

8-17-2016

Muscle Dysmorphia and Athletic Identity

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MUSCLE DYSMORPHIA AND ATHLETIC IDENTITY

A Capstone Experience/Thesis Project

Presented in Partial Fulfillment of the Requirements for

The Degree Bachelor of Arts in Psychology with

Honors College Graduate Distinction at Western Kentucky University

By:

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* * * * *

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ABSTRACT

Society is creating a stronger importance for men to have muscular physiques. Therefore, increasing the dissatisfaction men have with their bodies and perceptions of body image. The current study assesses the possible relationship between muscle dysmorphia and athletic identity. As well as a relationship between lifting time and athletic identity. Participants for the current study took three different self-reported surveys to measure demographics, exercise history, level of athletic identity, and possible symptoms of muscle dysmorphia. It was hypothesized that those with strong athletic identities also have a stronger desire to gain muscle mass, increasing likelihood of displaying muscle dysmorphia symptoms. Secondly, individuals with strong athletic identities will also have a more frequent weight lifting time. There were no significant results of a strong relationship between muscle dysmorphia and athletic identity. However, a significant relationship was found between lifting time and athletic identity, as well as lifting time and muscle dysmorphia symptoms.

Key words: Body Image, Muscle Dysmorphia, Athletic Identity

ACKNOWLEDGEMENTS

This project would not have been possible if it were not for the amazing support I have received from my professors, advisors, and peers. I am forever grateful for the encouragement and guidance I have received throughout my college career. I am extremely thankful for Dr. Grieve, my CE/T advisor, for his time and dedication toward helping this project become successful. I also want to give many thanks to the members of my committee- Dr. Derryberry and Dr. Bruner for their cooperation and ensuring this project's completion.

I would also like to thank the members of the Clinical Applied Research group for their contribution with data collection. The constant encouragement and support I have received from this group of individuals has been remarkable for ensuring the success in my scholarly endeavors.

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CHAPTER 1

INTRODUCTION

Body Image Overview

Body image can be defined as a subjective opinion of one's own body (Altabe & Thompson, 1996). This is how an individual perceives his or her body image. Sometimes these perceptions can be distorted. Self-perceptions can differ from social perceptions, and how others see oneself. Much of the research done on body image has focused on women, and the effects media has on how they view themselves (Perloff, 2012; Williams & Ricciardelli, 2014). According to Williams and Ricciardelli (2014), the media has a strong influence on what is portrayed as attractive. Many people believe after viewing advertisements on television that they should look like those individuals who appear on the little screen. Perfection is a common misconception of society. As technology continues to expand, the effects of media are hard to escape. Social media is a prime example. These constant reminders of perfection are only a simple touch away on a cellular device, making it easier to effect the lives of those with frequent experience (Perloff, 2012).

Social media, as well as entertainment media, offer unrealistic ideals of what men and women should look like (Stice, 2002). This results in the internalization of idealistic appearance. It has been shown through previous studies (Stice, 2002; Choate, 2005; Richins, 1991; Altabe & Thompson, 1996; Perloff, 2014, Williams & Ricciardelli, 2014,

Heider, Spruyt, & De Houwer, 2015), that women tend to engage in social comparison when they view media standards for ideal body types. Women internalize what the media portrays as the standard to which they should compare themselves (Stice, 2002).

According to Williams & Ricciardelli (2014), media increases the negative effect of self-perceptions, as well as increases social comparison. Social comparison theory (Festinger, 1954) states that through continued social comparison of those who are seen as superior (i.e., being more attractive), feelings of failure and inadequacy emerge. The larger the negative discrepancy between the standard and perceived performance, the larger the dissatisfaction (Richins, 1991).

On the other hand, constant comparison to unrealistic images of media and social interactions can lead to an adoption of maladaptive behaviors to obtain this impractical ideation. Maladaptive behaviors such as not eating, purging, excessive exercising, and supplement use to an excessive degree can be compensatory motivations to achieve and validate a positive self-concept. These behaviors counteract the feelings of inadequacy and failure, increasing the sense of self and allowing one to feel better about his or her body. This can be dangerous and continues to reinforce this type of behavior, increasing the likelihood of developing an eating disorder (Richins, 1991).

The majority of the past research on body image has focused on women, and the effect the media has on their body satisfaction. Through countless studies, it has been shown that women desire to be small and thin, as well as to lose an average of five to 10 pounds (Brownell & Rodin, 1994). The majority of the continua that have been tested range from thin to heavy. These scales measure the amount of heaviness through body fat (Olivadia et al., 2004). Societal perceptions of men and women differ greatly.

Traditionally speaking, women are perceived as nurturing. Women are also perceived as delicate, with absence of weight, and a thinner image; as well as dependent and needing men for help. Men, on the other hand are perceived as the providers, the head of the household, as they offer protection through their masculine physique (Brewster & Padavic, 2000).

Men have thought to be more care free and less sensitive when it comes to body image (Baird & Grieve, 2006), which could be a reason why they were not considered as much at risk for body image disturbance as women. Previously, when men were compared to women, there was much less pressure on men to achieve a certain body shape. Men have other assets to pull from for self-worth, such as employment, income, the vehicle they drive. However, women mainly have their appearance to gain a positive social status (Crandall, 1994). However, research has shown that this perspective is changing; men are becoming more and more concerned with their body weight than ever thought of before (Olivardia et al., (2004).

Once the focus shifted from only women and onto men, the continuum was still ranging from thin to heavy. However, in the past 30 years, more focus has been on the male body image and what effects society may have on men's body image and satisfaction (Lorenzen, Grieve, & Thomas, 2004). Muscularity to men is very important. There has been an increased importance placed on to a muscular physique in male attractiveness portrayed by the media. Past research on men has shown that generally men are unhappy with their current body image and desire a more muscular physique (Grieve, Wann, Henson, & Ford (2006); Lorenzen, Grieve, & Thomas, 2004). In regards to previous research, muscular aspects were not paid much attention.

In addition to this, a study done by Pope, Gruber et al., (2000) examined men from Austria, France, and the United States. They were presented images of men along an axis based on body fat percentage. The body fat percentage ranged from 4% body fat (muscular) to 40% body fat (overweight). This study found that, on average, men selected an ideal body shape that held 28 more pounds of muscle mass than they actually had. However, there was no significant finding for the difference between ideal and actual body weight in regards to body fat.

Muscle Dysmorphia Overview

Muscle Dysmorphia is currently classified as a type of body dysmorphic disorder in the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (American Psychiatric Association, 2013). Muscle Dysmorphia is a disorder in which men perceive themselves to be too lean and feel smaller than they actually appear. They preoccupy their thoughts with wanting to be more muscular and engage in compulsive behaviors to gain muscle mass. They spend an excessive amount of time exercising. These obsessions over their appearance lead to impairments in several areas of daily functioning. This includes missing social functions and a neglected social life because of extensive hours of exercise. Some other characteristics often include hiding their bodies from others while in public. Their daily functioning revolves around the ability to lift weights and exercise. Inability of these activities leads to distress and impaired functioning (Olivardia, 2001).

According to Grieve, Truba, and Bowersox (2009), individuals with muscle dysmorphia are subject to black and white thinking, contributing to their compulsive behaviors to counteract their cognitive distortions. For example, one may say “If I do not work out today, then my whole routine is ruined.” Catastrophizing is common among this

disorder as well. The use of “shoulds” or “musts” are also frequent. There is personalization and paranoia contributing to the cognitive distortions. Individuals with muscle dysmorphia may feel paranoid when they see someone whispering at the gym and personalize it to “they’re talking about how small I am.” There is a strong comorbidity with eating disorders, anxiety disorders, and concomitant personality traits, such as perfectionism (Strober et al., 2006, Olivardia et al., 2004, Pope et al., 1993)

To assess the symptoms of this disorder, a few questionnaires are available; these include such as questionnaires that assess the desired gain for muscle mass. A few examples of these are the Drive for Muscularity Scale (DMS; McCreary, & Sasse, Saucier, & Dorsche, 2000) and the Body Image Grid Scale (BIG; Hildebrandt, Langenbucher, & Schlundt, 2004), which measures current and ideal body weight. Scales that assess diagnostic criteria and muscle dysmorphia symptoms are useful as well (Olivardia, 2007). These include the Muscle Appearance Satisfaction Scale (MASS; Mayville, Williamson, White, Netemeyer, & Drab, 2002), and the Male Body Attitudes Scale (MBAS; Tylka, Bergeron, & Schwartz, 2005), as well as the Muscle Dysmorphia Questionnaire (MDQ; Grieve et al., 2014), and the Muscle Dysmorphia Inventory (MDI;

In regards to treatment for this disorder, there are currently no empirically validated treatments. However, treatments used for eating disorders can be considered as valid to use due to the strong relationship between muscle dysmorphia and eating disorders. Effective treatments include those with a general goal of helping the individual to become more accepting of body shape and size in order to live a healthier lifestyle. According to Grieve, Truba, & Bowersox (2009), behavior modification strategies may work as well, such as reassurance, and mirror checking. These treatments could lead to a

decrease in engagement of maladaptive behaviors. Self-monitoring and examining treatments allow individuals to become aware of the triggers of maladaptive behaviors, allowing them more control to fix and maintain these triggers. Reinforcement could be useful as well, and could be used in shaping behaviors. This strategy could modify excessive weight lifting behaviors and use of supplements. Exposure techniques could decrease anxiety that may result from exposure of the body, or missing a weight lifting session. Medications could be helpful as well. These include, selective serotonin reuptake inhibitors (SSRI's), which are included in the treatment of eating disorders.

The obsessions over body image with muscle dysmorphia leads to men partaking in extensive exercise behavior, which could then lead to injury and dangerous practices, along with drug enhancement (Olivardia, 2007). Baird and Grieve (2006) conducted a study that was designed to examine the effect of media and the ideal male body shape exposure on men. This study consisted of 173 college males, with an average education level of sophomores. Visual material consisted of 16 different advertisements. Eight advertisements presented were with male models presenting a certain object. The other eight consisted of just products. Baird and Grieve hypothesized that exposure to male models would increase the level of body dissatisfaction compared to images of just products. This study found findings consistent with their hypothesis; participants with male models in the advertisements showed an increase in body dissatisfaction.

Lorenzen, Grieve, & Thomas (2004) investigated the effect of muscular male models, as opposed to thin models, on male body satisfaction. It was hypothesized that body satisfaction would decrease after viewing images of muscular male models, and stay the same after viewing images of average models. This study used a repeated

measured design, and had 104 male participants. Participants were asked to complete the Body Assessment Scale (BA) before and after viewing the images. The BA measures satisfaction with different parts of the body, such as biceps, weight, and muscularity. This assessment was designed to measure overall satisfaction. Results showed that self-image decreased after viewing images of muscular men, but did not change after viewing images of average men. This study concluded that men are just as influenced by viewing others, just as women are. Another implication is that just a brief exposure to these images can cause an effect. Years of this exposure could imply a decrease in self-esteem, and increase in depression and insecurity. This continued negative affect can lead to an increase in developing muscle dysmorphia.

Grieve and Shacklette (2010) hypothesized that depression and muscle dysmorphia have the same relationship as depression and eating disorders. This concludes that depression is strongly and positively predictive of muscle dysmorphia symptoms. Additionally, the conclusion from Grieve's (2007) etiological model applies to this construct as well, in regards to the findings that negative mood contributes to the development of muscle dysmorphia.

Results were conclusive and supported the hypothesis made regarding the relationship between depression and muscle dysmorphia. It can be concluded that these two disorders are ego-syntonic. This can be seen as plausible due to the fact that those who suffer from depression also suffer from body image troubles and dissatisfaction with the self, which then leads to negative self-perceptions and cognitions. All of these factors combined could contribute to the development of an eating disorder.

Athletic Identity Overview

Athletic Identity is the degree to which an individual identifies oneself with the role of an athlete (Brewer, 1993). This idea deals with self-perception and on whether one considers them self an athlete. According to Brewer et al. (1993), individuals who strongly identify themselves as athletes exercise more frequently and also engage in more exercise behaviors than those with lower athletic identities. Too strong of an athletic identity may result in an over-commitment to athletics, which may lead to dangerous and dysfunctional practices, such as over-training. Behavioral problems may arise and could lead to an emotional burnout from excessive exercise. This could also lead to anxiety when not training. This could also lead to the potential use of engaging in activity that could produce self-harm, such as performance enhancement drugs to speed up the process in order to gain more results (Brewer, 1993).

According to Pearlin (1983), athletic identity is a social role. With this being said, individuals' family members, friends, and colleagues can have an influential role on athletic identity formation. However, this concept of athletic identity can have a positive effect on individuals. Having a strong and concrete athletic identity can improve athletic performance. One identifies him or herself as an athlete therefore pushes harder to succeed, for a loss would mean more to them personally, than say an individual with no athletic identity (Werthner & Orlick, 1986).

Schutte and McNeil (2015) conducted a study assessing the relationship between exercise motivation and the frequency, athletic identity, and subjective well-being; one's own perceptions of his or her current state. Self-determination theory played a key role in conducting this study. The findings were that there was a strong association between high

extrinsic and intrinsic motivation to a higher level of athletic identity and frequency level of exercise. This concludes that both intrinsic and extrinsic motivation factors play a role in identity formation in regards to athleticism. There is a difference between participation in physical activity as an aspect of individual's identity and actual athletic identity. According to Schutte and McNeil (2015), one may attribute exercise routine to exercise identity, while a member of an athletic team may attribute it to athletic identity.

According to Schutte and McNeil (2015), athletic identity can have subcomponents. These sub-components consist of social-referent aspect and self-referent aspect. These are prompted by intrinsic and extrinsic motivation factors. A self-referent self-concept of identity is defined as how individuals associate themselves. For example, an individual partaking in self-reference perception may say, "I consider myself an athlete." This concept is closely related to intrinsic motivation. Social referent self-concept is how an individual may associate them self, based on other's associations about them: "They consider me an athlete." This concept is closely related to extrinsic motivational factors.

It has been shown through previous studies that athletic identity can lead to increased frequency of engaging in exercise behavior. Kendzierski (1988) found that individuals that rated exercise related descriptors as extremely self-reflective of who they are engaged in exercise to a greater extent than those who did not. Steinfeldt et al. (2011) conducted a study using 197 college football players as participants to assess the drive for muscularity through masculinity. Results concluded that athletic identity combined with masculine norms throughout society were strongly correlated to the drive to become muscular. Participants stated that reasoning for this drive is due to athletic functioning, as

well as social benefits of being perceived as attractive. External gratification is obtained by gaining muscularity, such as the positive effect of physical appearance, sex appeal, and social conformity.

Rationale for the Current Study

A strong athletic identity also involves men participating in extensive exercise routines. The more they identify as athletes, the more likely they are to engage in more frequent and extensive exercise behaviors. Those with muscle dysmorphia also engage in extensive exercise behavior. There is severe anxiety felt due to lack of exercise. This leads to participating in more extensive routines and could also yield a greater likelihood of using performance enhancing drugs such as steroids. These are unhealthy behaviors that impair social functioning due to the preoccupation with exercise. This decreases focus on other important aspects of life, such as school, work, and intimate relationships. Muscle Dysmorphia and strong Athletic Identity lead to similar outcomes; therefore, they should correlate with each other when compared together.

There is no current research on the relationship of athletic identity and Muscle Dysmorphia. These two concepts have not yet been looked at together. There is a similarity between a strong athletic identity and muscle dysmorphia in regards to an increased desire to gain muscle mass. It is believed there should be somewhat of a positive relationship. Therefore, this study should be the first in which they are compared together with the hypothesis that people with more symptoms of Muscle Dysmorphia will be more likely to exhibit higher levels of Athletic Identity. Also, those with high athletic identity will be more likely to exhibit higher frequency of weight lifting.

CHAPTER 2

METHODS

Participants

This study took place at Western Kentucky University through the Department of Psychology Study Board. There were 41 total participants in this study. Only one participant was dropped because of an unrealistic response of participating in exercise for 120 hours a week. Overall, there was a total of 40 participants counted in this study. The average age was 20.98 ($SD = 3.37$), with an average education level of 14.52 ($SD = 1.5$), which is equivalent to a sophomore level of education in college. There were 27 Caucasian participants (67.5%), 9 African American (22.5%), and five that answered “other” (10%). At the discretion of their instructors, participants might be offered extra credit for participating in this study.

Measures

Demographics: Age, ethnicity, and education level were evaluated along with the participants’ exercise habits and health history. In this 26-question short answer survey, no other identifying information was taken. This measured how often participants worked out and what kind of exercise the participants performed, whether it be cardiovascular exercise or weight lifting. Supplement use was also evaluated in this survey. See Appendix A.

Athletic Identity Measurement Scale: The Athletic Identity Measurement Scale (AIMS; Brewer, 1993) is a seven-item self-report survey in which participants are asked to rate themselves on a Likert-scale. Responses range from 1 (*strongly disagree*) to 7 (*strongly agree*). For example, the participant would read “Sports are the most important part of my life” and then rate on a scale of 1 to 7 how much the participant agrees or disagrees with the statement. This is a unidimensional approach that measures athletic identity based on negative and positive self-perceptions in regard to athletics. The more points acquired equals a higher score, which means a higher level of associated athletic identity. A coefficient alpha of .93 was obtained for the AIMS (Brewer, 1993). This provides support for a high level of internal consistency.

Muscle Dysmorphia Questionnaire: The Muscle Dysmorphia Questionnaire (MDQ; Short 2005) is comprised of 34 items that measure the individual’s body anxiety, muscle anxiety, self-worth, diligence, eating and exercising habits, and irrational thinking. The questions are answered on a six-point Likert-scale, ranging from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). An example item is, “I am inclined to work out when I am sick.” Scores can range from a low of 34 to a high of 204. The more points acquired equals a higher score, which means the participant displays a higher number of Muscle Dysmorphia symptoms. Short (2005) reported that Cronbach's Alpha for the MDQ is .87, which gives this questionnaire a high level of internal consistency.

Procedure

Participants were recruited from Western Kentucky University through the Department of Psychology Study Board. They were given the informed consent document at the beginning of the study and then given the demographics questionnaire.

They were then given the Muscle Dysmorphia Questionnaire. Once the questionnaire was completed, they were given the Athletic Identity Measurement Scale. This process took no longer than 20 minutes to complete. They were debriefed and offered extra credit for participation if their instructors allowed it.

CHAPTER 3

RESULTS

The total scores for both Muscle Dysmorphia Questionnaire and the Athletic Identity Measurement Scale were calculated. A Cronbach's Alpha was calculated to measure internal consistency within the two scales. Both scales used for this study were shown to have high internal consistency rates with Cronbach's Alphas of $\alpha = .89$ for the MDQ and $\alpha = .94$ for the AIMS. The average scores for both scales were taken. For the Muscle Dysmorphia Questionnaire, the mean was 87.57 ($SD = 23.1$), and Athletic Identity Measurement Scale had a mean of 29 ($SD = 12.6$). The higher the score for AIMS the more intensive one's association of identity to athletics, the same goes to MDQ.

Pearson Correlation statistics were also computed to determine if a relationship is evident between athletic identity and muscle dysmorphia. The correlation analysis showed a positive correlation between the MDQ and the AIMS ($r = .11$). However, this relationship is not strong enough to draw any conclusions ($p = .44$). The average frequency of weight lifting behavior is equivalent to about one time a day, for an hour a day, over a week ($M = 7.65$) ($SD = 3.31$). This variable was calculated by multiplying the amount of minutes the participants reporting engaging in per day, and the amount of days per week in which they exercised; giving us an hourly time per week. A relationship between lifting time and athletic identity score was also tested, resulting in a correlation

of ($r = .43, p = .005$). As well as a relationship between lifting frequency and muscle dysmorphia symptoms was noted ($r = .39, p = .013$). This relationship is slightly stronger than the frequency of weight lifting and athletic identity.

CHAPTER 4

DISCUSSION

The primary purpose of this study was to further assess a possible relationship between two similar constructs; athletic identity and muscle dysmorphia. The first hypothesis for this study tested the relationship between muscle dysmorphia and athletic identity, predicting a strong positive correlation. It was hypothesized that those with a stronger athletic identity would have an increased likelihood to display muscle dysmorphia symptoms. Although there is a positive relationship, the correlation is not strong enough to support the hypothesis. However, this is good thing in that athletes are not at risk for developing muscle dysmorphia. Testing a construct of dysfunction and maladaptive behaviors such as muscle dysmorphia with a healthy concept such as athletic identity should not deem similarities.

The second hypothesis predicted a strong relationship between frequency of weight lifting and athletic identity. In other words, those who engaged in more frequent weight lifting behavior would also have a strong athletic identity, and vice versa. The Pearson Correlation showed a positive relationship, and supported the hypothesis. In fact, there is a relationship with the amount of time someone spends weight lifting and their level of athletic identity. The stronger the level of athletic identity the more likely they are to exhibit more frequent weight lifting behavior. However, another interesting relationship is in the works of being supported as well. There was also a relationship

between frequency of weight lifting and symptoms of muscle dysmorphia. This shows evidence that those with muscle dysmorphia have an increased desire for muscularity, by engaging in excessive exercise behavior. Lifting weights will give desired results to individuals wanting to obtain more muscle mass.

A limitation of this study is the small number of participants. It is difficult to find significance with a sample size of 40. An explanation for the insignificance of the results could possibly be due to the small sample size. For further research implications, a bigger sample size would be ideal to solidarize the findings. However, there is more opportunity for this research to expand and grow in regards to sample size. One outlier was dropped from the data, due to a misunderstanding of the question in exercise history questionnaire. Another limitation for this study is that there were very few participants who scored on the high end of the muscle dysmorphia questionnaire. With that being said, we can conclude that not many participants displayed a high level of muscle dysmorphia symptoms, which could also explain the insignificant results.

Future implications for research could include a broader and larger sample, increasing generalizability. With majority of the college students being Caucasian, it does not allow for results to extend across ethnicities. There could be differences in prevalence of muscle dysmorphia symptoms and athletic identity for other ethnicities with different cultural backgrounds.

Another direction that could be taken is assessing the relationship between muscle dysmorphia and adolescence. There is a stronger likelihood of adolescent individuals partaking in not just one, but multiple, sporting events within their middle school and high school years. This increases the likelihood of identity formation toward athleticism.

As individuals come to college, they often experience burnout of the sports they were engaged in and no longer want to devote time to them. According to Gustafsson et al. (2007), individuals with a high athletic identity have high levels of burnout in regards to their athleticism. There is also a strong possibility that they simply did not have the ability to play at the collegiate level, changing subjective perception from athlete to a student who may play sports every once in a while, just for fun. Insecurities are at an all-time high during the adolescent stage of development. According to Markey (2010), adolescents display a high level of body dissatisfaction and as a result have an increased risk in developing depression, eating disorders, and a low self-esteem. From these findings, it could be interesting to see if there is a strong relationship between these two constructs among a younger population as well.

Looking into the intensity of weight lifting could be another direction further studies could take. A self-reported intensity of weight lifting could be added to the demographics. Those with more intensive workouts could be more likely to display symptoms of muscle dysmorphia. This is related to the idea that individuals with muscle dysmorphia have a strong desire to gain muscle mass, increasing the likelihood of participating in excessive exercise to gain results (Grieve, Truba, & Bowersox, 2009).

The AIMS questionnaire (Brewer, 1993) does not ask about different types of sports participants may be engaged in. There could be a difference between the types of sports individuals may be engaged in and their increased desire for muscle mass. For example, those involved in a sport such as football would be more likely to want to gain muscle mass than say an individual who plays golf. So, another possible direction could be to look at athletic identity across different types of sports.

In conclusion, there is reason to believe that more data could increase significance of results that would further support the first hypothesis. There are significant relationships between lifting time and athletic identity scores, as well as muscle dysmorphia scores. This relationship supports the idea that those with stronger athletic identities have an increased desire for muscle mass, hence the increase in weight lifting behavior (Brewer et al. 1993). Additionally, there is a positive relationship between muscle dysmorphia and lifting time. This supports previous research of muscle dysmorphia in that individuals with this disorder engage in compulsive behaviors such as excessive weight lifting to counteract cognitive distortions toward their body image (Olivardia, 2000).

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Appendix A

Demographics

Please answer the following questions in an honest manner. **DO NOT** include your name or any other identifying information.

1. Age: _____

Ethnicity: _____

Education Level: _____

Exercise History

2. Do you have a gym membership?

Yes No

3. Do you lift weights?

Yes No

4. If you lift weights, how many days per week do you engage in these activities?

5. How many times per day do you lift weights? _____

6. How long does each weight lifting session last? _____

7. Do you have a scheduled time that you lift weights?

Yes No

8. If so, what time/s of day do you typically lift weights?

9. Do you use supplements?

Yes No

10. Which of the following supplements do you currently use?

Steroids ____

Creatine ____

Vitamins ____

Protein Shakes ____

Please list any other supplements that you use:

11. Do you participate in cardiovascular exercise (e.g. treadmill, swimming, elliptical trainer, bike, aerobics, etc.)?

Yes No

12. If you participate in cardiovascular exercise, how many days per week do you engage in these activities? _____

13. How many times per day do you participate in cardiovascular exercise?

14. How long does each cardiovascular session usually last?

15. Do you have a scheduled time that you participate in cardiovascular exercise?

Yes No

16. What time/s of day do you participate in cardiovascular exercise? _____

17. Please, list of forms of exercise that you do:

18. Please, list all of the organized sports that you have ever played (e.g. Basketball, Football, Baseball).

19. Please, list all of the organized sports that you **currently** play:

Health History

20. Do you have to use topical analgesics (e.g. Icy Hot, Bengay, Flexall 454) before you engage in any type of exercise?

Yes No

21. Do you have to use topical analgesics (e.g. Icy Hot, Bengay, Flexall 454, capcasin) **after** you finish exercising?

Yes No

22. Do you ever have to use pain medication **before** you exercise (e.g. Anti-inflammatory, over the counter, or prescription pain medications)?

Yes No

23. Do you ever have to use pain medications **after** you exercise (e.g. Anti-inflammatory, over the counter, or prescription pain medications)?

Yes No

Appendix B

Athletic Identity Measurement Scale (AIMS)

1.) I consider myself an athlete.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

2.) I have many goals related to sport.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

3.) Most of my friends are athletes.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

4.) Sport is the most important part of my life.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

5.) I spend more time thinking about sport than anything else.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

6.) I feel bad about myself when I do poorly in sport.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

7.) I would be very depressed if I were injured and could not compete in sport.

Please circle the number that best reflects the extent to which you agree or disagree with each statement regarding your sport participation.

Appendix C

Muscle Dysmorphia Questionnaire

Instructions: Please respond to each of the following statements. Circle the response choice that best describes you.

	Strongly Disagree	Somewhat Disagree	Slightly Disagree	Slightly Agree	Somewhat Agree	Strongly Agree
1. When I see my reflection in the mirror or a window, I feel badly about my body size or shape	1	2	3	4	5	6
2. Working out causes problems in my job	1	2	3	4	5	6
3. I eat specific foods at specific times throughout the day in order to gain muscle mass	1	2	3	4	5	6
4. When I see muscular men, it makes me feel badly about my body shape or size	1	2	3	4	5	6
5. I am inclined to continue to work out when I am sick	1	2	3	4	5	6

6. I am ashamed of my body shape or size	1	2	3	4	5	6
7. I have difficulty maintaining relationships because of thoughts about my body	1	2	3	4	5	6
8. I am inclined to continue to work out when I am injured	1	2	3	4	5	6
9. I have difficulty maintaining relationships because of thoughts of working out	1	2	3	4	5	6
10. I believe bad things happen in my life when I do not have a specific level of muscularity	1	2	3	4	5	6
11. Working out causes problems in my romantic relationships	1	2	3	4	5	6
*12. I believe I am more muscular than others	1	2	3	4	5	6
13. I feel badly when I do not get to work out	1	2	3	4	5	6

14. I eat by myself	1	2	3	4	5	6
15. I am inclined to continue to work out against doctor's orders	1	2	3	4	5	6
*16. I am inclined to participate in activities that require wearing swimsuits	1	2	3	4	5	6
17. I do not believe I am as muscular as others	1	2	3	4	5	6
18. I want to be more muscular than I currently am	1	2	3	4	5	6
19. I think I look better when I have large muscles	1	2	3	4	5	6
20. Working out causes problems in my friendships	1	2	3	4	5	6
*21. I am muscular enough	1	2	3	4	5	6
22. If I could increase my muscle mass, I would	1	2	3	4	5	6
23. I have difficulty focusing on						

schoolwork because of thoughts about my body	1	2	3	4	5	6
24. I am not muscular enough	1	2	3	4	5	6
25. Others feel that I am way too focused on my body shape or size	1	2	3	4	5	6
26. I have difficulty focusing on schoolwork because of thoughts of working out	1	2	3	4	5	6
27. I feel insecure about my body	1	2	3	4	5	6
28. I use legal or illegal supplements (creatine or anabolic steroids) to help develop my muscles	1	2	3	4	5	6
29. I am inclined to participate in activities that require minimal clothing	1	2	3	4	5	6
30. The less clothing I wear, the more anxious I become	1	2	3	4	5	6
31. I eat a large amount of protein in						

order to increase my muscularity	1	2	3	4	5	6
32. I feel anxious when I deviate from my diet	1	2	3	4	5	6
33. I believe bad things happen to me when I do not keep my workout schedule	1	2	3	4	5	6
34. I feel anxious when I miss a workout	1	2	3	4	5	6