A Sociocultural Analysis of Gender and Doping

Prepared for: World Anti-Doping Agency

Prepared by: Charlene Weaving, PhD (PI)
cweaving@stfx.ca

Sarah Teetzel, PhD (Co-I)
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ABBREVIATIONS

American Hockey League (AHL)
Canadian Football League (CFL)
Canadian Centre for Ethics in Sport (CCES)
Canadian Interuniversity Sport (CIS)
National Hockey League (NHL)
World Anti-Doping Agency (WADA)
EXECUTIVE SUMMARY

Background
The aim of this project was to analyze and expand the body of literature pertaining to sociocultural aspects of doping and gender, and to gain insight into female and male university student-athletes’ knowledge and perceptions of gender and doping. Due to the hypothesized disconcerting lack of attention given to the experiences of non-Olympic and female athletes with respect to doping in the research literature, we hope that by including such a population, the importance of examining the role of gender and doping will be further established. In addition, we believe that focusing on a population that is often ignored or underrepresented in doping research, can contribute to enhancing WADA’s education and anti-doping programs.

Methods
This project involved three stages in order to gain insight into the connections between doping and gender

1. Key arguments found in the literature on doping and gender, published in scholarly sources from the late 1960s to the present, were summarized and included in an annotated bibliography. The information provided the historical background needed to perform a philosophical, ethical, and sociocultural analysis of doping and gender in sport and was used to formulate the interview guide to be used in Stage 2

2. Semistructured interviews were performed with samples of 38 Canadian varsity athletes from three different universities with reference to doping risks, preventative factors, and perceptions of gender in sport and doping practices.

3. Results from the interviews with the Canadian university athletes were compared to the initial findings from a large doping study conducted in Denmark by Professor Gertrud Pfister. The purpose of stage three was to determine whether gendered doping constructions are a North American issue or if similar findings occurred in Europe, specifically in Denmark.

THREE MAIN OUTCOMES FOR DOPING PREVENTION

1. There is a gap in the literature focusing on gender and doping. There has been more research completed on doping from a quantitative approach that has neglected the role gender issues play in doping. Doping prevention and education programs need to account for gender stereotypes when creating policies and programs.

2. Doping is prevalent in Canadian university sport, especially in football. Student-athletes perceive there is a lack of drug testing for both male and female university athletes. Many student-athletes were never tested despite playing university sport for 5 years. Student-athletes require more education in order to understand why certain substances are banned and others are not. The current education system in the CIS in inadequate according to the athletes interviewed. Many male football and hockey players see the CIS as a stepping stone to professional leagues and are motivated to “do what it takes” to
make it to the next level. University female student-athletes interviewed echoed several long held stereotypes about women athletes: they feel pressure to adhere to societal standards in terms of ideal body composition, some use weight loss supplements to achieve a specific physique, and some acknowledge that their pursuit of ideal leanness is an unhealthy practice that does not benefit their athletic performance. The substances women student-athletes are using are not banned in sport, but their substance usage can be unhealthy and should be a concern for prevention programs.

3. The insights gained in the Canadian and Danish study can only be interpreted and understood in the context of the Canadian and the Danish (sport) cultures. Cross cultural comparisons are depended on specific cultures and contexts. Despite their being some similarities between the two, i.e. perspectives on marijuana as a non-performance enhancer; the differences in the two studies creates some important results. The current anti-doping approach and education mandate utilized by WADA is universal in nature. Based on the cross cultural comparison that was performed in this study, we argue that perhaps more individualized plans need to be incorporated. Canadian university students are doping for different reasons than elite Danish athletes and also tend to possess varying perspectives on gender, masculinity, femininity and doping, and as such, having specialized anti-doping education and policies targeting specific cultural contexts would be useful in doping prevention.
Specific Aim of the Project

The aim of this project was to analyze and expand the body of literature pertaining to sociocultural aspects of doping and gender, with an emphasis on ethics and equality. We began this study with the hypothesis that research on doping in sport tends to focus on quantitative studies regarding the prevalence of drug use among elite male athletes, which often results in conclusions that tend to be generalized and applied to the athletic population as a whole. Rather than focusing primarily on statistics and quantitative research methods involving male elite athletes, this study examined the doping practices and perceptions of Canadian university-aged varsity athletes of each sex, using semistructured interviews, to broaden the subject pool and ensure a greater variety of athletes’ voices are heard.

Objectives

Due to the disconcerting lack of attention given to the experiences of non-Olympic women athletes and doping in the research literature, we hope that by including such a population, women’s equality in sport will be further established. In addition, we believe that by focusing on a population that is often ignored or underrepresented in doping research, we can contribute to WADA’s education and anti-doping programs. It is important to realize that the perspectives of women athletes with respect to doping procedures and policies have been largely silenced in the past. By including this neglected group, we speculate that education programs can be made more effective because women athletes will feel that they have a voice in doping education. We believe that more input is needed from athletes who progress through to the high-performance and professional levels on what encourages or discourages their decisions related to participating in doping practices and taking supplements. It could be dangerous to assume that current risks and protective factors for doping use are gender neutral and apply equally to male and female athletes at all levels of sport. Therefore, it is necessary to determine if gender effects are present in male and female athletes’ attitudes, perspectives, and configured lived influences concerning doping to analyze the existing literature on doping and gender. This enabled an examination on whether gender effects and biases are present in the current doping literature and whether women athletes’ experiences with doping, in both Canada and Denmark, correspond to the norms identified in the literature.

Research Methods

This project involved three stages in order to gain insight into the connections between doping and gender.

Stage 1

Key arguments found in the literature on doping and gender, published in scholarly sources from the late 1960s to the present were identified, categorized, summarized and included in an annotated bibliography. This information provided the historical background needed to perform a philosophical, ethical, and sociocultural analysis of doping and gender in sport and to formulate the interview guide to be used in Stage 2. The annotated bibliography was created by 2 undergraduate students and updated by 2 Masters of Arts graduate students. The students gained valuable research experience through their involvement and continued their own individual research projects and theses in the realm of doping and university sport.
Stage 2
Following the completion of the annotated bibliography, the document was used to create an interview guide of questions. Semistructured interviews were performed with 38 varsity athletes with reference to doping risks, preventative factors, and perceptions of gender in sport and doping practices. After Research Ethics Approval was obtained by the researchers at their respective institutions, interviews were conducted with varsity athletes attending St. Francis Xavier University, The University of Manitoba, and The University of Winnipeg in Canada. Specifics on the interviews are outlined in the Stage 2 section below. Participants were encouraged to speak freely and openly about their experiences and perceptions. All interviews were recorded and transcribed by the investigators of the study and/or a research assistant hired to transcribe interviews. The transcribed interviews were checked against the audio recordings after transcription to ensure precision and accuracy, and each transcribed interview was made available to the respective participant to verify all statements made during the interview. Following the approval of the transcripts by the participants, the transcripts were coded and analyzed by the researchers.

Stage 3
Results from the interviews with the Canadian university athletes were compared to the initial findings from a large doping study conducted in Denmark by Professor Gertrud Pfister. In order to analyze whether gender constructions and doping are a North American issue or if similar findings occurred in Europe, specifically in Denmark, the conclusions drawn from this study were compared to the themes emerging from the study underway in Denmark. As the Denmark study is in progress and not complete, the cross-cultural comparison is tentative, but provides additional context from which the results obtained in Canada can be analyzed.

Rationale for the Use of these Research Methods
We believe there is a need for a complete package of the current literature regarding doping and gender in the form of an annotated bibliography. A complete annotated bibliography updated to include literature published prior to May 2012 can be used to provide a basis for future studies on doping in sport to start from, and avoid the need for anti-doping agencies to ‘reinvent the wheel’ in subsequent studies. Epidemiologists, statisticians, and sports medicine researchers are doing excellent work in quantifying the prevalence and trends in doping in sport. However, their work can be complemented through an analysis via a gender lens. Ensuring variables, such as gender stereotypes and effects, are considered might help produce a more nuanced picture of doping in sport that can be useful in the design and implementation of additional anti-doping education initiatives.

By using open-ended, one-on-one, semistructured interviews with varsity student-athletes of self-identified genders as a method of seeking information on doping risks and preventative factors, the current literature that focuses predominantly on male Olympic-level athletes was expanded. As it is widely accepted that some athletes, both female and male, participating at a highly competitive level, such as the intercollegiate level, are active participants in doping practices, it is necessary to study this segment of the athletic population in addition to ongoing research on athletes competing at higher levels of sport. The number of competitive athletes who fail to qualify for a World Championship is obviously much larger than the number of athletes who succeed in representing their countries internationally. The varsity level was chosen for this
study as it represents a level of sport that is highly competitive, yet accessible, and it is more inclusive of those who train to be elite athletes but do not reach their ultimate goals of participation in the Olympics or professional leagues.

In order to better understand and prevent doping, the athletes’ opinions in the context of their real-life experiences were critical. We did not perform a statistical analysis to determine how many athletes thought x or y, but rather, we opted to use a qualitative approach to compile rich in-depth answers from those who the research will benefit the most – the athletes – in order to compare and contrast the information they provided with what the existing literature states. Doing so constituted a step in confirming or denying gender effects in doping and addressing the under-representation of women athletes in research on doping in sport. We believe that by testing for universality through our affiliation and cooperation with Dr. Gertrud Pfister from Denmark, more insight was provided into doping prevention and gender.
STAGE 1- ANNOTATED BIBLIOGRAPHY

Below are the results of a review of peer-reviewed scholarly sources addressing gender and doping presented in the format of an annotated bibliography. Each entry contains the bibliographic information of the relevant sources identified and a brief summary of the key arguments each source contains. The research assistants hired to conduct this stage of the report searched databases from the fields of philosophy, sociology, sport science, medicine/physiology, and physical education for information pertaining to doping and gender in sport. Sources of information that examined only doping or only gender were not included. There were three phases of searches: the first search took place in 2009, the second in 2011 and the final in 2012 in order to ensure that the most recent publications were included in the bibliography. The resulting annotated bibliography is organized in the following manner:

1. **Qualitative Studies**
   a.) Doping as a gender issue
      i.) Dichotomization of gender
   b.) Attitudes towards and knowledge surrounding doping
   c.) Doping practices/patterns
   d.) Monitoring doping practices and anti-doping policies
   e.) Doping as an ethical issue
   f.) Nutritional supplements

2. **Quantitative Studies**
   a.) Attitudes towards and knowledge surrounding doping
   b.) Doping practices/patterns
      i.) Effect of gender
   c.) Monitoring doping practices and anti-doping policies
   d.) Effects of doping
      i.) Body image
      ii.) Physiological
   e.) Effectiveness of doping practices
   f.) Nutritional supplements

1. **QUALITATIVE STUDIES**

   a.) Doping as a gender issue


   Several analyses have suggested that doping bans have the effect of promoting a sex and/or gender social order. This article continues the logic of these analyses, but claims that this social order is specifically heterosexual. Butler’s heterosexual matrix is used to critique the subjugation of sexuality in these sex/gender analyses, and to assert that sexuality is implicated in the construction of sex and gender. Following Butler’s understanding of sex, gender and sexuality as mutually dependent on one another this article proceeds to illustrate that female
dopers are one category of women who disrupt the heterosexual matrix. It is suggested that the dislike of female dopers is similar to the dislike of lesbians and women who are considered ‘ugly’, for such female athletes fail to meet the criteria of heterosexual femininity. This article argues that doping is an ethical issue that should also consider athletes and non-athletes who are affected by the implications of anti-doping attitudes and bans.


The purpose of this study was to investigate the process and impact of bodybuilding and anabolic steroid use in the lives of ten bodybuilders. The data were analyzed in light of two perspectives. The critical feminist theory of hegemonic masculinity (Carrigan, Connell and Lee, 1987) and self-concept (Rosenburg, 1979) were applied. Structured interviews were used to examine the process by which individuals became involved in bodybuilding and, later, anabolic steroid use. Most of the men were introduced to weight training through participation in organized sport. This led to the enhancement in feelings of self-esteem and masculinity. Bodybuilding plateaued, causing frustration, leading to curiosity of anabolic steroid use. Nine of the ten bodybuilders had positive experiences with the steroids. Physical side effects were experienced, which reversed upon cessation of use.


Spectatorship theory has often been used and critiqued to understand the gendering of “the look” and its object. This article revitalizes the theory to better understand the way in which gender and looking create an ethical problem in the practice of judging. In this case, it is judging bodybuilding during the sport’s crisis over the proper female body in the early 1990’s. Bodybuilding was no longer expressed as a concern about the effects of sports competition on women but instead as a problem about spectating for men. Male spectators are not worried that women will be harmed or become too much like men, but afraid of the pleasure they take in viewing other men’s bodies. The problem of gender difference in bodybuilding was enacted as a difference in the relative privileging between sport versus spectacle.

Steroid use in bodybuilding is cheating and dangerous to the athlete. How it is cheating and how it is dangerous is quite different depending on if the athlete is male or female. For males, steroids are seen as a dangerous shortcut in which they substitute for dedication and discipline, but it is not seen as unnatural. Women are not able to achieve the gains that steroids give them naturally. Over time, with hard work, dedication and discipline, men are.


The main purpose of the study was to examine the beliefs and norms that are associated with initial ephedra use and perceived addictions to the drug. Undergraduate students at historically Black universities in the southwestern United States in softball, football, and dance teams were asked to participate in independent interviews about ephedra use. Only past use was investigated by researchers. Both genders cited weight loss as the main reason for using ephedra. However, male athletes also stated that they used the drug for enhanced athletic performance. The main driving force behind female use was weight loss purposes, but also included increased energy and physical appearance. Females believed that a barrier to quitting ephedra use was a
concern about their appearance followed by a hindrance in athletic performance. Females are more apt to use ephedra for social reinforcement and approval.


In this article, the social implications of gender verification testing in sport are analyzed. This is done through critical discourse analysis of the public discourses (news board discussants, scientific/medical communities and athletic governance policies) that followed Caster Semenya’s success at the International Association of Athletics Federation (IAAF) World Championship’s women’s 800 meter race. The authors seek to understand the perceptions of Semenya’s sex and gender identity. Through the discourse analysis the authors conclude that Caster Semenya’s body is perceived as disordered and the abject which works under maintaining the idea of fair play and equal opportunity for female athletes. In conclusion, gender verification tests reinforce already existing hegemonic gender ideologies.

i.) Dichotomization of gender


In this essay, Burke offers some radical claims that female athletes transgress drug policy for political reasons. He claims that body sexing is required to sustain the belief that males are superior at sport. Most sport is played in single-sexed categories, and it is when female performance reveals gender overlap that men are most precious about segregation. Burke argues that rigid gendering of bodies is a strong motivation for the drug ban. If men won’t play with women, then women can radicalise their sport space to significant political effect.


The purpose of this study is to illustrate how many of the anti-drug media campaigns, particularly those concerned with steroids, are problematic because they encourage readers to assume that bodies naturally fit into unambiguous bipolar categories of gender, and that steroids are artificial substances that disrupt this natural gender dichotomization. From 1988-1990, researchers collected as many posters, videotapes and other forms of media products in the U.S. that were aimed at athletes, carrying the message that athletes should not use drugs. Forty-one media texts, eight audiovisual tapes, twelve brochures, reports or articles, and twenty-one posters were reviewed. The assumption of physical gender dichotomization is problematic not only because it denies the physical realities of many humans, but also because it presently serves as a basis for, and helps to legitimate, the contemporary gender order.


The American culture uses breasts to sell beer and cigarettes, but breasts also signify nourishing, nurturing motherhood and love. This article challenges the naturalness of gender upon which normative heterosexuality lies. The distinct way the male body looks when pushed to its limits maintains gender norms by suggesting a “real man” defined against the feminine and
the “fag”. Bodybuilders, “real men,” become women. They develop smooth breasts, the center of the physique. They depilate body hair, tan, use cosmetics and oil, and wear g-strings. Females develop pectorals that shrink their breasts, and bulging veins make their skin look like a road map. Steroids cause the jaw muscle to protrude, and they develop facial hair, along with more body hair. In order to become “real men,” bodybuilders must become more feminine. Similarly, women must become more masculine to be successful female bodybuilders.


Sex-segregation in sport reinforces the binary categories of gender, as it requires athletes to compete in either male or female sport. To ensure that participants are in the correct gender category, associations like the International Association of Athletics Federation (IAAF) and the International Olympic Committee (IOC) have used sex testing in women’s athletics to verify the gender of competing athletes. The 2004 Stockholm Consensus is discussed in this article; it was framed as a policy for female competitors in an effort to protect the notion of fair play. This gender policy regulates the participation of male-to-female transsexual athletes in the Olympics.

The history of gender verification in sport and its implications are a main focus of this article. The sex-segregation of sport stems from the historically discriminatory, male-dominated, practices of sports competitions. Establishing fair and equitable gender policies as well as creating gender categories for sport are rooted in attempts to medically and scientifically define sex and are complex tasks.

b.) Attitudes towards and knowledge surrounding doping


This study focused on young athletes’ attitudes toward doping in sport. 403 young, talented athletes aged 12-21 in the UK, anonymously filled out a questionnaire which aimed to draw out these attitudes. About two thirds of the athletes were male. The results found that generally athletes were against doping in sport (78.4% disagreed or strongly disagreed with the statement: You have to take supplements to be successful in sport), although males were more open to using doping substances to enhance sport performance than were females. Most athletes (>90%) stated that they would not take a “magic” drug that would significantly enhance performance and remain undetectable, but many (72.6%) also stated that they thought others would take the drug. A significant association was found between the athlete’s intention to take the drug and his/her predictions on whether competitors would take the drug.


This article suggests that the concept of abjection applied to sport provides an opportunity to understand some philosophically suspect reactions to the use of certain substances and practices in high-level sport. It contends that such an understanding may enhance the possibility of developing rationally defensible policies governing the use of such substances and practices. The case of Ben Johnson is used as an example of the objectification of a sports exemplar. It traces the progress of Johnson from a virtual unknown in international track and
field, to a record-holding body beautiful, and then to a body ugly, disgraced athletically and stripped of his achievements. This article covers an in-depth look at why this consideration of abjection is appropriately focused on sport.


This paper examines how students at the Scarborough Campus of the University of Toronto explained and attributed responsibility for the events that led to Ben Johnson being stripped of his gold medal at the Seoul Olympics. The findings indicated a reluctance to blame Johnson for what happened and an attendant need on the part of respondents to distance themselves from self-threatening information. What the authors infer as identification with Johnson, tolerance of drug-use in sport, self-reported cheating on examinations and gender were all found, in varying degrees, to exert an influence upon the pattern of results.


This study sought to investigate student attitudes towards doping in sport over eight years in an attempt to analyze a possible shift in attitude. A discourse analysis of media portfolios created by 555 first year undergraduate students in human movement sciences at University of Ghent, Belgium from 1998-1999 to 2005-2006 was performed. The three research questions were:

1. How much attention do students pay to the issue of doping in elite sports?
2. What are the students’ opinions?
3. Which arguments do students use to substantiate these opinions?

The ethical arguments were categorized into a four level model: the self/individual athlete, the other/the athlete’s opponents and social environment, the play/the sport and fair play, and the display/the spectator side of sport and sport’s social role. The results point to a shift away from a zero tolerance attitude and towards a more accepting attitude surrounding doping in elite sport. The researchers offer two main explanations for this shift. Firstly, the reduced attention paid to doping in sport could be due to reduced media exposure to doping issues in sport, particularly after 2005. Secondly, it could be assumed that students became less interested in doping issues in elite sport because over the last decade, doping articles could be found on a daily basis in the media. The media ‘overexposure’ may have caused disinterest or lenience towards doping practices.

c.) **Doping practices/patterns**


This article is a literature review which explores the relationship between use of anabolic androgenic steroids (AAS) and use of other drugs. This review included published studies between the years of 1995 and 2010. Upon reviewing the literature, it was found that the use of AAS is positively associated with the use of illicit drugs, alcohol and legal performance enhancing substances. Anabolic androgenic steroids were found to have a mixed relationship with cannabis and tobacco.

This study examines the socio-economic determinants of adolescent use of performance enhancing drugs using data from the Youth Risk Behavior Surveillance System (YRBSS). The YRBSS is a biennial, national representative survey given to High School students in the US. For this study results from 1991 to 2005 were examined. Overall results show an insignificant statistic that males use steroids more frequently than females (1.1% more likely). One result of many showed the probability of steroid use when analyzed by gender and race indicated black males are slightly more likely to use steroids than their white counterparts, however black females have a lower probability to use steroids than white females. Regardless of gender, one-sport athletes are less likely than non-athletes to use steroids. It was also found that male multi-sport athletes had a higher likelihood use of steroids than multi-sport female athletes. The results indicate that socio-economic, racial and gender factors influence motivations for steroid use among adolescents.


The purpose of the study was to describe both qualitatively and quantitatively medication use and dietary supplement (DS) use in elite athletes. From 2006 to 2008, data was collected from 912 athletes (657 male, 255 female). These athletes reported DS and medications taken within 3 days before doping control. After identification and classification of all reported substances, results showed that 74.6% of athletes stated using at least one substance, 21.2% used six or more different products, 61.2% took DS and 40.6% took medications. The most common medication taken was a non-steroidal anti-inflammatory drug (NSAID) (24.7%) and 22.2% reported using more than one NSAID. No significant gender differences were found. The results from this study indicate a need for educational programs surrounding DS and medication use do to the found DS use with no performance or health benefits and the amount and combination of the medications and DS.

d.) Monitoring doping practices and anti-doping policies


This paper gives an overview of what is presently known about cannabis in relation with the practice of sport. Cannabis is on the list of prohibited substances in the practice of sport, although its performance enhancing effect has not yet been proved. Its popularity among the younger generations as a social drug puts cannabis at the top of the list of compounds detected by the anti-doping laboratories accredited by the World Anti-Doping Agency worldwide. The management of the results of urine analysis is quite difficult for the medical and disciplinary committees not only because of the social use of the substance, but also because of the interpretation of the analytical data from urine samples. A review of literature on the cannabis
and exercise, its effect in the body, and the problems with interpretation of results when it is detected in urine are analyzed. The paper outlines the major effects of cannabis in the context of its social use and its use for sport activities. The difficulties in the interpretation of urine sample analysis results because of the protracted excretion time of the main metabolite, long after the intake, are described. There is an urgent need for sport authorities to take measures necessary to avoid players misusing cannabis.


The purpose of this article is to argue why athletes should not want to dope and why the community should support doping-free sport. There is a contractarian justification for banning doping. The argument from harm to user is as follows: premise one, substance or practice X harms its user. Premise two, its user needs to be protected. Premise three, the user can be protected by banning the substance. Conclusion, therefore the substance should be banned. The argument from harm to other (clean) athletes is as follows: premise one, an athlete’s use of substance X causes harm to ‘clean’ athletes. Premise two, those people need protection. Premise three, banning substance X will protect those people. Conclusion, therefore substance X should be banned. Cheating and unfairness, harm to athletes who dope, other (clean) athletes, to society, the sports community and harm caused by bans. Athletes should not want to dope due to the joy of sport, irrelevance of doping, athletic prudence and the avoidance of unnecessary risk, and the self-defeating nature of doping. Without genuine athlete agreement and support, current efforts to prohibit doping are doomed.


Exogenous androgen is a banned substance in many competitive sports as it enhances athletic performance. Exogenous androgen is very similar to exogenous testosterone thus determining an allowable limit for testosterone in sport has proved difficult. Disorders of sexual development (DSD) may cause higher production levels of endogenous testosterone in women, which can be, and has been, seen as competitive advantage. Female athletes have undergone various sexual genotype and phenotype tests for gender verification reasons. Through these tests, women with DSD have been identified. Increasingly, women with this condition are allowed to compete.

e.) Doping as an ethical issue


This article looks deeper into the issue of perfecting the human body, and the lofty desire to improve or enhance a particular behavior or trait by the application of emerging biomedical knowledge in genetics, neuroscience, pharmacology, and physiology. The manufacturers of enhancement technologies will exploit the blurry line between enhancement and treatment in order to sell drugs. An alarming number of supposedly risk-free enhancements have later been associated with unanticipated side-effects, some of them deadly. The most successful
enhancement technologies have been backed by tremendously influential public relations campaigns. The pharmaceutical industry can buy politicians to pass industry-friendly legislation, can buy academic scientists to publish favourable journal articles and can buy professional societies and patient support groups to spread the word on the newly medicalized disorders that its interventions are developed to treat. We often ignore important human needs at the expense of frivolous human desires because we are ashamed of our personal shortcomings and inadequacies. These shortcomings and inadequacies are being exploited for commercial profit. Society has become so accustomed to the inequity that we do not see it as obscene.


This article concerns the question of whether research can be conducted with high school students in conjunction with a mandatory drug-testing program, while adhering to prevailing ethical standards regarding human-subjects research and specifically the participation of children in research. There is consensus that children have questionable decisional capacity and, therefore, in general a parent or a guardian must give permission to enrol a child in a research study. Moreover, freedom from duress and coercion, the cardinal rule in research involving adults, is even more important for children. This principle is embodied prominently in the Nuremberg Code (1947) and is embodied in various federal human research protection regulations. In a program named "SATURN" (Student Athletic Testing Using Random Notification), each school in the Oregon public-school system may implement a mandatory drug-testing program for high school student athletes. A prospective study to identify drug use among student-athletes, SATURN is designed both to evaluate the influence of random drug testing and to validate the survey data through identification of individuals who do not report drug use. The enrolment of students in the drug-testing study is a requirement for playing a school sport. In addition to the coercive nature of this study design, there were ethically questionable practices in recruitment, informed consent, and confidentiality.

f.) Nutritional supplements


This article attempts to address the issues concerning the use of nutritional supplements and the detection of doping agents as contaminants in dietary supplements. A major group using dietary supplements is sportsmen, ranging from amateur level to elite athletes. Besides the possible health risks associated with the use of dietary supplements, athletes should be aware not to violate the rules of the World Anti-Doping Agency because athletes remain responsible for substances detected in their biofluids, irrespective of their origin. Several analytical methods have been developed to determine the presence of doping agents as contaminants. Based upon recent sales numbers, nutritional supplements play a key role in the lifestyle of a substantial proportion of the population. As well as products such as vitamins or minerals, several precursors of anabolic steroids are marketed as nutritional supplements. Another group of commercially available supplements are products for weight loss based upon herbal formulations originating from Ephedra species. Apart from supplements indicating the presence of these active compounds, numerous non-hormonal nutritional supplements were found that were
contaminated with non-labeled anabolic steroids. Stimulating agents other than naturally occurring analogues of ephedrine were detected as well.

1. QUANTITATIVE STUDIES

   a.) Attitudes towards and knowledge surrounding doping


   The purpose of this study was to determine if drug education programs should be employed in an attempt to prevent drug use before it occurs. 182 Male CIAU football, wrestling, ice hockey, swimming and track and field athletes completed questionnaires. The results suggest that the questionnaire may not be measuring the variables of the Theory of Planned Behaviour and the variable self-esteem/body image very accurately. In order to implement a program such as the one proposed it is necessary to first understand the antecedents of performance enhancing drug use. The Theory of Planned Behaviour has successfully been used to predict both recreational drug use and exercise adherence. This theory may be used to better explain and predict performance enhancing drug use among male CIAU athletes, especially when the theory is combined with measures of the variables self-esteem/body image and habit strength.


   The purpose of this study is to examine the theoretical tenets which are outlined in the Sport Drug Control Model in Australia. A questionnaire was used to survey 643 elite Australian athletes (285 male, 383 female) between the ages of 14 and 66. The questionnaire aimed to test the effectiveness of the Sport Drug Control Model. It was found that morality, benefit appraisal and threat appraisal had the strongest relationships with attitude to doping. These factors were also positively associated with doping susceptibility. The Sport Drug Control Model accounted for 11% variance in attitudes to doping susceptibility and 30% variance in attitudes to doping. These findings support the hypothesized model, therefore the model is deemed useful in understanding influences on doping.


   This article reviews general trends in women’s drug use and attitudes toward drug testing, presents data assessing drug-related attitudes and behaviours of women intercollegiate athletes and their views on drug testing, and examines how college women differ from men in drug-related attitudes and behaviours or in their views of drug testing. Two sources of methods were used. A questionnaire was completed anonymously by 500 athletes on 21 teams, who were required to participate in drug testing at a division one university. In-depth, tape-recorded interviews with a random sample of 57 of the 500 athletes were performed. 71.4% of all participants were male, and 28.6% were female. College athletes’ attitudes toward drug use and drug testing differ by gender. Males prefer beer, and beer drinkers are more likely to be frequent drinkers, tend to drink to higher levels of intoxication and have higher rates of drinking and driving violations. Gender specific drug education is also underscored by reports on large
gender differences on a number of consequences of alcohol abuse such as damage to property, aggressive behaviour, and sexual assaults. Male college athletes’ use smokeless tobacco and female athletes’ use of non-prescription drugs associated with diet, weight, and body image issues also reiterate the gender difference in attitudes and behaviours toward drug use and testing.


The purpose of this study is to determine anabolic steroid use, risk-taking behaviour, satisfaction with body image, and attitudes and beliefs regarding anabolic steroids. Eleventh-grade students at seven high schools in Central Arkansas were surveyed. This included a total of 1492 adolescents, 672 males and 806 females. Fourteen students did not specify gender. Fifty-one males and twelve females admitted anabolic steroid use. There were significant differences between users and nonusers in risk-taking behaviours and degree of satisfaction with body image and muscles. Users were more likely than nonusers to approve of anabolic steroid use in sports and to believe that anabolic steroid use could improve one’s health. Gender, knowledge of beneficial side effects, knowing other anabolic steroid users, age, and race to be significantly related to anabolic steroid use. Anabolic steroid use was strongly motivated by social influences, some knowledge of beneficial effects, and denial of adverse effects in white adolescent males in the study population.


The purpose of this study was to examine the use of nonprescription weight loss products among NCAA Division I female athletes in basketball, softball and volleyball, and to address the concerns and health implications associated with such substance use. A self-report questionnaire was mailed to the above-mentioned female athlete by the Department of Physical Education at the University of South Carolina. 29% of the 371 respondents reported using nonprescription weight loss products. 71% of volleyball players used general weight-reducing products, diuretics, and laxatives, whereas only 32% of softball players and 11.3% of basketball players admitted use. Based on the results of this study, nonprescription weight loss product use is most common among volleyball players, but softball and basketball players should not be overlooked either. The greatest use of these products was out of season, and so future intervention and educational programs should target out of season use.


This purpose of this article was to study the impact of controversial publicity on perceptions of well-known sport performers. 106 undergraduate students rated six high-profile sport stars on eleven dependent variables assessing attitudes and ascribed personality characteristics. The three types of publicity assessed were steroid use, criminal activity and sexual stigma. Sports stars profiled included Ben Johnson and Martin Vinnicombe for steroid use, Mike Tyson and Tiny Pinder for criminal activity, and Martina Navratilova and Magic Johnson for homosexuality and HIV, respectively. Initial analyses revealed significant multivariate effects for gender, type of publicity, and the interaction of these variables.
Examination of univariate effects showed generally favorable perceptions of athletes associated with criminal acts. The results also indicated that athletes associated with the use of performance-enhancing drugs were evaluated harshly and that male and female differences existed for certain types of stigma.

**Petroczi, A. (2002). Exploring the doping dilemma in elite sport: Can athletes' attitudes be responsible for doping? Published Doctor of Philosophy dissertation, University of Northern Colorado, USA.**

Athletes' attitudes have been repeatedly used as a lay explanation for drug using behavior in competitive sport. The aim of the present study was to find empirical evidence to explain the use of performance enhancements by an athlete population. Data were collected via paper-and-pencil survey among competitive American and Hungarian athletes (N = 163) using the *Performance Enhancement Attitude Scale* and the *Sport Orientation Questionnaire*. No correlation was found between the indicators of sport orientation and doping orientation, except a weak yet statistically significant relationship between competitiveness and athletes' belief that currently banned performance enhancement should be allowed for all athletes. Results from the covariance structure analysis suggested that increase in doping behavior would lead to a significant increase in the use of social drugs. The relationship between social drugs and doping was a reversed correlation. While both models showed satisfactory fit, the model without social drugs indicated a slightly better overall fit to the data. American athletes, both males and females, showed a more supportive attitude toward legalizing doping than their Hungarian counterparts. While evidence was found for a relationship between doping attitudes and behavior, attitudes provided only a marginal explanation for drug use in sport. Findings of this study should warn researchers and officials alike not to place greater emphasis on personal characteristics of individual athletes that it is warranted for.


Due to a lack in the literature, this study aims to quantitatively explore to what extent athletes think that doping in sport aligns with illicit behaviour and how well it functions. An online survey was used to gain data from 46 competitive student-athletes (28 female, 18 male) at a large South-Eastern Australian university. Based on self-reported data, participants were placed in one of four groups: i.) no supplement or illicit drug use (30%), ii.) supplement only (22%), iii.) illicit only (26%) and iv.) both supplements and illicit drug use (22%). No participant reported doping themselves, although they were asked to report their estimation of doping prevalence. Individuals who used supplements inflated the percentage of athletes who dope but there was significantly higher doping prevalence estimation from athletes who used illicit drugs. These findings from this study, along with further research in this field could lead to enhanced doping prevention and intervention.

b.) Doping practices/patterns

**Curry, T.J. (1999). A comment on the use of anabolic steroids on women’s Olympic swimming. *International Review for the Sociology of Sport* 34(2), 173-180.**
This study compares the effects of anabolic steroids to other innovations, focusing on gold medal times in the women’s 100-meters freestyle from the 1919 to 1996 Olympics. Factors include changing conceptions of femininity, improved facilities and training methods and the recruitment of elite athletes. Anabolic steroids have had a significant but relatively minor impact on women’s swimming over the years.


The purpose of this study is to investigate the prevalence of illicit drug use among elite Australian athletes as well as understand these athlete’s attitudes towards drug use and attempt to discover predictors of recent drug use. The illicit drugs focused on are as follows: cannabis, ecstasy, meth/amphetamine, cocaine, GHB and ketamine. Surveys were completed by 971 elite athletes (734 male, 237 female) over the age of 18. The classification of ‘elite’ means that the athlete is eligible for state or national selection in his/her particular sport. Results found that in the past year, one-third of participants had the opportunity to use illicit drugs although all six drugs had self-reported usage rates lower than that of the general population. Significant predictors of recent drug use included: knowing other athletes who are illicit drug users, having the opportunity/being offered drugs and identifying as a ‘full-time athlete.’ A small percentage of participants (16%) reported that there was a drug of concern in their respected sport; ecstasy, cocaine and alcohol were these drugs of concern.


This study analysed the importance of social, personality and health factors for the use of anabolic-androgenic steroids (AAS). Over the last decade adolescent males have been shown to use anabolic-androgenic steroids (AAS) in order to improve their sports performance and appearance, as well as in combination with alcohol and psychotropic drugs. However, the risk profile of AAS use is still not well understood. More than 2,700 senior high school students in Uppsala, Sweden, filled out an anonymous closed-response questionnaire. The findings from multiple logistic regression analyses of adolescent males (n=1,353) showed that immigrant status, average/low self-esteem, average/low perceived school achievement and use of prescription tranquillisers/sedatives had independent significant associations with the use of AAS after controlling for age and previously known factors such as strength training, truancy and heavy alcohol consumption. The characteristics of AAS users extend beyond activities such as strength training and multiple drug use to include social, personality and health aspects.


Although racket sports are not usually associated with doping they do place particular physiological demands on athletes’ bodies which can be reflected in substance use and misuse (SUM). The purpose of the present study is to explore SUM in Slovenian Olympic racket sport athletes. Education, sociodemographics and sport-specificity are factors which are all considered.
Questionnaires about substance use habits were completed by 187 (112 male, 75 female) elite athletes in one of three racket sports, table tennis, badminton and tennis. The athletes selected to be in the present study had competed in at least one of the two most recent, highest national level competitions. 46% of athletes (for both males and females) reported using nutritional supplements. Male participants were more oriented toward substance use and misuse than their female counterparts; between 10% -24% of male indicated they would dope if it helped them compete better and had no negative health effects and 5% - 10% maintained this intention to dope regardless of health side effects. The most commonly reported substances used were those which did not affect sport performance when used outside of the competition period and included binge drinking (20%) and using opioids (18%). Athletes generally reported avoiding substances which impair athletic performance, adhering to anti-doping codes and having low trust in their coaches and physicians knowledge surrounding doping issues. The authors conclude that substance use and misuse does not only occur in doping-prone sports. They suggest that anti-doping programs should become more holistic to account for athletes’ health and not only for the integrity of sport.


Previous studies investigating doping prevalence in sport have generally used questionnaires and have found a wide variance in prevalence which can be explained by sample variety. The purpose of this study was to evaluate the effectiveness of the questionnaire method. In the study, 1810 amateur athletes (933 males, 817 females) received a questionnaire about doping, the definition of doping and types of questions varied by questionnaire. From this sample, the prevalence of doping ranged from 1.3% to 39.2%. It was found that most athletes did not use prohibited substances to dope, but they generally ignored the banned list. The two most commonly used banned substances were drugs for asthma and marijuana. The researchers speculated that, at the amateur level, doping is more of a social problem than a sport problem. They also concluded that cross checking data, looking at types of substances used, varying how athletes are questioned gives more reliable data on the prevalence of doping in sport.


The purpose of this article was to investigate the use of doping agents among Norwegian adolescents. The sample consisted of 14-17 year old in the public and private school systems in Oslo. 10 828 students participated. There was a special emphasis on the association between doping agent use and use of tobacco, alcohol and drugs. Use of doping agents did not vary according to socio-demographic variables, living area in the city, or ethnic background. There was an association between doping agent use and family factors (parental alcohol exposure and poor monitoring). Doping agent users often used commercial gymnasiums ad also reported high use of smokeless tobacco and alcohol problems. The association between doping agent use and use of amphetamines, MDMA, and heroin were particularly strong. The association between doping agent use and use of cannabis only was negative. The use of heroin should be noted, as this may imply needle sharing and the spread of hepatitis and HIV.

The purpose of the present study is to test the false consensus effect (FCE) in athletes in relation to their doping and recreational drug use behavior. The false consensus effect (FCE) occurs when one overestimates behaviors he/she engages in and underestimates behaviors he/she abstains from. In this context, it is predicted that those who dope will overestimate the prevalence of doping. Questionnaires surrounding projected use, self-reported behaviour and attitudes towards performance-enhancing drugs (PED) and recreational drugs (RD) were completed by 82 competitive Hungarian athletes (37 male, 45 female). Results indicated that 14.6% of athletes admitted to using PED and 31.7% of athletes stated they used RD. Both doping estimations and self-admitted doping practices by the athletes were significantly higher than the average rate of positive doping tests (2%). Participants demonstrated the false consensus effect for PED with an overestimation of 34.6% PED users (actual = 16.9%) but not for RD.

i.) Effect of gender


The purpose of this study was to examine the effect of gender and the negative consequences associated with alcohol use on the variables of self-esteem and approval motivation among the special population of collegiate athletes. Findings indicated that there was no significant difference between male and female athletes on their level of approval motivation or in the number of negative consequences associated with alcohol use. There was a significant difference between male and female athletes on the level of self-esteem. Additional findings indicated that high consequence drinkers demonstrated lower levels of self-esteem and higher levels of approval motivation than low consequence drinkers.


The present study compared the use risk of marijuana in male and female student-athletes to that of their same gender non-athlete peers. The reason behind this study is that aside from alcohol, marijuana is the most frequently used drug on male sports teams, and that there are similar findings for women’s teams. One third and one quarter of male and female athletes respectively report using marijuana at least once in the past year, and while this is significantly lower than their non-athlete peers, athletes have more to lose and may experience more negative consequences related to performance, eligibility and scholarship. Results of the study concluded that male and female non-athletes use marijuana more frequently than their male and female athlete peers, with athletes reporting using marijuana less than once a month. For men, being white, past year cigarette smoking, lower body-image stress, higher sensation seeking, and exaggerated perceptions of student use norms were associated with past year marijuana use. Additionally, the perceptions of student use norms were more influential on non-athletes. For women, the effects for past year marijuana use included being white, being a non-athlete, past-
year cigarette smoking, greater body-image stress, lower academic stress, higher sensation seeking and exaggerated perceptions of student use norms. This study also compared male athletes who used marijuana during their competitive season with those who did not. The same was not done for female athletes, as few reported in season use. Males who used marijuana in season compared with those who did not reported higher sensation seeking, greater anxiety, greater fatigue, greater current negative mood, higher normative perceptions of athletes marijuana use and higher coping. However, enhancement motivations were higher in athletes than in non-athletes, while all other motivations for athletes were lower in comparison to their non-athlete peers. This indicated that using marijuana for recreational purposes is a student-athlete’s most important reason for use.


This study models academic and health-related trajectories across high school years, examining how they are connected in adolescent life. Influence of family background and friendship groups are taken into consideration. It also looks at the relationship between academic and health-related trajectories that differ from gender-athletic status. Six California and three Wisconsin high schools were issued two questionnaires per year, from 1987-1990. Eighty percent participated, 15% absent and 5% abstained. The participants were mostly middle-class schools, one from a disadvantaged area and another from a rural-farming population. Nearly 40% of participants were of ethnic minorities, while over one third didn’t live with two biological parents. GPA was used as a measure of academic achievement. Tobacco, alcohol and illegal drugs are considered substance use. Athletic participation was determined by either being on a team or not. School becomes less important over time. Over these three years, evidence suggests that students become more involved in substance use. The researchers attributed this involvement in substance abuse to adolescents trying to figure out where they belong and who they are. Academic and health-related trajectories do differ by gender-athletic status. Females have the highest level of functioning in this stage, while male non-athletes show the lowest. Athletes are high achievers, but achievement does not increase, nor decrease over this time period. Athletes do not differ in substance use from non-athletes. Non-athletes are able to keep health-related and academic behaviors separate, athletes are not. Athletes have greater stake in academic success for eligibility reasons, scholarships and closer ties to school personnel. Female athletes may be advantaged doubly due to higher interest in school to begin with. Male non-athletes struggle the most with academics. Adolescents are actively developing and while doing so, they re-orient themselves to their environments and are subjects to constraints and pressures of the larger social world.


In an attempt to detect blood doping in athletes the World Anti-Doping Agency has implemented the Blood Passport. The Blood Passport looks for uncommon changes over time in reticulocytes percentage (Ret%), as a variable of the OFF-hr score, and haemoglobin concentration (Hb) reflecting potential doping violations. The purpose of this study is to investigate the concurrent stability of Ret% and (Hb) in athletes over extended periods of time.
Blood collection from 17 (10 male, 7 female) elite triathletes was collected at four stages throughout four competitive seasons. The results confirmed that both Ret% and Hb measurements are useful for anti-doping purposes utilizing the Blood Passport. Further research however is indicated in the area of Ret% fluctuations throughout a season for female athletes due to significant variance of Ret% within the stages.


The objective was to establish the use and opinions regarding dietary supplements, anti-doping opinions, and preferred way of providing dietary supplement education with respect to elite Canadian athletes that varied in age and gender. A descriptive, cross sectional survey was used on national team athletes from the Canadian Sport Centre Calgary, University of Calgary varsity teams and National Sport School high performance athletes. The participants included 582 high performance athletes, 314 male, and 268 female. There was no gender difference in supplementation rates. Most participants were unaware of the side effects or didn’t record side effects. Family/friends, teammates and coaches, in that order were named as sources of supplementation information. Females were less likely than males to seek supplementation advice from the internet, and were more likely to be influenced by dieticians. Females were more likely to take supplements due to perceived or diagnosed medical deficiencies. Gender and age influenced the justification of supplementation, awareness of anti-doping regulations and supplementation advisors.


The purpose of the study was to determine the characteristics of female US high school students who use anabolic steroids. Females from grade 9 to 12, who were representative of the national high school population, were give the 2003 Centers for Disease Control and Prevention national school-based Youth Risk Behavior Survey. 5.3% of female high school students reported past or present anabolic steroid use. These females also had an increase in other harmful behaviors in the past month, which included alcohol, cigarettes, marijuana, cocaine, and diet pills. These girls were less likely to play on school sports teams. However, steroid users playing on sports teams had the same self-injurious behaviors as steroid users not playing on sports teams. Anabolic use among females is not unique to only competitive athletes, but is an indicator of other health-harming behaviors.


The purpose of the article was to document the psychiatric and physiological effects of anabolic-androgenic steroids in females. Psychiatric and medical evaluations were done of 75 women athletes recruited from gymnasiums in Boston, Massachusetts. 25 of the women reported current or past AAS. Users were more muscular than nonusers and reported using more ergogenic aids. 14 of the users cited hypomanic symptoms during AAS use, and 10 reported depressive symptoms during withdrawal. 19 of the users reported at least one adverse effect due to AAS use. These women also suffered from psychiatric syndromes, which included eating
disorders, nontraditional gender roles and chronic dissatisfaction and preoccupation with their physiques, known as muscle dysmorphia.


This study sought to determine which sports and teams are at a greater risk for substance abuse. The premise of this study was based on the idea that it would seem likely that there would be variation in substance use based on sport and team affiliation, similar to the way there is variation in substance use in the general student population. This study notes the possibility that some sports/teams may create a setting that is more promoting or condoning of substance use or the possibility that other sports/teams foster an environment that discourages or disapproves substance use. The study included 2,316 athletes, of which 10.5% named football, 11% named volleyball, 14.5% named soccer, 6.4% named swimming/diving, 15.5% named basketball, 3.5% named hockey, 7.9% named baseball/softball, and 9.9% named cross country or track and field as their sport. 20.8% of the remaining athletes were coded as involved in other sports. Results show that male athletes (54%) were more likely to report binge drinking than female athletes (39%). When compared with non-athletes, male athletes were significantly less likely to report marijuana and other illicit drug use than non-athletes. Significant differences for marijuana use and other illicit drug use were not found between female athletes and non-athletes. There were no female sports/teams that reported significantly lower levels of substance use. In conclusion, results show that there were significant differences in substance use based on sport/team affiliation. Higher substance use was reported by male hockey players and female soccer players. Additionally, findings indicate that male hockey players and female soccer players were at greater risk for substance use.


With research indicating that the college environment places students at greater risk for drug use than their peers not attending college, and the increase in the use of prescription drugs for nonmedical use, this article examines the use of nonmedical prescription drug use among college students. The author describes nonmedical prescription drug use as using a prescription drug for the feeling or experience of the drug without that drug being prescribed by a doctor. It is argued that the use of nonmedical prescription is linked to the fact that they are easier to obtain, pose less of a threat for arrest, are more socially acceptable and are perceived as safer. The current research used questionnaires in order to obtain information on nonmedical prescription drug use among athlete and nonathlete college students. Participants were only considered athletes if they were involved in school-sponsored sports. The study looked at both nonmedical prescription drug use as well as a measure of past-year illicit drug use (ex: cocaine). Results of the study show that 17% of the participants reported using nonmedical prescription drugs during their lifetime, with 14% of the sample being classified as an athlete. Athletes were found to significantly report less use of tranquilizers and opiates than nonathletes, with female athletes significantly reporting less use of tranquilizers and opiates than female nonathletes. There is no mention in the study of male athletes reporting significant less use of any prescription drug than their male nonathlete peers.

The purpose of the article is to examine the effects of Androgenic-Anabolic Steroids (AAS) on body composition and athletic performance, as well as its effects on the health of the individuals consuming it. Strauss et al. interviewed ten females who had reported AAS use. All of them reported lowering of the voice as a result, and nine of the ten cited increased growth of facial hair, enlargement of the clitoris, and an increase in aggression and appetite. In a study by D Boer et al., 50% of females reported acne, 40% reported fluid retention, and 50% reported a change in libido. In a different study, female bodybuilders reported acne vulgaris changes in libido and deepening of the voice as the most prominent side effects. Long term AAS use causes loss of hair on the head, changes in pubic hair growth and enlargement of the clitoris. Menstrual irregularities and a decrease in breast mass also occur.


The purpose of the study was to determine whether recent reports have overestimated AAS use among teenage girls. This study reviewed four national surveys conducted that used anonymous questionnaires. It was noted that the wording of certain surveys might generate false positive responses. As well, results were reviewed from the most recent study were investigators personally interviewed female AAS users. Conflicting results were generated between different studies. One study reported female AAS use as high as 7.3%, and as low as 0.1% in another. The questions asked in the high response rate study tended to be vague about the difference between anabolic steroids, corticosteroids, and over the counter supplements. The prevalence of AAS use among females is exaggerated in certain studies, and is most likely between 0.1-0.5%. Follow-up studies should have better designed questions to eliminate any confusion regarding the definition of steroids versus other supplements.


This study examined differences in gender between and among fourth, fifth, and sixth grade Mexican American students for use of four specific minor substances: cigarettes, beer, wine/liquor, and marijuana. These minor substances are believed to be a gateway to more intense and frequent use of both minor and major substances. 2 216 students were surveyed. 52% were male, 48% female. Significant gender differences were evident at the fourth and fifth grade level for minor substances. Patterns of initiation of minor substance use by gender and grade are discussed using the “substance use stage theory.” Overall, results support the need for further research emphasizing within group variations in the substance use of singular ethnic groups.


The purpose of this study was to determine current AAS use patterns, other drugs taken in conjunction with AAS, and adverse effects encountered by users. 349 females responded to a questionnaire handed out to women in gymnasium. Only 2.3% of females admit to have taken AAS, and on average, they had taken them for 4.1 years. The most popular steroids taken were
Winstrol, Anavar, and Primobolan. The main reasons for taking AAS were to improve bodybuilding ability, to increase strength, and to increase muscle mass. All the women using AAS reported side effects, which included deepening of the voice, and menstrual irregularities.


The purpose of this paper is to address the issue of steroid abuse by women. An increase in lean body mass, strength, aggression, and a decrease in recovery time are some of the benefits of steroid use. Steroids are reported to be abused by women bodybuilders and those in competitive sports involving power and endurance. The effects of testosterone have deterred women because they include acne, unwanted facial hair, clitoromegaly, and a change in the shape of the face. Regardless of the hazards, oral steroids such as oxandrolone, stanozolol, oxymetholone and nandrolone are the preferred drugs by women athletes. The use of oral contraceptives can cause an increase in the T:E ratio, and produce a false positive for steroid abuse. The risks for women abusing steroid are greater than in men because some of the side effects are irreversible. Substantially fewer women have been found guilty of steroid abuse than men, so it is hoped that the message of risks and sanctions upon a guilty verdict outweigh the gains of drug use.


The purpose of this report is to study substance (licit, illicit and specially doping products) experimentation among sport sciences students and to discover whether or not the gender difference pointed out by the studies on substance use among French adolescents was still exhibited by an older population of French students. It is based on a self-report questionnaire. Sections of the questionnaire include demographics, sport practice, perceptions and opinions on doping in sport, and substance use. The questionnaire was administered to 331 second year students from the Faculty of Sport Sciences, University of the Mediterranean, Marseilles, and France. Twenty-two questionnaires were not complete; therefore 309 sets of data were used. 177 subjects were male and 132 female. There is a clear gender difference in the modes of consumption of several substances. Drug experimentation is more frequent among males than females for cannabis. There was a similar difference for other psychoactive compounds (crack, cocaine, ecstasy and amphetamines). Repeated alcohol consumption also showed similar results, with 10% of males reporting a repeated consumption of alcohol versus 5% at age 15 for females, and 23% for males, versus 7% for females at age 18. Repeated use of cigarettes did not reveal a gender difference. Considering the self-reported substance use of these university students, it would be surprising if none of the population tested positive after an anti-doping test.


This article focuses on performance enhancers used by women and girls, in the hopes of educating health care providers who work with females on the prevalence, effects, risks, and implications of using drugs. Surveys given to boys and girls between 9-13 years were used to find the prevalence of Anabolic-androgenic steroid use. Steroid use prevalence has also been studies in women collegiate athletes, where the NCAA surveyed more than 19,000 collegiate men and women. The NCAA did a study of substance use habits of college student athletes,
which included a section on steroid precursors, such as androstenedione and DHEA. No trials have been published which look at steroid precursors’ performance-enhancing effects in women. One case report and one survey have studied the use of the estrogen antagonist tamoxifen in women. A survey by the NCAA estimated the use of HGH in the past year, but did not separate data between men and women. The NCAA study of substance use habits of college student-athletes also looked at the prevalence of ephedra. The 2001 NCAA study of substance use habits did not differentiate between men and women with respect to the use of creatine. Supplement use in females has been increasing. Having an increase awareness of the issue may lead to better screening and identification of the problem in this population.


This paper examines the relationships among gender, athletic participation, and health related problem behaviours among adolescent steroid users. Contrary to popular assumption, adolescent anabolic-androgenic steroid use is not limited to serious male athletes. A nationally representative sample of 16 000 high school students was used. Nearly 500 had tried steroids. Compared to non-users, steroid users were significantly more likely to report substance use, suicidal behaviour and sexual risk-taking. Patterns of risk behaviour varied by athletic status and gender. Athletic participation and female gender were negatively associated with most risk behaviours among users of anabolic steroids. The prevalence of adolescent lifetime steroid use has been estimated at 4% to 12% for boys, compared to only 0.5% to 2.9% for girls. Steroid use has spread beyond the competitive an even recreational sports community to include adolescents and adults who do not participate in sport at all. Body image is the biggest motivator, ahead of the thought that steroids can serve as an alternative to exercise.


The purpose of this study was to investigate gender-specific relationships with respect to steroid use, physical activity, and other problem behaviors. The U.S. Centers for Disease Control and Prevention’s Youth Risk Behavior Survey was given to a sample of ninth through twelfth grade students at public and private schools throughout the country. 2.0% of girls, and 4.1% of boys in the sample admitted to steroid use without a doctor’s prescription. There was a positive and significant correlation between steroid use and smokeless tobacco use for girls, as well as a strong positive correlation between steroid use and fighting. Male and female users had lower levels of parental education than nonusers. A positive correlation exists between masculine behaviors, such as smokeless tobacco use and fighting, and an increased probability of lifetime steroid use for girls, more so than boys.


The objective of this study was to determine if there are differences between the supplement use of male and female collegiate athletes in order to modify body appearance. The study acknowledges that while supplementation behaviour is not limited to the athletic
population, it is the athletic population engaged in competition that appears to be more likely to use supplements than nonathletes. Participants consisted of 241 females from the women’s varsity field hockey, lacrosse, basketball, swimming, volleyball, soccer and softball teams, and the intramural lacrosse, bodybuilding and soccer sports clubs. Male participants were recruited from the men’s varsity lacrosse, basketball, swimming, baseball, football and soccer teams and the intramural bodybuilding, rugby and lacrosse sports clubs. Results on the basis of yes or no responses showed that a significant association existed for 9 of the 18 behaviours between behaviour and gender. The following behaviours were specifically associated with gender: taking dietary supplements, restricting food intake to decrease body fat, taking supplements to decrease body fat, checking body weight using a scale, feeling concern over body symmetry, looking into a mirror to check body size, lifting to become more powerful and lifting to increase size. Of the 18 behaviours, 9 others were not found to be associated with gender, they included: drinking protein shakes, avoiding high-fat foods, drinking meal replacement shakes, taking steroids or steroid-based substances to increase body size, thinking about or considering taking steroids, taking supplements to help increase body size, worry about losing mass, checking muscle size using a tape measure and wearing baggy clothes to hide body defects. The study concludes that for 9 of the 18 behaviours there were significant gender differences and that gender differences are most apparent in relation to concern about body size. The findings suggest that similar patterns for the 9 of 18 behaviours lend support to the idea that female collegiate athletes are behaving in ways more like their male counterparts.


The purpose of this study was to investigate the differential positions of sixteen banned substances relative to selected attributes as perceived by student athletes. Four factors dictating respondents’ preference were extracted using a factor analysis. Differences in perceptions as defined by gender and contact versus non-contact sports were compared to identify those banned substances to which student athletes were most vulnerable. The results revealed that besides alcohol, caffeine and anabolic steroids, marijuana, crank/speed, heroin, and LSD/ecstasy were popular among male student athletes. Marijuana, cocaine/crack, and heroin were given a special preference in contact sports, whereas marijuana and crank/speed were preferred in non-contact sports. These results could possibly help the development of targeted drug policies and education programs to control the potential use of banned substances in athletics. Initial analyses revealed significant multivariate effects for gender, type of publicity, and the interaction of these variables. Examination of univariate effects showed generally favorable perceptions of athletes associated with criminal acts. The results also indicated that athletes associated with the use of performance-enhancing drugs were evaluated harshly and that male and female differences existed for certain types of stigma.


Data is scarce on young non-professional athletes. This study examines the prevalence and predictors of doping use from Finland, France, Germany, Italy, Greece and Israel. A standardized, anonymous questionnaire was self-administered by 2650 tertiary education students. 2.6% admitted to at least one usage of a doping agent, with no significant variation in
the frequency of doping reporting among the participating countries. Doping was less common among students of biomedical schools and was higher among males. Students who drink coffee or recall frequent occasions of involvement in drunkenness episodes, were more likely (twice and three times, respectively) to report doping. Students using nutritional supplements or having participated in a major athletic event were more likely (four times and twice, respectively) to report doping in comparison with students who do not. There is a high odds ratio for reporting individual doping when having a friend who uses doping. There was evidence that high-risk behavior and supplement use increased the risk of doping. Doping in the general population may be a sizeable problem as it is in professional athletics.


The use of ergogenic aids is common in sport, even among preadolescent athletes (8,15,25). The purpose of this study was to investigate the relationship between preadolescents' use of nutritional ergogenic aids (creatine and amino acids) and gender, age, athletic participation, and sport-relevant psychological factors (i.e., sport success motivation, task and ego orientation, self-efficacy). 2,450 eleven to thirteen year-old children participated in this study. Results suggest that substance use increases with age, especially among male preadolescents; that gender differences are particularly marked among older preadolescents; and that a high commitment to sport training represents a risk factor of ergogenic supplementation only when it is linked to certain psychological dispositions, such as a high ego orientation and a low task orientation.


The purpose of this study was to examine the attitudes of varsity athletes toward a mandatory drug education and testing program to see if there were differences in drug-related attitudes and behaviors based on gender or varsity sport. Varsity athletes at a Big East university were surveyed. There were no statistically significant differences in personal drug use behaviors based on gender or team affiliation. Attitudes about drug use and knowledge of a teammate using drugs did show significant differences based on varsity sport. Tennis players were most likely to agree that drug use by college athletes is socially acceptable. Lacrosse players were most likely to be aware of at least one teammate using drugs. Overall, attitudes toward the mandatory drug education and testing program were ambivalent. Approximately half of the participants believed drug was necessary and discouraged drug use, while seventeen percent believed it was an invasion of privacy.


The notion that pregnancy and abortion are forms of doping has persisted for 20 years. Popular and scientific literature on pregnancy/abortion doping was critically analyzed to compare pregnancy/abortion doping with definitions of doping and blood doping and to compare pregnancy/abortion doping themes to current scientific knowledge. Main themes included oxygenation advantage and hormonal advantage. During pregnancy, maximal oxygen uptake may improve but not exercise performance. Human chorionic gonadotropin, the only pregnancy
hormone on National Collegiate Athletic Association and United States Anti-Doping Agency banned substances lists, increases during pregnancy but there is no evidence that hCG enhances athletic performance in women. Recommendations include revising USADA and NCAA policies into congruence with World Anti-Doping Agency policies which ban hCG for men only. During the past seven years of advocating for college student-athlete athletic department pregnancy and parenting policies, popular nonscientific literature (websites, blogs, and personal anecdotes) and scientific literature have been examined to detect barriers to student-athlete health and policy change. One barrier is a persistent belief in popular literature that athletes can use pregnancy and/or abortion to enhance competitive performance; i.e., as a form of prohibited blood doping. The scientific and nonscientific resources on pregnancy and abortion doping have considerably diverged over the past 20 years. The purposes of this paper were to examine the biophysical themes in popular and scientific definitions of doping, blood doping, and pregnancy/abortion doping, compare pregnancy/abortion doping to current scientific knowledge, and make recommendations to the stakeholders: student-athletes, coaches, athletic trainers, team physicians, athletic and university administrators, university faculty, the United States Anti-Doping Agency (USADA) and the National Collegiate Athletic Association (NCAA).


The objective of the study was to determine the prevalence, persistence, longitudinal trends, and predictors of future steroid use in a sample of adolescents. This was a 5-year longitudinal study, from 1999-2004, that recruited an equal number of males and females from middle and high schools in Minnesota. In 1999, the adolescents completed in-class surveys, and research staff measured their height and weight. In 2004, surveys were mailed to the participants. Female adolescents with low weight satisfaction and higher BMI in 1999 were predictors of 2004 steroid use. There is a small relationship between steroid use in girls and weight-related sports participation. Female steroid users in 1999 had less nutrition knowledge and were less concerned about their health.

c.) Monitoring doping practices and anti-doping policies


The purpose of the study was to define and rank factors that related to female disordered eating and body-shaping drug use. This would help to implement the correct type of sport team-centered drug-use prevention program for female athletes. Anonymous questionnaires were administered to female middle school and high school students. A second set of schools were randomly selected to become a control group, or to receive the determined curriculum. Following the intervention program, athletes reported less diet pill use, and less athletic-enhancing substance use, which included amphetamines, anabolic steroids, and sport supplements. The ATHENA program significantly identified the risks and decreased disordered eating and body-shaping drug use. Since sport teams are usually single sex, and adolescents often report greater comfort levels when discussing issues in the same-sex setting, the female-only format is best.

This article is a review of the literature related to measurement of steroids. The authors aimed to sensitize the personnel involved in steroid measurements to the impact of the numerous preanalytical factors that are capable of influencing the results of laboratory tests, especially in the context of female physiology. The authors suggest that in order to improve the value of the laboratory tests, efforts should be devoted to limiting the effects of confounding factors when necessary. One key strategy consists of devising standardized procedures for specimen collection and treatment.


Enea et al. set out to determine if rigorous exercise, the use of oral contraceptives and, or changes in the menstrual cycle in women induce changes in the excretion of nandrolone metabolites. Strenuous training and exhaustive exercise has previously been disproved as increasing the excretion of nandrolone metabolites in trained males. The reason behind this study is that WADA sets the limit of nandrolone metabolites present in the body at 2ng/mL for both males and females. The purpose of this study was thus twofold. First, the researchers set out to examine the effects of the menstrual cycle, oral contraceptives and physical training status on the excretion of nandrolone metabolites in urine, both at rest and after exhaustive exercise, and second, to determine if the limit of 2ng/mL of excreted nandrolone metabolites in urine for doping control was appropriate for females. Thirty-two women between the ages of 18 and 30 participated, with 22 of them being oral contraceptive users. Urine was collected before and 30 minutes, 60 minutes and 90 minutes after exercise. All women had regular menstrual cycles consistently for the last 6 months. Results showed that nondrolone excretion was not affected by intensive and exhaustive physical activity (comparable to previous studies on males), low dose oral contraceptive, menstrual cycle in eumenorrheic females or by physical training. Additionally, the highest concentration of nandrolone in the entire sample was 1.14ng/mL, indicating that the 2ng/mL limit for doping control set by WADA is fair to both female and male competitors.


The purpose of this study was to explore anti-doping awareness and dietary supplement (DS) and oriental supplement (OS) prevalence of athletes as well as investigate the resulting gender differences. DS and OS practice and anti-doping awareness questionnaires were completed by 479 (343 male, 136 female) Korea National Sport University athletes. Just under half of the athletes (46%) reported using dietary supplements (DS) during the training period and 26% of athletes reported using oriental supplements (OS). Female athlete use was significantly higher than male for both DS and OS. Both males and females cited that energy was the primary reason for DS. For these elite athletes during the training period and right before the game, their anti-doping education was highly related to increased DS.
d.) Effects of doping  
   i.) Body image


The purpose of this study is to determine anabolic steroid use, risk-taking behaviour, satisfaction with body image, and attitudes and beliefs regarding anabolic steroids. Eleventh-grade students at seven high schools in Central Arkansas were surveyed. This included a total of 1492 adolescents, 672 males and 806 females. Fourteen students did not specify gender. Fifty-one males and twelve females admitted anabolic steroid use. There were significant differences between users and nonusers in risk-taking behaviours and degree of satisfaction with body image and muscles. Users were more likely than nonusers to approve of anabolic steroid use in sports and to believe that anabolic steroid use could improve one’s health. Gender, knowledge of beneficial side effects, knowing other anabolic steroid users, age, and race to be significantly related to anabolic steroid use. Anabolic steroid use was strongly motivated by social influences, some knowledge of beneficial effects, and denial of adverse effects in white adolescent males in the study population.


This study examines measures of body image distortion and body dissatisfaction. Twenty-five bodybuilders, eighteen hockey players and twenty-five classroom subjects completed surveys. A significant majority of the bodybuilders reported anabolic steroid use, while no steroid use was reported in the other two groups. Results revealed marked levels of distortion and dissatisfaction in the bodybuilders, yet not in the other two groups. All groups differed significantly from each other in terms of how they rated the important physical appearance. Bodybuilders attached the highest importance to physical appearance.

   ii.) Physiological


The purpose of this study was to establish whether the symptoms of reverse anorexia continue with the cessation of anabolic-androgenic steroid (AAS) use in male bodybuilders. Random sample of regular aerobic exercisers, current, previous and non-AAS-using bodybuilders were recruited. Of the 137 male subjects, 50 were aerobic exercisers, 39 were non-AAS-using bodybuilders, 29 were current AAS users and 19 subjects were ex-AAS users. AAS use, not necessarily bodybuilding, was associated with increased symptoms of reverse anorexia, and this symptomatology was higher for AAS users. It remains undetermined whether symptoms of reverse anorexia are either a cause or an effect of AAS use.

Human growth hormone is reportedly used to enhance athletic performance, although its safety and efficacy for this purpose are poorly understood. This article evaluates evidence about the effects of growth hormone on athletic performance in physically fit, young individuals. Randomized, controlled trials compared growth hormone treatment with no growth hormone treatment in community-dwelling healthy participants between 13 and 45 years of age. 303 participants received growth hormone, representing 13.3 person-years of treatment. Participants were young (mean age, 27 years [SD, 3]), lean and physically fit. Growth hormone dosage and treatment duration for studies given growth hormone for >1 day varied. Lean body mass increased in growth hormone recipients compared with participants who did not receive growth hormone (increase, 2.1 kg [95% CI, 1.3 to 2.9 kg]), but strength and exercise capacity did not seem to improve. Lactate levels during exercise were statistically significantly higher in 2 of 3 studies that evaluated this outcome. Growth hormone-treated participants more frequently experienced soft tissue edema and fatigue than did those not treated with growth hormone. Growth hormone protocols in the studies may not reflect real-world doses and regimens. Claims that growth hormone enhances physical performance are not supported by the scientific literature. Although the limited available evidence suggests that growth hormone increases lean body mass, it may not improve strength; in addition, it may worsen exercise capacity and increase adverse events. More research is needed to conclusively determine the effects of growth hormone on athletic performance.

e.) Effectiveness of doping practices


The purpose of this study is to determine if there are differences in strength and hormonal adaptations between men and women with concurrent training and strength training only. Eleven subjects (6 M, 5 F) strength trained 3 times a week for 16 weeks, and 22 subjects (14 M, 8 F) did likewise while also performing endurance training 3 times a week on alternate days. All variables were tested every 4 weeks for 16 weeks. Significant gender differences were observed for bilateral incline leg press and bench press 1-RM, serum testosterone (T), urinary free cortisol (UC), ventilation threshold (VT), and VO2max. There was a significant increase in bilateral incline leg press and bench press 1-RM for both training groups and genders. Relative gains in bilateral incline leg press and bench press 1-RM were similar for men. For women the gains in bilateral incline leg press 1-RM, but not bench press, were lower with concurrent training than with strength training only. No significant differences in T were observed with either program. UC was significantly elevated at 8 weeks for men and remained so after concurrent training, but decreased to baseline levels after strength training. UC decreased in the strength training women at 8 weeks but increased for women in both groups at 16 weeks. VT and VO2max increased at 16 weeks of concurrent training.

This article compares the effects of creatine supplementation on effect size for body composition variables (mass and lean body mass), duration and intensity (less than or equal to 30 seconds, 30-150 seconds, and greater than 150 seconds. Effect size is calculated for each body composition and performance variable. Small, but significant effect size was reported for body composition, less than or equal to 30 seconds, 30-150 seconds and greater than 150 seconds. Effect size was greater for change in body composition following a loading-only creatine supplementation compared to a maintenance regimen, for repetitive-bout compared to single-bout, and for upper-body exercise compared to lower and total body exercise. There was no difference in body composition or performance effect size between males and females or between trained and untrained subjects. Effect size was greater for changes in lean body mass following short-term creatine supplementation, repetitive-bout laboratory-based exercise tasks less than or equal to 30 seconds, and upper-body exercise. Creatine supplementation does not appear effective in improving running and swimming performance. There is no evidence in the literature of an effect of gender or training status on effect size following creatine supplementation.


The purpose of the study was to examine if there is a relationship between viewpoints on doping and the achievement goal orientations of the athletes. Questionnaires were given to athletes who ranged in competitive level from local to international. Respondents were Caucasian, with 68% being male, and 31% being female. The Perceptions of Success Questionnaire was used to determine their achievement goal orientation. Attitudes were measured by a questionnaire called “Attitudes toward doping-free sport and anti-doping policy.” Females athletes were much more task oriented, and less ego oriented. The results imply that the way in which an athlete defines success influences their attitudes toward doping. When athletes are ego oriented, they are more likely to dope and to be against anti-doping policies than task oriented athletes. In females, goal orientation had less of an impact on attitudes toward doping than in males. From an educational standpoint, coaches and other individuals in the position of authority should encourage an atmosphere of task orientation while working with their athletes.

f.) **Nutritional supplements**


The aim of the study was to examine the effects of creatine supplementation on muscular strength and endurance of trained females, the impact of anaerobic exercise completed before supplementation, and the disappearance of the effects. Twenty six female collegiate softball players were split into either a creatine 1, or 2 supplementation group, or a control 1 or 2 group. They completed maximal isometric and isokinetic knee extensions. The individuals in creatine and control groups 2 performed exercises with 10 maximal repetitions, and cycling alternately
during the first week. In the second week, the creatine groups 1 and 2 consumed 20g of creatine daily for one week. After, the individuals in creatine group 2 continued to consume 3g of creatine daily for two weeks, while the creatine 1 group consumed placebo during the third and fourth weeks. Subjects in control groups 1 and 2 consumed placebo from weeks one through four. The measurements the individuals underwent on the first day were also carried out on the final day of the second, third, and fourth weeks. 20 g of creatine supplementation daily for a week improves the mean strength and endurance of repeated contractions. The outcome is enhanced by previously performed anaerobic exercises, and would wane in a week if supplementation ceased.


Research has shown that the prevalence of athletic performance and enhancing drug use is widespread. The purpose of this study is to examine the use of such supplements among body builder athletes. A cross-section of 250 men and 250 women from different bodybuilding clubs were asked to complete a self-administered standardized anonymous check-list. The results showed that a total of 49% of participants used supplements. The self-reported prevalence of supplement use was higher for men (86%) than for women (11%). It was found that coaches had the most impact on supplementation practices; this influence was followed by nutritionists and then doctors.


The purpose of the study was to establish the frequency and pattern of creatine use by NCAA Division 1 athletes. An anonymous survey was given out to varsity athletes. Of particular interest were the self-reports of creatine use, dosage and frequency, where these athletes received their information on creatine from, and the results they expected to see as a result of its use. 48% of men, and only 4% of women admitted to having taken creatine. Of the athletes that had used creatine, a third of them began using it in high school. Friends and teammates were the most popular sources of information on creatine. The amount of women using creatine was quite small compared to men. The athletes reported increased strength and muscle size as a result of creatine use, but most of the athletes did not know the dosing they used.


This study examined the knowledge and use of nutritional supplements among high school students. Factors influencing nutritional supplement were assessed and comparisons were made between various groups of sports participants and non-sports participants. 509 students were administered the Nutritional Supplement Use and Knowledge Scale. Significant relationships were obtained for supplement knowledge with use, and supplement use with gender, supplement use. Significant differences between supplement use by gender, supplement use by sports category, and knowledge scores by sports category. Discriminate function analysis indicated knowledge, supplement use, and subscores for protein, vitamins/minerals, and carbohydrates were best discriminators of sport group membership. This study may help coaches, trainers, teachers, physicians and parents identify misconceptions held by adolescents.

The use of ergogenic aids is common in sport, even among preadolescent athletes (8,15,25). The purpose of this study was to investigate the relationship between preadolescents' use of nutritional ergogenic aids (creatine and amino acids) and gender, age, athletic participation, and sport-relevant psychological factors (i.e., sport success motivation, task and ego orientation, self-efficacy). 2 450 eleven to thirteen year-old children participated in this study. Results suggest that substance use increases with age, especially among male preadolescents; that gender differences are particularly marked among older preadolescents; and that a high commitment to sport training represents a risk factor of ergogenic supplementation only when it is linked to certain psychological dispositions, such as a high ego orientation and a low task orientation.


The purpose of the study was to measure the effect of creatine supplementation on sprint repeats and thigh muscle volume in elite power athletes. Ten male, and ten female athletes, randomly assigned to a placebo or creatine group had to complete six maximal 10 second cycle sprints. There were 60 seconds of recovery between each sprint, and a dose of creatine or the placebo was administered before and after the sprint. Before and after supplementation, MRIs were taken of both thighs of the athletes. Cr supplementation resulted in an increase in body mass, and a peak power during sprints. Total work and peak power values were higher for males than females in the first sprint, but during the last three sprints, the opposite was true. There was a 6.6% increase in thigh volume in five of the six individuals in the creatine group. Creatine supplementation can increase thigh muscle volume, and can increase performance in power athletes. The results are greater in females as the sprints are repeated.

Findings from the Annotated Bibliography

From the annotated bibliography above, insight was gained on how athletes who engaged in doping practices were perceived in scholarly sources in the past with respect to their gender, and how female subjects continue to be under-represented in the current literature on doping in sport. Four conclusions emerged from the annotated bibliography:

1. There have been many more quantitative studies produced than qualitative (61:22). This may indicate a tendency to address the topic of doping in sport from a quantitative approach, and may translate into less rich data compared to what can be obtained from qualitative studies. The number of studies using quantitative methods also highlights the difficulties inherent in determining doping usage rates for different populations.

2. A reoccurring theme among the qualitative studies was the idea that doping disrupts normative, dichotomous gender roles, particularly in women’s sport. In studies that linked sex
verification and drug testing, fair play and equity were offered as rationales for sex verification in women’s sport. However, beyond this link, the research literature does not analyse extensively doping from a gender lens or with much emphasis on contextualizing gender differences in doping behaviours among men and women. There is a clear gap in the research.

3. For the studies which analyse doping practices (patterns, frequency, prevalence, etc.), most of the quantitative studies (but none of the qualitative studies) analysed how a person’s sex affects these practices. However, it should also be noted that none of the quantitative studies conveyed doping mainly as a gender issue, whereas multiple qualitative studies argued that doping is a gender issue (see Burke (2004), Davis & Delano (1992), Lock (2003) and Patton (2004), for example).

4. Many studies indicated males engage in doping behaviours more than females and are more open to the idea of doping in sport.

The findings from the annotated bibliography guided the development of the semistructured interview questions. We examined and attempted to understand the current motivations and pressures all athletes, but particularly women athletes, face when posed with the decision of whether or not to commit doping offences.

The annotated bibliography provided the historical context necessary to transition to the second stage of the research project, and it confirmed that women’s experiences with respect to doping are largely ignored in the research literature. For example, the April 2009 edition of the scholarly journal *Sport in Society* contained several research articles on developing an agenda for social science research on drugs in sport. The editor, Jason Mazanov of Australia, adopted a collaborative approach and incorporated essays from many social sciences disciplines (including psychology, sociology and sport philosophy). Clearly, this is an important step in developing a solid research foundation in the social sciences; however, the journal contained barely any mention of the lack of research and concern regarding women and drug use. We believe this omission further supports our observations from the annotated bibliography about the lack of attention given to women athletes in doping research.

**Implications from Annotated Bibliography for Prevention Programs**

The annotated bibliography demonstrates and confirms the lack of research on women and doping. In late August or early September of each year, prior to the beginning of the Canadian university sport season, every student-athlete is required to attend a general meeting that includes information on doping education in addition to other aspects of participating in a varsity sport. The involvement of important key figures, such as the head coaches, is thus required and it is essential for the investigators to establish a positive rapport with not only the research subjects but the support staff as well. The doping education information session at the Universities is a very small aspect to the orientation program, and student-athletes at some institutions are simply handed a book of banned substances with little, if any, discussion. Appending information about our study at the universities in which we sought to recruit participants helped open a dialogue for additional communication on doping in sport.
It is obvious from the information collected in the annotated bibliography that there is substantially more peer-reviewed research using quantitative rather than qualitative methodologies to analyze gender and doping. More studies that address experiences and personal attitudes on doping are needed to provide clearer direction for doping prevention programs. Additionally, the research that draws on qualitative frameworks predominantly focuses on males and or masculinity in terms of doping. The unequal representation demonstrates the lack of specific studies focused on women athletes, and should be noted when designing prevention programs.
STAGE 2- INTERVIEWS

Semistructured interview questions were designed based on the findings from Stage 1. According to Graton and Jones (2010), “semistructured interviews allow the emergence of important themes that may not emerge from a more structured format” (p. 157). A total of thirty-eight university student-athletes (n=38) accepted our invitations to participate in this study and were subsequently interviewed at St. Francis Xavier University, The University of Manitoba and the University of Winnipeg in Canada. Invitations to participate were sent to approximately 400 athletes, which demonstrates the low response rate experienced in this study, and alerted the researchers to student-athletes’ potential disinclination to discuss gender and doping in sport.

In order to ensure rich, un-biased results, we made the decision not to interview student-athletes until final grades were entered. Given that St. Francis Xavier is a very small undergraduate university (approximately 4000 students), and that many student-athletes were enrolled in the Human Kinetic degree where the PI is a professor, steps were taken to decrease any real or perceived power relationships. We sought to provide the “ultimate interview setting” to gain insight into doping culture at the university level. Consequently, athletes were interviewed in mid-April, after their final exams, once their academic years and playing seasons had ended. We believe that since it was the end of their season, and they were somewhat removed, this allowed for deeper reflection from the athletes into the doping culture surrounding university athletes.

The methodological issues and constraints associated with obtaining accurate information about socially stigmatized behaviors, such as doping, have been known for many years. As far back as Herbert Hyman’s 1944 cautionary article, “Do They Tell the Truth?” researchers have been cognizant of the fact that people implicated in socially unacceptable behaviors are unlikely to disclose their involvement – particularly if they fear negative repercussions will occur (Yesalis, Bahrke, Kopstein and Baruskiewicz, 2000). Consequently, it is difficult to use self-reported data to obtain accurate information about doping in sport. Participants’ ability to self-report and their willingness to self-disclose can impact the veracity of their self-report data. Participants may distort their responses by minimizing their knowledge or involvement in undesirable behaviours or by providing what they think are socially desirable responses (Petróczki and Nepusz, 2011). By speaking with the student-athlete participants after their seasons and academic years were completed, and by asking about their overall perceptions of doping in the CIS, rather than their own experiences or involvement with banned performance-enhancing drugs and methods, we hoped to minimize some of these methodological constraints and to obtain as rich and accurate of responses as possible.
Specifics on Participants and Interview Structure

Illustrated below is the breakdown of the participants. We first recruited subjects at either the annual information meeting required for all varsity athletes or through written communication approved by the university’s athletic director, coaches, and research ethics board. We noticed that snowballing occurred in recruitment, as individuals who initially volunteered for the interviews encouraged their teammates to also participate.

<table>
<thead>
<tr>
<th># of participants</th>
<th>Sex</th>
<th>Varsity Sport</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>Rugby</td>
</tr>
<tr>
<td>5</td>
<td>Male</td>
<td>Football</td>
</tr>
<tr>
<td>1</td>
<td>Female</td>
<td>Hockey</td>
</tr>
<tr>
<td>9</td>
<td>Male</td>
<td>Hockey</td>
</tr>
<tr>
<td>1</td>
<td>Female</td>
<td>Soccer</td>
</tr>
<tr>
<td>7</td>
<td>Female</td>
<td>Basketball</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>Basketball</td>
</tr>
<tr>
<td>5</td>
<td>Female</td>
<td>Volleyball</td>
</tr>
<tr>
<td>3</td>
<td>Male</td>
<td>Volleyball</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>Cross Country and Athletics</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>Cross Country and Athletics</td>
</tr>
</tbody>
</table>

The length of the interviews varied depending on the amount of information the student-athlete provided, and on average the interviews lasted from 30 minutes to 45 minutes. The interviews took place in a quiet and private space. Participants signed informed consent forms and agreed to have the interview recorded and transcribed, and then analyzed once identifying details had been removed and the transcript had been member checked. The goal was for the interview to adopt a conversational style rather than a mere question and answer period where a question is asked and a brief answer is supplied. Overall, we noticed that the participants were quite keen to share their opinions and takes on doping and gender. We followed Graton and Jones’ (2010) interviewing techniques and given the type of responses we received, we put effort into communicating with the participants in non-judgmental ways. Effort was placed on evading overt reactions to information provided so as to avoid influencing subsequent responses from participants. The list of questions used to direct the interview are included below as Appendix A.

Interview Coding

In order to ensure effective coding, the principal investigator and main collaborator met in person to code the interview transcripts together. Codes emerged from the conceptual framework that was developed prior to data collection; however, the coding process also ensured that unexpected codes was recognized through emergent coding techniques. Each transcript was read carefully before identifying and assigning additional codes and themes. Relevant statements were then organized under the appropriate codes. After multiple reads, patterns and explanations within the codes were analyzed. Trustworthiness was sought through reflexivity whereby the researchers’ roles were critically reflected upon within the entire data collection process, and attempts were made to demonstrate how it may have influenced the findings and interpretations.
Thematic Analysis of Interview Transcripts

As the data was coded, it became obvious that many elements could be cross-listed in various and/or multiple themes. Below the nine themes that emerged during the coding process are described. Some statements that the athletes participating in this study provided are applicable to more than one theme; hence acknowledgement is given when cross-listing and double classification occurs. Direct quotes from participants are included in green font, and the sex and sport played by the speaker is indicated in italics after each quote. In instances where quotes from more than one athlete of the same sex and sport are included to represent the theme that emerged, the quotes are from different athletes, not the same speaker. (E.g. if three male football players all discussed a common theme related to steroids, the three statements attributed to male football player in the section come from three different athletes.)
1. Perceptions of Substance Use in CIS

**Perceptions of Substance Use in CIS**

**Masculine**
- Creatine
- Clenbuterol
- Energy Supplements
- NO Explode
- Glycogen Booster
- Human Growth Hormone
- Size-On
- Anabolic Steroids (injectable, Winstrol, Dianabol)
- Super Pump
- Whey Protein & other protein powders

**Feminine**
- Energy Supplements
- Ephedrine
- Iron Supplements
- MPower
- Pain Killers
- Protein Powders
- Weight Loss Supplements (e.g. Hydroxy Cut)

**Gender Neutral**
- Protein Powders
- Protein Supplements
- Caffeine & Energy Drinks
a. Masculine
The following is a list of substances (in alphabetical order) that participants indicated they are aware of or perceive male university athletes use. This list was formulated during the coding process:

- Creatine
- Clenbuterol
- Energy Supplements
- NO Explode
- Glycogen Booster
- Human Growth Hormone
- Size-On
- Anabolic Steroids (injectable, Winstrol, Dianabol)
- Super Pump
- Whey Protein and other protein powders

Participants considered the above substances to be ‘masculine’ in nature and used by male athletes in the CIS. Based on the above list, some male CIS athletes are using a variety of substances ranging from protein supplements to steroids. As a result of the responses provided, it is naïve to consider the university sport system free of doping. Based on our interview findings, athletes reported that doping is practiced in various manners throughout the CIS. One interesting response from a participant noted, “top of the line pills” as an example of substances used by males. Subsequent themes analyze more specific aspects of doping, such as the prominence of doping in football, and motivation for university athletes to engage in doping behaviours.

b) Feminine
The following is a list of substances (in alphabetical order) that participants indicated are used by female university athletes. This list was formulated during the coding process:

- Energy Supplements
- Ephedrine
- Iron Supplements
- MPower
- Pain Killers
- Protein Powders
- Weight Loss Supplements (e.g. Hydroxy Cut)

Participants described the above list of substances to be ‘feminine’ in nature. This list indicates that female university athletes also use a variety of substances. However, the responses demonstrate that female athletes use supplements and drugs for different reasons than male athletes, which will be discussed in the motivation section below. Most of the literature (see annotated bibliography) has focused on male athletes and doping and, based on the interview data, many women athletes use weight loss supplements for performance-enhancing purposes. Athletes of both sexes perceived that CIS system has discounted the idea that female athletes might dope, which the literature confirms. As will be discussed below in Theme 8 (critique of the testing system) most of the attention and testing focuses on male athletes, especially those who...
play football. More attention needs to be focused on women athletes because based on what the participants interviewed indicated, women athletes are also utilizing substances for performance-enhancement and some of them are considered to be risky to one’s health, e.g., ephedrine. The most commonly cited substances used by women were weight loss supplements. This will be discussed further in Theme 7 (motivation to dope) and Theme 2 (gender stereotypes).

Some participants noted that known banned performance-enhancing substances, such as EPO, would be beneficial for endurance activities like long distance running, but speculated that EPO was not available or commonly used at the university level.

Based on the interview responses, male athletes seem to possess much more knowledge and experience of doping at the university level compared to women athletes. The following two quotes were common sentiments echoed by several female athletes interviewed:

I don’t know because I’ve never taken any or know anyone that’s taken them, the only thing I know that people use are protein powders after a workout or a game, outside of that I don’t know anything because I’ve never got involved in it (female volleyball player).

There’s plenty of information out there so if I wanted to I would go get it…I could talk to the guys who know all about it and get information from them (female volleyball player).

The female athletes who were most knowledgeable about doping tended to be Human Kinetics/Kinesiology students (where they would have taken courses in nutrition and performance enhancement) or members of the Canadian national team in their sport (and had thus received more specific information on doping compared to the university level). However, generally, the female athletes interviewed appeared quite ignorant about performance-enhancing substances beyond simple protein powders.

c) Gender Neutral Substances

Variations of protein powders were considered by our participants to be a ‘gender neutral’ drug, meaning that both males and females reported that both men and women athletes use it. Protein supplements were considered neither masculine nor feminine, and equally acceptable for both female and male athletes to consume. Many participants also specified that caffeine and energy drinks are gender neutral substances as well. One athlete described energy supplements to be the “most underused supplement” and indicated these products are commonly consumed by university athletes.

Additionally, based on the interview findings, protein powder was considered to be the most popular supplement for university athletes. One male football player describes the importance of protein powder to athletes noting: “protein powder is like water to an athlete”.

An athlete described the shift in viewing protein as a muscle-building supplement only for male strength athletes to become a common, gender neutral substance:

I think protein powders used to be more male but I think with all these new studies and stuff that it has been proven to be beneficial, so I think it’s more balanced, like, just as many girls take protein powder (male volleyball player).
However, a teammate believed that male athletes use protein powders in order to improve their physical appearance (i.e. shapely and large muscles, particularly abdominals) more than female athletes do, explaining:

Guys take protein powders because they want that beach body perception, I think it’s most of the reason those guys are taking it to be honest (male volleyball player).

Comments associating protein powders with muscular physiques were common. For example, an athlete discussed how she was in the process of deciding whether she should incorporate protein powders into her diet. She noted, specifically, that she was concerned about becoming ‘too ripped’:

I started a pretty crazy training schedule, I work out every day, and I’ve been told to look into protein powders and stuff just because of the amount I’ve worked out, so it’ll bulk me up way faster, but I’m not sure if I want to be really ripped type of thing, so I’m thinking and mulling it over (female basketball player).

Numerous participants mentioned how costly supplements can be for university students. One participant noted that they spent $100 CDN on supplements per month. It was noted that the cost of the supplements functions as a deterrent for some athletes:

The protein supplement was given to me but then I ran out so I didn’t buy anymore (male basketball player).

In addition to the added expense to most university students’ modest budgets, some participants were deterred from purchasing protein powders due to a perceived lack of scientific evidence supporting the effectiveness of supplementing their diets. These athletes were skeptical of the value of certain products despite the popularity of protein supplements with their peers:

Your body can only process 9 grams of protein per hour, and these guys are taking 40 grams at once in their drink. They have huge tubs of it, and are always talking about how they need more protein, and I think it’s over blown, it’s just expensive piss. I think you should get your protein and nutrients [through] proper nutrition (male volleyball player).

Sentiments of this nature demonstrate the prevalence of protein supplement consumption, and the cautious critique of these powders some athletes hold.

2. Gender Stereotypes

Participants were asked what the terms ‘femininity’ and ‘masculinity’ imply to them in the context of sport. Answers varied extensively, and most participants associated ‘femininity’ with feminism and the second wave feminist movement, or with gender stereotypes about masculine and feminine behaviours. One of the classic responses given: “feminine is not burping while wearing a dress.” Overall, there is a lack of understanding of the terms, and the majority of participants wanted to ensure they avoided being stereotypical in their responses, yet many acknowledged their answers ended up being based on gender stereotypes they were not
comfortable holding. Based on our interview data, we found that doping practices are associated with gender stereotypes that will be explained in the next four subsections.

The subthemes of this section include:

a. Musculature
b. Steroids and muscle builders as masculine
c. Women’s sport more about skill than strength
d. Weight loss supplements as feminine

a. Musculature

It was clear that women athletes are hesitant to use muscle building supplements, or to “bulk up,” because many see a muscular body as associated more with masculinity and male athletes. Some women athletes were even worried that their “traps” muscles would show. We speculate that this fear of increased musculature is based on athletes’ preconceived notions of femininity and masculinity idealized norms. Specifically, many women athletes in Canada remain hesitant to develop an overly muscular body in fear that they will no longer be considered appropriately feminine or ‘womanly’ outside of the sport context. Some participants even associated muscle mass for women with homosexuality. Several athletes also used the descriptor “jacked” to imply a certain type of muscular physique:

Girls aren’t supposed to be jacked per say, that’s not the view of society” (female volleyball player).

I think guys just want to get bigger for the beach but if girls were doing that guys would think that is kind of gross, but it’s weird people would think that (male volleyball player).

They [female athletes] don’t want to get bulky and look gay (female hockey player).

They are either feminine or butch (male volleyball player).

One participant believed that athletes who play traditionally feminine sports are less likely to utilize certain substances because there is even greater fear of putting on too much muscle mass:

like volleyball is very feminine compared to hockey players and stuff so I feel like they’d be more reluctant to take banned substances than we would (female hockey player).

Outdated stereotypes about appropriately feminine-looking body types and physiques were echoed frequently by participants. However, there was awareness by the participants making these statements that they are based on stereotypes, and many participants were reflective and cognizant of the tensions they felt in using stereotypes of this nature to inform their answers.

b. Steroids and Muscle Builders as Masculine

There was also the trend that numerous participants questioned why female athletes would need to use a substance like steroids. The underlying perception associated with these sentiments is
that female athletes should not be or do not need to be as strong (or as muscularly defined) as male athletes:

Because obviously for women if you’re going to be taking steroids and can bench press 400 pounds, it’s not going to do much, but if you’re a guy and you can bench press 400 pounds, you can play in the NFL (male hockey player).

It’s that whole masculinity and femininity thing because men have to be big, strong and fast. I guess they always compare themselves to big Americans and guys in the NFL, but people don’t understand that these guys are freaks, they’re just freaks (male football player).

I would be way more surprised to hear if girls took steroids and the next question would be what is she doing it for, is she a bodybuilder? (male football player).

Hence, the views expressed by many athletes isolate steroid use as substances only males would benefit from taking. The following subsection examines this issue in more detail.

c. Women’s Sport more about Skill than Strength

Several participants expressed strong views that success in women’s university sport requires more emphasis on skill than on great strength. One can interpret this idea as a negative view of women’s sport, because the underlying assumption indicates that women’s sport is not as important or as ‘good’ as men’s sport. However, the acknowledgment of the skill required to excel in university women’s sport is positive. Participants also expressed the idea that there is much more pressure and necessity for males to be “big” in order to be successful in their sports, hence male athletes would be more inclined to use substances that increase strength:

Women’s sports is more skill based rather than athleticism type of thing, and females can be very small and skilled and still make it, but if a male is really small but really skilled his chances of making it are really tough compared to someone who is already a big size (male basketball player).

Athletes expressing these sentiments failed to realize the range of advantages associated with skill and strength in both men’s and women’s sports.

d. Weight Loss Supplements as Feminine

All participants considered weight loss supplements to be feminine drugs and the most prominent supplement used by women university athletes (see classification list in Theme 1a). An example of the stereotype that weight loss supplements are more acceptable for female athletes to take than male athletes is expressed in the following statement:

if you’re taking a weight-loss pill you would think that there are a lot of people out there that think, ooooh that’s for females, you’re taking a female pill (male hockey player).

The idea that weight-loss supplements can be dangerous for any athlete was not mentioned.
Participants reported that women ‘doped’ in many cases in order to lose weight (see Theme 7 motivation to dope). On the other hand, males were more concerned with putting weight on rather than losing weight. Therefore, the old assumption that women use substances to lose weight/mass and males use substances to gain weight/mass is generally replicated and adhered to by university athletes in Canada.

These views raise concerns about healthy eating practices and gender stereotypes both within sport and in the broader society.

3. Football

Without being asked by the researchers to name a sport in which doping is prevalent, 36 of the 38 student-athletes participating indicated at some point in their interviews that doping is most prominent in football. Most mainstream media coverage of doping has focused on high-profile track and field athletes (i.e. Ben Johnson, Marion Jones), cyclists, or the BALCO steroid scandal and baseball (i.e. Mark McGuire and Barry Bonds). However, our interviews took place during and after the University of Waterloo football scandal, and even though only 2 participants referred to that specific example, others could have been influenced by it as well. Several participants noted their suspicions or knowledge of doping in Canadian university football and the culture of silence previously surrounding the sport of football. University football in Canada is a premiere sport with very strong ties to alumni support and tradition, and it is only played by men. It is the main event at homecoming celebrations across Canada, and football players continue to be granted high social status by their peers. Given that CIS football is also considered a stepping stone to the professional Canadian Football League (CFL), there appears to be additional pressure placed on university football athletes to be successful and make a career out of their sport. For these reasons, football has become the sport most associated with doping at the Canadian university level:

If you hear of a guy taking steroids the first thing you think is does he play football (male football player).

If you look at a guy you would think that he has to be on steroids. When you see a football guy it’s like he has to be on something because it looks unnatural (male hockey player).

Many participants indicated that there is enormous pressure for football players to use steroids and muscle-building supplements because, in order to play, they are required to put on additional weight in their transition from high school to university football. Additionally, participants believed football size requirements and the style of the game to be drastically different than other sports, such as hockey or volleyball, in terms of the need to gain muscle mass to achieve success:

They [football players] usually try to gain weight from when they leave high school, probably gain 20 pounds (male basketball player).
I came in here at 215 pounds and the coach told me I had to be at 240, and so it was my 1st year and I listened to what he said, but I gained 40 pounds in my first year by going to meal hall and sitting there for 2 hour and eating 5 plates of food and then going to the gym for 2 or 3 hours (male football player).

Hockey has more emphasis on the skill set of the game, you don’t need to be 250 pounds like Arnold Schwarzenegger like in football where you want to be as big as possible (male hockey player).

Hockey isn’t really a sport where performance-enhancing drugs is widely used because I think compared to football or that kind of stuff, hockey players don’t need to lift 400 pounds, they don’t need to do that, maybe 10 years ago they were a little widely used but the game has changed so much that I would say if there’s anything used in hockey, if there was one drug it would be some kind of upper like ephedrine or something like that, but as for in college and at this University there is nothing being used as performance-enhancing (male hockey player).

This theme discussing football has direct connections to the following theme on steroids, which will discuss the participants’ perceptions of the association between steroids and university football.

**4. Steroids**

In addition to discussion of steroids in the context of football, the general topic of anabolic androgenic steroids arose frequently in the interviews. References to steroid use were speculative in nature and/or related to the size of athletes’ muscles. Many athletes indicated that while they were confident athletes in the CIS system use steroids, they do not know anyone specifically who is taking these drugs, nor do they think, with the exception of the football players interviewed, that steroids are prevalent in their sports. For example, it was noted by a male runner that steroids would be helpful for some athletes, but not all athletes, because runners “don’t want heavy mass in running.” Instead, several athletes seemed quite confident that CIS athletes use steroids, but speculated that it is other athletes, not athletes in their own peer groups, who engage in steroid use. Anti-steroid stances were vocalized by many athletes, and these athletes did not consider taking testosterone-based supplements a smart decision for a CIS athlete to make to improve his or her performance. In addition to breaking rules, athletes espousing anti-steroid positions were aware of the physiological and psychological dangers that could result from abusing steroids and similar compounds, for example:

When I played hockey in the US, I had a few teammates who experimented with Andro—the stuff that Mark McGuire took — but those guys ended up tearing muscles pretty early in the season and missed a substantial amount of games (male hockey player).

Many athletes interviewed felt confident that they could identify a steroid user simply by the resulting physique that such an athlete would possess. Unsurprisingly, steroid users were associated with extreme muscles mass beyond typical results achieved through lifting weights and following a protein-rich diet. Representative statements included sentiments such as:
There’s guys walking around that you know they’re on steroids because the human body is just not supposed to bloat like that *(male football player)*.

Any time I think of steroids the first picture I think in my head is some big juice monkey looking guy and I never picture a girl, it’s always a big guy *(male football player)*.

When the name steroids is thrown out the first thing I think about is the big bodybuilder, or some football or baseball player so I would say steroids, I think, would be more masculine first *(male volleyball player)*

In addition to visible markers from muscle growth, gains in strength were identified as an indicator of steroid use:

I know guys on my teams that I’ve played on that have done steroids and nothing has happened and we all know, it wasn’t like a secret. You can tell when somebody has baby arms and then has Godzilla arms, you can tell instantly. Or one season he can only bench press 225 twice and then comes back next year benching it 25 times. It’s like, what happened? *(male football player)*.

However, one athlete rejected the ease of visibly identifying male steroid users, noting that he thought physical markers of steroid use are restricted to women athletes only. In this athlete’s opinion, male athletic bodies need not demonstrate steroid use if the user knows how to properly combat undesired androgenic side-effects or the excessive accumulation of bulk:

You would be able to tell if the woman was on steroids pretty easily but whereas guys, if you’re not an idiot about it you don’t have to look like you’re on steroids *(male hockey player)*.

There was agreement, however, among most of the male athletes interviewed that steps could be taken by steroid users to avoid detection or mask the presence of steroid markers in urine if an athlete was selected for testing. The following statement highlights a perception shared by several football players, specifically:

If you have access to steroids you have access to anything. It’s kinda like you go into a store for steroids and they have your steroids and everything you need to stay away from getting caught *(male football player)*.

As noted by the representative quotes drawn from the transcripts, it was the male participants who had the most to say about steroid use. Only one female athlete interviewed claimed to have any knowledge about steroid use generally, or the prevalence of steroid use specifically.

### 5. Critique of the Banned List

Throughout the interviews, participants were encouraged to speak openly and candidly about their perceptions of doping use at the Canadian university level, as well as more broadly in sport. Without receiving any context from the interviewers or clues about how other participants had
responded, when student-athletes were asked the broad question of whether they would like to see any substances added or removed from WADA’s banned substance list, many athletes voiced strong opinions. All student-athletes interviewed provided a response that was either critical of the system or fully supportive, with no indifference or middle-of-the-road positions noted. A common refrain was that the list is too lengthy and difficult for student-athletes to remember:

I think some of the drugs on that list are outrageous that we can’t take, I can’t think of any off the top of my head, but it seems a little picky (male hockey player).

I think there are so many already on there that I can’t keep track, so I don’t even know what can be added at this point. Oh my goodness you could go online and type in everything and have, like, 10 things for one name (female volleyball player).

On the other hand, approximately half of the athletes interviewed indicated they are satisfied with the current rules, expressing statements in favour of the current regulations, such as:

Somebody smart out there made it and they know (female volleyball player).

Personally, I’ve never really had any problems with them [anti-doping rules], and I’ve never really heard of any athlete having problems with them just because they are there for our safety, and to really make the sport that we all love fair so it can stay the way we love it, that kind of stuff (female basketball player).

No participants suggested any banned substances or methods (that are currently allowed) that they would like to see added to the list and consequently banned in sport. One athlete lamented the inclusion of menstrual pain medications and advocated for the removal of these drugs from the banned list:

Most menstrual stuff you can’t take and if you get cramps so that’s a frustrating one that should be removed I think (female rugby player).

Themes of criticism of the current rules outlined in the World Anti-Doping Code, mentioned by multiple athletes, revolved around 2 main areas:

a) Dissatisfaction with the current cold medication regulations on the banned list
b) Dissatisfaction with the inclusion of marijuana on the banned list

a. Critiques of Cold Medication Bans

Participants echoed the general complaint about cold medication bans heard from athletes competing at all levels of sport, noting that they find it difficult to feel confident taking any type of cold medication to relieve uncomfortable cold systems. They fear all cold medications might contain a banned substance, which could lead to a positive analytical finding for doping. Confusion and frustration abounded on which common cold products are permitted and which ones are banned.
It’s been hard because some substances, like, we can never take cold medicines anymore, there’s, like, one out of 100 that are available that we can take (female volleyball player).

We went through this shift like my generation where we used to be able to so now we can’t and it hit us really hard, so it’s very difficult for an athlete to go to the drugstore when he has a cold and to have that book on you, and it’s really inconvenient that you can’t get a Tylenol sinus when you’re struggling all day with the studying, so it’s really inconvenient for us and I think it’s a lot harder than it should be and I think different things need to be implemented to make it easier on us (male hockey player).

Frustration was also voiced regarding the rationale for banning cold medications. A strong majority of participants felt that their competitors would not gain performance-enhancing benefits from taking small, medicinal doses of cold medications.

It’s not because they are performance-enhancing but it’s because somebody has abused it at some point in the past and it’s one person that ruined it for everybody (female volleyball player).

These sentiments indicate a lack of understanding of the banned substance list, and lack of awareness about which substances included in various cold medications places cold medicines on the prohibited list.

b. Dissatisfaction with the Inclusion of Marijuana on the Banned List

Exactly one half of the student-athletes interviewed expressed to the interviewer that marijuana does not belong on the banned substance list. Several participants highlighted and explained the prevalence and role of recreational marijuana use in university culture. They discussed the drug openly and indicated they perceived it was widely available to anyone looking to purchase it. Social use of marijuana was mentioned frequently. The idea that marijuana is a social drug, not a performance-enhancing drug, was mentioned frequently as well:

I’m totally against those drugs [steroids], as opposed to seeing guys on your team using stuff, like, that doesn’t sit well with me. Marijuana might be a different case, like, if a guy is having a puff every now and again I don’t think that is gonna kill him (male hockey player).

Athletes’ use of marijuana, specifically, was discussed at length by some participants. These participants noted that many of their teammates, or themselves, smoke marijuana, despite its inclusion on the prohibited substances list.

I think some just like to let go, like there’s a lot of pressure with athletic sports. I think a lot of them just find relief [in marijuana] (female volleyball player).

I would say marijuana hands down would be used more than steroids of any of the other things mentioned (male hockey player).

If everybody’s doing it and everyone knows about it and athletes don’t really think, I don’t really think it’s that bad because you’re just highlighting it more by incriminating people (female track and field).
A lot of people smoke weed, so if you’re on a team you know who has before and who might be, so you have your suspicions and hear your rumors (male volleyball player).

The prevalence of marijuana use by university students was cited as a reason participants favoured removing marijuana from the banned substance list:

I don’t think women go out socially to smoke marijuana but guys will, its just the culture and what the media portray (male basketball player).

Among the responses related to marijuana use, there was no mention of perceived performance-enhancing benefits associated with its use. On the contrary, the performance-detrimental effects of marijuana were mentioned as one athlete was surprised that professional athletes would use the drug:

In football culture I feel like anything goes. Like I was talking to one of the guys about the CFL and CFL guys smoke weed all the time and I’m, like, it’s just weird how different the culture is because you would think that players at that level wouldn’t be doing that as much (female rugby player).

One participant noted the calming effects of marijuana as a reason athletes use the drug:

I do know that people need to take it [marijuana] to perform because it calms them down. I know that it is one of the more popular ones that people get caught for (male basketball player).

The lack of testing of university athletes in the CIS system (explored in more detail below in section 8) was offered as a reason why many student-athletes would smoke marijuana despite knowing it could lead to a doping violation. However, one female participant noted she stopped smoking marijuana out of fear of testing positive and committing a doping violation:

I used to (use marijuana) and then… the punishment just went up two years ago or one year ago, and I was like, for me, it’s just not worth it and if I get busted with that… (female rugby player).

Suspicions were also raised that marijuana violations would be ignored or overlooked more readily by teammates or the coaching staff than other violations of the World Anti-Doping Code. The lack of testing enables an attitude of acceptance toward marijuana use to be sustained.

Like if _____ [CIS athlete] got caught with marijuana would they publicize it? No. Would he get banned? No (female rugby player).

Even though marijuana, it’s banned in the CIS, 75% of my team smokes marijuana. And has no, there’s no repercussions (male football player).

Overall, both male and female athletes spoke openly about their teammates’ marijuana use. Only one participant suggested that men use marijuana more than women, but this athlete was talking about social drug use by non-athletes. There was no mention of marijuana when athletes were asked to discuss gender and drugs (Theme 2). It was clear from the interviews that most student-athletes, both females and males, perceive their risks of being selected for drug testing to be low, and if they want to use marijuana they perceive their likelihood of not getting caught to be high.
6. Athlete Acceptance and Apathy

With the exception of the views on cold medications and marijuana (highlighted in Theme 5) many athletes espoused an attitude of complete acceptance toward the anti-doping rules in force in the CIS. Very few critical comments were made and, for the most part, the athletes did not challenge or question why the bans are in place. For example:

If they’re on the list I’m sure there’s a reason for that (male cross country athlete).

Several athletes participating in the study admitted to their ignorance of the banned list and/or noted they had not spent any time reviewing what substances are included. Much doubt was raised over the substances included on the banned list:

I don’t know, honestly I don’t know the list that well, I just know that you can [take] protein, most proteins, but I don’t know too much about that list (male hockey player).

There are so many [substances] on there that I am not sure, I haven’t really been, myself I haven’t had to look on the list and wondered, can I take this? So I guess I’ve never really been concerned with that (female soccer player).

I think it’s kind of reasonable to restrict athletes, but at the same time I find it a little crazy that they want to make sure that everything you put into your body, reading labels, they always tell us [if we] start a new supplement to email the company to make sure there are no trace elements. I mean, I would never do anything like that. It just seems like a little bit tedious that you could get blamed for taking something even though you’ve read the instructions and it’s not in the ingredients. That to me seems a little bit excessive, but, oh well, I guess that’s okay (female track and field athlete).

I am unaware of the rules, [other than] steroids are illegal (male hockey player).

Student-athletes in general placed a heavy reliance on other people to help them understand and act in compliance with the banned substance list. Because very few athletes interviewed had consulted the list of banned substances themselves, they have become accustomed to asking team doctors or athletic therapists to check for them if a drug or supplement is prohibited or permitted. When presented with an unfamiliar substance, many athletes do not take the time to check the ingredient list themselves against the banned substance list, but instead rely on a member of their team’s support staff to investigate. However, the awareness that they could be more involved, or invested in the process, was noted by a few participants:

I’ve heard stories of Olympic athletes that do it [Isogenics] and there are people in the States, such as a beach volleyball player, who competes as the Olympic level and doing this cleanse, so I find it very highly recommended and because of that I haven’t done any checking on my own, but I probably should (female volleyball player).
Related to student-athletes’ tendencies to rely on support staff to clarify their questions about banned substances, many athletes also noted that they rely on their friends, family, and teammates for information on nutrition, training, and supplements. As a result, many misconceptions were echoed by participants, and several inaccurate claims were presented as facts. Among the misconceptions repeated by athletes in this study is the idea that ColdFX is a performance-enhancing drug, and that exercising in sweat suits or spending excess time in a sauna is a safe and natural way of losing weight. Related to drugs in sport specifically, athletes reported seemingly inaccurate statements such as:

Marijuana is on there because it is a masking agent (*male football player*).

Just males, I’ve never heard of a female resorting to steroids (*male hockey player*).

I think they [coaching staff] are aware [of drug use in the CIS] and don’t care (*male football player*).

Statements of this nature indicate some athletes have very little understanding of how performance-enhancing drugs work or the goals of the anti-doping movement, generally, and the CIS’s role specifically. Overall, the athletes interviewed in this study, both male and female, demonstrated very little critical or reflective thinking about gender and doping in sport.

### 7. Motivation to Dope

Even though direct questions about motivation for doping were not asked during the interviews (see Appendix 1 for the list of interview questions), motivation emerged as a significant theme. There are numerous reasons why university athletes chose to dope. The most prominent motivation for doping expressed by participants involves the potential for male university athletes to turn professional in their sports and to use the CIS as a step in acquiring a professional contract. For example, most participants noted that university sport for males (especially those in football and hockey) can be viewed as a stepping stone to professional sport, whether it involves the Canadian Football League (CFL) or various professional hockey leagues around the world, such as the American Hockey League (AHL). Participants also noted that doping regulations seemed more lax at the professional level than in the CIS.

For women athletes, the participants commented that, generally, university-level sports mark the top/final level for high-performance competition for women athletes in Canada. Therefore, women athletes were not participating in their sport in a similar manner to some players on the men’s football and hockey teams, and did not have as much to gain in the future from consistently performing well:

So the guys that are looking for a pro career, they’re spending more time on the game, out on the ice more and in the gym trying to get that advantage, and with that … more use drugs and the need to get the edge on the next guy (*male hockey player*).
I could see that men would be more prone to taking it to have that chance of an extra couple million dollars where in the WNBA there isn’t that money (male football player).

Other motivations to dope were connected to pressure to please loved ones and peers. Participants discussed that they believed that university athletes experience pressure to excel in their sports from their parents, coaches, teammates, and some even place pressure on themselves to succeed:

People come to start their sports and they get locked in to the mind frame that this is what I’m doing and I’m to do this forever but what happens when your eligibility runs out? Are you going to be an athlete for the rest of your life or do you just want to be fit for the rest of your life? Like where are you going with your fitness? (male track and field).

I think the pressure athletes have from parents and coaches [is why some athletes turn to doping]. They want to make their family and coaches proud, plus they’ve been working hard and dedicating so much of their life to their sport, so they want to be the best they can be and achieve their goals (male volleyball player).

…in university there are those big age differences which is why I think people take supplements because veterans are telling them to take something they are probably going to listen (male basketball player).

Only one participant indicated that doping is synonymous with winning. The participant refers to track and field as an example. Given the prominent examples of professional track and field athletes and doping scandals, it is not surprising that the participant has come to this conclusion:

In the track and field world [it] is generally accepted that if you are winning you are doping, so if you want to win you have to dope…If you want to win, the people are doping. If you want to win you have to dope (male track and field).

As addressed in Theme 2 (gender stereotypes), participants in this study perceived that female athletes tend to use weight loss supplements in order to maintain a certain specific weight. Athletes who participate in sports that require or are associated with a lean frame (such as volleyball, cross country running, and track and field) seemed more concerned about weight compared to those athletes who participated in more traditional masculine contact sports (such as rugby and hockey) which require more strength and mass. Consequently, motivation to dope in women’s sport appears sport dependent. However, according to the interview data, many university women athletes are using weight loss supplements. Participants included sentiments that could be interpreted to suggest that societal pressures for women athletes to fit with accepted norms regarding the ideal female body could motivate athletes to use weight loss supplements as a way to achieve a certain body shape and size:

The coach, because the other countries like Brazil had a 15-18% body fat limit and the coach here was trying to get us down to around 20 (female volleyball player).

The motivation to dope varies. For male athletes participating in hockey and football, there is much pressure to be successful in order to sign a contract with a professional team. As evidenced from the quote above, female athletes can experience pressure to maintain a certain weight or
body fat percentage. Among other sources, pressure to maintain this weight can come from coaches who base expectations on difficult to attain standards (i.e. body weight of 15 %).

8. Critique of the Testing System

A perceived lack of testing in the CIS emerged as a theme and was frequently discussed by the student-athletes. It was noted by many participants in the study that if you play on a team that does not qualify for the CIS National Championships, you will not be tested. These statements indicate participants believe random, unannounced testing is practically non-existent in many CIS sports. The athletes were in agreement that drug testing occurs primarily at the CIS championships and that little to none occurs at the regional level. Despite the prominent case of every member of the University of Waterloo’s football team undergoing testing in 2010, at the request of that university’s administration, the athletes interviewed were skeptical that the recommendations stemming from the official investigation that followed the Waterloo scandal made any impact. The belief that their chances of being tested were very low remained unaltered:

I think people still realize that it’s only at nationals you get tested. That’s it. I know it’s like that for volleyball anyway. Two people from each team or something and that’s it. It’s two people out of twelve on each team that get tested. So you know you got to be good a couple weeks before and then that’s it (female volleyball player).

I think a lot of CIS athletes fly under the radar (male hockey player).

Like Michael Phelps getting caught for smoking pot or the Waterloo football team two years ago getting shut down and I know it was supposed to increase all the doping testing in varsity sports in Canada, but everybody knows the only time you’re getting drug tested is when you’re going to nationals. So outside that people don’t worry about it. So people do it throughout the year and they’re just really careful about before their nationals, and I think it’s become more prevalent in varsity sports and I think more media attention has been paid towards it. But I think there needs to be some way to find out more so we can keep sport true (female volleyball player).

…we went to CIS and placed ___ so they don’t care about us, but we still won [regional] so if there was someone on our team who was using and we weren’t tested then we shouldn’t have won that [regional] title either, especially since the [regional] is in the CIS, I think it should be parallel, it should be the same (female soccer player).

I’ve never been tested in 5 years (male basketball player).

Several women interviewed noted that they perceived their chances of being drug tested to be even lower than the male athletes competing at the same university in the same sport. A frequent refrain was the expectation that athletes could easily finish their degrees without once being selected for drug testing:

I don’t think I’d ever get tested (female volleyball player).

I’d think WADA has only gone down as far as the professional athletes and they haven’t gotten into the academic athletes and those athletes in school, maybe in the US more because I know
they test male football players sometimes and male basketball players I’ve heard of no females being tested unless you are at a national level (female soccer player).

Compared to other leagues, CIS student-athletes reported they are left alone by the drug testing agency in Canada, the Canadian Centre for Ethics in Sport. A hockey player noted that in Junior Hockey leagues, the testing was more frequent:

It’s fairly random testing in junior, but it occurs a lot more [than CIS] (male hockey player).

I think the CIS is looked as not a serious as the NCAA so obviously they are a lot more in the limelight, so I think they would definitely be in the spotlight more and scrutinized more for doping and stuff. I don’t think that we would be (male hockey player).

The lack of testing, especially for women, was not the only critique of the testing system that arose in the interviews. Another common refrain was the request for more testing at the university level, and the acknowledgment that if the CIS wanted to ensure athletes were not using banned substances, more tests needed to be conducted to 1) catch cheaters, and 2) deter athletes from using banned substances who expect no testing and thus no repercussions. There was very little diversity in athletes’ acknowledgment that the current testing system is inadequate to detect or deter cheating:

You can say you’re not supposed to take it and then not test. I know for a fact on my team and other teams there are guys taking steroids and it makes a difference. And those guys in my eyes should not be allowed to play football (male football player).

Proper testing requires a budget that CIS cannot afford. Therefore some athletes will get away with it. This will tempt more to experiment with doping (male hockey player).

As noted above in Section 3 (football) and Section 4 (steroids) football players in Canada at the university level are associated with performance-enhancing drug use more than athletes from any other sport. With increased drug testing in football in the 2010-2011 and 2011-2012 seasons, university football players were exposed to a record number of drug tests. Despite the additional testing of football players, several participants who were members of their university’s football team exhibited a cynical attitude toward the impact of the increased testing. Frustration was expressed that the new protocols are not any more effective than previous efforts, and doubts were raised concerning whether all the samples collected by the anti-doping testers from CCES are actually tested:

They’re [only] picking one school because of the stuff that happened and they’re finally testing every guy on the team. You know if they did that here there would probably be a shut down too (male football player).

In my 5 years of playing here, we’ve been approached 4 times for testing and 3 guys each time got tested, but of those 3 there [is] not any guarantee to get processed. It’s just like taking names out of a hat (male football player).
I don’t know how much money is going into just testing football players not testing everybody, just football players. It seems like a big waste of money because it’s making everyone think they can’t do anything and it’s just insane (male football player).

Student-athletes competing in sports other than football also raised concerns about the current testing protocols, which follow the guidelines set out in the World Anti-Doping Code. Among the points of contention raised was dissatisfaction with the discomfort involved in providing urine samples under observation, and the level of surveillance top amateur athletes experience:

The random testing that they do freaks me out. I never want to do that, but I think that kind of keeps it regulated, but again just trying to keep it fair (female basketball player).

I hear at the highest levels it gets a little crazy, but it’s just about you where you are and telling people and having to tell people where you are at all times, and I don’t really like that component. I don’t know how necessary it is, but I don’t think it’s right to have, what’s that international centre, WADA? To have WADA become big brother, I don’t think that’s right for athletes (female basketball player).

Despite the doubts raised about the current system of anti-doping detection in the CIS, some participants noted that they would like to see target testing implemented with more frequency. Instead of drawing names ‘out of a hat’ at national competitions, athletes would like to see athletes whose testing results have improved significantly, or body composition have changed drastically, tested:

I feel like if this person from a team is humongous and all this stuff, and instead of testing this guy that is 120 pounds that never played a game in his life but just happens to be on the team, like why not test this guy? (male football player).

Both female and male athletes echoed the call for more testing in the CIS if they we had to adhere to the anti-doping rules and regulations set by the World Anti-Doping Agency and endorsed in Canadian university sport.

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9. Insufficient Doping Education

The standard process for doping education in the CIS appears to be minimal and insufficient from the perspective of the athletes. Currently, anti-doping information is shared at the beginning of the academic year at an information session that student-athletes are required to attend. These sessions are conducted and organized by a university’s Athletic Therapist or Athletic Director. The participants indicated that they found the pre-season anti-doping session to lack specific information on the “dangers of doping” and information on why certain substances are banned and others are not (see Themes 6 and 8, athlete acceptance/apathy and critique of the banned list). After the information session, all athletes are required to complete on their own time an online quiz developed by the CCES. Based on comments provide by participants, this quiz does not seem to be particularly effective or helpful for the athletes. Based on the sentiments expressed by the athletes, there needs to be more effective anti-doping education.
programs/materials available for athletes. Several participants expressed a desire for more information in a more engaging format:

We always have to do that thing online every year, but it’s kind of boring, but to be honest, I don’t actually pay attention to everything they’re telling you (female basketball player).

We do that online show and it’s pretty much a big joke and no one takes it seriously because you can sit down and walk away for half an hour and come back and print the thing (female rugby player).

Athletes interviewed seemed willing to learn more about doping and banned substances if they did not need to seek this information out for themselves (see Theme 6 athlete acceptance/apathy). Thus, anti-doping education is an area where there is considerable room for improvement.
Summary

1. Perceptions of Substance Use in CIS

2. Gender Stereotypes
   - Musculature
   - Steroids & muscle builders as masculine
   - Women's Sport more about skill than strength
   - Weight loss supplements as feminine

3. Football

4. Steroids

5. Critique of Banned List
   - Dissatisfaction with the current cold medication regulations
   - Dissatisfaction with the inclusion of marijuana

7. Motivation to Dope

8. Critique of the Testing System

9. Insufficient Doping Education
Three Major Findings from Interview Data

1. Many student-athletes’ perceptions of drug use in the CIS are based on traditional and outdated notions of femininity and masculinity (themes 1 and 2)

Student athletes considered some substances to be masculine (steroids) and others to be feminine (weight loss supplements). There was concern expressed that some women wouldn’t take certain substances because they did not want to become too muscually defined. Some participants even associated muscle mass for women with homosexuality. These sentiments supported the findings from the annotated bibliography (see Burke (2004), Davis & Delano (1992), Lock (2003) and Patton (2004)). Themes # 1 and 2 indicate that doping is clearly entangled with femininity, masculinity and traditional perceptions of gender.

2. Male professional sport opportunities and perceptions of drug use (themes 3, 4, 7)

Thirty-six of the 38 student-athletes participating in the study indicated at some point in their interviews that doping is most prominent in football. Given that CIS football is also considered a stepping stone to the professional CFL, many student-athletes’ believe that the opportunity to advance to male professional sports leagues motivates student-athletes to experiment with banned performance-enhancing drugs. This was not the same case for university women athletes, where there is a lack of high paying professional leagues in North American for them and consequently less pressure to dope to achieve a higher level of play. It is difficult to make direct comparisons to the annotated bibliography, because of not only the lack of research examining gender and doping, but also the lack of doping research focused from a primarily Canadian university perspective. Doping is present in university sport, and many of the participants indicated that steroids are used.

3. Athletes want more drug testing and education to protect drug-free sport (themes 5, 8, 9)

Despite not asking specifically for recommendations to improve anti-doping policy, testing, or education at the CIS level, many of the themes that emerged contain recommendations from the student-athletes for deterring banned performance-enhancing drug use in university-level sport. Clearly, many athletes have issue with the testing system, as indicated by the numerous comments that there is insufficient testing and a lack of repercussions for doping violations. For many participants, it did not make sense why they have to follow the banned list when there are few to no consequences for an athlete who opts to use banned substances. Furthermore, the athletes noted that they were confident their chances of being tested were very low, and questioned why the list was even in place in the CIS university system. These results indicate student-athletes would like to see more testing at the CIS level.

The general sentiment expressed by participants was that the current drug testing system is inadequate and that an athlete, particularly a woman, could take a banned substance throughout an entire university career without ever being tested. It is only athletes’ dedication to clean and drug-free sport that deters them from using performance-enhancing drugs at this level.
Implications for Prevention Programs from Stage 2 Interviews:

As mentioned above, we were surprised with the snowball effect of participant recruitment. After being interviewed, student-athletes at one university became excellent recruiters and encouraged teammates and friends to participate in the interview session. However, at another university included in this study, recruitment was difficult and very few student-athletes initially volunteered to participate. At all locations, despite the approval of the study by the relevant athletic directors, we sensed a lack of interest among coaches, which could stem from a desire to avoid finding out what their athletes think about doping in addition to coping with an already busy workload. At one university included in the study, there was a sense of naivety among the coaching staff with coaches speculating there was no chance that athletes would be using anything “too drastic.” However, this view contradicted the interview findings. It does not matter the size of the institution nor the location; student-athletes themselves believe doping is widespread among Canadian university athletics. Ultimately, in terms of prevention, we have learned that all members of a team need to be involved in conversations about doping and that athletes are willing to tolerate increased testing if they believe it will deter their competitors from using banned performance-enhancing drugs. The involvement of important key figures, such as the head coaches, is thus required and it is essential for the investigators to establish a positive rapport with not only the research subjects but the coaching staff and support staff as well.

At several universities, athletes complete an online module developed by the Canadian Centre for Ethics in Sport (CCES), but the unsupervised nature of the module and lack of discussion allows athletes to simply enter the answers provided by teammates to meet the requirement of completing the module.
STAGE 3- INTERNATIONAL COMPARISONS
*Prepared with Project Collaborator Gertrud Pfister, Ph.D.*

On the Importance of Cross-Cultural Comparisons

This section includes a reaction to the second stage of this research project from a European perspective and a comparative analysis of the findings with similar research conducted in Denmark. The Canadian research project on the perceptions of substance use among college students adds to the body of information about the role and meaning of performance enhancing drugs in sport and contributes to insights in and understanding of doping. At the same time, it makes clear, that sport and performance or appearance-enhancing practices are anchored in specific contexts and cultures.

The results of this project underline the importance of intercultural comparisons which reveal the impact of country-specific contexts and conditions which may encourage the use of legal or illegal performance enhancing substances. Intercultural comparisons provide information about doping issues in other countries, reveal culture specific differences, and provide also a new perspective on the specific contexts and practices in the researchers own countries (finding the blind spot). Knowledge about sport systems, the situation of athletes and the discourses and practices with regard to performance enhancements is also crucial for the development and implementation of anti-doping policies, particularly prevention programs. All athletes are subjected to the same anti-doping regime, but measurements of prevention may vary. Here the situations, perceptions and experiences of athletes, men and women, in different sports from different countries and cultures have to be taken into consideration.

Currently, various ideologies and practices of enhancement gain increasing acceptance and importance in Western countries. Besides performance, which is not only important in sport but also in many occupations, health and appearance are in the centre of the endeavours for enhancements. In addition, striving for fitness and a perfect body seems to be a common trend. Cross-cultural comparisons can show if this trend is universal and if the body ideals as well as the appearance-enhancing practices are similar in different cultures. Sport is gendered, meaning that many men and women prefer different sports and compete in different performance categories. Comparative studies can show if and how gender norms, ideals and practices have an impact on male and female athletes.

The Canadian Study – Focus on a Specific Sports Culture

The Canadian study described in phase two above reveals how the organization of competitive sport affects the situation and the practices of the athletes. In the USA and Canada, universities and colleges organize sport competitions and the intercollegiate sport is the major arena for amateur athletes. In contrast, the European sport system is built on sport clubs and federations, which cater for the sport-for-all competitive sport model. Schools and universities do not
organize sport competitions and competitive sport is not an issue at these institutions. Therefore doping is not an issue at universities in Denmark, at least not in connection with sport.

In Denmark specifically, elite sport is not organized around universities. Depending on the individual sport, elite athletes train in elite centers, in sports clubs or with other elite athletes. Some schools offer specific opportunities for athletes. They give them time to train and more flexible conditions such as a prolongation of study to be able to combine education and elite sport. These schools (because they have many other students) do not always have their own facilities and the athletes are competing for a team or a club outside of the educational setting.

The Canadian target participants were student-athletes who share a specific culture as well as their everyday lives. They not only train with each other, but they spend at least part of their leisure time together. Athletes have a high status in the college community; in particular, football players are typically among the most popular students on campuses. It has to be emphasized that college athletes are a specific group not only with regard to their everyday lives but also with regard to the training regimes and the types of sports. In Denmark, American football and softball play only a marginal role.

**Contextualization**

In contrast to the Canadians, the Danish participants are among the best athletes of the country which may have had an impact on their attitudes and practices with regard to legal and illegal means of performance enhancement. However, we did not ask directly if they use or used illegal means because the probability to get reliable answers is very low. On the other hand, college students are young men and women who form a community where athletes, in particular football players, have a high social status not the least because of their engagement and risk taking. In this climate the use of performance-enhancing means and recreational drugs may be an everyday practice and part of college life. Danish elite athletes differ considerably with regard to their living conditions. In addition, some of the Danish athletes are older than the Canadians included in the sample. There is another decisive difference between athletes, their lives and their consumption of legal or illegal drugs in Canada and in Europe: the sports in focus. It can be assumed that American Football players are particularly motivated to take performance enhancing means and muscle building drugs because size together with agility provides in many positions of this aggressive contact sport advantages, especially when trying to make it in the professional ranks. However, it should also be addressed that cycling is very popular in Denmark, and according to media reports, doping is quite prevalent in cycling. We reiterate that we did not ask participants about their specific doping practices and consequently cannot comment whether Danish cyclists participate in doping practices. The insights gained in the Canadian and in the Danish study can only be interpreted and understood in the context of the Canadian and the Danish (sports) cultures.

However, the results of a recent Denmark survey conducted with members of fitness centers showed similar patterns to the findings from the Canadian university students: men aimed at larger muscles, women at slimmer bodies. In Denmark, the anti-doping agency is not only responsible for elite sport but also for fitness activities. In both environments, the same rules and
regulations are employed and tests are conducted in order to identify male steroid users. It does not seem to be a concern that women also may use drugs or engage in overtraining in order to reach the desired body shapes, which is similar to the Canadian findings. In terms of gender ideals among elite athletes, they appear to aim at a ‘sport body,’ but even though they are participating at an elite level they are also influenced by the general beauty ideals, which currently emphasize a trim that can be muscular as long as the muscles are not too large. Such a perspective is very similar to the findings from the Canadian university athletes.

As noted in the introduction, direct comparisons cannot be made between Denmark doping findings and the Canadian student athlete findings because of the grave differences in the sporting culture. Specifically, in Denmark, university sport does not exist. However, based on past and ongoing doping research projects by Pfister, it appears that there are similar approaches and uses of various types of drugs in Scandinavia and in Canada that are relevant to outline in this report.

In terms of gender stereotypes, the respondents have a very intricate and seemingly reflected attitude towards the use of illegal drugs – the vast majority rejects doping out of various reasons, for example, equality, fairness, and health reasons. Women are even a bit more negative towards doping than men, and women athletes are also more negative with regard to performance enhancements in other areas of life – e.g. soldiers. However, age and type of sport also factor in some of the participants’ responses. The Canadian women athletes were not as knowledgeable about doping practices as their male counterparts. Overall, there was a sense that the women were not as engaged in doping as men, which is similar to the overall Danish female perspective.

It is important to highlight that cultural differences come into play in terms of gender and doping discussion. Currently, homosexuality and lesbianism are not big issues in Scandinavia, for example, see the interview with Henning Bech “The disappearance of the homosexual” in Seidman, S., Fischer, N., & Meeks, C. (2006). Handbook of the new sexuality studies. The situation of women is specific: Denmark has the highest birthrate and the highest employment of women in Europe, which influences individual perceptions of gender, masculinity and femininity and doping.

**Marijuana**

Contrary to the Canadian university culture, the use of marijuana is not assumed to be a central part of the elite sport cultures in Denmark. However, marijuana is a quite common social drug in the social setting. Despite competing at a high level, elite athletes have a social life and for some of these athletes, this might also include the lifestyles with peers outside of sports settings (e.g. at parties). Thus, testing positive for the use of marijuana can also be (and has been) an issue for some Danish athletes in the past. For instance, in Denmark we have had 11 positive cases of Cannabis between the years 1988-2007.

As with the Canadian study, in the larger Denmark study, we did not ask directly about the inclusion of marijuana on the prohibited list; however, when approaching questions about attitudes towards use of social drugs used outside of competitions setting, we got some insight to
perceptions of use of marijuana (and other “social drugs”). We only asked about the perception of use of these drugs outside of competitions like in a social setting such as during parties (in a non-competition setting). In other parts of the study some (male) athletes highlighted this theme themselves. Below is a male athlete’s response to a question about marijuana and other social drugs:

I have always believed that it was ridiculous that some athletes are banned 2 years from sport due to use of marijuana. And it is not because I would come even close to using this myself, but I don’t believe that any (performance enhancing) effect are given. I think it will have a negative impact on your competition level. I think it will affect you negatively to use marijuana or cocaine if you are going the play the week after…it cannot be healthy and performance enhancing, as I see it! But I don’t know anything about it, and in general I do not support the use of it. So I do not believe that it should be used in sport. But I think it is ridiculous to ban an athlete for two years because he used marijuana (Danish male athlete, racket sport).

Danish participants considered it “overkill” and meaningless to punish athletes when they used marijuana for recreational purposes. This was a similar response to the Canadian participants, that athletes do not think marijuana enhances athletic performance. When interviewing the elite athletes it became clear that their concepts of doping most often were associated with substances that would enhance performances in elite sport. And those substances or means that would not affect performances or in fact decrease performances in sport would not by athletes be perceived as unfair – as doping. Thus, we would expect the majority of athletes not to perceive the use of marijuana – and other non-performance-enhancing substances or means on the prohibited list – as doping. Though this does not mean that their support their use of it in sport (or in general). But it would mean that we would expect the majority of athletes not to support athletes being expelled (banned) from sport; if they used a substance that would not enhance (or decreased) their performances. Consequently a conclusion could be that only performance-enhancing drugs should be included on the Prohibited List of Substances. If following this logic, an exception would be made for specific sports; if a (otherwise non-performance-enhancing) substance actually would enhance performances in a specific sport.

**Cold Medication**

The selection of cold medicine available to buy over-the-counter in Denmark does not include substances on the prohibited list (such as ephedrine and pseudo-ephedrine). However, in Denmark we have had some examples of athletes testing positive for nose-drops, and “old stories” about positive doping cases due to nose-drops were occasionally mentioned in interviews. These stories made some athletes fear that this would happen to them and were very cautious of what medications they used when treating a cold or sickness.

**Support of the Doping List**
Our results also show a great deal of support of or acceptance of the list of prohibited substances by Danish athletes, as well as a rather high trust in anti-doping authorities with regards to include the right substances on the list.

**Trust in Experts**

The Denmark study also found that the majority of athletes support the doping list, even though many athletes also indicated that they did not know exactly what is on the list. There were no differences between male and female athletes in this question. The prohibited list of substances currently includes more than 200 substances or methods, thus we would expect most of athletes to indicate that they did not know exactly what is on the list. As found in the Canadian study, some of the interviewed athletes indicated that they trusted that experts would include the correct substances on the list:

“but it (the doping list) is very, very comprehensive. But I would say that it is developed by some experts, so you must presume that they know what is on the list” *(male athlete).*

“I trust that some experts have controls of this (what is included on the list)” *(female athlete).*

**Great Support of Doping Tests**

The great majority of athletes supported the conduction of doping test in elite sport. However, during the doping test athletes sometimes experienced some difficulties, for example, fear of false positive test (this was experienced more by female and younger athletes) and stress caused by urination difficulty during the control.

**Major Findings from Cultural Comparisons**

1. The insights gained in the Canadian and Danish doping study can only be interpreted and understood in the context of the Canadian and the Danish (sport) cultures. Contextualization is key.

2. There were somewhat similar findings in terms of perspectives on marijuana and cold medications. Specifically, athletes do not view marijuana to be a performance enhancer.

3. Both the Canadian and Danish athletes have complete trust in the system when it is working and tests are being conducted, despite not being knowledgeable about what exactly is on the list and not completely understanding why it is prohibited or banned.

4. There are some similarities in terms of gender stereotypes between Canada and Denmark; however, it is important to understand the specific context and culture. For instance,
women hold more political and societal power in Denmark than in Canada, which influences individual perceptions on gender, masculinity and femininity and doping.
CONCLUSION AND OVERALL RECOMMENDATIONS FOR PREVENTION PROGRAMS AND DOPING EDUCATION

Based on the three methodological stages completed in this study, we conclude the following:

1. There is a gap in the literature focusing on gender and doping. There has been more research completed on doping from a quantitative approach which has neglected the role gender issues play in doping. Doping prevention and education programs should account for gender stereotypes when creating policies and programs.

2. Athletes perceive there to be a lack of drug testing for both male and female university athletes. Many athletes were never tested despite playing university sport for 5 years. Student-athletes question why they should abide by the rules given the lack of testing and insufficient punishment for people who break the rules. Student-athletes require more education in order to understand why certain substances are banned and others are not. According to many student-athletes, the current education system in the CIS in inadequate. The CIS’s efforts to highlight doping prevention have not been acknowledged by the athletes.

3. Athletes believe that doping is present in Canadian university sport, especially in football. Male athletes, especially football and hockey players, see the CIS as a stepping stone to lucrative professional leagues and are motivated to “do what it takes” to make it to the next level. University female athletes feel pressure to adhere to societal standards in terms of ideal body composition, and some use weight loss supplements in order to achieve a certain body composition and appearance. In some cases, this is an unhealthy practice, and even though they are not “doping” for performance enhancement, their substance use can be equally unhealthy and should be a concern for prevention programs.

4. The insights gained in the Canadian and Danish study can only be interpreted and understood in the context of the Canadian and the Danish (sport) cultures. Cross cultural comparisons are depended on specific cultures and contexts. Despite there being some similarities between the two, i.e. perspectives on marijuana as a non-performance enhancer, the differences in the two studies create some important results. The current anti-doping approach and education mandate utilized by WADA is universal in nature, and based on the cross cultural comparison, we argue that perhaps more individualized plans need to be incorporated. Canadian university students are doping for different reasons than elite Danish athletes and also tend to possess varying perspectives on gender, masculinity, femininity and doping, and as such, having specialized anti-doping education and policies targeting specific cultural contexts would be useful in doping prevention.
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APPENDIX A

THE INTERVIEW GUIDE

Note: Prompts are indicated in red

BACKGROUND Questions
*These first sets of questions involve questions about your sporting background

Can you describe your sports career? When did you start playing sports…and why?
*ensure that the focus is university sport*

How would you describe femininity? What do you think femininity is?

How would you describe masculinity? What do you think masculinity is?
*might need to say “cultural views/ or how does society portray masculinity and femininity*

Do your definitions of masculinity and femininity change when you think of athletes/sports or do they remain the same?

INDIVIDUAL PREPARATION and DIET
*most effective to ask these questions separately rather than all grouped together.

Can you describe how you prepared for your last major competition?

Do you always prepare the same way, eat the same thing?

Do you follow a special diet?

Are there any drink or foods you won’t consume?

Where do you get your knowledge about your diet?

WHAT DO THEY SEE IN UNIVERSITY CULTURE?
In your experience, what are the most common supplements and performance-enhancing drugs used by University athletes? (it doesn’t have to be specific to …. (their university) it can be what
you(they) have noticed at other universities---looking for insights into the culture and what is going on?

By females specifically (what do females use?)

By males specifically? (What do males use?)

*If they note a certain substance, ask for more explanation, sport specific? Used by males and females? During season, out of season?

*Also ask about non-athletes, if they stated a certain supplement, can ask if they noticed if that supplement was popular for male gym-goers (non-varsity) and female gym-goers (non-varsity)?

Do you think one *gender*/sex uses more supplements or drugs than the other? WHY?

   In your opinion, why do athletes use ergogenic aids?
      a. What factors encourage athletes to use ergogenic aids?
      b. Why do female athletes use ergogenic aids?
      c. Why do male athletes use ergogenic aids?

Do you think that certain performance enhancing drugs/ ergogenic aids are more suited for a specific *gender*/sex?
   d. Why?
   e. Do you consider some drugs more feminine or masculine than others?
   f. Please provide examples and why you feel this way.

   If a drug is considered gender neutral, that is, it is perceived as acceptable for all people to take, do you think that both males and female should use it? Can you think of any examples of a gender neutral drug? What would be a gender neutral drug?

**BODY IMAGE**

* Introduce this section as “size requirements”. How do they lose or gain weight for their sport? What is popular/common in university sport.

Is your weight important in your sport?

Are there weight requirements?

Do you need to be thin to win? Or do you have to be bulky to be successful?
   *If yes, do you feel an obligation to conform to/strive for a specific body shape?

   How do you do it? So in order to get to that size what do people do?

   *The next series of questions can be sport specific, i.e. are there any positions in football that require you to be lean?
I.e. are there any position in rugby that you need to be super lean for?

Should women athletes use whatever they can to build stronger muscles, and get ‘bigger,’ if that is what is needed for their sports? *Have you ever heard of any women athletes having to add weight for their sport?

How did they do it?

**HOW ATHLETES COPE WITH INJURIES***

Have you ever been injured in your sport?

Did you listen to your body signals?

How do you feel if you do not train?

Have you ever competed injured on pain killers?

Do males use more pain killers? Why?

Do females use more pain killers? Why?

How do you think you handle general pain?

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**SPECIFIC TO DOPING**

In society, a trend has emerged where more and more healthy people take medicines (examples, Sudafed, Tylenol cold and flu). Do you think its reasonable that healthy people take drugs to optimize their performance in daily life, but elite athletes, like yourself, can’t?

Do you think that the doping regulations are fair at the university level?

  g. Do you think any substances should be added to the banned list?
  h. Do you think any substances should be taken off the list?

Some say recreational drugs are banned in sport because they are taboo/illegal for many societies. So, it adds pressure on “sport” to clean up drug use in society. What do you think about recreational drugs being on the banned list for university athletes?

What role do you think the media should play with respect to doping? Does the media influence your attitude toward doping?

Do you think that uni athlete face suspicion of doping?
Have you ever heard of any rumours about student athletes doping?

Do you think there is enough testing in CIS sport?

**HEALTH and RISK**

How do you define a healthy university athlete?

Do you think being a university athlete is risky? (in terms of health)

Do you think male uni athletes are more likely to experiment with different banned substances, methods...how/why/can you think of any examples....

Is there anything you would like to add on the discussion of university athletes and doping/supplement usage...