with an anonymous survey to evaluate the guidelines. Of the surveys distributed, 80% (8 of 10) were returned. Surveys were returned by 80% (4 of 5, respectively) of both ATCs and HIV educators. Findings are divided into two sections: 1) Survey Results: ATC Survey, and 2) Survey Results: HIV Educator Survey.

Survey Results: ATC Survey

Of the surveys distributed to ATCs, 60% were to ATCs employed in a Division I collegiate setting; 20% to ATCs

employed in a Division II collegiate setting; and 20% to ATCs employed in a Junior College setting. There were 100% return rates from Division I and II collegiate ATCs, and a 0% return rate from Junior College ATCs.

Demographic information for ATCs included job title, years employed as an ATC, and current athletic training setting employed in. The mean number of years employed as an ATC was 13 years, with two respondents reporting they were head athletic trainers, one an assistant athletic trainer, and one an athletic trainer (see Table 3).

Table 3.

ATC Demographic Information (n = 4)

Position	Years Employed as an ATC	Setting
Head Athletic Trainer	24	Division I
Athletic Trainer	7	Division I
Assistant Athletic Trainer	6	Division I
Head Athletic Trainer	15	Division II

The ATC Survey consisted of eight statements, to which respondents could check "yes" or "no", with a "yes" response indicating agreement with the statement, and a "no" response indicating disagreement with the statement. Of the

respondents, 100% of ATCs responded "yes" to all 8 statements (see Table 4).

Table 4.

ATC Survey Results (n = 4)

Statement	Response	
	Yes	No
1. Terms are clearly defined.	100%	0%
2. Language is clear and concise.	100%	0%
3. Information is easy to understand.	100%	0%
4. Information arranged in logical order.	100%	0%
5. Information on universal precautions in athletic training is accurate.	100%	0%
6. Information is relevant to the athletic training profession.	100%	0%
7. Information HIV/AIDS is beneficial for use with athletes.	100%	0%
8. Information is relevant for an athletic training setting based on known risk factors, i.e., risky sexual behaviors and use of injectable ergogenic aids, blood exposure, and HIV testing.	100%	0%

Survey Results: HIV Educator Survey

Of the surveys distributed to HIV educators, there was an 80% (4 of 5) return rate. Demographic information for HIV educators consisted of job position and HIV education experience (see Table 5). The mean number of years of HIV education experience was 8 years. Of the respondents, two reported being HIV educators, one an HIV education coordinator, and one an HIV counseling trainer and educator. Table 5.

HIV Educator Demographic Information (n = 4)

<u>Position</u>	<u>HIV Education Experience</u>
HIV Educator	10 years
HIV Education Coordinator/Clinic Manager	10 years
HIV Counseling Trainer/Educator	12 years
HIV Educator	7 years

The HIV Educator Survey consisted of seven statements to which respondents could check "yes" or "no", with a "yes" response indicating agreement with the statement, and a "no" response indicating disagreement with the statement. Of HIV educators who responded, 100% responded "yes" to statements 1-6, and 75% responded "yes" to statement 7. One respondent did not respond to statement 7, possibly due to lack of knowledge of athletic training settings (see Table 6).

Table 6.

HIV Educator Survey Results (n = 4)

Statement	Response		
	Yes	No	NR
1. Terms are clearly defined.	100%	0%	0%
2. Language is clear and concise.	100%	0%	0%
3. Information is accurate.	100%	0%	0%
4. Information is easy to understand.	100%	0%	0%
6. Information is arranged in logical order.	100%	0%	0%
7. Information is relevant for an athletic training setting based on known risk factors, i.e., risky sexual behaviors and use of injectable ergogenic aids, blood exposure, and HIV testing.	75%	0%	25%

Note. NR = no response.

The positive responses by ATCs and HIV educators who participated in this survey indicate that the information provided on the HIV Educational Information for Athletic Trainers web page is: 1) accurate, 2) has clearly defined terms, 3) applicable to athletes, 4) easy to understand, and 5) has clear and concise language. No modifications were

made to the original web page, as the only comments offered by HIV educators were "good job," and no comments were offered by ATCs.

Summary

Issues addressed in this project should assist the collegiate athletic trainer in informing athletes about HIV, as well as offer information about referral services available to the athlete who has more questions or concerns about HIV than is addressed in this project. References that were used for this project are included on the web page so that referenced information is easily accessible.

With the increasing incidence worldwide of HIV/AIDS infection, and the tendency of athletes to engage in risky behaviors, it is probable that athletic trainers will encounter athletes who have questions and/or concerns about HIV and AIDS. While athletic trainers may be approached with questions about HIV, HIV education of athletic trainers has been lacking. This project served to address the lack of HIV and AIDS information specific to athletic trainers in a collegiate setting; therefore, future research on HIV and athletes or HIV information for athletic trainers should address other athletic training settings.

The information provided on the HIV Educational Information for Athletic Trainers web page includes

information regarding HIV transmission, risk factors, competing with or against someone who is HIV-positive, precautions to reduce risk of infection, HIV testing, and referral services for athletes who may want more information or require extensive HIV counseling; however, there are other issues which should be further explored in the future. These issues include policies of mandatory HIV testing of athletes, sport participation or disqualification of the HIV-positive athlete, and establishment of HIV/AIDS policies and universal precautions.

To improve this project, future surveys should include:

1) a more sophisticated instrument to measure a more discriminating response; 2) providing a space labeled "other." Revising the survey could serve to generate more feedback from respondents. Improvements to the web page may include the addition of video clips to demonstrate donning and removal of gloves, as well as use of CPR masks, and an HIV information quiz at the end of the web page.

Chapter V

HIV EDUCATIONAL INFORMATION FOR ATHLETIC TRAINERS

Presented in this chapter is the HIV Educational Information for Athletic Trainers web page. This web page is posted at <http://www.geocities.com/rbatc/>, and can be accessed directly or via link from the San Jose State University Graduate Athletic Training Program home page.



AIDS/HIV

HIV Educational Information for Athletic Trainers

In the early 1980's, an immune system destroying virus was identified. Initially, this virus was thought to affect only homosexual males and intravenous (IV) drug users. Today, HIV is known to be a non-discriminatory disease; therefore, athletes can be affected by HIV/AIDS.

Athletes' off-field activities, such as sexual activity and injection of ergogenic aids, are primary exposure paths to HIV. In addition, athletes may have questions about peers or opponents with this disease. Since athletic trainers are often the easiest or most accessible healthcare providers to athletes, it is necessary that athletic trainers provide accurate information when approached with questions about HIV/AIDS. This web page will provide you with general HIV/AIDS information, including: 1) pathophysiology, 2) epidemiology, 3) modes of transmission, 4) factors that increase risks, 5) reducing risks, 6) universal precautions, 7) HIV testing information, 8) resources and referral services, and 9) references.

General HIV/AIDS Information

What is HIV?

HIV is a virus that compromises the immune system by attacking white blood cells (WBC's) (primarily the CD4+ T-helper cells) by assimilating into cell DNA, eventually destroying the cell. CD4+ lymphocytes are instrumental in initiating immune response. Destruction of CD4+ cells by HIV leads to the development of opportunistic infections (rare cancers generally found in immunosuppressed patients). Normally, the immune system would be able

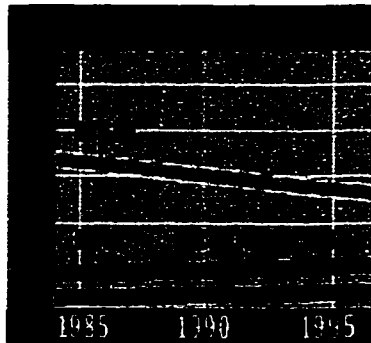
to combat opportunistic infections, such as Kaposi's Sarcoma and *Pneumocystis carinii*. People who have full-blown AIDS die from these and other opportunistic infections.

(Calabrese & Kelley, 1989; Calabrese & LaPerriere, 1993; Hamel, 1992; LaPerriere, Klimas, Fletcher, Ironson, & Schneiderman, 1997; Lawless, Jackson, & Greenleaf, 1995; MacArthur, Levine, & Birk, 1993; Seltzer, 1993)

Pathophysiology: Are HIV and AIDS the same thing?

- No. HIV is the virus that causes AIDS
- HIV disease progresses from asymptomatic infection to AIDS
- Disease stage is determined by a person's CD4+ T-cell count in the blood
- The CD4+ count is normal at 500 to 1,200 cells per cubic millimeter (mm^3):
 - During the asymptomatic stage there are systemically few symptoms, but the virus rapidly spreads, destroying the immune system
 - Early HIV disease is characterized by a CD4+ count of 200 to 500 cells per mm^3 , and development of one or more opportunistic infections occurs
 - The advanced stage of HIV disease is characterized by a CD4+ count below 200 cells per mm^3
 - At a CD4+ count below 200 cells per mm^3 , the infected individual is considered to have AIDS
- Characteristic of the final stage of the HIV disease (AIDS) are serious opportunistic infections and rare cancers, resulting in death. (Sankaran, 1999; Ward, 1999)

Epidemiology: Who gets HIV/AIDS? Isn't it only gay men and IV drug users who get HIV/AIDS?



Anyone can contract HIV, no one is immune

The most affected groups in the United States are homosexual or bisexual males, and IV drug users; however, worldwide, 75% of adult HIV cases are attributed to heterosexual males. In the United States, the fastest growing populations of those who contract HIV are heterosexual

females, and persons aged 20 to 29 years; transmission to heterosexual males is on the rise. (Hunt & Pujol, 1994; Quinn, 1996; Seltzer, 1993)

Modes of Transmission: How do you get HIV?

- Unprotected sexual intercourse (no condom used)
- Use of contaminated IV needles (pre-used needles)
- Perinatal transmission (mother to unborn fetus)
- Exposure to infected blood:
 - Blood transfusions prior to bloodbank screened blood supplies (prior to 1985)



Casual contact with an HIV-positive person does not put one at risk. HIV cannot be transmitted through talking, shaking hands, sharing bathroom facilities, or touching objects an HIV infected person has touched. (Calabrese & Kelley, 1989; Hamel, 1992; Strukel, 1993; Volkwein, Sankaran, & Bonsall 1996)

What about competing against someone who is HIV-positive? Can their sweat or saliva be infectious?

There have been no documented cases of HIV transmission via sport participation in almost two decades of the epidemic (American Academy of Pediatrics, 1991; Garl, 1993, Gray, 1992; Gunby, 1988; Hamel, 1992; Thomas, 1996; Whitehill & Wright, 1994)

- HIV virus has not been found in sweat
- HIV has been found in negligible amounts in saliva
- Sweat or saliva are not means of HIV transmission through contact
- HIV is not transmitted by sharing eating utensils and drinking glasses
- Exposure to blood or bodily fluids through topical means (skin and/or mucous membrane) cannot transmit HIV/AIDS

A study of blood exposures related to on-the-field injuries has revealed that the risk of contracting HIV to be less than 1 per 80 million National Football League football games
(Brown, Drotman, Chu, Brown & Knowlan, 1995)

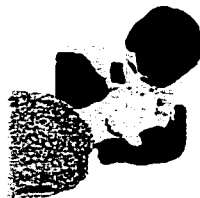
Universal Precautions Required to Limit Blood Exposure:

- All human blood is treated as potentially infectious
- Early recognition and control of bleeding before an athlete can return to competition (cessation of all bleeding)
- Change of blood-saturated uniform

Officials must remove an athlete from competition if they are bleeding, and that athlete cannot return until the bleeding has been stopped
(National Collegiate Athletic Association, 1994)

- Use of latex gloves at all times when treating wounds and when handling contaminated materials

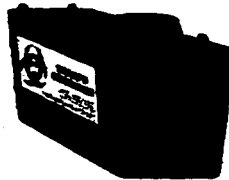
- Use of mouth shields when performing cardiopulmonary resuscitation, or rescue breathing



- Washing hands with soap and water before and after glove removal from attending a wound
- Contaminated materials (biohazard) must be disposed into a designated, clearly labeled biohazard container



- Disposal of sharp instruments (needles, scalpels) into a designated, clearly labeled sharps container



- Disinfection of counter surfaces, table tops, taping and treatment tables, or any other area that may be contaminated with blood or exudate from a seeping wound
- Biohazard and sharps containers must be collected and disposed by a professional, established environmental control company (OSHA, 1991; CDC, 1987)

Factors that Increase HIV Contraction Risks:

- Unprotected sexual intercourse (no condom used)
- Increased number of sexual partners
- History of sexually transmitted diseases (STDs):
 - Genital tract infections
 - Yeast infections
 - Presence of genital sores or ulcers
 - Immune response to inflammation increases WBCs in the affected area. Inflammation of the genital tract due to an STD concentrates cells that are susceptible to HIV infection in genital tissues, thus placing a person with an STD history at greater risk of contracting HIV
- Sharing needles to inject IV drugs or ergogenic aids:



- Drugs do not need to be illegal for HIV transmission to occur when sharing needles to inject drugs
- It only takes sharing needles once for HIV transmission to occur

HIV transmission has occurred when athletes shared needles to inject ergogenic aids such as steroids
(Chitwood, et al., 1995; Seltzer, 1993)

Reducing Risks: Educating Your Athletes about Protecting Themselves

Abstinence and not injecting ergogenic aids are the only ways to avoid HIV/AIDS

- Advise athletes to practice safer sex by using a condom that has a spermicide such as nonoxynol-9
- Advise athletes to take a sexual history of their partner
- Advise athletes to engage in a monogamous relationship with someone who has tested HIV-negative
- Athletes should understand:
 - You are "sleeping" with the people your partner has slept with
 - Know if your partner practiced safer sex
 - Know your partner's HIV status

HIV Testing Referral: When to Suggest an Athlete be Tested or Seek Counseling

Any athlete who may require long-term counseling due to an HIV-positive status should be referred to a service or professional who is trained in HIV counseling

- Athletes who are sexually active or suspect they have been exposed to HIV should be tested

Why is testing important?

- Protect self and sexual partner(s) from potential HIV infection
- Early HIV drug intervention can help you stay healthy. While there is no cure for HIV yet, new drugs are allowing those who are HIV-positive to live longer, healthier lives
- A positive test result can help promote lifestyle changes that can help you stay healthy longer
- Testing negative can promote lifestyle changes so athletes will stay HIV-negative

Testing Procedures:

- First, your athlete needs to decide if they want to take a test that is anonymous or confidential:
 - An anonymous test is when a code is assigned. There is no name or identity associated with the test. Results are obtained by calling with the code. There is no record of the results.
 - Confidential testing is when testing personnel know the results of the test. These results are included in your medical chart.
- It is possible for false positives or false negatives to occur. This is usually due to contamination of the blood sample taken.
- One negative test result does not mean you are HIV-negative. A negative test will result until an infected person begins antibody production (about 6 weeks post-exposure). Some people may not begin antibody production for up to a year post-exposure.

Because there is individual variation in antibody production, it is important to be tested in increments of 6 weeks, 3 months, 6 months, and 1 year following potential exposure
(Seltzer, 1993)

- Only after a person has tested negative for one year, and not engaged in risky behaviors during that time, are they considered to be HIV-negative
- Because it is possible to have a false positive, two ELISA tests and a confirmatory Western blot test all need to result in positives before a person is considered to be HIV-positive
- Although the virus may be dormant and is not having an effect on you, you can still transmit the virus to others

You must refer your athlete for counseling and testing if you suspect they have been exposed to HIV

Where can I go for more information?

Any school health center should be able to provide information, as well as pre and posttest counseling. There are also county and state hotlines designed to provide information and counseling

Resources:

- Ⓒ AIDS Resources, Information, & Services (ARIS)
 1550 The Alameda, Suite 100
 San Jose, CA 95126-2304
 408-293-2747
<http://www.aris.org/>
- Ⓒ The Body: An AIDS and HIV Information Resource
<http://www.thebody.com>
- Ⓒ Center for AIDS Prevention Studies (CAPS)
 UCSF
 74 Montgomery Street, Suite 600
 San Francisco, CA 94105
 415-597-9100
<http://www.caps.ucsf.edu>
- Ⓒ HIV/AIDS Treatment Information Services (ATIS)
 1-800-448-0440
<http://www.hivatis.org>
- Ⓒ HIV InSite
<http://hivinsite.ucsf.edu>
- Ⓒ JAMA HIV/AIDS Information Center
<http://www.ama-assn.org/special/hiv/hivhome.htm>
- Ⓒ National AIDS Information Clearinghouse
 P.O. Box 6003
 Rockville, MD 20850
 1-800-458-5231
<http://www.cdcnac.org>
- Ⓒ San Francisco AIDS Foundation
 995 Market Street, Suite 200
 San Francisco, CA 94103
 1-800-367-AIDS
<http://www.sfaf.org>

Hotlines:

- © California State Hotline
North: 1-800-367-2437
South: 1-800-400-7432
- © National AIDS Hotline
1-800-342-2437

References:

American Academy of Pediatrics. (1991). Human immunodeficiency virus [Acquired immunodeficiency syndrome (AIDS)] in the athletic setting. Pediatrics, 88, (3), 640-641.

American College Health Association. (1988). General statement on institutional response to AIDS [Brochure]. Baltimore, MD: Richard P. Keeling, MD.

American College Health Association. (1989). Statement on AIDS and international education issues [Brochure]. Baltimore, MD: Richard P. Keeling, MD.

American Medical Association and the American Academy of Sports Medicine. (1995). Human immunodeficiency virus (HIV) and other blood-borne pathogens in sports: Joint position statement. The American Journal of Sports Medicine, 23, (4), 510-514.

Anderson, W.A., Albrecht, R.R., & McKeag, D.B. (1993). A second replication of the national study of substance use and abuse habits of college student-athletes. Report presented to the National Collegiate Athletic Association, Overland Park, Kansas.

Arnheim, D.D., & Prentice, W.E. (1993). Principles of athletic training (8th ed., p. 8). St. Louis: Mosby Yearbook.

Arnold, B.L. (1995). A review of selected blood-borne pathogen positions statements and federal regulations. Journal of Athletic Training, 30, (2), 171-176.

Bitting, L.A., Trowbridge, C.A., & Costello, L.E. (1996). A model for a policy on HIV/AIDS and athletics. Journal of Athletic Training, 31, (4), 356-357.

Boyle, M., Sitler, M., Rogers, K., Duffy, A.J., & Kimura, I. (1997). Knowledge and attitudes of certified athletic trainers in Pennsylvania toward HIV/AIDS and treating HIV-Positive athletes. Journal of Athletic Training, 32, (1), 40-44.

Brown, L.S., Drotman, D.P., Chu, A., Brown, C.L., & Knowlan, D. (1995). Bleeding injuries in professional football: Estimating risk for HIV transmission. Annals of Internal Medicine, 122, (4), 271-274.

Brown, L.S., Phillips, R.Y., Brown, C.L., & Moyer, J. (1994). HIV/AIDS policies and sports: The National Football League. Medicine and Science in Sports and Exercise, 26, (4), 403-407.

Calabrese, L.H. & Kelley, D.K. (1989). AIDS and athletes. The Physician and Sports Medicine, 17, (1), 127-131.

Calabrese, L.H. & LaPerriere, A. (1993). Human immunodeficiency virus infection, exercise, and athletics. Sports Medicine, 15, (1), 6-13.

Centers for Disease Control and Prevention. (1987). Recommendations for prevention of HIV transmission in healthcare settings. Morbidity and Mortality Weekly Report, 36, 15-185.

Centers for Disease Control and Prevention. (1993). Technical guidance on HIV counseling. Morbidity and Mortality Weekly Report, 42, (2), 1-10.

Centers for Disease Control and Prevention. (1994). HIV counseling, testing, and referral standards and guidelines. Atlanta, GA: U.S. Department of Health and Human Services.

Centers for Disease Control and Prevention. (1996). HIV/AIDS Surveillance Report, 8, (2), 1-40.

Chitwood, D.D., Griffin, D.K., Comerford, M., Page, J.B., Trapido, E.J., Lai, S., & McCoy, C.B. (1995). Risk factors for HIV-1 seroconversion among injection drug users: A case-control study. American Journal of Public Health, 85, (11), 1538-1542.

Cohn, D.L., Miller, L.A., Yamaguchi, K.J., & Douglas, J.M. (1992). Denver's increase in HIV counseling after Magic Johnson's HIV disclosure. American Journal of Public Health, 82, (12), 1692.

DuRant, R.H., Rickert, V.I., Ashworth, C.S., Newman, C., & Slavens, G. (1993). Use of multiple drugs among adolescents who use anabolic steroids. The New England Journal of Medicine, 328, 922-926.

Erickson, S., & Rich, B. (1996). Medical staff needs to know school's policy on HIV and HBV. NCAA Sport Sciences Education Newsletter, 1, 4.

Friedland, G.H. & Klein, R.S. (1987). Transmission of the human immunodeficiency virus. New England Journal of Medicine, 317, 1125-1135.

Garl, T. (1993). AIDS in athletics: Does a collision on the court warrant cause for concern? Athletic Management, 5, (18), 18-22.

Gray, C. (1992). AIDS becomes a sports issue. Canadian Medical Association Journal, 146, (8), 1437-1440.

Gunby, P. (1988). Boxing: AIDS? Journal of the American Medical Association, 259, 1613-1614.

Hamel, R. (1992). AIDS: Assessing the risk among athletes. The Physician and Sports Medicine, 20, (2), 139-146.

Henderson, D.K., Fahey, B.J., Willy, M., Schmitt, J.M., Carey, K., Koziol, D.E., Lane, H.C., Fedio, J., & Saah, A.J. (1990). Risk for occupational transmission of human immunodeficiency virus type-1 (HIV-1) associated with clinical exposures: A prospective evaluation. Annals of Internal Medicine, 113, (10), 740-746.

HIV Positive. (1998). Counseling guidelines for HIV testing [On-line]. Available: <http://hivpositive.com/f-TestingHIV/CanadaGuidelines/checklist.htm>

Hunt, B.P. & Pujol, T.J. (1994). Athletic trainers as HIV/AIDS educators for athletes. Journal of Athletic Training, 29, (2), 102-105.

Izumi, H. (1991). AIDS and athletic trainers: Recommendations for athletic training programs. Athletic Training, 26, 358-363.

Johnson, R.J. (1992). HIV infection in athletes: What are the risks? Who can compete? Postgraduate Medicine, 92, (7), 73-80.

Keesing, H. (1994). Contractors' "band-aid" remedies may defy bloodborne pathogen risks. Occupational Health and Safety, 63, (12), 49-52.

Keyser, D.L. (1999). Living with HIV/AIDS: The voices of sports professionals. In G. Sankaran, K.A.E. Volkwein, and D.R. Bonsall (eds.), HIV/AIDS in sport: Impact, issues, and challenges (pp. 57-67). Champaign, IL: Human Kinetics Publishers, Inc.

Kokotailo, P.K., Henry, B.C., Kosciak, R.E., Fleming, M.F., & Landry, G.L. (1996). Substance use and other health risk behaviors in collegiate athletes. Clinical Journal of Sport Medicine, 6, (3), 183-189.

Landesman, S.H. & Vieira, J. (1983). AIDS: A review. Archives of Internal Medicine, 143, 2307-2309.

LaPerriere, A., Klimas, N., Fletcher, M.A., Ironson, G., & Schneiderman, N. (1997). Change in CD4+ cell enumeration following aerobic exercise training in HIV-1 disease: Possible mechanisms and practical applications. International Journal of Sports Medicine, 18, (Supplement 1), S56-S61.

Lawless, D., Jackson, C.G.R., & Greenleaf, J.E. (1995). Exercise and human immunodeficiency virus (HIV-1) infection. Sports Medicine, 19, (4), 235-239.

Lifson, A.R., Rutherford, G.W., & Jaffe, H.W. (1988). The natural history of human immunodeficiency virus infection. Journal of Infectious Diseases, 158, (6), 1360-1367.

MacArthur, R.D., Levine, S.D., & Birk, T.J. (1993). Supervised exercise training improves cardiopulmonary fitness in HIV-infected persons. Medicine and Science in Sports and Exercise, 25, 684-688.

Mast, E.E. & Goodman, R.A. (1997). Prevention of infectious disease transmission in sports. Sports Medicine, 24, (1), 1-7.

McGrew, C.A., Dick, R.W., Schniedwind, K., & Gikas, P. (1993). Survey of NCAA institutions concerning HIV/AIDS policies and universal precautions. Medicine and Science in Sports and Exercise, 25, (8), 917-921.

Middleman, A.B. & DuRant, R.H. (1996). Anabolic steroid use associated with health risk behaviors. Sports Medicine, 21, (4), 251-255.

Misasi, S.P., Davis, C.F., Morin, G.E., & Stockman, D. (1996). Academic preparation of athletic trainers as counselors. Journal of Athletic Training, 31, (1), 39-42.

Mitten, M.J. (1994). HIV-positive athletes: When medicine meets the law. The Physician and Sports Medicine, 22, (10), 63-68.

Moulton, M.A., Molstad, S., & Turner, A. (1997). The role of athletic trainers in counseling collegiate athletes. Journal of Athletic Training, 32, (2), 148-150.

National Collegiate Athletic Association. (1994). Bloodborne pathogens and intercollegiate athletics. 1998-99 Sports Medicine Handbook, 11th ed. (pp. 29-33). Overland Park, KS: National Collegiate Athletic Association.

National Football League. (1992). National football league HIV/AIDS related policies. New York: National Football League.

Nattiv, A. & Puffer, J.C. (1991). Lifestyles and health risks of collegiate athletes. Journal of Family Practice, 33, (6), 585-590.

Nattiv, A., Puffer, J.C., & Green, G.A. (1997). Lifestyles and health risks of collegiate athletes: A multi-center study. Clinical Journal of Sports Medicine, 7, (4), 262-272.

Newman, S. (1993). Pamphlet on HIV and athletes dispels myths about possibility of infection through sports. Canadian Medical Association Journal, 149, (9), 1315-1317.

Occupational Safety and Health Administration, United States Department of Labor. (1991). Occupational exposure to bloodborne pathogens. Rule 29 CFR part 1910 (amended), subpart z (amended), section 1910.1030; final rule. Federal Register, 56, (235), 64175-64182.

Odom, J.C. & Strobel, G. (1999). HIV, the game official, and control and prevention. In G. Sankaran, K.A.E. Volkwein, and D.R. Bonsall (Eds.), HIV/AIDS in sports: Impact, issues, and challenges (pp. 35-44). Champaign, IL: Human Kinetics Publishers, Inc.

Quinn, T. (1996). Global burden of the HIV pandemic. Lancet, 348, 99-106.

Rompolo, A. (1989). Acquired immunodeficiency syndrome. Athletic Training, 24, (1), 24-25.

Sankaran, G. (1999). Epidemiology, immunology, and clinical spectrum of HIV and AIDS. In G. Sankaran, K.A.E. Volkwein, and D.R. Bonsall (Eds.), HIV/AIDS in sports: Impact, issues, and challenges (pp. 9-25). Champaign, IL: Human Kinetics Publishers, Inc.

Seltzer, D.G. (1993). Educating athletes in HIV disease and AIDS: The team physician's role. The Physician and Sports Medicine, 21, (1), 109-115.

Sklarek, H., Mantovani, R., Erens, E., Heisler, D., Niederman, M., & Fein, A. (1984). AIDS in a bodybuilder using anabolic steroids [Letter to the editor]. New England Journal of Medicine, 311, (26), 1701.

Strukel, D.P. (1993). AIDS and athletic training. Journal of Sport Rehabilitation, 2, (1), 1-12.

Sutliff, M.A. & Bomgardner, R. (1994). HIV/AIDS: How to maintain a safe environment. Journal of Physical Education, Recreation, and Dance, May/June, 53-56.

Sutliff, M.A. & Freeland, D.K. (1995). Limits of confidentiality testing and disclosure with HIV infected sports participants engaging in contact sports: Legal and ethical implications. Journal of Sport and Social Issues, 19, (4), 415-431.

Thomas, C.E. (1996). The HIV athletes: Policy, obligations, and attitudes. Sport Science Review, 5, (2), 12-29.

Thurn, J.R. (1997). HIV and occupational risk: Evolving ways to protect healthcare workers. Postgraduate Medicine, 102, (4), 155-161.

Volkwein, K.A.E. & Bonsall, D.R. (1999). Transmission of HIV in sport. In G. Sankaran, K.A.E. Volkwein, and D.R. Bonsall (Eds.), HIV/AIDS in sports: Impact, issues, and challenges (pp. 1-6). Champaign, IL: Human Kinetics Publishers, Inc.

Volkwein, K.A.E., Sankaran, G., & Bonsall, D.R. (1996). Bleeding wounds and the threat of HIV: The role of athletic trainers. Athletic Therapy Today, 1, (1), 38-41.

Ward, D.E. (1999). The AmFar AIDS handbook: The complete guide to understanding HIV and AIDS (pp. 6-7; 57-59; 174-197; 366; 369-370). New York: W.W. Norton & Company, Inc.

Webster, D.L. & Kaiser, D.A. (1991). An infection control policy for the athletic training setting. Athletic Training, 26, 72-74.

Welch, M.J., Sitler, M.R., & Horodyski, M.B. (1989). Should athletic trainers be concerned about HIV? Guidelines for athletic trainers. Athletic Training, 24, (1), 27-28.

Whiddon, S. & Horodyski, M.B. (1996). Bloodborne pathogen control efforts for physical education and athletic programs in southern states. The Physical Educator, 53, (3), 132-136.

Whitehill, W.R. & Wright, K.E. (1994). Delphi study: HIV/AIDS and the athletic population. Journal of Athletic Training, 29, (2), 114-119.

World Health Organization. (1992). Consensus statement: Consultation on AIDS and sports. Journal of the American Medical Association, 267, (10), 1312.

Zeigler, T. (1997). Management of bloodborne infections in sport (pp. 20-21). Champaign, IL: Human Kinetics Publishers, Inc.

References

- American Academy of Pediatrics. (1991). Human immunodeficiency virus [Acquired immunodeficiency syndrome (AIDS)] in the athletic setting. Pediatrics, 88, (3), 640-641.
- American College Health Association. (1988). General statement on institutional response to AIDS [Brochure]. Baltimore, MD: Richard P. Keeling, MD.
- American College Health Association. (1989). Statement on AIDS and international education issues [Brochure]. Baltimore, MD: Richard P. Keeling, MD.
- American Medical Association and the American Academy of Sports Medicine. (1995). Human immunodeficiency virus (HIV) and other blood-borne pathogens in sports: Joint position statement. The American Journal of Sports Medicine, 23, (4), 510-514.
- Anderson, W.A., Albrecht, R.R., & McKeag, D.B. (1993). A second replication of the national study of substance use and abuse habits of college student-athletes. Report presented to the National Collegiate Athletic Association, Overland Park, Kansas.
- Arnheim, D.D., & Prentice, W.E. (1993). Principles of athletic training (8th ed., p. 8). St. Louis: Mosby Yearbook.
- Arnold, B.L. (1995). A review of selected blood-borne pathogen positions statements and federal regulations. Journal of Athletic Training, 30, (2), 171-176.
- Bitting, L.A., Trowbridge, C.A., & Costello, L.E. (1996). A model for a policy on HIV/AIDS and athletics. Journal of Athletic Training, 31, (4), 356-357.
- Boyle, M., Sitler, M., Rogers, K., Duffy, A.J., & Kimura, I. (1997). Knowledge and attitudes of certified athletic trainers in Pennsylvania toward HIV/AIDS and treating HIV-Positive athletes. Journal of Athletic Training, 32, (1), 40-44.

Brown, L.S., Drotman, D.P., Chu, A., Brown, C.L., & Knowlan, D. (1995). Bleeding injuries in professional football: Estimating risk for HIV transmission. Annals of Internal Medicine, 122, (4), 271-274.

Brown, L.S., Phillips, R.Y., Brown, C.L., & Moyer, J. (1994). HIV/AIDS policies and sports: The National Football League. Medicine and Science in Sports and Exercise, 26, (4), 403-407.

Calabrese, L.H. & Kelley, D.K. (1989). AIDS and athletes. The Physician and Sports Medicine, 17, (1), 127-131.

Calabrese, L.H. & LaPerriere, A. (1993). Human immunodeficiency virus infection, exercise, and athletics. Sports Medicine, 15, (1), 6-13.

Centers for Disease Control and Prevention. (1985). Recommendations for preventing transmission of infection with human t-lymphotropic virus type/III lymphadenopathy-associated virus in the workplace. Morbidity and Mortality Weekly Report, 34, (45), 682-686, 691-695.

Centers for Disease Control and Prevention. (1987). Recommendations for prevention of HIV transmission in healthcare settings. Morbidity and Mortality Weekly Report, 36, 15-185.

Centers for Disease Control and Prevention. (1993). Technical guidance on HIV counseling. Morbidity and Mortality Weekly Report, 42, (2), 1-10.

Centers for Disease Control and Prevention. (1994). HIV counseling, testing, and referral standards and guidelines. Atlanta, GA: U.S. Department of Health and Human Services.

Centers for Disease Control and Prevention. (1996). HIV/AIDS Surveillance Report, 8, (2), 1-40.

Chitwood, D.D., Griffin, D.K., Comerford, M., Page, J.B., Trapido, E.J., Lai, S., & McCoy, C.B. (1995). Risk factors for HIV-1 seroconversion among injection drug users: A case-control study. American Journal of Public Health, 85, (11), 1538-1542.

Cohn, D.L., Miller, L.A., Yamaguchi, K.J., & Douglas, J.M. (1992). Denver's increase in HIV counseling after Magic Johnson's HIV disclosure. American Journal of Public Health, 82, (12), 1692.

DuRant, R.H., Rickert, V.I., Ashworth, C.S., Newman, C., & Slavens, G. (1993). Use of multiple drugs among adolescents who use anabolic steroids. The New England Journal of Medicine, 328, 922-926.

Erickson, S., & Rich, B. (1996). Medical staff needs to know school's policy on HIV and HBV. NCAA Sport Sciences Education Newsletter, 1, 4.

Friedland, G.H. & Klein, R.S. (1987). Transmission of the human immunodeficiency virus. New England Journal of Medicine, 317, 1125-1135.

Garl, T. (1993). AIDS in athletics: Does a collision on the court warrant cause for concern? Athletic Management, 5, (18), 18-22.

Gray, C. (1992). AIDS becomes a sports issue. Canadian Medical Association Journal, 146, (8), 1437-1440.

Gunby, P. (1988). Boxing: AIDS? Journal of the American Medical Association, 259, 1613-1614.

Hamel, R. (1992). AIDS: Assessing the risk among athletes. The Physician and Sports Medicine, 20, (2), 139-146.

Henderson, D.K., Fahey, B.J., Willy, M., Schmitt, J.M., Carey, K., Koziol, D.E., Lane, H.C., Fedio, J., & Saah, A.J. (1990). Risk for occupational transmission of human immunodeficiency virus type-1 (HIV-1) associated with clinical exposures: A prospective evaluation. Annals of Internal Medicine, 113, (10), 740-746.

HIV Positive. (1998). Counseling guidelines for HIV testing [On-line]. Available: <http://hivpositive.com/f-TestingHIV/CanadaGuidelines/checklist.htm>

Hunt, B.P. & Pujol, T.J. (1994). Athletic trainers as HIV/AIDS educators for athletes. Journal of Athletic Training, 29, (2), 102-105.

Izumi, H. (1991). AIDS and athletic trainers: Recommendations for athletic training programs. Athletic Training, 26, 358-363.

Johnson, R.J. (1992). HIV infection in athletes: What are the risks? Who can compete? Postgraduate Medicine, 92, (7), 73-80.

Keesing, H. (1994). Contractors' "band-aid" remedies may defy bloodborne pathogen risks. Occupational Health and Safety, 63, (12), 49-52.

Keyser, D.L. (1999). Living with HIV/AIDS: The voices of sports professionals. In G. Sankaran, K.A.E. Volkwein, and D.R. Bonsall (eds.), HIV/AIDS in sport: Impact, issues, and challenges (pp. 57-67). Champaign, IL: Human Kinetics Publishers, Inc.

Kokotailo, P.K., Henry, B.C., Koscik, R.E., Fleming, M.F., & Landry, G.L. (1996). Substance use and other health risk behaviors in collegiate athletes. Clinical Journal of Sport Medicine, 6, (3), 183-189.

Landesman, S.H. & Vieira, J. (1983). AIDS: A review. Archives of Internal Medicine, 143, 2307-2309.

LaPerriere, A., Klimas, N., Fletcher, M.A., Ironson, G., & Schneiderman, N. (1997). Change in CD4+ cell enumeration following aerobic exercise training in HIV-1 disease: Possible mechanisms and practical applications. International Journal of Sports Medicine, 18, (Supplement 1), S56-S61.

Lawless, D., Jackson, C.G.R., & Greenleaf, J.E. (1995). Exercise and human immunodeficiency virus (HIV-1) infection. Sports Medicine, 19, (4), 235-239.

Lifson, A.R., Rutherford, G.W., & Jaffe, H.W. (1988). The natural history of human immunodeficiency virus infection. Journal of Infectious Diseases, 158, (6), 1360-1367.

MacArthur, R.D., Levine, S.D., & Birk, T.J. (1993). Supervised exercise training improves cardiopulmonary fitness in HIV-infected persons. Medicine and Science in Sports and Exercise, 25, 684-688.

Mast, E.E. & Goodman, R.A. (1997). Prevention of infectious disease transmission in sports. Sports Medicine, 24, (1), 1-7.

McGrew, C.A., Dick, R.W., Schniedwind, K., & Gikas, P. (1993). Survey of NCAA institutions concerning HIV/AIDS policies and universal precautions. Medicine and Science in Sports and Exercise, 25, (8), 917-921.

Middleman, A.B. & DuRant, R.H. (1996). Anabolic steroid use associated with health risk behaviors. Sports Medicine, 21, (4), 251-255.

Misasi, S.P., Davis, C.F., Morin, G.E., & Stockman, D. (1996). Academic preparation of athletic trainers as counselors. Journal of Athletic Training, 31, (1), 39-42.

Mitten, M.J. (1994). HIV-positive athletes: When medicine meets the law. The Physician and Sports Medicine, 22, (10), 63-68.

Moulton, M.A., Molstad, S., & Turner, A. (1997). The role of athletic trainers in counseling collegiate athletes. Journal of Athletic Training, 32, (2), 148-150.

National Collegiate Athletic Association. (1994). Bloodborne pathogens and intercollegiate athletics. 1998-99 Sports Medicine Handbook, 11th ed. (pp. 29-33). Overland Park, KS: National Collegiate Athletic Association.

National Football League. (1992). National football league HIV/AIDS related policies. New York: National Football League

Nattiv, A. & Puffer, J.C. (1991). Lifestyles and health risks of collegiate athletes. Journal of Family Practice, 33, (6), 585-590.

Nattiv, A., Puffer, J.C., & Green, G.A. (1997). Lifestyles and health risks of collegiate athletes: A multi-center study. Clinical Journal of Sports Medicine, 7, (4), 262-272.

Newman, S. (1993). Pamphlet on HIV and athletes dispels myths about possibility of infection through sports. Canadian Medical Association Journal, 149, (9), 1315-1317.

Occupational Safety and Health Administration, United States Department of Labor. (1991). Occupational exposure to bloodborne pathogens. Rule 29 CFR part 1910 (amended), subpart z (amended), section 1910.1030; final rule. Federal Register, 56, (235), 64175-64182.

Odom, J.C. & Strobel, G. (1999). HIV, the game official, and control and prevention. In G. Sankaran, K.A.E. Volkwein, and D.R. Bonsall (Eds.), HIV/AIDS in sports: Impact, issues, and challenges (pp. 35-44). Champaign, IL: Human Kinetics Publishers, Inc.

Quinn, T. (1996). Global burden of the HIV pandemic. Lancet, 348, 99-106.

Rompolo, A. (1989). Acquired immunodeficiency syndrome. Athletic Training, 24, (1), 24-25.

Sankaran, G. (1999). Epidemiology, immunology, and clinical spectrum of HIV and AIDS. In G. Sankaran, K.A.E. Volkwein, and D.R. Bonsall (Eds.), HIV/AIDS in sports: Impact, issues, and challenges (pp. 9-25). Champaign, IL: Human Kinetics Publishers, Inc.

Seltzer, D.G. (1993). Educating athletes in HIV disease and AIDS: The team physician's role. The Physician and Sports Medicine, 21, (1), 109-115.

Sklarek, H., Mantovani, R., Erens, E., Heisler, D., Niederman, M., & Fein, A. (1984). AIDS in a bodybuilder using anabolic steroids [Letter to the editor]. New England Journal of Medicine, 311, (26), 1701.

Strukel, D.P. (1993). AIDS and athletic training. Journal of Sport Rehabilitation, 2, (1), 1-12.

Sutliff, M.A. & Bomgardner, R. (1994). HIV/AIDS: How to maintain a safe environment. Journal of Physical Education, Recreation, and Dance, May/June, 53-56.

Sutliff, M.A. & Freeland, D.K. (1995). Limits of confidentiality testing and disclosure with HIV infected sports participants engaging in contact sports: Legal and ethical implications. Journal of Sport and Social Issues, 19, (4), 415-431.

Thomas, C.E. (1996). The HIV athletes: Policy, obligations, and attitudes. Sport Science Review, 5, (2), 12-29.

Thurn, J.R. (1997). HIV and occupational risk: Evolving ways to protect healthcare workers. Postgraduate Medicine, 102, (4), 155-161.

Volkwein, K.A.E. & Bonsall, D.R. (1999). Transmission of HIV in sport. In G. Sankaran, K.A.E. Volkwein, and D.R. Bonsall (Eds.), HIV/AIDS in sports: Impact, issues, and challenges (pp. 1-6). Champaign, IL: Human Kinetics Publishers, Inc.

Volkwein, K.A.E., Sankaran, G., & Bonsall, D.R. (1996). Bleeding wounds and the threat of HIV: The role of athletic trainers. Athletic Therapy Today, 1, (1), 38-41.

Ward, D.E. (1999). The AmFar AIDS handbook: The complete guide to understanding HIV and AIDS (pp. 6-7; 57-59; 174-197; 366; 369-370). New York: W.W. Norton & Company, Inc.

Webster, D.L. & Kaiser, D.A. (1991). An infection control policy for the athletic training setting. Athletic Training, 26, 72-74.

Welch, M.J., Sitler, M.R., & Horodyski, M.B. (1989). Should athletic trainers be concerned about HIV? Guidelines for athletic trainers. Athletic Training, 24, (1), 27-28.

Whiddon, S. & Horodyski, M.B. (1996). Bloodborne pathogen control efforts for physical education and athletic programs in southern states. The Physical Educator, 53, (3), 132-136.

Whitehill, W.R. & Wright, K.E. (1994). Delphi study: HIV/AIDS and the athletic population. Journal of Athletic Training, 29, (2), 114-119.

World Health Organization. (1992). Consensus statement: Consultation on AIDS and sports. Journal of the American Medical Association, 267, (10), 1312.

Zeigler, T. (1997). Management of bloodborne infections in sport (pp. 20-21). Champaign, IL: Human Kinetics Publishers, Inc.

APPENDIX A. ATC Survey

Demographic Information:

1. Job Title: _____
2. Years Employed as an ATC: _____
3. Athletic Training Setting Employed in:
 - A. Junior College: _____ B. Division I Collegiate: _____
 - C. Division II Collegiate: _____

HIV Educational Information for Athletic Trainers Survey:

1. Terms are clearly defined: Yes____No____
2. Language is clear and concise: Yes____No____
3. Information is easy to understand: Yes____No____
4. Information is arranged in logical order: Yes____No____
5. Information on universal precautions in athletic training is accurate: Yes____No____
6. Information is relevant to the athletic training profession: Yes____No____
7. Information on HIV/AIDS is beneficial for use with athletes: Yes____No____
8. Information is relevant for an athletic training setting based on known risk factors, i.e., risky sexual behaviors and use of injectable ergogenic aids, blood exposure, and HIV testing: Yes____No____

Comments/Suggestions:

APPENDIX B. HIV Educator Survey

Demographic Information:

1. Job Title: _____
2. HIV Education Experience: _____

HIV Educational Information for Athletic Trainers survey:

1. Terms are clearly defined: Yes____No____
2. Language is clear and concise: Yes____No____
3. Information is accurate: Yes____No____
4. Information is easy to understand: Yes____No____
5. Information is arranged in a logical
order: Yes____No____
6. HIV information included is appropriate
For educational purposes: Yes____No____
7. Information is relevant for an athletic
training setting based on known risk
factors, i.e., risky sexual behaviors
and use of injectable ergogenic aids,
blood exposure, and HIV testing: Yes____No____

Comments/Suggestions:

APPENDIX C. ATC Survey Letter

May 15, 1999

Dear Certified Athletic Trainer:

I am completing a project that will address the need of HIV education for athletic trainers. The results of this project should increase the HIV knowledge of athletic trainers. Attached is the HIV Educational Information for Athletic Trainers and an anonymous questionnaire for reviewing this information. I would be grateful if you would take a moment of your time to review the information, fill out the questionnaire, and return the questionnaire in the enclosed self-addressed stamped envelope to me within two weeks.

Your participation is voluntary, and choosing not to participate in this project, or in any part of this project, will not affect your relations with San Jose State University.

The results of this project will be posted on an internet web page, but any information that could result in your identification will remain confidential.

If you have any questions about this project, I will be happy to talk with you. I can be reached at (619) 482-3313. If you have any questions or complaints about this project, please contact Dr. Leamor Kahanov, Department of Human Performance, at (408) 924-3040 or Nabil Ibrahim, Ph.D., Associate Academic Vice President for Graduate Studies and Research, at (408) 924-2480.

Sincerely,

Rachel A. Blakeman, ATC

APPENDIX D. HIV Educator Letter

May 15, 1999

Dear HIV Educator:

I am completing a project that will address the need of HIV education for athletic trainers. The results of this project should increase the HIV knowledge of athletic trainers. Attached is the HIV Educational Information for Athletic Trainers and an anonymous questionnaire for reviewing this information. I would be grateful if you would take a moment of your time to review the information, fill out the questionnaire, and return the questionnaire in the enclosed self-addressed stamped envelope to me within two weeks.

Your participation is voluntary, and choosing not to participate in this project, or in any part of this project, will not affect your relations with San Jose State University.

The results of this project will be posted on an internet web page, but any information that could result in your identification will remain confidential.

If you have any questions about this project, I will be happy to talk with you. I can be reached at (619) 482-3313. If you have any questions or complaints about this project, please contact Dr. Leamor Kahanov, Department of Human Performance, at (408) 924-3040 or Nabil Ibrahim, Ph.D., Associate Academic Vice President for Graduate Studies and Research, at (408) 924-2480.

Sincerely,


Rachel A. Blakeman, ATC



San José State
UNIVERSITY

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**Associate Vice President
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San Jose, CA 95192-0025
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E-mail: gstudies@www.sjsu.edu
<http://www.sjsu.edu>

TO: Rachel A. Blakeman
460 N. Shoreline Blvd, #1
Mountain View, CA 94043

FROM: Nabil Ibrahim, 
Acting AVP, Graduate Studies & Research

DATE: May 19, 1999

**The Human Subjects-Institutional Review Board has approved
your request to use human subjects in the study entitled:**

**"HIV and Athletes: Educational Information
for Athletic Trainers"**

**This approval is contingent upon the subjects participating in
your research project being appropriately protected from risk.
This includes the protection of the anonymity of the subjects'
identity when they participate in your research project, and
with regard to any and all data that may be collected from the
subjects. The Board's approval includes continued monitoring
of your research by the Board to assure that the subjects are
being adequately and properly protected from such risks. If at
any time a subject becomes injured or complains of injury, you
must notify Nabil Ibrahim, Ph.D., immediately. Injury includes
but is not limited to bodily harm, psychological trauma and
release of potentially damaging personal information.**

**Please also be advised that all subjects need to be fully
informed and aware that their participation in your research
project is voluntary, and that he or she may withdraw from the
project at any time. Further, a subject's participation, refusal to
participate, or withdrawal will not affect any services the
subject is receiving or will receive at the institution in which
the research is being conducted.**

**If you have any questions, please contact me at
(408) 924-2480.**

The California State University:
Chancellor's Office
Bakersfield, Chico, Dominguez Hills,
Fresno, Fullerton, Hayward, Humboldt,
Long Beach, Los Angeles Maritime Academy,
Monterey Bay, Northridge, Pomona,
Sacramento, San Bernardino, San Diego,
San Francisco, San Jose, San Luis Obispo,
San Marcos, Sonoma, Stanislaus