Biceps and Body Image: The Relationship Between Muscularity and Self-Esteem, Depression, and Eating Disorder Symptoms

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The present study examined body image and associated psychological traits in 154 college men. The comprehensive battery of measures included a novel computerized test of body image perception, the Somatomorphic Matrix, in which subjects could navigate through a range of body images, spanning a wide range of body fat and muscularity, to answer various questions posed by the computer. Subjects also completed paper-and-pencil instruments assessing depression, characteristics of eating disorders, self-esteem, and use of performance-enhancing substances. Findings suggest that contemporary American men display substantial body dissatisfaction and that this dissatisfaction is closely associated with depression, measures of eating pathology, use of performance-enhancing substances, and low self-esteem. Muscle belittlement, believing that one is less muscular than he is, presented as an important construct in the body dissatisfaction of men.

The body image concerns of men have not been addressed in the scientific literature nearly as extensively as the body image concerns of women (Pope, Phillips, & Olivardia, 2000). Recent studies have demonstrated trends that illustrate the growing importance of the mesomorphic muscular body build in Western culture (McCreary & Sasse, 2000). For example, Pope, Olivardia, Gruber, and Borowiecki (1999) conducted a study documenting trends over time in the muscularity of male action figures, such as G.I. Joe. They found that when extrapolated to human size, today’s G.I. Joe figure would be just as unattainable to boys as the Barbie doll is for girls. A similar media trend has been documented in two recent studies showing that *Playgirl* magazine centerfold models have grown increasingly lean and muscular over the decades (Leit, Pope, & Gray, 2001; Spitzer, Henderson, & Zivian, 1999). One of these studies calculated that the average *Playgirl* centerfold man had shed about 12 pounds of fat while putting on approximately 27 pounds of muscle over the last 25 years (Leit et al., 2001). Another line of related evidence comes from a study by Pope, Olivardia, Borowiecki, and Cohane (2001) that found that men’s bodies are being used increasingly in advertisements for products unrelated to the body. The authors found that the proportion of undressed men has skyrocketed, going from as little as 3% of ads containing men in the 1950s to 35% in 1 year in the 1990s.

Despite recent evidence suggesting an increase in body image problems and associated psychopathology among men (Olivardia, 2001a; Olivardia & Pope, 1997; Olivardia, Pope, & Hudson, 2000; Olivardia, Pope, Mangweth, & Hudson, 1995), the literature in this area remains very limited. In contrast to the extensive literature on body image and associated disorders in women, the literature on men comprises only a modest number of studies. Furthermore, most of these few studies are limited by the fact that they investigated only one or two specific aspects of body image, rather than performing a comprehensive battery of body image measures and related assessments in a large sample of men (see Cohane & Pope, 2001; Herzog, Newman, & Warshaw, 1991). Of more importance, many of the existing studies of body image focus only on one dimension: thinness versus obesity (see Cohane & Pope, 2001; Stunkard, Sorenson, & Schulsinger, 1983). Although valid for studies with female populations, male samples may not respond to this dimension in the same manner. Muscularity in men is an additional important dimension in body image research. This study examines the importance of muscularity in the overall body image of men.

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Depression and body dissatisfaction typically accompany each other in women. However, few studies have demonstrated whether depression is correlated with body dissatisfaction or body image distortions in men (McCreary & Sasse, 2000; Olivardia et al., 1995). This study tests for this association, which may have significant implications in therapeutic interventions with men who exhibit body image disorders and/or depressive disorders.

This study seeks to understand what variables may predict steroid and other performance-enhancing substance (PES) use. Only one previous study, to our knowledge, has examined this (Blouin & Goldfield, 1995). Use of steroids and other PESs carries public health significance, as studies have shown that steroid use has serious physical and psychological side effects (Haupt & Rovere, 1984; Lenders et al., 1988; Pope & Brower, 1999; Pope & Katz, 1987, 1988, 1994; Pope, Kouri, & Hudson, 2000).

Method

Male Participants

One hundred fifty-four heterosexual male college students, aged 18–30 years, were recruited at an ethnically diverse Boston-area college. To recruit participants, we visited classes of various disciplines, including psychology, mechanical engineering, civil engineering, sociology, mathematics, accounting, marketing, and history and advertised the study.

Female Participants

One of the questions on the Somatomorphic Matrix (SMM) asked men to choose the male body that they thought women preferred most. To compare the men’s responses to this question with the male body preferred by actual women, we obtained data from a separate study of 77 heterosexual college women, aged 18–30 years, recruited in the same manner as the male students at the same university (Gruber, Pope, Lalonde, & Hudson, 2001). As part of this study, the women were asked to select an image from the SMM that corresponded to the male body that they preferred the most.

Variables and Measures

Height, weight, and body fat measurements were taken for each participant. Body fat was calculated from six skinfold measurements, according to the widely used and well-validated method of Jackson and Pollock (1978). The participants’ fat-free mass index (FFMI) was then calculated. The formula, described by Kouri, Pope, Katz, and Oliva (1995), considers one’s height, weight, and body fat in determining the level of muscularity. The FFMI equation is as follows: FFMI = W × [(100 – BF)/100] × H² + 6.1 × (1.8 – H), where W is weight in kilograms, BF is percent body fat, and H is height in meters.

The FFMI serves as an objective measure of an individual’s degree of muscularity. Men who do not lift weights typically display FFMIs in the high teens. FFMIs for weightlifters who do not take steroids normally fall in the low 20s (ranging from 21 to 25), whereas FFMIs for steroid users may extend into the upper 20s and higher (Kouri et al., 1995).

Body image perceptions were measured using the SMM (Gruber, Pope, Borowiecki, & Cohane, 2000). The SMM offers the advantage of measuring body image perception according to separate axes for fat and muscularity. To create the SMM, Gruber et al. (2000) obtained a collection of photographs from men of various levels of body fat and muscularity. Measurements of their height, weight, and body fat were taken, and their FFMI was calculated. Using these photographs as a guide, a graphic artist prepared 100 body drawings, arranged in a 10 × 10 matrix, representing 10 levels of fat and 10 levels of muscularity. Body fat percentage ranged from 4% to 40% in increments of 4%, and FFMI ranged on the other axis from 16.5 kg/m² to 30.0 kg/m² in increments of 1.5 kg/m². Participants using the SMM are first presented with a “median” body image. The participant may then click on one of four buttons on the right side of the screen to make the image more or less fat and more or less muscular. Participants are then asked four questions: (a) “Choose the image that best represents your own body” (referred to in the text as the perceived image), (b) “Choose the image that represents the body that you ideally would like to have” (ideal image), (c) “Choose the image that represents the body of an average person of your age and sex” (average image), and (d) “Choose the image that represents the body most desired by the opposite sex” (perceived female ideal of male body).

This instrument is hypothesized to be a more valid measure of body image perspectives in men because it tests body image along two axes: thin–fat and nonmuscular–muscular. With this added dimension, the results of this study may challenge previous results that have been difficult to interpret because some men may wish to gain weight in the form of muscle whereas others may wish to lose weight in the form of fat. When asked simply whether they want to gain or lose weight, men from these two groups may cancel each other out, leading to the erroneous conclu-
sion that men are satisfied with their body image (Fallon & Rozin, 1985).

For female participants, the item of interest in this study was the item “Choose the male body that you find most attractive” (actual female ideal of the male body). To respond to this question, the women were presented with the same male computer images as the men.

For the purposes of analysis, we calculated several indices from the SMM for each participant. Fat exaggeration was calculated by subtracting the participant’s actual body fat percentage from the body fat percentage of the perceived image that he selected. Thus, a higher positive number (represented in percentage points) would suggest that the participant thinks that he is fatter than he actually is.

Muscle belittlement was computed by subtracting the FFMI measurement of the perceived image from the actual participant’s FFMI. Thus, a higher positive number indicates that the participant thinks that he is less muscular than he actually is.

Fat displeasure was computed by subtracting the body fat measurement of the ideal image from the body fat measurement of the perceived image. Thus, a higher positive number would indicate that an individual wants to be leaner than he is.

Muscle displeasure was computed by subtracting the FFMI of the perceived image from the FFMI of the ideal image. Thus, a higher number would indicate that an individual wants to be more muscular than he currently perceives himself to be.

Depression was measured using the Beck Depression Inventory—Short Form (BDI; Beck, Ward, Mendelson, & Erbaugh, 1961). Eating disorder symptoms and attitudes and body dissatisfaction, mostly in regard to body fat, were measured using the Eating Disorders Inventory (EDI; Garner, Olmstead, & Polivy, 1983). Demographic, childhood, and family background information for male participants were surveyed through the Demographic/Family/Childhood Questionnaire (Finkelhor, 1979). Demographic information for female participants was assessed using brief questions on the computer instead of a paper-and-pencil questionnaire. This information was collected to ensure that female participants did not differ significantly from their male counterparts demographically. Exercise behavior and attitudes, together with history of anabolic steroid use (if any), was assessed using the Confidential Exercise Behavior Survey (Johnson & Love, 1984). This brief survey assesses exercise behavior (four questions) and attitudes related to exercise (two questions). Four questions, of our own design, inquire about an individual’s possible history of using anabolic steroids or other performance-enhancing drugs. Self-esteem was assessed with the Rosenberg Self-Esteem Scale (Rosenberg, 1979).

Hypotheses

This study was designed to test a wide range of hypotheses. Our first five hypotheses are all derived from the theory that modern men tend to be dissatisfied with their body appearance, possibly because modern societal and media pressures have constantly presented them with an unrealistic ideal of what they should look like. This ideal is described as a muscular body with lean body fat (Olivardia, 2001a; Pope, Gruber, Choi, Olivardia, & Phillips, 1997; Pope et al., 1999; Pope, Phillips, & Olivardia, 2000). The hypotheses are as follows.

Hypothesis 1: Men will perceive themselves to be (a) less muscular and (b) fatter than they actually are.

Hypothesis 2: Men will prefer an ideal body that is significantly (a) more muscular and (b) less fat (leaner) than both their actual body and their perceived image.

Hypothesis 3: Men will choose a significantly (a) more muscular and (b) less fat (leaner) perceived female ideal of the male body than the ideal male body that women actually choose.

Hypothesis 4: The (a) muscularity and (b) fat of the men’s chosen ideal body will not differ significantly from what they judge to be women’s ideal of the male body.

Hypothesis 5: The muscularity and fat of the men’s chosen ideal body will be significantly (a) more muscular and (b) less fat (leaner) than what they judge to be the body of an average man of their age.

Our next two hypotheses are derived from previous studies suggesting that there is an association between poor body image and depression (Joiner, Schmidt, & Singh, 1994; Thompson & Thompson, 1986) and body dissatisfaction and eating disorders (Garner et al., 1983). The hypotheses are as follows.

Hypothesis 6: Depression will be positively correlated with (a) muscle belittlement and (b) fat exaggeration.

Hypothesis 7: EDI scores, similarly, will be positively correlated with (a) muscle belittlement and (b) fat exaggeration.
Our last hypothesis derives from studies that have shown that self-esteem and body satisfaction are associated (Joiner et al., 1994; Rosenberg, 1979; Thompson & Thompson, 1986). The hypothesis is as follows.

**Hypothesis 8:** Self-esteem will be negatively correlated with muscle belittlement and body dissatisfaction.

The study also assessed the prevalence of PES use.

**Data Analysis**

Data for all participants were scored by hand, using the scoring procedures specific to the survey, and then entered into an SPSS program (SPSS, Inc., 2000) for statistical analysis. The above hypotheses were then tested using the following statistical tests, as required. For within-subject comparisons involving continuous variables (e.g., the comparison of measured body fat with ideal body fat in each man), we used $t$ tests for paired samples, two-tailed. For between-subject comparisons for continuous variables (e.g., in comparisons between the male and female samples), we used independent $t$ tests, two-tailed. For correlations between two variables, we calculated Pearson’s correlation coefficients. Although we have reported all differences with significance levels of $p < .05$, the reader should recognize that these values are presented without correction for the effect of multiple comparisons. Thus, some findings, particularly those of marginal significance, may represent chance associations.

**Results**

**Demographic Features**

Table 1 summarizes the demographic features of the 154 men. As the table illustrates, the majority of participants were Caucasian and Catholic. There were no significant differences between the male sample and the sample of 77 women on age ($M = 21.1$ years, $SD = 1.5$ for men; $M = 21.1$ years, $SD = 1.8$ for women), $t(229) = -0.08, p = .93$; marital status (100% of both men and women were single); and ethnic background (76% of men and 82% of women were Caucasian).

**SMM Data**

Men perceived themselves to be more muscular (see Table 2) and slightly fatter (see Table 3) than they actually were. They chose an ideal body with significantly greater muscularity and significantly less body fat than their actual bodies and their perceived bodies (see Tables 2 and 3). Participants thought that women wanted them to be significantly more muscular and leaner than the ideal male body chosen by the 77 actual women (see Tables 2 and 3). There was no significant difference between men’s perceived body fat, actual body fat, and the level of

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Demographic Features of College Male Sample $(N = 154)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>$M \pm SD$</td>
</tr>
<tr>
<td>Age (years)</td>
<td>$21.1 \pm 1.5$</td>
</tr>
<tr>
<td>Weight (lb.)</td>
<td>$175.2 \pm 28.4$</td>
</tr>
<tr>
<td>Height (in.)</td>
<td>$176.5 \pm 6.6$</td>
</tr>
<tr>
<td>Body fat (%)</td>
<td>$17.1 \pm 5.2$</td>
</tr>
<tr>
<td>FFMI (kg/m²)</td>
<td>$21.0 \pm 2.1$</td>
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<tr>
<td>Religion</td>
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<td>Roman Catholic</td>
<td>88</td>
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<tr>
<td>Jewish</td>
<td>10</td>
</tr>
<tr>
<td>Protestant</td>
<td>20</td>
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<tr>
<td>No religion</td>
<td>14</td>
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<tr>
<td>Other</td>
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<tr>
<td>Did not answer</td>
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<tr>
<td>Ethnic background</td>
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<td>White (not of Hispanic origin)</td>
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<tr>
<td>Black (not of Hispanic origin)</td>
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<tr>
<td>Hispanic</td>
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<td>Pacific Islander</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>

*Note.* FFMI = fat-free mass index.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Somatomorphic Matrix Data: FFMI Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>$M \pm SD$</td>
</tr>
<tr>
<td>Actual FFMI</td>
<td>$21.0 \pm 2.1$</td>
</tr>
<tr>
<td>Perceived image</td>
<td>$21.8 \pm 2.6$</td>
</tr>
<tr>
<td>Ideal image</td>
<td>$24.6 \pm 2.2$</td>
</tr>
<tr>
<td>Perceived female ideal of the male body</td>
<td>$24.0 \pm 2.5$</td>
</tr>
<tr>
<td>Average image</td>
<td>$21.4 \pm 1.7$</td>
</tr>
<tr>
<td>Actual female ideal of the male body</td>
<td>$22.0 \pm 2.4$</td>
</tr>
</tbody>
</table>

*Note.* All values represent fat-free mass index (FFMI) in kg/m². Differences, related to hypotheses, are as follows: perceived image versus actual FFMI, $t(153) = -3.7, p = .001$; ideal image versus actual FFMI, $t(153) = -16.0, p = .001$; ideal image versus perceived image, $t(153) = -17.8, p = .001$; perceived female ideal of the male body versus actual female ideal of the male body, $t(229) = 3.3, p = .001$; ideal image versus perceived female ideal of the male body, $t(154) = 2.3, p = .02$; and ideal image versus average image, $t(154) = 16.7, p = .001$. 
Table 3
Somatomorphic Matrix Data: Fat Indices

<table>
<thead>
<tr>
<th>Index</th>
<th>M ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual body fat</td>
<td>17.0 ± 5.2</td>
</tr>
<tr>
<td>Perceived image</td>
<td>18.6 ± 8.6</td>
</tr>
<tr>
<td>Ideal image</td>
<td>14.8 ± 5.7</td>
</tr>
<tr>
<td>Perceived female ideal of</td>
<td>13.0 ± 5.3</td>
</tr>
<tr>
<td>the male body</td>
<td></td>
</tr>
<tr>
<td>Average image</td>
<td>20.4 ± 6.6</td>
</tr>
<tr>
<td>Actual female ideal of the</td>
<td>18.0 ± 6.5</td>
</tr>
<tr>
<td>male body</td>
<td></td>
</tr>
</tbody>
</table>

Note. All values represent percent body fat. Differences, related to hypotheses, are as follows: perceived image versus actual body fat, t(153) = −3.0, p = .003; ideal image versus actual body fat, t(153) = −4.2, p = .001; ideal image versus perceived image, t(153) = 5.7, p = .001; perceived female ideal of the male body versus actual female ideal of the male body, t(229) = 5.0, p = .001; ideal image versus perceived female ideal of the male body, t(153) = 2.1, p = .03; and ideal image versus average image, t(153) = −9.4, p = .001.

The male body fat that women actually desired. However, men’s actual and perceived masculinity was significantly lower than the masculinity of the ideal male body chosen by the 77 women. Men chose an ideal image that was significantly more muscular (see Table 2) and significantly fatter (see Table 3) than the perceived female ideal of the male body. The ideal body chosen by men had significantly greater masculinity (see Table 2) and significantly less body fat (see Table 3) than their estimates of an average man of their age.

Depression, Body Dissatisfaction, and Muscle Belittlement

Depression, as measured by the BDI, was significantly positively correlated with muscle belittlement (r = .26, p = .001), but not with fat exaggeration (r = −.14, p = .07). Muscle belittlement was also significantly positively correlated with six of the EDI scores, including Drive For Thinness (r = .20, p = .01), Bulimia (r = .17, p = .03), Body Dissatisfaction (r = .30, p = .001), Ineffectiveness (r = .32, p = .001), Interpersonal Distrust (r = .16, p = .05), and Total EDI (r = .26, p = .001). Correlations with the remaining EDI scales did not produce significant results (Interoceptive Awareness, r = .12, p = .13; Maturity Fears, r = .11, p = .16; and Perfectionism, r = .05, p = .51). Fat exaggeration was significantly correlated only with the Drive for Thinness scale (r = .22, p = .006).

Self-Esteem and Body Image

Self-esteem, as measured by the Rosenberg Self-Esteem Scale, was significantly negatively correlated with many body dissatisfaction variables, including muscle belittlement (r = −.22, p = .005), EDI Body Dissatisfaction (r = −.40, p = .001), muscle displeasure (r = −.18, p = .02), not liking one’s body (r = −.37, p = .001), dissatisfaction with the way one’s body is proportioned (r = −.34, p = .001), fat feeling (r = −.26, p = .001), and feeling out of shape (r = −.30, p = .001), all measured by the Demographic/Family/Childhood Questionnaire. Self-esteem was significantly positively correlated with perceived FFMI (r = .18, p = .02).

PES Use

Forty-two participants (27%) reported using over-the-counter bodybuilding supplements (creatine, adrenal steroids, and ephedrine) and/or illicit drugs (anabolic steroids or clenbuterol) to gain muscle or lose fat.

Discussion

We assessed 154 male college students on indices of body image, depression, self-esteem, and use of PESs. For several of the analyses in the study, we also used comparison data from a sample of 77 college women to determine the male body that women prefer. In both the men and the women, we used a newly developed instrument, the SMM, in which participants could navigate through a range of body images, spanning a wide range of body fat and masculinity, to answer various questions posed by the computer. The study generated a wide range of findings regarding body image in men.

Body Dissatisfaction in Men

The SMM generally confirmed our hypotheses that American college men would exhibit substantial levels of body dissatisfaction. As predicted, the men perceived themselves to be slightly fatter than their actual body fat measurement, although, contrary to prediction, the men perceived themselves to be slightly more muscular than their measured masculinity. Dramatic differences, strongly in the predicted direction, emerged when men were asked to choose the body that they ideally would like to have. Indeed, the men chose an ideal body with a mean of about 25 pounds more muscle than their actual level of masculinity and about 8 pounds less body fat than their actual levels of fat. This difference between men’s body reality and body ideal is consistent with the findings of earlier studies (Brodie, Slade, & Riley, 1991; Davis, 1985; Dibiase & Hjelle, 1968; Dolan,
them to be more muscular than women in which men and boys thought that women wanted again, this finding is consistent with previous studies than the ideal male body that women actually chose.

Male body significantly more muscular and leaner (Pope et al., 1999).

Pressures on modern men to be ever more muscular desired muscularity may reflect societal and media studies, the striking gulf between men and boys thought that women wanted them to be more muscular than women’s actual ideal male body (Collins, 1991; Fallon & Rozin, 1985; Herzog et al., 1991; Pope, Phillips, & Olivardia, 2000; Thompson & Tantleff, 1992). This finding is also consistent with recent theories about modern societal pressures on men to achieve an unrealistically lean and muscular body (Pope, Phillips, & Olivardia, 2000).

A fourth hypothesis proposed in this study was that the muscularity and fatness of the men’s chosen ideal body would not differ significantly from what they judged to be women’s ideal male body. This hypothesis was not supported: Men chose an ideal body for themselves that was slightly fatter and more muscular than what they perceived as women’s ideal male body. Although these differences were modest, it is possible that men chose a particularly large ideal body partially to express their desire to gain respect from other men, as well as to be attractive to women. This speculation is consistent with the writings of Kimmel (1996) and Franklin (1984), who have argued that men are more sensitive to the opinions of other men than to the opinions of women. Some have argued that a desire for a large muscular body may have more to do with expressing one’s masculinity and reasserting a gender hierarchy than it has to do with being attractive to women (Mishkind, Rodin, Silberstein, & Striegel-Moore, 1986; Olivardia, 2001b).

Finally, again in accordance with prediction, the men’s chosen ideal body was significantly more muscular and less fat (leaner) than what they judged to be the body of an average man of their age. This finding appears consistent with Festinger’s (1954) social comparison theory, which argues that a discrepancy between oneself and the comparison individual will lead to an action on one’s part to reduce the discrepancy. Thus, if a man makes an upward comparison, perceiving himself as smaller as or less muscular than the average man, he will do what he can to reduce that discrepancy or even create a new discrepancy where he is now the more muscular (Suls & Wills, 1991). Indeed, the drive to be more muscular than one’s peers gives credence to Dutton’s (1995) notion that men strive to stand out and above the rest, to be recognized as a “supernormal stimulus” in a culture that praises attractiveness.

Collectively, the findings with the SMM strongly support the notion, advanced by previous authors, that there is a large and perhaps widening gulf between body reality and body ideal in contemporary young American men (Brodie et al., 1991; Davis, 1985; Dibiase & Hjelle, 1968; Dolan et al., 1987; Dutton, 1995; Guy et al., 1980; Herzog et al., 1991; Salusso-Deonier et al., 1993; Staffieri, 1967; Thompson & Tantleff, 1992; Tucker, 1982).

The Association Between Body Image, Depression, and Eating Disturbances

We turn next to our hypotheses that body dissatisfaction would be associated with depression and eating disorders. Here again, most predictions were supported. First, we found that muscle belittlement, but not fat exaggeration, was positively correlated with depression. This finding suggests that for men, muscularity is more consequential than fatness. Many of the subscales of the EDI were similarly positively correlated with muscle belittlement but not fat exaggeration (with the exception of Drive for Thinness).

The association between muscle belittlement, depression, and constructs relating to eating disorders is clinically important. Specifically, clinicians treating men with body image disorders, depressive disorders, or eating disorders should be alerted to the possibility that all of these symptoms could cluster together in a given man. Indeed, muscle belittlement may serve as a diagnostic screening tool for assessing depression or eating pathology in men, as much as fat exaggeration may alert a clinician to the existence of an eating disorder in women (Bruch, 1978). Because previous instruments have been poorly adapted for measuring muscle belittlement, the SMM may serve as a useful new tool to accomplish this task.

Use of PESs

Forty-two men (27%) in the sample reported use of PESs. This may be an underestimate of the true number of students using these substances because the screening question did not specifically enumerate the many supplements that college men commonly use,
such as creatine, adrenal steroids, and ephedrine. It is possible that some men used these substances but did not understand that these substances were included in the definition of PESs, thus producing false-negative responses.

**Body Satisfaction and Self-Esteem**

The study strongly supported the hypothesis of a relationship between body satisfaction and self-esteem—a relationship noted in many previous studies of men and boys (Cohane & Pope, 2001; McCue & Sasse, 2000). Specifically, self-esteem was significantly negatively correlated with many body dissatisfaction variables, including muscle displeasure, muscle belittlement, the Body Dissatisfaction Scale of the EDI, not liking one’s body, dissatisfaction with the way one’s body is proportioned, feeling fat, and feeling out of shape. Self-esteem was also positively correlated with perceived FFMI. It is not clear whether a high self-esteem leads to seeing oneself as more muscular or whether seeing yourself as more muscular results in higher self-esteem. It is of note that self-esteem was correlated more with indicators related to musculature, indicating that for men, self-esteem and self-concept may rest more on his satisfaction with muscularity rather than his degree of fatness.

**Methodological Considerations**

The SMM offers a number of advantages over traditional scales in that it allows participants to express their perceptions along axes of both fat and musculature. The SMM is also inexpensive, easy to administer, and mobile. It requires no mastery of the conventional systems of measurement and demands only basic computer skills familiar to virtually all college students. The instrument relies purely on visual cues, unlike other modes of assessment (Kretler & Kreitler, 1970). It also displays a higher level of bodily and muscular detail than other instruments (Stunkard et al., 1983; Tucker, 1982).

However, the SMM carries certain limitations as well. First, the images are all presented in a posing position, with their arms flexed—a position more familiar to weightlifters and bodybuilders than to men who do not work out. Second, the reliability of this measure has not been firmly established. Thus, future research should incorporate data regarding reliability because body image has been shown to be inconsistent over time (Altabe & Thompson, 1995; Cash & Brown, 1987; Thompson, 1992). Third, the images in the SMM vary more in their upper body dimensions than in their lower bodies. Thus, a participant with substantial lower body development (e.g., a runner or a cyclist) may find that none of the images on the instrument coincides very well with his own body and thus may have difficulty making accurate choices.

Another potential source of bias in the study involved participant recruitment. Male college students, primarily of Caucasian ethnicity, may not be representative of men from other ethnic, cultural, socioeconomic, or age groups. Furthermore, the group of participants who elected to participate in this study may, in turn, have differed from the overall population of men at the college where the study was conducted. Specifically, men who were particularly embarrassed about their bodies may have been less likely to respond to the invitation to participate, especially because the study required them to take their shirts off and have their height, weight, and body fat measured. Thus, it is quite likely that the levels of body dissatisfaction found in the study—are impressive as they are—are actually underestimates of the true levels of body dissatisfaction among all of the men in the college as a whole.

**Conclusions**

The literature on body image in men remains limited, despite a surge of recent interest in this area. The present study, examining a large sample of men with a comprehensive battery of instruments, strongly reinforces many of the impressions of previous smaller studies. Our findings suggest that contemporary American men display substantial body dissatisfaction and that this dissatisfaction is closely associated with depression, measures of eating pathology, use of PESs, and low self-esteem. These findings reinforce the speculations of many theorists that today’s men are laboring under increased societal and media pressures to meet an ever more unrealistic body ideal (Brodie et al., 1991; Cohane & Pope, 2001; Davis, 1985; Dibiase & Hjelle, 1968; Dolan et al., 1997; Guy et al., 1980; Herzog et al., 1991; Mishkind et al., 1986; Salusso-Deonier et al., 1993; Staffieri, 1967; Thompson & Tantleff, 1992; Tucker, 1982).

These findings have considerable implications for public health. If, indeed, men are experiencing growing levels of body image dissatisfaction, we may witness undesirable public health effects from this trend. For example, more men may seek cosmetic surgery, require treatment for eating disorders, develop orthopedic problems from excessive exercise associated with muscle dysmorphia, or use anabolic steroids. However, much of this pathology may go unrecog-
nized because heterosexual men, in particular, may be less likely to report such symptoms, for fear they may be labeled as “feminine” or “gay” (Olivardia & Pope, 1997). Therefore, outreach and support organizations must become increasingly aware of body image concerns in men and the psychopathology that can accompany these concerns.

References


Mishkind, M. E., Rodin, J., Silberstein, L. R., & Striegel-


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