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# What Predicts Drive for Muscularity in College Students?

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## Abstract

While research has established that men tend to exhibit greater levels of DFM than women, little research has examined the relation between DFM and other forms of disordered eating and exercise behaviors. Study 1 examined the influence of disordered eating and obligatory exercise on DFM in male and female college students. In women, DFM was related to eating concern and obligatory exercise; whereas in men, DFM was related to obligatory exercise and shape concern. Study 2 examined the influence of exercise motivations and body dissatisfaction on DFM in male and female college students. In women, DFM was predicted by personal goal achievement exercise motives, exercising to cope, and dissatisfaction with specific body areas. In men, DFM was predicted by appearance orientation, personal goal achievement, affiliation, and recognition exercise motives.

**Keywords:** drive for muscularity, college students, disordered eating, obligatory exercise, exercise motives, body dissatisfaction

Research suggests that drive for muscularity (DFM) may mean different things to men and women. Whereas DFM is related to increased bulkiness in men (McCreary & Sasse, 2000), women with high DFM want a toned and lean appearance (Kyrejto, Mosewich, Kowalski, Mack, & Crocker, 2008). If DFM means something different to men and women is DFM also affected by different factors?

## Study 1

Few studies have examined correlates of DFM in females, especially other variables measuring eating and exercise disturbances. The Eating Disorders Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994) has been found to be reliable in female and male populations (Hay, Loukas, & Philpott, 2005), especially when assessing bulimic behaviors (Goldfein, Devlin, & Kamenetz, 2005). No studies have examined the relation between DFM and disordered eating as measured by the EDE-Q. In addition, few studies have examined the relation between DFM and excessive exercise habits.

The purpose of the present study was to assess whether DFM relates to disordered eating and exercise as measured by the EDE-Q and the Obligatory Exercise Questionnaire (OEQ; Steffen & Brehm, 1999). We hypothesized that, similar to previous studies (Kyrejto et al., 2008), men would display higher levels of DFM than women, but no hypotheses regarding DFM's relationship with the EDE-Q and OEQ were made.

## Method

### Participants

Undergraduate Psychology 101 students (335 women, 232 men) at a state university participated in this on-line survey. Participants were 83.4% Caucasian, 2.6% African American, 5.1% Hispanic American, 3.8% Asian American, and 5.1% Other. Ages ranged from 18 to 55 ( $M = 21.43$ ,  $SD = 4.95$ ). The Institutional Review Board approved the study prior to data collection.

## Measures

*Drive for muscularity.* The Drive for Muscularity Scale (McCreary & Sasse, 2000) has been shown to be valid and reliable in college populations (Wojtowicz & von Ranson, 2006). Participants respond to statements about their desired muscularity (e.g., "I think that I would look better if I gained 10 pounds in bulk.") on a 5-point Likert scale (1 = *never/rarely*, 2 = *sometimes*, 3 = *often*, 4 = *usually*, 5 = *always*). Scores are averaged into an overall mean ( $\alpha = .87$ ).

*Eating Disorders Examination-Questionnaire (EDE-Q).* Disordered eating attitudes, feelings, and behaviors were assessed using the EDE-Q (Fairburn & Beglin, 1994). The EDE-Q is a 41-item, self-report measure that assesses four areas: 5-items each concerning Restraint ( $\alpha = .79$ ), Shape Concern (SC;  $\alpha = .52$ ), and Weight Concern (WC;  $\alpha = .63$ ), and 4-items measuring Eating Concern (EC;  $\alpha = .66$ ) over the past 28 days.

*Obligatory exercise.* Obligatory exercise was assessed the OEQ (Steffen & Brehm, 1999). Students responded to several questions concerning their exercise behaviors (e.g., When I don't exercise, I feel guilty) on a 4-point scale (0 = *Never*, 1 = *Sometimes*, 2 = *Usually*, 3 = *Always*). Items were averaged to create a scale score ( $\alpha = .86$ ).

## Results

### Preliminary Analyses

Before proceeding to the regression models, we wanted to verify gender differences in DFM in our study. As expected, men did exhibit significantly more drive for muscularity ( $M = 20.61$ ,  $SD = 5.99$ ) than did women ( $M = 13.03$ ,  $SD = 5.67$ ),  $t(562) = 15.25$ ,  $p < .001$ .

### Exploratory Analyses

To ascertain whether DFM related to the EDE-Q and OEQ the same way in men and women, separate stepwise regression analyses were performed for each gender. The stepwise method was chosen because we felt it was important to examine whether other types of disordered eating and exercise behaviors relate to DFM, and also which variables have primary influence, secondary influence, etc.

The primary predictor of DFM in women was eating concern,  $F(1, 323) = 12.75$ ,  $p < .001$ ,  $R^2 = .04$ ,  $B = .07$ ,  $SE B = .02$ ,  $\beta = .20$ ,  $p < .001$ , with OEQ serving as a secondary predictor,  $F(2, 322) = 10.41$ ,  $p < .001$ ,  $R^2 = .06$ ,  $B = 1.27$ ,  $SE B = .45$ ,  $\beta = .15$ ,  $p < .01$ .

The primary predictor of DFM in men was OEQ,  $F(1, 229) = 42.38$ ,  $p < .001$ ,  $R^2 = .16$ ,  $B = 3.24$ ,  $SE B = .59$ ,  $\beta = .40$ ,  $p < .001$ , with shape concern serving as a secondary predictor,  $F(2, 228) = 24.65$ ,  $p < .001$ ,  $R^2 = .18$ ,  $B = .05$ ,  $SE B = .02$ ,  $\beta = .15$ ,  $p < .01$ .

## Discussion

The purpose of the first study was to assess whether DFM relates to disordered eating and exercise as measured by the EDE-Q and the OEQ. Similar to previous studies (Kyrejtó et al., 2008), male undergraduates reported significantly higher levels of DFM than did female undergraduates. The study also revealed that DFM relates to other measures of disordered eating and exercise in slightly different ways in males and females.

As women are more likely than are men to reporting dieting and exercising to lose weight (McCreary & Sasse, 2000), it is perhaps not surprising that eating concern (thinking obsessively about eating, feeling guilty about eating, etc.) was the primary predictor of DFM. In some ways, this result is similar to the finding that drive for thinness (measures feeling guilty about eating, etc.) relates to DFM in men (Grabarek & Cooper, 2008). Similarly, it is not surprising that OEQ related to DFM in women, as many women lift weights to increase muscle mass in an effort to lose weight (McCabe & Ricciardelli, 2003).

Because men are more focused on exercising to gain muscle than are women (Kyrejtó et al., 2008; McCabe & Ricciardelli, 2003), it is not surprising that OEQ would be the primary predictor of DFM in men. Similarly, expressed dissatisfaction with weight and shape as measured by shape concern was the second predictor of DFM in men. Because men think that women want them to be muscular (Morrison, Morrison, Hopkins, & Rowan, 2004), shape concern likely would predict DFM in men.

## Study 2

Exercise participation is clearly an important factor predicting DFM in women and men (Kyrejtó et al., 2008; McCreary & Sasse, 2000). Research suggests that exercise motivation may differ by gender, with males' motivation relating to enhancing a self-concept (McCreary & Sasse, 2000). Gillison, Osborn, Standage, and Skevington (2009) found that males acted upon their motivation to exercise to avoid social disapproval and to increase their self-esteem or ego, whereas females are more concerned with mood improvement, enhancing physical performance, and relieving stress (Kjelsås & Augestad, 2003).

If men and women exercise for different reasons, might these differences help explain differences in DFM? Study 2 was designed to delve further into this issue. Based on research suggesting gender differences in exercise motivations (Gillison et al., 2009; Kjelsås & Augestad, 2003), as well as differing impacts of body dissatisfaction on issues related to DFM (Olivardia, Pope, Borowiecki, & Cohane, 2004.), we expect gender differences in the relation between exercise motivations, body dissatisfaction, and DFM.

## Method

### Participants

Three hundred twenty five undergraduate (67.8% female) Introductory Psychology students participated in this study. The participants were 87% Caucasian, 1.2% African American, 4.6% Latino, 3.4% Asian American, 0.9% Pacific Islander, 0.6% Native American, and 2.2% Other. The average age of the participants was 20.95 years ( $SD = 5.26$ ). The ages ranged from 18 to 45. Prior to collecting data, the study was approved by the Institutional Review Board.

### Measures

*Body satisfaction.* The Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000) was used to assess body satisfaction. It measures the following scales: self-classified weight, body areas, satisfaction, overweight preoccupation, and appearance evaluation.

*Drive for muscularity.* DFM was assessed by McCreary and Sasse's (2000) 15-item Drive for Muscularity Scale.

*Exercise motives.* Students completed the Motivations for Marathoners Scale (MOMS; Masters, Ogles, & Jolton, 1993) revised to ask about general exercise motives. The MOMS groups exercise motives into the following categories: Health Orientation, Weight Concern, Personal Goal Achievement, Competition, Recognition, Affiliation, Psychological Coping, Life Meaning, and Self-esteem.

## Results

Again, separate stepwise regression analyses were performed for each gender. DFM was predicted by personal goal achievement exercise motives,  $F(1, 205) = 29.33, p < .001, R^2 = .13$ , then by exercising to cope,  $F(2, 204) = 18.47, p < .001, R^2 = .15$ , and dissatisfaction with specific body areas,  $F(3, 203) = 15.33, p < .001, R^2 = .18$  (see Table 1).

DFM was predicted by appearance orientation,  $F(1, 98) = 16.08, p < .001, R^2 = .14$ , then personal goal achievement,  $F(2, 97) = 12.67, p < .001, R^2 = .21$ , affiliation,  $F(3, 96) = 10.11, p < .001, R^2 = .24$ , and recognition exercise motives,  $F(4, 95) = 9.98, p < .001, R^2 = .30$  (see Table 2).

## Discussion

The purpose of Study 2 was to further delve into the relationship between DFM and exercise motives and body dissatisfaction. The findings were similar to Study 1 as well as previous research (McCreary & Sasse, 2000; Kyreito et al., 2008) in that DFM seems to be influenced by different factors in men and women.

It is not surprising that personal goal achievement was a predictor of DFM in both men and women as goal achievement has been found to be important in exercise enjoyment and continued participation in exercise (Anderson & Dixon, 2009). However, that appeared to be where the similarities stopped. Women with higher levels of DFM reported exercising to cope. It is unclear what contributed to this; it may just be that women were more likely to report exercising for coping reasons. It may be connected to Kjelsås and Augestad's (2003) finding that women are more likely than men to run to relieve stress; lifting weights may provide a similar stress-relieving function in women. Finally, as women with a high DFM are more focused on toning their bodies (Kyreito et al., 2008), it is not surprising that dissatisfaction with specific body parts would motivate women to seek muscle-building activity as a way to accomplish this goal.

It is not surprising that DFM would relate to appearance orientation in men as DFM has been found to relate to several appearance and diet-related issues in men, including frequent negative and positive body commentary from others, low self-esteem (Nowell & Ricciardelli, 2008), and self-objectification (Grieve & Helmick, 2008). Similarly, one might expect DFM to relate to exercising for recognition motives, as those motives are concerned with exercising to earn the respect of peers, have people look up to them, and to make family or friends proud (Masters et al., 1993). Finally, DFM was also predicted by exercising for affiliation (e.g., socializing, meeting people) in men. This is not surprising given that a recent study of adolescent boys reported higher levels of DFM in boys whose friends expressed interest in muscularity and frequently discussed muscularity with peers (Smolak, Murnen, & Thompson, 2005). Thus, if men are exercising to affiliate with other men with high levels of DFM, it would make sense that affiliation motives would predict DFM.

## Conclusion

The results of the present studies suggest that there are both similarities and differences in what predicts DFM in male and female college students. As DFM can potentially lead to more dangerous conditions (e.g., muscle dysmorphia anabolic steroid use; Smolak et al., 2005), it is important for health professionals, athletic trainers, and counselors to know what factors to look for. Future research should examine how other factors influence DFM in both male and female college students.

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Table 1

*Summary of Stepwise Regression Analysis for Variables Predicting Drive for Muscularity in Women*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>
Step 1				
Personal Goal Achievement	-1.99	.37	-.35	5.42***
Step 2				
Personal Goal Achievement	-2.44	.40	-.43	6.08***
Exercise to Cope	1.08	.42	.19	2.61**
Step 3				
Personal Goal Achievement	-2.61	.40	-.47	6.55***
Exercise to Cope	1.36	.42	.23	3.24***
Body Areas Dissatisfaction	2.68	.96	.18	2.80**

Note: \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$



Table 2

*Summary of Stepwise Regression Analysis for Variables Predicting Drive for Muscularity in Men*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>
Step 1				
Appearance Orientation	-7.52	1.88	-.38	4.01***
Step 2				
Appearance Orientation	-5.84	1.91	-.30	3.07**
Personal Goal Achievement	-2.05	.72	-.27	2.85**
Step 3				
Appearance Orientation	-6.14	1.88	-.31	3.26**
Personal Goal Achievement	-2.79	.80	-.37	3.51***
Affiliation	1.69	.83	.21	2.04*
Step 4				
Appearance Orientation	-4.65	1.90	-.23	2.45*
Personal Goal Achievement	-2.09	.81	-.28	2.57**
Affiliation	3.05	.94	.38	3.24**
Recognition	-2.80	1.02	-.35	2.74**

Note: \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$