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OVERVIEW OF THE METHODS OF PHYSICAL IMPROVEMENT AND THE  
PREVALENCE OF STEROID USE IN HIGH SCHOOL MALE STUDENT  
ATHLETES

BY

SARAH SABLE

B.A., University of New Hampshire, 2004

THESIS

Submitted to the University of New Hampshire  
in Partial Fulfillment of  
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in

Counseling

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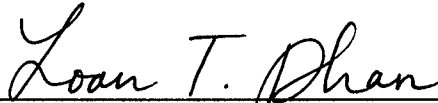
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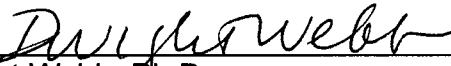
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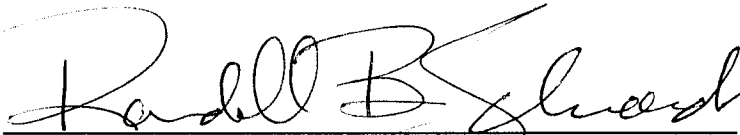
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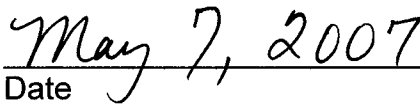
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## ABSTRACT

# OVERVIEW OF THE METHODS OF PHYSICAL IMPROVEMENT AND THE PREVALENCE OF STEROID USE IN HIGH SCHOOL MALE STUDENT ATHLETES

by

Sarah Sable

University of New Hampshire, May 2007

Two questionnaires, eight demographic questions and The Drive for Muscularity Scale (DMS) were administered to 19 high school male student athletes to determine their attitudes and behaviors around steroid use. The intent of this study was to research this sample to add to the literature in order to develop more effective steroid prevention measures. Steroid use of this group, 5.2% was found to be consistent with the national average. As indicated by the DMS, risk factors that might lead to or indicate steroid use include; wishing to be more muscular, lifting weights, taking protein/energy supplements, taking weight gain/protein shakes, feeling more confident with more muscle mass, feeling stronger with more muscle mass, thinking that legs, arms, and chest are not muscular enough. Specific motivating factors of diet and exercise habit found were feeling more confident with more muscle mass, wishing for more bulk, feeling stronger with more muscle mass, wishing that arms, chest, and legs were more muscular

## CHAPTER I

### INTRODUCTION

#### **Rationale and Statement of the Problem**

Over the years, more and more emphasis has been put on appearance and body image. With the invention of television, the standards of acceptable beauty and attractiveness have been rising towards unattainable levels. The models in magazines and billboards have also followed this trend. The general population has been left with images of perfection, to which they should aspire, and the effects on individuals can be severe. Even though years of research have been spent on investigating body image dissatisfaction in women not much has been done to look at the sources of body image dissatisfaction in men. Young women have been found to be highly affected by these influences, and one cannot help but wonder what effects are occurring in young men. Men may begin to identify with the men in magazines and advertisements, and may strive to look like them. Furthermore, even less research has been conducted on the effects body image dissatisfaction has had on men's behavior, including steroid use. Steroid use is also thought to be more common in males who play particular sports that require power, speed or endurance. This study will discuss various risk behaviors as well as the prevalence of steroid use in high school male student athletes.

Body image dissatisfaction occurs in both men and women and this can take shape in many forms. Typically when women are dissatisfied with their body image, they will change their diet habits (Anderson, Cohn, & Holbrook, 2000). Men might change their diet for health reasons instead of image reasons. These diets may reduce the level of carbohydrates or fat that a person ingests. Many men exercise. Some men might exercise for their overall health, while others might have different motives. Men with higher body image dissatisfaction may exercise more than men who do not. Also, particular sports show higher prevalence of these types of disorders, such as wrestling and body-building (Pope, Phillips, & Olivardia, 2000). In these sports, an athlete's body weight and physical appearance are taken into account. Wrestlers are weighed just before a meet to be placed in the correct weight class. The object is to be placed in the lowest possible weight class, because your opponent will be smaller and therefore easier to beat. Many wrestlers resort to exercising in plastic trash bags to sweat off water weight, and restrict eating and drinking before a meet. Body builders want to have a muscular physique that is well-defined. They will go to great lengths to build their muscles and reduce body fat. This is an attitude that may lead to steroid use. Their dissatisfaction could also lead to a condition known as body dysmorphia.

How or what individuals think of and feel about themselves may impact their body image satisfaction or dissatisfaction level. If a male has higher self-esteem, it could act as a buffer and he might be better able to balance out his body image perception. As a result, persons with higher self-esteem may be less affected by

some of these other risk factors like substance use/abuse and unhealthy diet and exercise habits. A person who has lower self-esteem might be more susceptible to some of these risk factors because he has less self-esteem to act as a buffer for these types of images. Research thus far points towards body image dissatisfaction being a larger issue for homosexual men than heterosexual men (Kimmel, 2005). Research has also found that self-esteem is a major predictor of the level of body image satisfaction or dissatisfaction (Rash, 2004). For athletes, steroid use may not be about body image dissatisfaction. Instead for competitive reasons, these individuals may be concerned with being in the best physical shape they can be. These individuals want to be faster, stronger and have more endurance.

Some individuals use alcohol to self-medicate and avoid facing their true thoughts and feelings. The alcohol numbs the individual and distracts them from their real thoughts and problems (Luciano, 2001). Research has also found alcohol to be a gateway drug for later use of illegal substances like steroids (Kusserow, 1991). There is an estimated 6.6 percent of high school students using steroids, a study like this one might help in determine what is contributing to the rise of steroid use (Pope et al., 2000). Little data of this type has been collected from this population.

### **Purpose of the Study**

The purpose of this study is to contribute to the research base on risk factors in adolescent males that might put them at risk for steroid use. There have been some similar studies to this one conducted with adult males (college

age and older), but few have looked at the adolescent population. However, there has been agreement in the research that knowledge of this population is greatly needed to address this issue (Stout, 2004). The results of this study will assist in the development of more efficient steroid use prevention strategies and add to the research base on dietary intake, body-image, amount of and type of exercise.

### **Hypotheses**

This researcher hypothesizes that high school male student athletes demonstrating a larger degree of risk factors such as substance use/abuse and unhealthy diet and exercise habits, will be more likely to contemplate using, have used or use steroids. It is postulated that more diet and exercise concerns will be found in men who are using or contemplating steroid use. It is expected that men who exercise frequently, especially athletes in sports like wrestling and body-building, are more attentive to their body image, and might be more prone to steroid use.

For some males, body image dissatisfaction could be an issue that might lead them to consume alcohol, in order to distract them from their true feelings. An individual who chooses to put alcohol into his body, could be tempted to also put steroids into it. Research from the Department of Health and Human Services has found that alcohol consumption is a major risk factor for steroid use and combined with other risk factors, alcohol consumption appears to have a large influence on whether or not an individual uses steroids (1991). An individual

using alcohol to cope with low body image issues, might be more likely to use steroids.

### **Limitations of the Study**

The nonstatistical and exploratory nature of this study does not allow generalizations to the to the larger population. Not only was the sample size small, it also did not contain a wide variety of athletes of different disciplines. If athletes from other sports were available for this study, different results may have been found. Race, ethnicity, and socio-economic status cannot be overlooked in this study either. The participants mainly consisted of white, middle class individuals. For this reason again one should be cautious when applying the results of this study to populations different from the sample in this study.

Second, this study does not examine the in-depth effects that anabolic steroids have on the physical male body or the chemistry of anabolic steroids and their effects on male body chemistry. These are more biological and chemical aspects of steroid use and are not the focus of this research.

### **Definition of Terms**

*Body Image* – The perception an individual has of his own physical body, and whether it is an accurate reflection of his actual appearance.

*Self-esteem* – “an affective component of the self, consisting of a person’s positive and negative self-evaluations” (Brehm, Kassin, & Fein, 2002, p. 67).

*Extreme dieting* – When dieting has become an obsession, where the individual is obsessed with keeping track of nutritional facts, eating, buying food,

looking for food and thinking about food, to either gain or lose more weight than is healthy for that individual's body (Anderson, et al., 2000).

*Compulsive exercise* – Exercising beyond the reasons of health or feeling well, often to the point of decreased health or injury, such as muscle strains and tears or dangerously low body fat levels (Anderson et al., 2000).

*Alcohol abuse* – Consumption of alcohol more than twice a week in amounts excessive of three drinks per day.

*Body dysmorphia* – Occurs mostly in males, where the male feels that he will not ever be big enough. This is sometimes referred to as reverse anorexia (Anderson et al., 2000).

*Anabolic Steroids* – May be taken as injections, oral supplements and/or topical creams (not prescribed by a physician) used to build muscle mass, and/or increase strength or speed.

## CHAPTER II

### REVIEW OF THE LITERATURE

Many factors can lead to body-image dissatisfaction in males. Men are looking for ways to maintain and assert their masculinity as women have become more liberated, sexually, socially, and economically (Danna, 1994). Men portrayed in advertisements are getting more muscular and are wearing less clothing. Boys' action figures are also becoming more muscular, with physiques that not even bodybuilders can obtain. Currently many males within normal weight are dissatisfied with their weight and have taken to dieting, exercising, and in some cases steroids to obtain the body they would like. Sometimes this can lead to a condition called muscle dysmorphia. The following review will discuss these topics in more detail, and then introduce the Drive for Muscularity Attitudes Questionnaire, which assesses how much ambition an individual has towards obtaining a muscular physique.

#### **Rite of Passage**

Many tribal societies have specific rites of passage that define the transformation of a boy to a man. These rites of passage are distinct; there is no ambiguity, or in-between stage, from boy to man. These societies do not have a concept of adolescence. The male is brought up in the society as a boy, removed from society for a period of time during the rite of passage, and then returns and is re-introduced to the society as a man (Raphael, 1988). While the tribal boy is away,



there are no women or young boys around, and he is educated by older men (Raphael, 1988). The education may include hunting skills, sex education, and tribal lore. "By using all of these techniques-seclusion, hazing, tests of fortitude, genital operations or other forms of scarification, the changing of names-an initiation ritual during the transition phase redefines the physical, social, and spiritual existence of its participants" (Raphael, 1988, p. 6). Upon his return into society, he is often given new clothes; his re-introduction is referred to as a rebirth (Raphael, 1988). After this point he is a man, with a new place and role in his society.

In America there appears to be no such rite of passage. Instead, boys go through a period of adolescence where they are to become men; however, there is no formal way to facilitate this change, or present boys to society as men (Raphael, 1988). The closest rite of passage in America that parallels the tribal rite of passage is the Jewish bar mitzvah; however, the next day the boy is expected to go about his day much the same as he did before this event (Raphael, 1988). His role in society does not really change as the tribal boy's role had. Instead, American boys are left in a state of ambiguity, where they are not placed at a precise level of society.

"According to some observers, adolescence in contemporary society often lasts for more than a decade-perhaps even for a lifetime" (Raphael, 1988, p. 16).

Adolescence allows males who look like men to act as boys. In America we now have to define for ourselves, as what constitutes a boy's transition into manhood. Boys now have options to define their entrance into manhood which can be made personal to the individual.

So contemporary society seems to give us differing and conflicting definitions of what manhood is and how it might be achieved. One

definition might require us to do a hundred pushups; another might require us to do the dishes instead. Legally, a boy turns into a man at sixteen when he can drive, at seventeen when he can join the military, at eighteen when he can vote, or at twenty-one when he can drink. In terms of social status, a boy might turn into a man when he holds down a well-paying job, when he moves away from home, or perhaps when he graduates from high school or college. Physiologically, a boy might argue it's when he can hold his beer. (Raphael, 1988, p. 22)

Some boys choose high school or college graduation, moving out of their parents' home, becoming financially secure, joining a fraternity, going to boot camp, having sex, drinking alcohol or going on a journey of some sort (Raphael, 1988). A boy chooses his own criterion for what defines a man, and then strives to reach it (Raphael, 1988). Many boys choose competitive sports and weight lifting as their transformation to becoming a man. Often the definition of a man is obscured with winning; men are taught to be tough, and they are not consoled when they lose (Raphael, 1988). "Our male rites of passage therefore tend to become dysfunctional and counter-productive. The self-concepts of young men, when based upon these competitive programs, are bound to suffer if they fail to emerge as winners" (Raphael, 1988, p. 184). Instead of supporting boys to become men, American society scares them into becoming men, through measuring if they are manly enough by winning, and if they do not, then they are considered a failure (Raphael, 1988).

### **Men in the Media**

Men began to be used more in advertising in the 1980s. At this time the portrayals of males as authority figures declined, and the male body became objectified (Danna, 1994). Men used in advertisements, such as those by Calvin Klein, began to show a great deal more skin, and became sex objects for the first

time in history (Danna, 1994). As time progressed into the 1990s men continued to lose more clothes in advertisements.

Women used to be attracted to men for their power and money however, with the women's movement and sexual revolution, many women do not need men in this way anymore (Danna, 1994). Women now have a greater opportunity to provide for themselves, this can be perceived as threatening to men and the definition of what is masculine (Luciano, 2001). "Muscularity in particular has become increasingly important, because it symbolized masculinity" (Pope, 2000, p. 51). As a result of this progression men have become more adorned, with more emphasis put on the male wardrobe, fragrances, and figure (Danna, 1994). Men's muscles have now become a prominent way to assert their masculinity and separate themselves from women. "Increasingly men started to diet, weight-lift, and wear sexier-looking clothes-or none at all. The result has been increased admiration of the male body" in our culture (Danna, 1994, p. 84).

Advertising with men as the focus for selling a product has been a strategic move. Marketing studies have found that male homosexuals on average buy more merchandise such as compact disks, clothing and toiletries, than do male heterosexuals (Danna, 1994). This finding has led advertisers to begin marketing to gays and lesbians. Because of this, more heterosexual men are also viewing these advertisements, and incorporating the images of the men in the ads into their concept of what a desirable man looks like. "As one advertising executive stated, the male torso reigns as the decade's most powerful "cross-over image" (appealing to women, gays, and heterosexual men alike)" (Pope et al., 2000, p. 60). In the 1970s

gay men began to take up an interest in body-building, perhaps because it is a hyper-masculine sport, and gay men want to assert and defend their masculinity (Luciano, 2001). This phenomenon led to the increase of clothes marketed for the purpose of showing off a muscular male body (Luciano, 2001). These clothes now became another sort of cross-over where both homosexual and heterosexual males were buying them (Luciano, 2001). This image of men resembles the bodies portrayed in the art of the Ancient Greeks, strong, muscular, and chiseled.

Many villains in television and movies are overweight. This fact subtly suggests to viewers that being overweight is socially unacceptable (Santo, 2002). Tony Soprano in the popular television series *The Sopranos* is a “fat” mobster who is a villain but also the protagonist. Tony acts childish in the series, and various characters in different episodes have accused him of this, which suggests that being overweight can also subtly indicate immaturity (Santo, 2002). Tony’s portrayal of fat as being childish and villain-like is an anti-model and another example of why boys and men today could be dieting and exercising more than ever.

Just as female models have been getting thinner and thinner, male models’ bodies have been changing as well. The centerfolds in the magazine *Playgirl* have on average lost 12 pounds of fat tissue and put on 27 pounds of muscle from the 1970s to the 1990s (Pope, 2000). It seems that today’s men are receiving the message that they should lose fat and bulk up at every possible angle.

G.I. Joe made its first debut in 1964 but has made various transformations through present day. Regarding the first action figure, “if he were a man 5 feet ten 10 inches tall, he would have a 32-inch waist, a 44-inch chest, and a 12-inch bicep-a

perfectly respectable physique, similar to that of an ordinary man in reasonably good physical shape” (Pope et al., 2000, p. 41). Over the past forty years this figure has gradually grown to the G.I. Joe Extreme, who if “full-sized, he would have a 55-inch chest, and a 27-inch bicep. His bicep, in other words, is almost as big as his waist- and bigger than that of most competition bodybuilders” (Pope et al., 2000, p. 42). A similar evolution can also be found in Star Wars action figures. In terms of trends, the physiques of the toys that boys are playing with can only be achieved through the use of steroids however, the little boys playing with these toys do not know this fact. Years of playing with toys like this sends subtle messages to boys that this is what they should look like, which could be contributing to the rise of steroid use that is seen today.

### **Weight-Change**

Adolescent males are beginning to pick up on the media messages as to what the ideal male body should look like. As a result, many boys to begin trying to alter their weight to one that they think is more desirable. In a Journal of Consulting and Clinical Psychology study looking at adolescents attempting to lose or gain weight, one third of the boys, the majority of whom were of normal weight, were trying to gain weight (Rosen, Gross, & Vara, 1987). A study measuring male body-image in the journal Psychology of Men & Masculinity, found that fifty percent of men misperceive their own body weight (Cafri & Thompson, 2004). The study that assessed the reasons behind weight change in adolescents, found low body-image was a common factor for males who were trying to gain weight or using dietary restraint (Rosen et al., 1987). In this same study males who were trying to lose

weight were overweight and also demonstrated body-image dissatisfaction (Rosen et al., 1987). The most common response men give when asked about their ideal body is, that it is muscular, strong, and broad-shouldered (Cafri & Thompson, 2004). The media's use of male body may be responsible for body-image dissatisfaction in adolescent boys who fall outside of what is portrayed as "ideal" in advertisements.

In a study conducted and reported in the book *The Adonis Complex*, it was determined that most male college students chose an ideal body for themselves that was, on average, 28 more pounds of muscle weight than their current weight (Pope et al., 2000). These same males also indicated that they thought women were most attracted to a body size that was on average 30 more pounds of muscle than the men's current body weight (Pope et al., 2000). However, many studies have confirmed that women do not prefer such heavily muscular bodies of body-builders; in fact, 94 percent are repulsed by these types of bodies (Pope et al., 2000). Men are receiving messages everywhere about what they should look like, and they also think that this is what women expect them to look like, or would like them to look like, even though this is not the case.

### **Diet**

Diet is also a concern for many men. One man who had muscle dysmorphia made and drank a protein shake every 90 minutes even at work resulting in his being fired (Pope et al., 2000). Nutritionists have found that the average American consumes twice as much protein as needed, and that bodybuilders consume twenty to thirty times the amount of protein needed (Luciano, 2001). High protein intake can severely reduce life span and can lead to kidney failure. In fact, the average life span

of a professional body builder is fifty-five years (Luciano, 2001). Many bodybuilders also engage in bingeing, purging, and the use of diuretics, which can lead to various eating disorders (Luciano, 2001). Whether men are trying to gain weight or lose weight, they often change their diet. The new diet could be a high-protein diet or it could be a low-fat, or restricted calorie diet. Dieting can be healthy as long as the individual does not overdo it and continues to meet all of the nutritional needs.

### **Homosexual Males**

There are some basic differences between gay men and heterosexual men in terms of body image and working out. Gay men report higher body image dissatisfaction than heterosexual men and are also more likely than heterosexual men to have eating disorders and other body-related distress (Kimmel & Mahalik, 2005). Among gay men, age is found to affect the amount of body image dissatisfaction, with younger men reporting more dissatisfaction than older men (Kimmel & Mahalik, 2005). Some gay men feel the need to look and act more masculine to compensation for their perceived lack of masculinity. Because homosexuals are a frequently targeted minority, some gay men report working out and getting bigger as a way of protecting themselves from physical attacks from heterosexual, antigay individuals (Kimmel & Mahalik, 2005). This finding provides one possible explanation for why some gay men take such a liking to body-building.

### **Muscle Dysmorphia**

Muscle dysmorphia is a condition, sometimes referred to as reverse anorexia, where highly muscular men are convinced that they are not muscular and perceive themselves as tiny. These men are convinced that they are not big enough, even if

they are larger than most other men. Some of these men are so embarrassed by their “small size” that they avoid situations where their bodies would be visible, such as the beach or a locker room. Some men are even afraid to leave their homes for fear that people would think that they are too small. Male body-builders, as a population, significantly misperceive their own body weight by underestimating it (Cafri & Thompson, 2004). Many of these men also alter their appearance by hiding under layers of bulky clothes, to give them the illusion that they are actually bigger than they are. These men spend much of their time looking at other men and wondering “is he bigger than me?” (Pope et al., 2000, p. 86). Many of these men plan their lives around their diet and exercise regimen, and have lost jobs and girlfriends due to this problem. One man would not even go on vacation if there was not a gym close by (Pope et al., 2000).

The men’s sex lives were often disrupted as badly as their social and occupational activities. One man reported that he scrupulously tried to avoid any “unnecessary” physical labor in order to conserve energy for working out. As a result, he limited himself to sex twice a month. Another, when he was training for a bodybuilding competition, wouldn’t even kiss his girlfriend for two weeks, fearing that she might transmit calories to him through her saliva. Even the men with less extreme concerns often reported that their muscle preoccupations had cost them their girlfriends. (Pope et al., 2000, p. 90)

In these cases working out has been taken to an extreme level that compromises the normal lives of these men. They are not able to hold professional jobs or be involved in a functioning healthy relationship, because they are preoccupied with working out and calorie counting in order to obtain a certain look- a look that ultimately is supposed to be attracting others to them, but in reality could be driving away the very people whom they are trying to attract.



Muscle dysmorphia might be related to obsessive-compulsive disorder. For example, a person who has a tendency towards obsessive-compulsive disorder, and works out at a gym might have the obsession (recurrent thought) that he is not muscular enough, and then carry out the compulsion (repetitive behavior) to work out excessively in order to reduce that obsession (Pope et al., 2000). Sometimes a preoccupation with exercise is at a level that compromises other responsibilities; for example when his father died, Arnold Schwarzenegger refused to go to the funeral in Austria because it would interrupt his training schedule (Luciano, 2001). When working out becomes a preoccupation that leads an individual to become distressed, and also interferes with social and occupational activities, there is a major psychological problem involved (Pope et al., 2000).

### **Anabolic Steroids**

Steroid use is on the rise in adolescent and adult males (National Institute of Health, 2000). In a study conducted by the *Journal of the American Medical Association*, researchers found that 6.6 percent of boys had used anabolic steroids, and of this sample, two-thirds had admitted that they tried steroids when they were sixteen years old or younger (Pope et al., 2000). Of the adolescents who use steroids, most have used them by age sixteen (Kusserow, 1991).

Steroids became popular through their use by athletes. During the 1960s and 1970s, professional college athletes were using steroids in sports that required a great deal of strength, such as weightlifting (Luciano, 2001). In 1988, Ben Johnson set the world record in the hundred-meter dash while on steroids, and soon after this time, steroid use began to increase in the general public (Luciano, 2001). Many boys

look up to athletes of all sorts, and steroid use by these men has made taking steroids appear to be more socially acceptable and safer to boys in the general public.

For years the medical community was reporting that steroids do not increase muscle mass and strength. In 1996, the *New England Journal of Medicine* published a groundbreaking study, reporting that steroids do work, and those people who are using them are consuming fifty to a hundred times the doses that experimenters have used in their studies (Pope et al., 2000). The fact that scientists were experimenting with smaller steroid dosages, explains why earlier studies had failed to determine that steroids were effective in gaining muscle mass and strength. In addition to taking large doses of steroids, users often repeat steroid use in cycles. The youths that begin to take steroids can be at risk to become heavy users, often using five cycles lasting six-weeks each (Kusserow, 1991). This type of steroid use suggests that steroids may be addicting. Many adolescents who begin steroid use do not intend to discontinue use, or cannot stop using even when they try to (Kusserow, 1991). When discontinuing use, many steroid users go through a stage of depression.

Fifty-three percent of adolescents who use steroids report the reason for using is to be happier or to be more satisfied with themselves (Kusserow, 1991). Adolescents believe that steroids increase their muscle mass, strength, training capacity, and speed (Kusserow, 1991). "An estimated half a million high school boys use steroids, and though most of them claim to take them to improve athletic performance, one out of four admits doing so for enhanced appearance" (Luciano,

2001, p. 178). Whether boys are taking steroids for increased athletic performance or just to look better, the fact that more boys are using steroids now than ever before is a huge problem. Many of these boys are unaware of the negative effects of steroid use. There are also many boys who are aware of the effects of steroid use, but the knowledge has not prevented them from using steroids. The appeal of steroids and the benefits of steroids are difficult to resist, and according to some researchers steroids are more addictive than cocaine (Luciano, 2001).

It has been speculated that drug and alcohol use are risk factors for steroid use. A Department of Health and Human Services report states that “Before starting steroids, nearly two-thirds of the users report drug use, but of a different type. They used alcohol (65%), marijuana (26%) and nicotine (14%). A few mention ‘uppers’ (4.2%) and pain-killers (1.4%)” (Kusserow, 1991, p. 9). These numbers support the possibility that adolescents who use drugs and especially alcohol are at a greater risk for becoming involved in steroid use.

Steroids can adversely affect the hormonal system, musculoskeletal system, cardiovascular system, liver, skin, risk of infection and psychological effects (National Institute of Health, 2000). Effects of steroid use on men’s hormonal systems can lead to infertility, breast development, shrunken testicles and male-pattern baldness (National Institute of Health, 2000). Steroids may even increase the risk for prostate cancer in men (Pope et al., 2000). Steroids can cause stunted height and tendon ruptures in the musculoskeletal system; heart attacks and enlargement of the left ventricle in the cardiovascular system; cancer and peliosis hepatis in the liver; and acne, cysts and oily scalp in skin (National Institute of

Health, 2000). Adolescents using an injection form of steroids, either using a dirty needle or sharing a needle with others, increase their risk of contracting hepatitis and HIV/AIDS (National Institute of Health, 2000).

The psychological effects of steroids can be quite severe. Psychiatric effects of steroids include homicidal rage, mania, and delusions (National Institute of Health, 2000). Depression from the discontinuation of steroid use can be mild or severe. In mild cases depression may be accompanied by lethargy, decreased appetite and sex drive, and anxiety (Pope et al., 2000). In more severe cases of depression, which occur in about 6.5 percent of cases, suicidal thoughts and attempts are present (Pope et al., 2000). Probably the most commonly known form of psychological steroid effects is “roid rage” where, the steroids bind to important brain receptors causing the individual to explode with aggressiveness and violence (Luciano, 2001). Steroid users have often beaten or killed other people, often their girlfriends (who are an easy target) or displayed other instances of rage.

Steroid use is usually kept secret. Steroid users do not want others to know that they have been using; they do not want others to know that they had chemical help in achieving their image. Steroids have been the best-kept secret of professional athletes for years, and only recently have they begun to trickle down into the public, into college, into high school, and even middle school boys and athletes (Pope et al., 2000). If the secret of steroid use is revealed, then the boys using steroids do not receive credit for the assumed amount of work and dedication they desire for their appearance. Many men would rather tell you they were using a drug like cocaine or heroin than admit to using steroids (Pope et al., 2000).

## **Adolescents and Steroids**

One million middle and high school students used steroids in the year 2003; in a sample of 1,000 students, thirty to forty of them are or have used anabolic steroids (Svare, 2003). This number is evident of the rising problem of steroid use in adolescent aged children. Steroids can have adverse effects, including death. Taylor Hooten of Texas committed suicide after his seventeenth birthday, after being faced with severe depression as a result of his use of anabolic steroids (Svare, 2003). A study conducted in 2005 on middle school students found that more than half reported exercising or lifting weights to increase body mass and a portion of those had used steroids (Smolak, Murnen & Thompson, 2005).

Another concern for adolescent steroid use is aggression. Adolescence is a time where the body is growing, hormones like testosterone are being produced and new neural circuits for behavior are still being set (McGinnis, 2004). Adding anabolic steroid use during adolescence can impact the ways these neural circuits are set and could potentially increase aggressive and sometimes violent behavior during adolescence that could continue throughout adulthood (McGinnis, 2004).

The rise of steroid use in adolescents has become such a large issue that on June 7, 2006 the state of New Jersey has decided to begin testing high school athletes for steroid use (Samuels, 2006). Over 10,000 students from public and private schools are projected to be tested (Samuels, 2006). Fifty thousand dollars was donated to this cause by the state legislature and by the New Jersey State Interscholastic Athletic Association (Samuels, 2006). Due to the cost of testing (\$150- \$200 per test), only the athletes of the sports where steroid use is most

common were tested, which included football, wrestling, track, swimming, baseball, and lacrosse (Samuels, 2006). Students testing positive were suspended from their teams and awards they had earned were taken away (Samuel, 2006). The state of New Jersey was the first state in the country to develop a program like this, and the results may influence what procedures other states make to combat steroid use in adolescents (Samuel, 2006).

### **Summary**

This review is intended to reveal some of the reasons why male masculinity has become manifested in their muscles, and how this effects adolescents. Adolescent boys may become dissatisfied with their own bodies as a result of all the media attention and focus on body-image in advertising. It is speculated that this dissatisfaction could lead to experimentation with drugs like alcohol, narcotics and others, which could lead to steroid use, or directly lead to use of steroids themselves (Kusserow, 1991), which can have harmful physical and psychological effects on boys (National Institute of Health, 2000). Since most of the research has been conducted on college-age males, there is a need to gather research on younger males. If effective assessments are made to help pinpoint males who are at risk for steroid use, then preventative measures can become more effective. This study is intended to identify some risk factors and the prevalence of steroid use or contemplation of use.

## CHAPTER III

### METHOD

#### Overview

Chapter three will present the methods and procedures for the qualitative research design. These methods and procedures were utilized for investigation of the following questions:

1. What is the prevalence of steroid use in high school male student athletes?
2. What are some risk factors that might lead to or indicate steroid use?
3. What are the motivating factors of high school male student athletes' diet and exercise habits?
4. What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and desire to participate in college athletics?
5. What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and alcohol use in high school male student athletes?
6. What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and nicotine/tobacco use in high school male student athletes?

7. What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and narcotic use in high school male student athletes?
8. What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and anabolic steroid use in high school male student athletes?

### **Participants and Setting**

The participants in this study consisted of high school male student athletes (N=19) between the ages of 14 and 18. These students attended a small public high school in southern Maine and participated in various sports, including soccer, wrestling, and football. Consent forms were sent home to the participants' parent(s)/guardian(s), asking for permission for the student to participate in the study. The consent form included a brief description of the study, the measures, and the researcher's contact information (see Appendix A). Assent forms (see Appendix B) were distributed to participants prior to administering the measures. As an incentive for participation, each participant was entered in a raffle for a chance to win a gift certificate for \$25 to a Dick's Sporting Goods Store.

The instruments were administered at school during the student's advisee/home room period. The time commitment for each student was approximately 20 minutes. The first instrument asked demographic questions (see Appendix D) to gather information on age, grade, type of sport(s) played, substance use behaviors, and whether or not the athlete is considering college sports. The students answered eight demographic questions (see Appendix D). The responses to the questions



found in the two parts of Appendix D were kept separate. These pages were kept separate to prevent linkage of demographic information and responses to the Drive for Muscularity Scale (DMS).

### **Procedure**

Packets of the measures were prepared and distributed by the researcher to the male athletes. The researcher administered the measures to make sure that testing conditions were appropriate, and that participants were not discussing questions or sharing answers. Also, this approach prevented the students' coaches from having the opportunity to view participant responses, and ensured greater privacy. Without this privacy students may not have answered the items on the measures honestly. If participants had questions, the researcher instructed them to interpret the questions as best as they could, in order to prevent any bias or influence of their responses. The measures were administered to all teams, and then were collected face-side down and placed in large envelopes. After all of the measures were collected and the envelope had been sealed, a debriefing form was given to the participants that explained the details of the study (see Appendix C).

### **Instrumentation**

The Drive for Muscularity Scale (DMS) was formulated from the Eating Attitudes Test (EAT), an assessment of attitudes and behaviors associated with a desire to be thinner (McCreary, 2005). The DMS is a 15-item self-report survey about the perception of one's muscle mass (McCreary, 2005). There are four main types of questions asked on this report, related to appearance, exercise, diet, and steroids. The DMS has been found to be both reliable and valid. The DMS has an

alpha reliability of .85 to .91 in male respondents (McCreary, 2005). The DMS has also been found to be reliable in item-total correlations with a range from .37 to .65 (McCreary, 2005). The DMS have been found to have construct validity, concurrent validity, convergent validity and discriminant validity (McCreary, 2005). To demonstrate concurrent validity, a positive correlation of .24 was found between DMS score and the number of times (weekly) that subjects weight-trained (McCreary, 2005). Concurrent validity was demonstrated with anabolic steroid users scoring significantly higher on the DMS than non-users (McCreary, 2005). To demonstrate convergent validity, the DMS was positively correlated to the Swansea Muscularity Attitudes Questionnaire and negatively associated with self-esteem (McCreary, 2005). The DMS was found to have discriminant validity when compared to the Eating Attitudes Test (EAT) the two measures were correlated from .30 to .40 (McCreary, 2005).

The DMS is scored using reverse-direction scoring procedure (McCreary, 2005). All items on the DMS are scored on a Likert-type scale from 1 (always) to 6 (never) (McCreary, 2005). Higher scores on the DMS measure indicate a greater drive for muscularity (McCreary, 2005).

### **Analysis of the Data**

Student demographic data were compared with scores on the Drive for Muscularity Scale (DMS). Higher scores on the DMS indicate that the particular individual has more drive to obtain a muscular physique (McCreary, 2005). DMS scores will be compared individually to look for relationships with the participant's

age, particular sports team and weight lifting, protein/supplement intake, and steroid contemplation.

## CHAPTER IV

### DISCUSSION

This final chapter discusses the findings of the study, implications, and future research.

#### **Summary and Discussion of Findings**

##### **Summary and Discussion of Findings for Research Question One**

The first question the researcher investigated was: What is the prevalence of steroid use in high school male student athletes?

This researcher did find prevalence, the number of times steroid use occurs in the sample, of steroid use among high school male student athletes. In this sample, 5.2% of the student athletes admitted to steroid use (1 out of 19). This statistic is slightly lower than the 6.6% of boys who disclose that they have tried steroids (Pope et al., 2000), but it is also slightly higher than the 3-4% of users in another survey of 1,000 boys (Svare, 2003). The statistic indicating the prevalence of steroid use in this sample is consistent with the findings of these previous surveys. However, one should be cautious when generalizing the results of this study to a larger population, due to the small sample size of only one self-reported steroid user.

##### **Summary and Discussion of Findings for Research Question Two**

The second question the researcher investigated was: What are some risk factors that might lead to or indicate steroid use?

Over half, 52.6% of student athletes sampled (n=19) indicated that they wished they were more muscular. This desire to be more muscular could be a risk factor for steroid use. To support this, 42.1% of the same sample revealed that they lift weights to build muscle mass. The desire to build muscle mass by lifting weights, could be aided by steroid use.

Scoring for the DMS consisted of 1-6 reverse scoring: “always” 6, “very often” 5, “often” 4, “sometimes” 3, “rarely” 2, and “never” 1. The researcher has displayed the percentages of responses scored 6-4 on the DMS Likert scale below.

Table 1: Risk Factors

Item	% of Students Reporting Always	% of Students Reporting Very Often	% of Students Reporting Often	Total %
I wish I were more muscular	26.3	5.2	21.1	52.6
I lift weights to build muscle	15.8	15.8	10.5	42.1
I use protein/ energy supplements	10.5	5.2	15.8	31.5
I drink weight gain/ protein shakes	10.5	5.2	10.5	26.2
I think I would feel more confident if I had more muscle mass	21.1	5.2	10.5	36.8
I think I would feel stronger if I gained a little more muscle mass	15.8	10.5	15.8	26.3
I think that my legs are not muscular enough	15.8	10.5	15.8	42.1
I think that my arms are not muscular enough	15.8	10.5	15.8	42.1
I think that my chest is not muscular enough	15.8	10.5	5.2	31.5

As indicated by the DMS, risk factors that might lead to or indicate steroid use include wishing they were more muscular, lifting weights, taking protein/energy supplements, weight gain/protein shakes, feeling more confident with more muscle mass, feeling stronger with more muscle mass, thinking that legs, arms, and chest are not muscular enough.

It might be assumed that men who exercise frequently, especially male athletes in sports such as wrestling and body-building, are more attentive to their body image and might be more prone to steroid use. This is supported by the data found. The participants who have admitted to steroid use also indicated that they are more attentive of their body image, by wishing and thinking they were more muscular/stronger, taking protein/energy supplements, drinking weight gain/protein shakes, and by lifting weights to become more muscular.

### Summary and Discussion of Findings for Research Question Three

The third question the researcher investigated was: What are the motivating factors of male high school student athletes' diet and exercise habits?

Motivating factors of male's diet and exercise habits appear to be related predominantly to perceived degree of strength and muscle mass. Specific motivating factors of diet and exercise habits found were feeling more confident with more muscle mass, wishing they had more bulk, feeling stronger with more muscle mass, wishing that arms, chest and legs were more muscular. Thirty-six percent of participants sampled admitted that they would feel more confident with more muscle mass, and 47.4% admitted that they would feel stronger with more

muscle mass. These are large percentages and may indicate what lies behind student athletes' diet and exercise habits.

Scoring for the DMS consisted of 1-6 reverse scoring; "always" 6, "very often" 5, and "often" 4, "sometimes" 3, "rarely" 2, and "never" 1. The researcher has displayed the percentages of responses scored 6-4 on the DMS Likert scale below.

Table 2: Motivating Factors

Item	% of Students Reporting Always	% of Students Reporting Very Often	% of Students Reporting Often	Total %
I think I would feel more confident if I have more muscle mass	21.1	5.2	10.5	36.8
I think that I would look better if I gained 10 pounds in bulk	15.8	5.2	---	21.0
I think I would feel stronger if I gained a little more muscle mass	15.8	15.8	15.8	47.4
I think that my arms are not muscular enough	15.8	10.5	15.8	42.1
I think that my chest is not muscular enough	15.8	10.5	5.2	31.5
I think that my legs are not muscular enough	15.8	10.5	---	26.3

Thinking about the use of anabolic steroids did not appear to be a factor in what motivates steroid use. Most participants reported that they never think about steroid use (84.2%), while 10.5% revealed that they sometimes think about steroid use and 5.2% revealed that they rarely think about steroid use.

It is postulated that more diet and exercise concerns will be found in high school male student athletes who are using or contemplating steroid use. However,

it should be noted that several non-steroid users reported similar degrees of using these protein/energy supplements and weight gain/protein shakes as the individuals who admitted to steroid use.

#### Summary and Discussion of Findings for Research Question Four

The fourth question the researcher investigated was: What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and desire to participate in college athletics?

In general students that reported wanting to participate in college athletics, demonstrated higher scores on the DMS, than students who reported not or maybe wanting to participate in college athletics. Students reporting a desire to participate in college athletics had an average DMS score of 3.05 compared to 2.22 of the students reporting they did not intend to participate in college athletics.

This difference in averages of the participants who intend to play college athletics and those who do not may indicate that within the high school male student athlete sample, there may be two different sub groups. It could be possible that each of these groups may view their health and athletic participation differently, which may also impact their ideas about steroids and steroid use. It would be interesting to observe the similarities and differences in motivation and drive and/or pressure to succeed, for each of these two groups.



### Summary and Discussion of Findings for Research Question Five

The fifth question the researcher investigated was: What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and alcohol use in high school male student athletes?

Alcohol use was not found to be related to steroid use. Student athletes who reported using alcohol, were not the same individuals that reported using steroids. This finding was not supported by the literature, which suggested that these other substances might lead to or indicate steroid use. Research has found alcohol to be a gateway drug for later use of illegal substances like steroids (Kusserow, 1991).

### Summary and Discussion of Findings for Research Question Six

The sixth question the researcher investigated was: What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and nicotine/tobacco use in high school male student athletes?

Nicotine/tobacco use was not found to be related to steroid use. Student athletes who reported using nicotine/tobacco, were not the same individuals that reported using steroids. This finding was not supported by the literature, which suggested that these other substances might lead to or indicate steroid use.

### Summary and Discussion of Findings for Research Question Seven

The seventh question the researcher investigated was: What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and narcotic use in high school male student athletes?

Narcotic use was not found to be related to steroid use. Student athletes who reported using narcotics, were not the same individuals that reported using steroids. This finding was not supported by the literature, which suggested that these other substances might lead to or indicate steroid use. This researcher did not find narcotics to be a gateway drug to steroid use.

Finding the differences in opinion on these substances from student athletes may shed some light over this issue. Could it be that in this sample student athletes view narcotics, alcohol (Research Question Five), and nicotine/tobacco (Research Question Six) as substances that could impair their athletic ability, while viewing steroids as a substance that could potentially improve their athletic ability? Understanding the different conceptualizations of these substances could have an impact on how steroid prevention strategies could be presented to this population.

### Summary and Discussion of Findings for Research Question Eight

The eighth question the researcher investigated was: What relationship exists between the drive for muscularity as measured by the Drive for Muscularity Scale (DMS) (see Appendix E) and anabolic steroid use in high school male student athletes?

Of the 5.2% of student athletes sampled who admitted to steroid use, the following risk factors were identified: wishing they were more muscular, feeling more confident with more muscle mass, feeling stronger with more muscle mass and wishing that legs, arms, and chest were more muscular. These risk factors were identified by responses to the DMS.

There were no participants that indicated contemplating steroid use above the degree described as “sometimes.” Of the participant(s) who admitted to steroid use, the following diet and exercise concerns were found in these individual(s): lifting weights to feel more muscular, drinking weight gain/protein shakes, using protein/energy supplements, as indicated by DMS responses.

The participants who have admitted to steroid use also indicated that they are more attentive of their body image, by wishing and thinking they were more muscular/stronger, taking protein/energy supplements, drinking weight gain/protein shakes, and by lifting weights to become more muscular.

Thinking about using anabolic steroids did not appear to be related to steroid use. Of the student athletes that reported steroid use, they did not report thinking about steroid use more than those who reported not using steroids. Of the students who did report steroid use, they appeared to lead an otherwise healthy lifestyle (not using alcohol or other drugs and also not using protein/energy supplements or weight gain/protein shakes) with hopes of college athletics. In a future study it may be beneficial to investigate if steroid use among student athletes may be motivated by wanting to have a competitive edge over other athletes, in pursuit of a college athletic career.

## Summary and Discussion of Findings for the Hypothesis

The researcher hypothesized that male athletes demonstrating a larger degree of risk factors will be more likely to contemplate using, have used, or use steroids. The following risk factors were identified by the DMS: wishing they were more muscular, feeling more confident with more muscle mass, feeling stronger with more muscle mass and wishing that legs, arms and chest were more muscular. These risk factors were reported with greater intensity with the steroid users than the responses of non-steroid users.

This purpose of this study was to gather information to expand the research base on risk factors in adolescent male student athletes that might put them at risk for steroid use. There have been some similar studies that were conducted with college-age men and men older than college age, but few have looked at the adolescent population. The lack of research of this topic on the adolescent population further supports the need for this study.

There is an estimated 6.6% of high school students using steroids. A study such as this one might be helpful in determining what is contributing to this rise in steroid use (Pope et al., 2000). No data of this type has been collected on this population. The results of this study could assist in the development of more efficient steroid use prevention strategies for high school male athletes.

## **Implications**

As the data collected has demonstrated, steroid use is present in high school male student athletes, even in this small sample of nineteen participants. If this is the data collected from only nineteen students in a small public school in southern Maine, what might be the data collected from the entire United States of America? Steroid use is a problem facing high school male student athletes today, where the age of first-time use is sixteen (Kusserow, 1991). These individuals are not recognizing the potentially harmful effects of steroid use to their health.

Coaches, parents, and athletic directors must be vigilant in monitoring their high school male student athletes. It may be helpful to pay attention to their personalities, body size/shape in relation to muscle mass and stress healthier eating and sleeping habits as avenues towards physical and athletic improvement. Guidelines and information on steroid use should be available and readily discussed with all high school male student athletes. These individuals should know what their coaches and athletic director's policies are on steroid use (i.e., penalties for use) and what health risks steroids pose.

Emphasis can be placed on being the best one can be without sacrificing one's body to the use of steroids. Students may need to hear that although winning may feel great, the price they have to pay with the consequences of using steroids are much greater. Some consequences such as adverse side effects and health risks addressed in the literature can impair and possibly damage their prospects of college athletics. An attitude can be created in the sports world of high school male

student athletes, that the use of steroids comes at too high a price. These individuals must be reminded that in the long run, steroids will hurt them.

### **Future Research**

Future research would hopefully result in a larger sample size. Additionally, a more diverse sample would strengthen the external validity of the study. Although this study was nonstatistical and exploratory in nature, it may be beneficial for one to compare the results of this study to an older population, such as college athletes. This may be helpful to pinpoint the age and level of athletics that pose the largest issue in steroids use. Awareness of the information on these different populations could lead to more effective steroid prevention strategies at an earlier age.

Another area of interest would be to look at the degree of pressure a student athlete is under to perform at the ultimate level. Who is applying the pressure and how do the athletes cope with the pressure? The answers to these questions could also aid in developing more effective steroid prevention strategies. The improvement of these programs may spread awareness about steroid use and the negative effects steroids can cause, which in turn may reduce the number of student athletes who choose to use them.

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## APPENDICES

## APPENDIX A

### PARENTAL CONSENT FORM

Dear Parents,

My name is Sarah Sable, and I am a student in the Graduate Program in Counseling at the University of New Hampshire. I am currently working on my master's thesis, studying the level risk behaviors (e.g. alcohol use, nicotine/tobacco use and narcotic use) in adolescent male athletes. I would like your consent, to allow your child to participate in a short survey (which includes demographic questions and the Drive for Muscularity Scale), which would investigate body-image and health-related behaviors. The survey would probably take no longer than 15 minutes to complete, and your son would be entered into a raffle for a \$25 gift certificate to a Dick's Sporting Goods store.

The study will occur on DATE at TIME, before athletic practice at your son's school. I will be administering the instruments myself. The survey is confidential and no identifying information will be attached to the survey. Completion of the demographic questions and DMS, does not put the participant in physical, economic or psychological risk. If confidentiality is breached, the student's responses could be brought to the awareness of teammates and coach. If this was to happen the student could be teased, harassed or suspended or kicked off their team (in extreme cases). To further ensure confidentiality, students' seating will be spaced out so that students will not be able to look at one another's answers. After completing the surveys, I will be collecting them in an envelope, and sealing it after all surveys are completed. Only I and my research colleagues will be viewing the data. Participation in this study is voluntary and if while filling out the survey, your son decides not to continue for any reason, he has the choice to withdraw himself from the study without penalty or loss. The data collected from this study will contribute to the research on adolescent male athlete steroid use and prevention. Results from this study will be presented to the Traip Academy staff at the completion of the study.

If you have any further questions, please contact me at: [ssable@cisunix.unh.edu](mailto:ssable@cisunix.unh.edu) or Julie Simpson in the UNH Office of Sponsored Research, [Julie.Simpson@unh.edu](mailto:Julie.Simpson@unh.edu) or (603) 862-2003.

Sincerely,  
Sarah Sable

I \_\_\_\_\_, allow my son \_\_\_\_\_, to participate in the above described research study, conducted by Sarah Sable, B.A., from the University of New Hampshire, Durham.

APPENDIX B  
ASSENT FORM

Dear Student-athletes,

My name is Sarah Sable and I am a student in the Graduate Program in Counseling at the University of New Hampshire. I am currently working on my master's thesis, which is investigating the level of risk behaviors in adolescent male student athletes. The purpose of this study is to improve prevention of illegal substance use in male student athletes. I have received approval from the Traip Academy and from the University of New Hampshire to study these risk behaviors in the male student athlete population. I would like your assent (permission) to participate in a short survey (which includes demographic (informational) questions and (the Drive for Muscularity Scale), which would investigate these health-related behaviors. The demographic questions ask you whether or not you have ever used illegal substances (i.e., alcohol, nicotine/tobacco, steroids, and/or narcotics), and if so, the frequency and amount. The survey would probably take no longer than 15 minutes to complete, and you would be entered into a raffle for a \$25 gift certificate to a Dick's Sporting Goods store.

I will be administering the instruments myself. The survey is confidential and no identifying information will be attached to the survey. Completion of the demographic questions and DMS, does not put you in physical, economic or psychological risk. If confidentiality is broken, the your responses could be brought to the awareness of your teammates and coach. If this was to happen you could be teased, harassed or suspended or kicked off the team (in extreme cases). To further ensure confidentiality, your seats will be spaced out so that participants will not be able to look at one another's answers. After completing the surveys, I will be collecting them in an envelope, and sealing it after all surveys are completed. Only I and my research colleagues will be viewing the data. Participation in this study is voluntary and if while filling out the survey, you decide not to continue for any reason, you have the choice to withdraw yourself from the study without penalty or loss. The data collected from this study will contribute to the research on adolescent male athlete steroid use and prevention. Results from this study will be confidential. After the completion of this study, the researcher would like to provide informational sessions about the risk of steroid use to student-athletes of Traip Academy

If you have any further questions about this study, please contact me at [ssable@cisunix.unh.edu](mailto:ssable@cisunix.unh.edu). If you have any questions about your rights as a research subject, please contact Julie Simpson in the UNH Office of Sponsored Research, [Julie.simpson@unh.edu](mailto:Julie.simpson@unh.edu) or (603)862-2003.

Sincerely,  
Sarah Sable

I \_\_\_\_\_, am willing to participate in the above described research study, conducted by Sarah Sable, B.A., from the University of New Hampshire, Durham.

APPENDIX C  
STUDENT DEBRIEF FORM

Debrief:

Thank you for your participation in this study. No identifying information will be linked to your questionnaire. For your time and participation you have been entered in a raffle for a chance to win a \$25 gift certificate to a Dick's Sporting Goods store.

This study was designed to determine risk factors and adolescent male's motivation to obtain a muscular body. The study was also designed to find out what attitudes adolescent males have towards steroids and steroid use. The information collected in this study will add to the existing research on how to promote healthy body image ideals and to the development of more efficient steroid prevention/education programs.

If you have any further questions about the study or how the information gathered, will be used, please feel free to contact me at: [ssable@cisunix.unh.edu](mailto:ssable@cisunix.unh.edu)

APPENDIX D  
DEMOGRAPHIC QUESTIONS

1. Age?
2. Year in school?
3. What sports do you play?

4. Are you considering participating in college athletics?
5. Do you drink alcohol? If yes, indicate amount:  
\_0-1 drinks/week    \_2-3 drinks/week    \_4-5 drinks/week    \_6+ drinks/week
6. Do you use nicotine or tobacco products? If yes, indicate amount:  
\_never    \_1-2 times/month    \_1-2/ week    \_daily    \_several times/ day
7. Do you use illegal drugs such as marijuana, cocaine, or heroin? If yes, what substance and how often?  
\_never    \_1-2 times/month    \_1-2/ week    \_daily    \_several times/ day
8. Have you used anabolic steroids (includes injections, oral supplements and creams that have not been prescribed by a physician, to build muscle mass, increase strength or speed)?



## APPENDIX E

### THE DRIVE FOR MUSCULARITY SCALE (McCreary, 2005)

Please read each item carefully then, for each statement, circle the response that best applies to you.

1. I wish that I were more muscular.	Always	Very Often	Often	Sometimes	Rarely	Never
2. I lift weights to build up muscle.	Always	Very Often	Often	Sometimes	Rarely	Never
3. I use protein or energy supplements.	Always	Very Often	Often	Sometimes	Rarely	Never
4. I drink weight gain or protein shakes.	Always	Very Often	Often	Sometimes	Rarely	Never
5. I try to consume as many calories as I can in a day.	Always	Very Often	Often	Sometimes	Rarely	Never
6. I feel guilty if I miss a weight training session.	Always	Very Often	Often	Sometimes	Rarely	Never
7. I think I would feel more confident if I had more muscle mass.	Always	Very Often	Often	Sometimes	Rarely	Never
8. Other people think I work out with weights too often.	Always	Very Often	Often	Sometimes	Rarely	Never
9. I think that I would look better if I gained 10 pounds in bulk.						

Always	Very Often	Often	Sometimes	Rarely	Never
10. I think about taking anabolic steroids.					
Always	Very Often	Often	Sometimes	Rarely	Never
11. I think that I would feel stronger if I gained a little more muscle mass.					
Always	Very Often	Often	Sometimes	Rarely	Never
12. I think that my weight training schedule interferes with other aspects of my life.					
Always	Very Often	Often	Sometimes	Rarely	Never
13. I think that my arms are not muscular enough.					
Always	Very Often	Often	Sometimes	Rarely	Never
14. I think that my chest is not muscular enough.					
Always	Very Often	Often	Sometimes	Rarely	Never
15. I think that my legs are not muscular enough.					
Always	Very Often	Often	Sometimes	Rarely	Never

APPENDIX F  
IRB APPROVAL LETTER

University of New Hampshire

Research Conduct and Compliance Services, Office of Sponsored Research  
Service Building, 51 College Road, Durham, NH 03824-3585  
Fax: 603-862-3564

24-Jan-2007

Sable, Sarah  
Education, Morrill Hall  
20 Exeter Road  
Kingston, NH 03848

**IRB #:** 3843

**Study:** Overview of the Methods of Physical Improvement and the Prevalence of Steroid Use

**Approval Date:** 29-Nov-2006

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed your response to its concerns and approved the protocol for your study with the following comments:

*The researcher needs to ensure that she keeps the written responses to the two parts of Appendix C separate (this is not explained in the protocol).*

*In the parent consent information, change the last sentence to read, "If you have any further questions about this study, please contact me at [ssable@cisunix.unh.edu](mailto:ssable@cisunix.unh.edu). If you have any questions about your child's rights as a research subject, please contact Julie Simpson in the UNH Office of Sponsored Research, [Julie.simpson@unh.edu](mailto:Julie.simpson@unh.edu) or (603)862-2003.*


*In the student assent information, change the last sentence to read, "If you have any further questions about this study, please contact me at [ssable@cisunix.unh.edu](mailto:ssable@cisunix.unh.edu). If you have any questions about your rights as a research subject, please contact Julie Simpson in the UNH Office of Sponsored Research, [Julie.simpson@unh.edu](mailto:Julie.simpson@unh.edu) or (603)862-2003.*

**Approval is granted to conduct your study as described in your protocol for one year from the approval date above.** At the end of the approval date you will be asked to submit a report with regard to the involvement of human subjects in this study. If your study is still active, you may request an extension of IRB approval.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. (This document is also available at <http://www.unh.edu/osr/compliance/irb.html>.) Please read this document carefully before commencing your work involving human subjects.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or [Julie.simpson@unh.edu](mailto:Julie.simpson@unh.edu). Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,



Julie F. Simpson  
Manager

cc: File  
Phan, Loan