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WHAT PREDICTS DRIVE FOR MUSCULARITY IN COLLEGIATE ATHLETES V. NON-ATHLETES?

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ABSTRACT

In the past decade, research has begun to focus not only on dieting and exercise to lose weight, but dieting and exercise to gain muscle mass (drive for muscularity; DFM). While research has established that men tend to exhibit greater levels of DFM than women, little research has examined the influence of athletic status on drive for muscularity in male and female college students. The present study surveyed 290 student participants (30 female athletes, 38 male athletes, 139 female non-athletes, 82 male non-athletes and asked them about their DFM as well as factors known to relate to DFM. As expected, men and athletes exhibited higher levels of DFM than did women and non-athletes; however different variables predicted DFM in the four groups. Implications for prevention and treatment of DFM are discussed.

Research concerning the influence of participation in athletes on disordered eating and exercise behaviors is controversial. Some research indicates that athletes are more vulnerable to developing disordered eating and exercise behaviors than are non-athletes (Engel et al., 2003; Patel, Greydanus, Pratt, & Phillips, 2003; Smolak, Murnen, & Ruble, 2000). However, some research has found no differences in disordered eating and exercise behaviors between female athletes and non-athletes who engaged in regular exercise (Kirk, Singh, & Getz, 2001; Krane, Stiles-Shipley, Waldron, & Michalenok, 2001). Furthermore, some studies have found that participation in athletics can serve as a buffer to the development of disordered eating behaviors (Reinking & Alexander, 2005). One explanation for these differences is that athletic status may influence certain types of disordered eating and exercise behaviors, but not others (Hausenblas & McNally, 2004). Thus, it is important to examine the influence of athletic status on each type of disordered eating and exercise behaviors and not just lump them all together.

One little-investigated type of disordered eating and exercise behaviors known to affect athletes more than non-athletes is drive for muscularity (McCreary & Sasse, 2000). Drive for muscularity is defined as "the desire to achieve an idealized, muscular body type" (Morrison, Morrison, & Hopkins, 2003, p. 113). Many individuals will go through excessive changes in body behaviors in order to increase their muscularity (Chittester & Hausenblas, 2009). But

certain individuals appear to be more vulnerable to the drive than others; one such group may be athletes. For example, Zelli, Lucidi, and Mallia (2010) reported that recreational and competitive male and female adolescent athletes exhibited a significantly stronger drive for muscularity than did non-athletes (but see Jankauskienė & Kairaitis, 2007, who reported no differences between athlete and non-athlete adolescent males). In fact, Raudenbush and Meyer (2003) reported that all the male collegiate athletes in their study desired to become more muscular. This is especially true when weight-lifting is the sport involved (Hallsworth, Wade, & Tiggemann, 2005).

It is important to examine factors affecting drive for muscularity because it has been associated with low levels of self-esteem (Chittester & Hausenblas, 2009; McCreary & Sasse, 2000), depression (McCreary & Sasse, 2000), dieting to gain weight (McCreary & Sasse, 2002), social physique anxiety (Duggan & McCreary, 2004), self-oriented perfectionism (Davis, Karvinen & McCreary, 2005), eating pathology, and substance abuse (Chittester & Hausenblas, 2009). Below we will discuss some of the factors proposed to influence drive for muscularity.

Gender

Drive for muscularity has been thought to exist solely in men (McCreary, Karvinen, & Davis, 2006; Morrison, Morrison, Hopkins, & Rowan, 2004), but research indicates that although women are less likely to exhibit DFM than men, women are not immune to this drive (McCreary & Sasse, 2000; McCreay, Sasse, Saucier, & Dorsch, 2004; McCreary, Saucier, & Courtenay, 2005); it just may mean something different to women than to men. Whereas men want to gain muscle bulk and mass, women wish to attain a toned and lean physique (Kyrejto, Mosewich, Kowalski, Mack, & Crocker, 2008).

Exercise Motives

With all the added pressures to fit the ideal image (McCreary & Sasse, 2000), many turn to exercise to achieve the ‘ideal’ body type. Although exercise has numerous psychological (LePage & Crowther, 2010) and physical benefits (Salerno, 2003), many use it to achieve a certain look rather than for the health benefits it provides (Calogero, Davis, & Thompson, 2005; Leit, Gray, & Pope, 2002). Tata, Fox, and Cooper (2001) found that weight dissatisfaction influenced the amount of exercise that both males and females participated in. Males who believe they are underweight often exhibit drive for muscularity (DFM) and will turn to exercise in an attempt to build muscle mass (Davis et al., 2005; Ingledew & Sullivan, 2002; McCreary & Saucier, 2009; Ricciardelli & McCabe, 2004), whereas women who believe they are overweight will often turn to exercise as a means to control their body weight and shape (Hubbard, Gray, & Parker, 1998; Ingledew & Sullivan, 2002; Mond, Hay, Rodgers, Owen, & Beumont, 2004). Low self-esteem and body esteem in both men and women also predict exercise behavior (Morry & Staska, 2001; Strelan, Mehaffey, & Tiggemann, 2003) as students use exercise to boost self-esteem and alter body image (Prichard & Tiggemann, 2005; 2008). Finally, some studies suggest that exercise behaviors may relate to exercise enjoyment (Lochbaum & Bartholomew, 2002; Plante et al., 2003).

Research also indicates that athletes and non-athletes may exercise for different reasons. Whereas athletes exercise more for enjoyment (Frederick & Ryan, 1993; Pritchard & Nielsen, in press), competence (Frederick & Ryan, 1993) and competition motives (Mathes & Battista, 1985), non-athletes tend to exercise to enhance mood and fitness motives (Pritchard & Nielsen, in press) or for appearance-related issues (Frederick & Ryan, 1993).

Societal Pressures

Exposure to idealized body images in the media can serve as a source of societal pressure to achieve that ideal body image, leading to a number of negative effects on both women and men including body dissatisfaction (Hamilton, Mintz, & Kashubeck-West, 2007; Hobza & Rochlen, 2009; Hobza, Walker, Yakushko, & Peugh, 2007) and self-objectification (Aubrey, 2007). In addition, models in magazines for women of all ages and interests are generally thinner than the average American woman (Bessenoff & Del Priore, 2007), pressuring women to achieve an ideal that may not be feasible for them. Similarly, exposure to idealistic muscular male images is also associated with the intensity of men's drive for muscularity (Morrison et al., 2003) and eating disturbances (Giles & Close, 2008).

Pressures from Family and Friends

In addition to exercise motives and societal pressures, peer and familial commentary about one's appearance can influence individuals to exercise more in an effort to live up to other's expectations (Gruber, 2008; Tantleff-Dunn & Gokee, 2004; Tergerson & King, 2002). In addition to these pressures, athletes are also under pressure not only from themselves, but also their coaches, teammates, and/or judges (Hausenblas & Symons Downs, 2001; Hausenblas & McNally, 2004). They need to be able to reach their weight requirements (Hausenblas & Symons Downs, 2001) and be able to maintain that weight (Hausenblas & McNally, 2004), which may make them even more vulnerable to pressures from others to achieve a certain level of muscularity.

Internalization of Media Images

The ideal body type for men and women has changed drastically over the years (Daniel & Bridges, 2010). Media exposure can have a strong, negative effect on an individual's body image, especially in women (Daniel & Bridges, 2010). Awareness and internalization of sociocultural standards of appearance significantly predict women's body dissatisfaction (Cheng & Mallinckrodt, 2009; Lokken, Worthy, & Trautmann, 2004), drive for thinness, and bulimic symptoms (Lokken et al.). Similarly, men who internalize media images of muscular men are more likely to experience eating disturbances (Giles & Close, 2008). Given that male models in magazines such as *Play Girl* (Raudenbush & Meyer, 2003; Daniel & Bridges, 2010) and *Men's Fitness* (Johnson, McCreary, & Mills, 2007) have become more and more muscular over the years, it is not surprising that men are internalizing these messages. Interestingly, few studies have examined whether media internalization affects athletes. While a few studies seem to suggest that female athletes are not as affected by media internalization

as they are other pressures (e.g., peers, coaches; Ertel, 2008; Greenleaf, Petrie, Reel, & Carter, 2010), no research has examined media internalization as a predictor of disordered eating or exercise habits, specifically drive for muscularity, in male athletes.

Present Study

While research has established both gender and athletic status differences in drive for muscularity (McCreary & Sasse, 2000), few studies have examined why these differences exist. That is, do different factors predict drive for muscularity in male and female college athletes and non-athletes? The present study examined the influence of predictors known to affect drive for muscularity in some populations to ascertain whether these same factors predict drive for muscularity equally across gender and athletic status. Although we expected that men would exhibit higher levels of DFM than women and that athletes would exhibit higher levels than non-athletes, predictions about which variables affected DFM in each of the four groups (female athletes, female non-athletes, male athletes, and male non-athletes) and their order of importance were not made as no prior research has examined this question.

METHOD

Participants

Participants in this study were recruited from a pool of general psychology students who registered through a computer software program Experimetrix, an Internet-based subject pool management program, in Spring 2010. There were 290 total student participants (30 female athletes, 38 male athletes, 139 female non-athletes, 82 male non-athletes). The average age was 22.37 (*SD*=6.25), with the oldest student being 55 years old and the youngest 18 years old. Of the student participants, 76.8 % of students were Caucasian, 6.5% Latino, 5.5% Asian, 1.9% African-American, 1.0% Pacific Islander, 1.3% Native Americans and 2.9% considered themselves as 'Other.' The psychology students received course credit for participating in the survey. The Institutional Review Board approved the study protocol before data collection began. Consent was implied with completion of this anonymous survey.

Materials and Procedures

Drive for muscularity. Drive for muscularity and muscle tone questionnaire was adapted by the author from the Drive for Muscularity Scale (DFM; McCreary & Sasse, 2000). The DFM consisted of 19 items which were adapted to include questions about how they felt about muscle mass as well as body tone in order to be more applicable to women (i.e., I think I would feel more confident if I had more muscle mass/body tone). Responses were based on a 6-point Likert scale (1 = always, 2 = very often, 3 = often, 4 = sometimes, 5 = rarely, and 6 = never). The DFM was scored by obtaining the average rating of the items, with higher scores indicating a greater drive for muscularity (α=.91).

Reasons for exercise. The Motivation of Marathoners Scale (Masters, Ogles, & Jolton, 1993) was adapted to include all exercise types for the purpose of this study. The MOMS consists of 56 items that cover nine different areas: health orientation (3 items; α=.81), weight concern (4 items; α=.84), affiliation (5 items; α=.88), recognition (5 items; α=.90), personal goal achievement (2 items; α=.80), competition (2 items; α=.80), psychological coping (5 items; α=.85), life meaning (4 items; α=.90), and exercise self-esteem (7 items; α=.92). Responses were scored on a frequency scale from 1 = not a reason to 7 = a most important reason.

Sociocultural attitudes towards appearance scale - 3 (SATAQ-3). Participants completed items in the four subscales (Internalization-General (3 items), α = .74, Internalization-Athlete (5 items), α = .78, Pressures (6 items), α = .94, Information (4 items), α = .84) of the Sociocultural Attitudes towards Appearance Scale – 3 (Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004) that dealt with magazine exposure. Internalization-General items measured the extent to which participants internalized the general media messages presented that women should be thin and men should be muscular. Similarly, Internalization-Athlete items measured the extent to which participants internalized the media messages encouraging a well-toned and defined athletic body. Pressures measured perceived pressure of the media to conform to the idealistic images presented. Information measured the extent to which magazines were used specifically for gaining information about how to attain the ideal body. Items such as, "I would like my body to look like the models who appear in magazines" were responded to on a five-point Likert response scale where 1 = *Definitely Disagree* and 5 = *Definitely Agree*. Higher scores indicated higher influence of the media on appearance.

Figure rating questionnaire. Participants were presented with a series of same-sex figure drawings, with each series containing 5 line drawings varying in level of muscularity (Vartanian, Giant, & Passino, 2001). Participants were asked to choose from the series that applied to them (male/female bodies) and decide: a) which of the fe/male bodies has the muscle tone that is like your own body?, b) which of the fe/male bodies has the muscle tone that you would like to have?, c) which of the female bodies has the muscle tone that you think everyone (friends, TV, magazines) wants you to have?, d) which of the fe/male bodies has the muscle tone that you like best?, and e) which of the fe/male bodies has the muscle tone that you think everyone (friends, TV, magazines) wants fe/males to look like? Individual figures within each series received a score from 1 (least muscular) to 5 (most muscular). The number of the "current body shape" was then subtracted from the number of all other options above (b-e), yielding four body dissatisfaction scores: a) current – ideal, b) current – what others want you to have (other ideal), c) current – body you like best, and d) current – societal ideal. Higher scores, thus, indicate more dissatisfaction.

RESULTS

All means and standard deviations are displayed in Table 1. As predicted, there were significant differences in DFM based on athletic status, F (1, 285) = 4.34, $p < .05$, $\eta^2 == .02$. There was also a significant effect of gender, F (1, 285) = 19.65, $p < .001$, $\eta^2 = .06$. However, there was no interaction between gender and sport, F (1, 285) = .01.

Because DFM differed by gender and sport, we ran multiple stepwise regressions to see which factors predicted DFM in each category (female athletes, male athletes, female non-

athletes, male non-athletes). The stepwise method was chosen because we felt it was important not only to ascertain which variables predicted DFM in our four groups, but also their order of importance.

Table 1. Means and standard deviations of male and female athletes and non-athletes

Variables	FA	FNA	MA	MNA
DFM	2.92 (.67)	2.66 (.82)	3.44 (1.02)	3.20 (.88)
Recognition	3.62 (1.74)	2.91 (1.74)	3.24 (1.70)	3.16 (1.75)
Coping	4.67 (1.66)	4.03 (1.79)	3.83 (1.62)	3.92 (1.71)
Life Meaning	3.92 (1.74)	3.13 (1.91)	3.11 (1.45)	3.53 (1.87)
Affiliation	3.37 (1.57)	2.72 (1.56)	3.39 (1.39)	2.82 (1.50)
Competition	3.54 (1.82)	2.31 (1.59)	3.93 (2.07)	2.99 (2.04)
EXERse	5.12 (1.25)	4.62 (1.72)	4.32 (1.65)	4.41 (1.58)
Discrepideal	-.19 (.92)	.36 (1.09)	.53 (1.52)	1.03 (.94)
Discrepother	-.37 (1.28)	.16 (1.36)	.59 (1.42)	1.04 (1.46)
Internath	3.59 (.90)	3.00 (.86)	3.11 (.95)	3.10 (.84)
Pressures	3.14 (1.08)	3.15 (1.09)	2.12 (.86)	2.31 (.95)

Note: DFM=Drive for Muscularity; Recognition=Exercising for recognition motives; Coping=Exercising to cope with stress; Life Meaning=Exercising to give your life meaning; Affiliation=Exercising to socialize with others; Competition=Exercising to compete with others; EXERse=Exercising to increase self-esteem; Discrepideal=having a discrepancy between what you want to look like and how you think you look; Discrepother=having a discrepancy between how you perceive others want to look and how you think you look; Internath=internalization of media images of athletic bodies; Pressures=Feeling social pressures from media to look a certain way.

For female non-athletes, the primary predictors of DFM were exercising for self-esteem, F (1, 115) = 36.65, $p < .001$, $R^2 = .24$, internalization of media images of athletic bodies, F (2, 114) = 24.76, $p < .01$, $R^2 = .30$, exercising for affiliation reasons, F (3, 113) = 18.67, $p < .05$, $R^2 = .331$, and exercising for recognition motives, F (4, 112) = 16.55, $p < .01$, $R^2 = .37$ (see Table 2). As displayed in Table 3, the primary predictors for female athletes were exercising for competition-based reasons, F (1, 25) = 16.58, $p < .001$, $R^2 = .40$, exercising to cope, F (2, 24) = 15.57, $p < .01$, $R^2 = .57$, general societal pressures to look a certain way, F (2, 23) = 18.07, $p < .01$, $R^2 = .70$, perceptions that what others want you to look like do not match up with what you actually look like, F (4, 22) = 18.34, $p < .05$, $R^2 = .77$, and exercising for recognition reasons, F (5, 21) = 18.66, $p < .05$, $R^2 = .82$.

For male non-athletes, DFM was predicted by exercising for recognition motives, F (1, 65) = 31.46, $p < .001$, $R^2 = .33$, a larger discrepancy between what you believe you look like and what you want to look like, F (2, 64) = 23.32, $p < .01$, $R^2 = .42$, and internalization of media images of athletic bodies, F (3, 63) = 18.48, $p < .05$, $R^2 = .47$ (see Table 4). Finally, as shown in Table 5, for male athletes, DFM was predicted by exercising for self-esteem F (1, 32) = 35.67, $p < .001$, $R^2 = .53$, internalization of media images of athletic bodies, F (2, 31) =

24.51, $p < .05$, $R^2 = .61$, and exercising to give your life meaning, F (3, 30) = 20.90, $p < .05$, $R^2 = .68$.

Table 2. Summary of stepwise regression for predicting DFM in female non-athletes

Variable	*B*	*SE*	*β*	*t*
Step 1				
EXERse	.23	.04	.49	8.46***
Step 2				
EXERse	.19	.04	.40	4.86***
Internath	.25	.08	.26	3.16**
Step 3				
EXERse	.24	.05	.52	5.34***
Internath	.27	.08	.29	3.47**
Affiliation	-.11	.05	-.21	-2.20*
Step 4				
EXERse	.15	.06	.32	2.63*
Internath	.25	.08	.27	3.31**
Affiliation	-.15	.05	-.28	-2.90**
Recognition	.15	.06	.33	2.68**

Note: *p< .05, ** p< .01, *** p≤ .001; DFM=Drive for Muscularity; Recognition=Exercising for recognition motives; Affiliation=Exercising to socialize with others; EXERse=Exercising to increase self-esteem; Internath=internalization of media images of athletic bodies.

Table 3. Summary of stepwise regression for predicting DFM in male non-athletes

Variable	*B*	*SE*	*β*	*t*
Step 1				
Recognition	.30	.05	.57	5.61***
Step 2				
Recognition	.27	.05	.51	5.29***
Disrepideal	.30	.09	.32	3.25**
Step 3				
Recognition	.21	.06	.40	3.77***
Discrepideal	.27	.09	.27	2.88**
Internath	.27	.12	.25	2.35*

Note: *p< .05, ** p< .01, *** p≤ .001; DFM=Drive for Muscularity; Recognition=Exercising for recognition motives; Discrepideal=having a discrepancy between what you want to look like and how you think you look; Internath=internalization of media images of athletic bodies.

Table 4. Summary of stepwise regression for predicting DFM in male athletes

Variable	*B*	*SE*	*β*	*t*
Step 1				
EXERse	.45	.08	.73	5.97***
Step 2				
EXERse	.30	.09	.48	3.24**
Internath	.42	.16	.38	2.16*
Step 3				
EXERse	.49	.12	.78	4.22***
Internath	.41	.15	.38	2.75*
LifeMeaning	-.28	.12	-.39	-2.43*

Note: *p< .05, ** p< .01, *** p≤ .001; DFM=Drive for Muscularity; Life Meaning=Exercising to give your life meaning; EXERse=Exercising to increase self-esteem; Internath=internalization of media images of athletic bodies.

Table 5. Summary of stepwise regression for predicting DFM in female athletes

Variable	*B*	*SE*	*β*	*t*
Step 1				
Competition	.24	.06	.63	4.07***
Step 2				
Competition	.19	.05	.49	3.48**
Coping	.18	.06	.43	3.03**
Step 3				
Competition	.18	.05	.46	3.79**
Coping	.30	.06	.71	4.80***
Pressures	-.30	.09	-.46	-3.26**
Step 4				
Competition	.18	.04	.49	4.50***
Coping	.31	.06	.74	5.55***
Pressures	-.27	.08	-.42	-3.32**
Discrepother	.15	.06	.27	2.53*
Step 5				
Competition	.16	.04	.41	3.83**
Coping	.26	.06	.63	4.78***
Pressures	-.32	.08	-.50	-4.14***
Discrepother	.14	.05	.26	2.63*
Recognition	.12	.05	.30	2.32*

Note: *p< .05, ** p< .01, *** p≤ .001; DFM=Drive for Muscularity; Recognition=Exercising for recognition motives; Coping=Exercising to cope with stress; Competition=Exercising to compete with others; Discrepother=having a discrepancy between how you perceive others want to look and how you think you look; Pressures=Feeling social pressures from media to look a certain way.

DISCUSSION

The purpose of the present study was to examine the similarities and differences between factors predicting DFM in athletes and non-athletes by gender. Although we expected that men would exhibit higher levels of DFM than women and that athletes would exhibit higher levels than non-athletes, predictions about which variables affected DFM in each of the four groups (female athletes, female non-athletes, male athletes, and male non-athletes) and their order of importance were not made as no prior research has examined this question. Below we will discuss our findings.

Gender and Athletic Status

As expected, although women were less likely to exhibit DFM than were men, the women in our study were not immune to this drive (c.f., McCreary & Sasse, 2000; McCreary et al., 2004; McCreary et al., 2005; Tiggemann, 2005). In addition, different factors seemed to predict DFM in women and men, as will be described below. Similarly, as predicted, athletes exhibited higher levels of DFM than did non-athletes (c.f., Zelli et al., 2010), but again the factors predicting DFM seemed to vary by athletic status, as well as gender.

Exercise Motives

Previous research suggests that low self-esteem and body esteem in both men and women predict exercise behavior (Morry & Staska, 2001; Strelan et al., 2003) as students use exercise to boost self-esteem and alter body image (Prichard & Tiggemann, 2005; 2008). Thus, it is not surprising that exercising for self-esteem reasons predicted DFM in female non-athletes, as well as male athletes. It is interesting that it did not predict DFM in female athletes and male non-athletes. Future studies need to examine why the discrepancy exists between the four groups. It may be that exercising for self-esteem reasons does, in fact, predict DFM in all groups, but is just not as important as are other factors in those two groups and, thus, did not register in our stepwise regression analysis.

Given that athletes tend to exercise more for competition motives than do non-athletes (Mathes & Battista, 1985), it is not surprising that exercising for competition-based reasons predicted DFM in female athletes. Similarly, exercising to cope also predicted DFM in female athletes. Thus, perhaps the increased competition female athletes are feeling is causing them to exercise more in order to cope with the pressures they feel. It is interesting that these variables did not seem to affect DFM in male athletes; however, this may be a result of the sport in question. Future studies should examine whether the sport affects DFM levels in athletes as well as the factors that predict DFM in athletes. In addition, male athletes were the only group for which DFM was related to exercising to give your life meaning. Thus, if male athletes' lives revolve around succeeding in their sport, competition and exercising to cope with increasing demands put on them may be inherent components of that motive. Future studies should examine this possibility closer as well as investigate what specific stressors female athletes are exercising to cope with (e.g., academic, athletic, social).

It is interesting that exercising for recognition motives related to DFM in all groups except male athletes. Thus, it appears that most of our groups to some extent are exercising just to be noticed in the gym. Similarly, female non-athletes reported exercising for affiliation reasons, which makes sense given that non-athletes tend to exercise to enhance mood (Pritchard & Nielsen, in press), and socializing with friends, even while exercising, tends to do that.

Societal Pressures

Research suggests that exposure to idealized body images in the media can serve as a source of societal pressure to achieve a certain body ideal (Hamilton et al., 2007; Hobza et al., 2007; Hobza & Rochlen, 2009). Thus, it is perhaps not surprising that DFM in female athletes was related to general societal pressures to look a certain way. In addition, in male non-athletes, DFM was predicted by having a discrepancy between how they believed they looked and how they wanted to look, a factor often linked to social pressures.

Pressures from Family and Friends

As many 'societal' pressures can come directly in the form of peer and familial commentary about one's appearance (Gruber, 2008; Tantleff-Dunn & Gokee, 2004; Tergerson & King, 2002), and athletes often face additional 'social' pressures from coaches, teammates, and/or judges (Hausenblas & Symons Downs, 2001; Hausenblas & McNally, 2004), it is not surprising that DFM in female athletes was related to their perceptions that what other people wanted them to look like did not match up with how they believed they actually looked. Future studies may wish to examine which 'other people' these athletes are referring to (e.g., friends, coaches) to better ascertain where this pressure is coming from.

Internalization of Media Images

Although female athletes seemed to be more affected by general social pressures and perceptions of not matching up to the ideal body put forth by others, all other groups' DFM was directly impacted by the internalization of media images of athletic bodies (c.f., Cheng & Mallinckrodt, 2009; Giles & Close, 2008; Lokken et al., 2004). This finding is in line with previous research suggesting that female athletes are not as affected by media internalization as they are other pressures (e.g., peers, coaches; Ertel, 2008; Greenleaf et al., 2010). Although no research had examined media internalization as a predictor of DFM in male athletes, it is interesting that male athletes seem to be affected by internalization of media images even though female athletes do not.

LIMITATIONS

There were several limitations of our study, the first being that our participants were undergraduate Psychology 101 students. Future research would benefit from a wider variety

of participants, including a broader coverage of athletes in a variety of sports. Secondly, the majority of our participants were Caucasians with an average age of 22. Further research would benefit from a more racially diverse group of participants. Finally, this study was correlational in nature. Thus, although we can determine which factors seem to predict DFM in our different groups, we cannot make any statements about causality.

CONCLUSION AND IMPLICATIONS

No one seems to be immune from social pressures to achieve a muscular or toned look. However, athletes appear to be even more vulnerable to these pressures. Coaches and athletic trainers need to be aware that the pressures they are putting on their athletes to succeed may be putting them at risk for certain disordered eating and exercise behaviors. If athletes are spending too much time exercising (e.g., exercising beyond what is required for their sport) and/or not eating enough nutrients to perform optimally due to fear of weight gain, it could put them at risk for injury, potentially ending their athletic career early. Because previous research suggests that athletic status can, in some cases, buffer the harmful effects of social pressures on disordered eating and exercise (Reinking & Alexander, 2005), it is important that coaches and athletic trainers find a balance between helping an athlete succeed and pushing them beyond their limits, potentially encouraging the athlete to engage in unhealthy eating and exercise behaviors in an attempt to achieve someone else's ideal.

REFERENCES

Aubrey, J. S. (2007). The impact of sexually objectifying media exposure on negative body emotions and sexual self-perceptions: Investigating the mediating role of body self-consciousness. *Mass Communication & Society, 10,* 1-23.

Bessenoff, G. R., & Del Priore, R. E. (2007). Women, weight, and age: Social comparison to magazine images across the lifespan. *Sex Roles, 56,* 215-222.

Calogero, R. M., Davis, W. N., & Thompson, J. K. (2005). The role of self-objectification in the experience of women with eating disorders. *Sex Roles*, 52, 43-50.

Cheng, H., & Mallinckrodt, B. (2009). Parental bonds, anxious attachment, media internalization, and body image dissatisfaction: Exploring a mediation model. *Journal of Counseling Psychology, 56*(3), 365-375. doi:10.1037/a0015067.

Chittester, N. I., & Hausenblas, H. A. (2009). Correlates of drive for muscularity: The role of anthropometric measures and psychological factors. *Journal of Health Psychology*, 14(7), 872-877. doi:10.1177/1359105309340986

Daniel, S., & Bridges, S. (2010). The drive for muscularity in men: media influences and objectification theory. *Body Image*, *7*, 32-38. Retrieved from EBSCO*host*.

Davis, C., Karvinen, K., & McCreary, D. R. (2005). Personality correlates of a drive for muscularity in young men. *Personality and Individual Differences*, *39*, 349-359. doi:10.1016/j.paid.2005.01.013

Duggan, S. J., & McCreary, D. R. (2004). Body image, eating disorders, and the drive for muscularity in gay and heterosexual men: The influence of media images. *Journal of Homosexuality*, *47*(3-4), 45-58. doi:10.1300/J082v47n03_03

Engel, S. G., Johnson, C., Powers, P. S., Crosby, R. D., Wonderlich, S. A., Wittrock, D. A., & Mitchell, J. E. (2003). Predictors of disordered eating in a sample of Elite Division I college athletes. *Eating Behaviors, 4,* 333-343.

Ertel, M. (2008). The double dose message of slimness among adolescent female athletes: Existence and potential origins of pressure. *Dissertation Abstracts International*, *68*, Retrieved from EBSCO*host*.

Frederick, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relationships with participation and mental health. *Journal of Sport Behavior*, *16*, 125-145.

Giles, D. C., & Close, J. (2008). Exposure to 'lad magazines' and drive for muscularity in dating and non-dating young men. *Personality and Individual Differences, 44*(7), 1610-1616.

Greenleaf, C., Petrie, T., Reel, J., & Carter, J. (2010). Psychosocial risk factors of bulimic symptomatology among female athletes. *Journal of Clinical Sport Psychology*, 4(3), 177-190. Retrieved from EBSCO*host*.

Gruber, K. (2008). Social support for exercise and dietary habits among college students. *Adolescence*, *43*(171), 557-575.

Hallsworth, L., Wade, T., & Tiggemann, M. (2005). Individual differences in male body-image: An examination of self-objectification in recreational body builders. *British Journal of Health Psychology*, *10*(3), 453-465. doi:10.1348/135910705X26966

Hamilton, E. A., Mintz, L., & Kashubeck-West, S. (2007). Predictors of media effects on body dissatisfaction in European American women. *Sex Roles, 56,* 397-402.

Hausenblas, H. A., & McNally, K. D. (2004). Eating disorder prevalence and symptoms for track and field athletes and nonathletes. *Journal of Applied Sport Psychology*, *16*, 274-286.

Hausenblas, H. A., & Symons Downs, D. (2001). Comparison of body image between athletes and nonathletes: A meta-analytic review. *Journal of Applied Sport Psychology*, *13*, 323-339. doi:10.1080/104132001753144437.

Hobza, C. L., & Rochlen, A. B. (2009). Gender role conflict, drive for muscularity, and the impact of ideal media portrayals on men. *Psychology of Men and Masculinity, 10,* 120-130.

Hobza, C. L., Walker, K. E., Yakushko, O., & Peugh, J. L. (2007). What about men? Social comparison and the effects of media images on body and self-esteem. *Psychology of Men and Masculinity, 8,* 161-172.

Hubbard, S. T., Gray, J. J., & Parker, S. (1998). Differences among women who exercise for 'food related' and 'non-food related' reasons. *European Eating Disorders Review*, *6*, 225-265.

Ingledew, D. K., & Sullivan, G. (2002). Effects of body mass and body image on exercise motives in adolescence. *Psychology of Sport and Exercise*, 3(4), 323-338. doi:10.1016/S1469-0292(01)00029-2

Jankauskienė, R., & Kairaitis, R. (2007). The drive for muscularity among adolescent boys: Its relationship with global self-esteem. *Education. Physical Training. Sport*, *66)* 19-24. Retrieved from EBSCO*host*.

Johnson, P., McCreary, D. R., & Mills, J. S. (2007). Effects of exposure to objectified male and female media images on men's psychological well-being. *Psychology of Men &Masculinity*, *8*, 95-102. doi:10.1037/1524-9220.8.2.95

Kirk, G., Singh, K., & Getz, H. (2001). Risk of eating disorders among female college athletes and non-athletes. *Journal of College Counseling, 4,* 122-133.

Krane, V., Stiles-Shipley, J. A., Waldron, J., & Michalenok, J. (2001). Relationships among body satisfaction, social physique anxiety, and eating behaviors in female athletes and exercisers. *Journal of Sport Behavior, 24,* 247-265.

Kyrejto, J. W., Mosewich, A. D., Kowalski, K. C., Mack, D. E., & Crocker, P. R. E. (2008). Men's and women's drive for muscularity: Gender differences and cognitive and behavioral correlates. *International Journal of Sport and Exercise Psychology*, *6*, 69-84.

LePage, M. L., & Crowther, J. H. (2010). The effects of exercise on body satisfaction and affect. *Body Image*, 7, 124-130. doi:10.1016/j.bodyim.2009.12.002

Leit, R. A., Gray, J. J., & Pope, H. G. (2002). The media's representation of the ideal male body: A cause for muscle dysmorphia? *International Journal of Eating Disorders, 31,* 335–338.

Lochbaum, M. R., & Bartholomew, J. B. (2002). The role of exercise enjoyment in post-exercise psychological state. *Journal of Sport & Exercise Psychology*, *24*, S90-S91.

Lokken, K. L., Worthy, S., & Trautmann, J. (2004). Examining the links among magazine preference, levels of awareness and internalization of sociocultural appearance standards, and presence of eating-disordered symptoms in college women. *Family and Consumer Sciences Research Journal, 32*(4), 361-381.

Masters, K. S., Ogles, B. M., & Jolton, J. A. (1993). The development of an instrument to measure motivation for marathon running: The motivations of marathoners scales (MOMS). *Research Quarterly in Exercise and Sport, 64*, 134-143.

Mathes, S. A., & Battista, R. (1985). College men's and women's motives for participation in physical activity. *Perceptual and Motor Skills*, *61*, 719-726. Retrieved from EBSCO*host*.

McCreary, D. R., Karvinen, K. H., & Davis, C. (2006). The relationship between the drive for muscularity and anthropometric measures of muscularity and adiposity. *Body Image*, 3, 145-152.

McCreary, D. R., & Sasse, D. K. (2000). An exploration of the drive for muscularity in adolescent boys and girls. *Journal of American College Health, 48,* 297-304.

McCreary, D. R., & Sasse, D. K. (2002). Gender differences in high school students' dieting behavior and their correlates. *International Journal of Men's Health*, *1*, 195-213. doi:10.3149/jmh.0102.195

McCreary, D. R., Sasse, D. K., Saucier, D. M., & Dorsch, K. D. (2004). Measuring the drive for muscularity: Factorial validity of the Drive for Muscularity Scale in men and women. *Psychology of Men and Masculinity*, *5*, 49–58.

McCreary, D. R., & Saucier, D. M. (2009). Drive for muscularity, body comparison, and social physique anxiety in men and women. *Body Image*, *6*, 24-30.

McCreary, D. R., Saucier, D. M., & Courtenay, W. H. (2005). The drive for muscularity and masculinity: Testing the associations among gender-role traits, behaviors, attitudes, and conflict. *Psychology of Men & Masculinity*, *6*, 83-94.

Mond, J. M., Hay, P. J., Rodgers, B. B., Owen, C. C., & Beumont, P. V. (2004). Relationships between exercise behaviour, eating-disordered behaviour and quality of life in a community sample of women: When is exercise 'excessive'? *European Eating Disorders Review*, *12*, 265-272. doi:10.1002/erv.579.

Morrison, T. G., Morrison, M. A., & Hopkins, C. (2003). Striving for bodily perfection? An exploration of the drive for muscularity in Canadian men. *Psychology of Men and Masculinity, 4,* 111-120.

Morrison, T. G., Morrison, M. A., Hopkins, C., & Rowan, E. (2004). Muscle mania: Development of a new scale examining the drive for muscularity in Canadian males. *Psychology of Men & Masculinity*, *5*, 30-39. doi:10.1037/1524-9220.5.1.30

Morry, M. M., & Staska, S. L. (2001). Magazine exposure: Internalization, self-objectification, eating attitudes, and body satisfaction in male and female university students. *Canadian Journal of Behavioral Science*, *33,* 269–279.

Patel, D. R., Greydanus, D. E., Pratt, H. D., & Phillips, E. L. (2003). Eating disorders in adolescent athletes. *Journal of Adolescent Research, 18,* 280-296.

Plante, T. G., Bogdan, R., Kanani, Z., Ferlic, E., Babula, M., & MacAskill, E. (2003). Psychological benefits of exercising with another. *Journal of Human Movement Studies*, *44*, 93–106.

Prichard, I., & Tiggemann, M. (2005). Objectification in fitness centers: Self-objectification, body dissatisfaction, and disordered eating in aerobic instructors and aerobic participants. *Sex Roles, 53,* 19-22.

Prichard, I., & Tiggemann, M. (2008). Relations among exercise type, self-objectification, and body image in the fitness centre environment: The role of reasons for exercise. *Psychology of Sport & Exercise*, *9*, 855-866.

Pritchard, M. E., & Nielsen†, A. (in press). Predicting exercise dependence in athletes v. non-athletes. *Athletic Insight.*

Raudenbush, B., & Meyer, B. (2003). Muscular dissatisfaction and supplement use among intercollegiate athletes. *Journal of Sport & Exercise Psychology*, *25*(2), 161-170. Retrieved from EBSCO*host*.

Reinking, M. F., & Alexander, L. E. (2005). Prevalence of disordered-eating behaviors in undergraduate female collegiate athletes and non-athletes. *Journal of Athletic Training, 40,* 47-51.

Ricciardelli, L. A., & McCabe, M. P. (2004). A biopsychosocial model of disordered eating and the pursuit of muscularity in adolescent boys. *Psychological Bulletin*, *130*, 179-205. doi:10.1037/0033-2909.130.2.179.

Salerno, J. (2003, March). *Fitness and nutrition: The prescription for healthy aging*. Paper presented at the Special Committee on Aging—United States Senate. Abstract retrieved from http://www.hhs.gov/asl/testify/t030311a.html

Smolak, L., Murnen, S. K., & Ruble, A. E. (2000). Female athletes and eating problems: A meta-analysis. *International Journal of Eating Disorders, 27,* 371-380.

Strelan, P., Mehaffey, S. J., & Tiggemann, M. (2003). Self-objectification and esteem in young women: The mediating role of exercise. *Sex Roles*, *48,* 89–95.

Tantleff-Dunn, S., & Gokee, J. L. (2004). Interpersonal influences on body image development. In T. F. Cash, & T. Pruzinsky (Eds.), *Body image: a handbook of theory, research, and clinical practice*, 108−116. New York: Guilford Press.

Tergerson, J. L., & King, K. A. (2002). Do perceived cues, benefits, and barriers to physical activity differ between male and female adolescents? *Journal of School Health, 72,* 374-80.

Thompson, J. K., van den Berg, P., Roehrig, M., Guarda, A. S., & Heinberg, L. J. (2004). The sociocultural attitudes towards appearance scale-3 (SATAQ-3): Development and validation. *International Journal of Eating Disorders, 35,* 293-304.

Vartanian, L. R., Giant, C. L., & Passino, R. M. (2001). "Ally McBeal vs. Arnold Schwarzenegger": Comparing mass media, interpersonal feedback and gender as predictors of satisfaction with body thinness and muscularity. *Social Behavior and Personality, 29,* 711-724.

Zelli, A., Lucidi, F., & Mallia, L. (2010). The relationships among adolescents' drive for muscularity, drive for thinness, doping attitudes, and doping intentions. *Journal of Clinical Sport Psychology*, *4*(1), 39-52. Retrieved from EBSCO*host*.