

Body Image and Steroid Use in Male Bodybuilders

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This study was designed to examine the association between body image and eating-related attitudes among male bodybuilders in relation to two athletic comparison groups, runners and martial artists. It was also of interest to examine whether steroid use may be associated with body image disturbances in athletes. The volunteer sample of 139 male athletes recruited from fitness centers comprised 43 bodybuilders, 48 runners, and 48 martial artists (tae kwon do practitioners). Standardized measures of body dissatisfaction, drive for thinness, drive for bulk, bulimia, self-esteem, depression, maturity fears, and perfectionism as well as questionnaires designed to measure attitudes toward steroids, and rates of steroid use were administered in a manner that encouraged disclosure. Bodybuilders reported significantly greater body dissatisfaction, with a high drive for bulk, high drive for thinness, and increased bulimic tendencies than either of the other athletic groups. In addition bodybuilders reported significant elevations on measures of perfectionism, ineffectiveness, and lower self-esteem. They also reported the greatest use of anabolic steroids and most liberal attitudes towards using steroids. Steroid users reported that the most significant reason for using steroids was to improve looks. Steroid users reported an elevated drive to put on muscle mass in the form of bulk, greater maturity fears, and enhanced bulimic tendencies than nonusers. The results suggest that male bodybuilders are at risk for body image disturbance and the associated psychological characteristics that have been commonly reported among eating disorder patients. These psychological characteristics also appear to predict steroid use in this group of males. © 1995 by John Wiley & Sons, Inc.

There is considerable evidence that weight preoccupation and body dissatisfaction are widespread among women during adolescence and early adulthood (McCauley, Mintz, & Glenn, 1988; Miller, Coffman, & Linke, 1980; Mintz & Betz, 1986; Rodin, Silberstein,

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& Striegel-Moore, 1985; Rosen & Gross, 1987; Wadden, Foster, Stunkard, & Linkowitz, 1989; Wadden, Brown, Foster, & Linkowitz, 1991). More recently, it has been suggested that males also report body dissatisfaction, however it has not generally been considered as severe as among females and is commonly associated with feeling underweight rather than overweight (McCaulay et al., 1988; Mintz & Betz, 1986). A relationship among self-esteem, proneness to depression, and body dissatisfaction (McCaulay et al., 1988; Mintz & Betz, 1986; Davis, Elliott, Dionne, & Mitchell, 1991) has been reported among both males and females.

Among males, body image concerns appear to be greatest for those who are below average weight for height (Harmatz, Gronendyke, & Thomas, 1985) with serious negative effects on self-esteem and social adjustment. As a result, it has been suggested that men who see themselves as underweight may pursue bodybuilding, male hormones, and steroids in order to attain an exaggerated "hypermesomorphic" look (Mishkind, Rodin, Silberstein, & Striegel-Moore, 1986). Bodybuilders have been reported to exhibit considerable psychiatric morbidity in association with the use of anabolic steroids (Pope & Katz, 1987, 1988; Pope, Katz, & Hudson, 1993) including anorexia nervosa and "reverse anorexia" (a term used to describe the fear and belief of being small, when actually large and muscular; Pope et al., 1993). Loosemore and Moriarty (1990) found bodybuilders to be dissatisfied with the perception that they were thinner than ideal, a perception associated with anabolic steroid use.

The aim of the present study was to test the hypothesis that bodybuilders may be at risk for body dissatisfaction and that this may be associated with unhealthy or dangerous practices such as steroid use. The control groups in the present study include runners and martial artists, chosen in an attempt to control for both interest in personal development (rather than more social team participation) and for possible attraction to a sport perceived to enhance personal feelings of masculine effectiveness (martial arts).

METHOD

Subjects

One-hundred forty-four (approximately 29%) of the 500 males approached at athletic centers to volunteer, completed and returned questionnaires. Five multivariate outliers were excluded. The remaining sample of 139 athletes included 43 bodybuilders (18 competitive, 25 recreational), 48 runners (23 competitive, 25 recreational), and 48 tae kwon do participants (24 competitive, 24 recreational).

Procedure

Bodybuilders were defined as athletes engaged in traditional forms of weight training using free weights, nautilus, or universal equipment. Runners were simply defined as anyone who ran or jogged. The martial art group consisted of individuals who participate in the Korean martial art of tae kwon do at schools recognized either by the World Tae Kwon Do Federation or the International Tae Kwon Do Federation. All participated in their sport at least twice per week for 7 months. Entry into the competitive condition required that athletes were either actively training for an out of club competition (or race), or had competed outside of their own club in their sport within the past 12 months.

The assessment measures, completed in an anonymous fashion to facilitate disclosure, included the Eating Disorder Inventory (EDI; Garner, Olmstead, & Polivy, 1983), Beck Depression Inventory (BDI; Beck, Ward, & Mendelson, 1961), Rosenberg Self-Esteem Scale (Rosenberg, 1965), a modified version of the Anabolic Steroid Questionnaire (ASQ; Chng & Moore, 1990), and the three Participation Questionnaires designed for the purpose of this study: Bodybuilding, Running, and Martial Arts. A Drive for Bulk scale was developed as a modification of the Drive for Thinness scale of the EDI. The direction of items was reversed (e.g., "too big" changed to "too small") and references to body parts were adapted, appropriate to males.

Statistical Analysis

These results were analyzed using multivariate analysis of variance (MANOVA) with a 3×2 between subjects design whereby the factors were "sport" consisting of three levels (bodybuilding, running, martial art) and two levels of "competition" (competitive vs. recreational). Two categories of dependent measures were included in separate analyses: (1) general measures (not specific to the psychology of eating disorders): Depression, Self-Esteem, Ineffectiveness, Maturity Fears, Perfectionism, Interpersonal Distrust, Interoceptive Awareness and (2) more specific measures associated with body image and eating attitudes: Drive for Thinness, Drive for Bulk, Bulimia, and Body Dissatisfaction. Significant multivariate findings were followed by ANOVA and multiple comparison post hoc tests using Tukey's honest significant differences. The chi-square test was used to test differences in rates of steroid use. Since there were age differences between groups, analyses were conducted with age as a covariate (MANCOVA) and results similar to those reported here were obtained. There was, however, a violation of the assumption of homogeneity of regression in the MANCOVA, therefore the results of the covariance analysis are not reported. Multiple regression analysis was employed to determine the degree of association between steroid use and psychological factors.

RESULTS

There were significant age differences among sport groups [$F(2,135) = 17.82, p < .001$]. Runners ($M = 37.9, SD = 14.2$) were older than bodybuilders ($M = 26.6, SD = 6.8, p < .001$) and martial artists ($M = 27.6, SD = 7.5, p < .001$). Age differences between martial artists and bodybuilders were not statistically significant. There were no statistically significant differences among sport groups in height. The average height across sports was 69.7 in. ($SD = 2.6$). There were statistically significant differences among sports in mean body weight [$F(2,136) = 13.61, p < .001$]. Bodybuilders ($M = 185.1 \text{ lb}, SD = 24.3$) were significantly heavier than runners ($M = 167.0 \text{ lb}, SD = 20.4, p < .001$) and martial artists ($M = 162.2 \text{ lb}, SD = 21.0, p < .001$). Weight differences between runners and martial artists were not statistically significant. Statistically significant differences in education levels were reported among sports [$F(2,136) = 5.22, p < .01$] with bodybuilders reporting significantly less education (4.8; community college graduate, $SD = 2.1$) than runners (6.1; a few years of university, $SD = 1.8, p < .001$). Runners and martial artists (5.7; a few years of University, $SD = 2.0$) did not differ significantly with respect to level of education.

Psychological Factors

Table 1 displays the results of general psychological measures analyzed across sport conditions. The MANOVA revealed that there was a significant main effect for sport on measures of general psychological functioning ($F = 1.75$; $df = 14,252$; $p < .05$). The univariate ANOVA indicated significant differences among sports on measures of Self-Esteem ($F = 4.97$; $df = 2,132$; $p < .01$), Ineffectiveness ($F = 3.73$; $df = 2,132$; $p < .05$), Perfectionism ($F = 3.47$; $df = 2,132$; $p < .05$), and Interoceptive Awareness ($F = 3.76$; $df = 2,132$; $p < .05$). Multiple comparisons using Tukey's honest significant differences found that bodybuilders had significantly lower self-esteem than martial artists ($p < .05$), but not runners. Self-esteem of martial artists did not differ significantly from runners. Bodybuilders reported significantly higher Ineffectiveness scores than martial artists ($p < .05$), but not runners, and martial artists did not differ significantly from runners. Measures of Perfectionism and Interoceptive Awareness were significantly higher among bodybuilders than runners ($p < .05$) but not martial artists. Martial artists did not differ significantly from runners on measures of Perfectionism or Interoceptive awareness.

Body Image and Eating Attitudes

For the body image and eating-related measures, the MANOVA revealed a significant main effect for sport ($F = 13.38$; $df = 8,260$; $p < .001$). The univariate ANOVA results indicated significant between-group differences on measures of Body Dissatisfaction, ($F = 5.54$; $df = 2,133$; $p < .01$), Bulimia ($F = 19.75$; $df = 2,133$; $p < .001$), Drive for Bulk ($F = 43.34$; $df = 2,133$; $p < .001$), and Drive for Thinness ($F = 6.18$; $df = 2,133$; $p < .01$). Tukey's honest significant difference multiple comparisons revealed that bodybuilders reported significant elevations on the measures of Bulimia and Drive for Bulk compared to both runners ($p < .001$) and martial artists ($p < .001$), but no significant differences between runners and martial artists. Bodybuilders also reported significantly higher scores on scales of Drive for Thinness than both runners ($p < .05$) and martial artists ($p < .001$). Runners did not significantly differ from martial artists with respect to Drive for

Table 1. Psychological characteristics of bodybuilders and comparison groups

Measure	Bodybuilding	Running	Martial Arts
Psychological measures	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Self-Esteem*	47.8 (1.2)	50.0 (.91)	51.9 (.92)
Ineffectiveness*	68.7 (2.4)	64.2 (2.0)	61.8 (1.8)
Perfectionism**	59.7 (4.1)	44.2 (4.2)	53.5 (4.3)
Interoceptive Awareness**	68.1 (2.3)	61.3 (1.5)	63.4 (1.8)
Interpersonal Distrust	56.3 (3.2)	54.4 (3.9)	49.3 (3.6)
Maturity Fears	63.7 (3.5)	55.1 (3.1)	55.2 (3.5)
Depression	4.5 (0.6)	3.1 (0.4)	3.7 (0.5)
Body image and eating measures			
Drive for Thinness***	75.2 (1.8)	67.8 (1.6)	66.6 (1.9)
Bulimia***	78.0 (1.8)	69.6 (0.7)	69.2 (0.8)
Body Dissatisfaction*	58.6 (3.0)	47.5 (2.9)	41.7 (2.6)
Drive For Bulk***	17.5 (0.9)	7.7 (0.7)	9.2 (0.9)

*Bodybuilders vs. martial artists $p < .05$.

**Bodybuilders vs. runners $p < .05$.

***Martial artists vs. runners $p < .05$.

Thinness. Bodybuilders were significantly more dissatisfied with their bodies than martial artists ($p < .001$). Again, no significant differences were found between runners and martial artists on Body Dissatisfaction.

Steroid Use

Across conditions, 20 athletes (14.4%) reported using anabolic steroids. Steroid use was significantly influenced by sport and level of competition ($\chi^2 = 7.48$; $df = 1$; $p < .01$). Bodybuilders (14 competitive and 5 recreational) used steroids (44.2%) more frequently than both runners (one competitive), 2.1% and martial artists (who did not report using steroids; $\chi^2 = 44.96$; $df = 2$; $p < .001$). There were no differences between runners and martial artists. Competitive bodybuilders (77.8%) used steroids more frequently than recreational bodybuilders (20%; $\chi^2 = 14.2$; $df = 1$; $p < .001$).

Bodybuilders ranked "improve looks" and "increased size needed for competitive sport" as the two primary reasons for taking steroids. Eight bodybuilders (42%) (5 [28%] competitive and 3 [60%] recreational) ranked improve looks as their primary reason for using steroids. Six bodybuilders (5 [28%] competitive and 1 [20%] recreational) reported taking steroids primarily to increase their size sufficiently for competitive sport (football). Two (11%) bodybuilders (1 [6%] competitive and 1 [20%] recreational) reported taking steroids primarily to improve their overall athletic performance. The lone competitive runner reported using steroids primarily out of curiosity.

Steroid-Using Versus Nonusing Bodybuilders

A total of 19 bodybuilders (14 competitive and 5 recreational) reported using steroids, and 24 bodybuilders (4 competitive and 20 recreational) did not report steroid use. Independent t tests revealed that users reported significantly lower Self-Esteem scores (users mean = 42.7, $SD = 2.3$; nonusers mean = 49.9, $SD = 1.5$; $t = -2.59$; $df = 41$, $p < .05$), higher Interoceptive Awareness (users mean = 74.6, $SD = 4.3$; nonusers mean = 26.8, $SD = 2.2$; $t = -2.7$, $df = 41$, $p < .01$), and Maturity Fears scores (users mean = 71.6, $SD = 5.2$; nonusers mean = 57.4, $SD = 4.5$; $t = -2.1$, $df = 41$, $p < .05$) than nonusers. Users reported significantly higher scores than nonusers on Bulimia (users mean = 83.2, $SD = 2.6$; nonusers mean = 73.9, $SD = .5$; $t = -2.9$, $df = 41$, $p < .01$) and Drive for Bulk (users mean = 20.5, $SD = 1.0$; nonusers mean = 15.1, $SD = 1.3$; $t = -3.54$, $df = 41$, $p < .01$).

Predicting Steroid Use

Multiple linear regression analysis indicated that the psychological and body image variables were statistically significant predictors of steroid use ($R^2 = .47$, $df = 12$, $p < .001$). Significant independent predictors of steroid use included Bulimia (beta = .28, $p < .001$), Drive for Bulk (beta = .28, $p < .01$), and Maturity Fears (beta = .15, $p < .05$).

DISCUSSION

This study has identified a subgroup of male bodybuilders who exhibit a profile of body-related attitudes and psychological characteristics similar to those commonly seen among eating disorder patients and associated with anabolic steroid use. Unlike the

Pope et al. (1993) study, the present study was not designed to identify cases. The present findings are more similar to those of Loosemore and Moriarty (1990) in that bodybuilders in general reported greater body dissatisfaction than other athletes. In the present study bodybuilders report a high drive to gain weight and enlarge various body parts (drive for bulk) than either runners or martial artists, in spite of the fact that bodybuilders were somewhat heavier than the other athletes. The high drive for bulk combined with a high drive for thinness reflects the prevailing attitude in bodybuilding that the increases in bulk must be in the form of lean body mass, while maintaining low body fat. In the pursuit of lean body mass, bodybuilders appear to be at risk for the development of abnormal eating practices such as bingeing, purging, and restricting food, as measured by the Bulimia scale of the EDI.

In addition to the body image dissatisfaction and abnormal eating practices exhibited by bodybuilders, bodybuilders reported perfectionism, feelings of ineffectiveness, low interoceptive awareness, and low self-esteem. To be underweight as a young adolescent male has been reported to have a significant negative impact on body image, self-esteem, and social adjustment (Harmatz et al., 1985). While the bodybuilders in this study were not underweight (in fact they were generally heavier than the controls), their perceived ideal body is apparently larger than their current body and this perception appears similarly negatively associated with self-esteem, feelings of effectiveness, and personal awareness.

These factors appear to be associated with steroid use in this population. Based on self-reports, 44.2% of the bodybuilders used steroids compared to 2.1% of the runners and none of the martial artists, rates lower than the 72% steroid use in the Loosemore and Moriarty (1990) study. However 77.8% of competitive bodybuilders (compared to only 20% of recreational bodybuilders) had used steroids suggesting that rates of reported steroid use may vary as a function of the competition history of the sample obtained. Eating-related factors and self-perception appear to play a significant role in the use of steroids since the bodybuilders who used steroids reported higher scores on scales of Drive for Bulk and Bulimia as well as exhibited lower Self-Esteem and greater Maturity Fears than those who did not use steroids. Moreover, bodybuilders reported that the most frequent reason for using steroids was to enhance looks. The drive to pursue bodybuilding and use of steroids appears strongly associated with a drive to attain a body image that resembles the "hypermesomorphic" look described by Mishkind et al. (1986).

Participation was voluntary and only a limited number of those approached participated. This seriously limits the generalizability of the results to the general bodybuilding population. Somewhat similar findings were obtained in a sample collected in a similar fashion by Pope & Katz (1994). The results do suggest that there is at least one identified subgroup of male bodybuilders with psychological and behavioral characteristics similar to eating disorder females. According to the present results, this group is at risk for developing high-risk behavioral practices (notably steroid use, bulimic, and anorexic behavior) with an apparent purpose of modifying their body in order to meet personal and/or societal expectations.

REFERENCES

- Beck, A. T., Ward, C. H., & Mendelson, M. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.

- Chng, C. L., & Moore, A. (1990). A study of steroid use among athletes: Knowledge, attitude, and use. *Health Education, 21*(6), 12–17.
- Davis, C., Elliott, S., Dionne, M., & Mitchell, I. (1991). The relationship of personality factors and physical activity to body satisfaction in men. *Personality and Individual Differences, 12*(7), 689–694.
- Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2*(2), 15–32.
- Harmatz, M. G., Gronendyke, J., & Thomas, T. (1985). The underweight male: The unrecognized problem group of body image research. *The Journal of Obesity and Weight Regulation, 4*(4), 258–267.
- Loosemore, D. J., & Moriarty, D. (1990). Body image dissatisfaction and body image distortion in selected groups of males. *Canadian Association for Health, Physical Education, and Recreation, 11*, 11–15.
- McCauley, M., Mintz, L., & Glenn, A. (1988). Body image, self-esteem, and depression proneness: Closing the gender gap. *Sex Roles, 18*(7/8), 381–391.
- Miller, T. M., Coffman, J. G., & Linke, R. A. (1980). Survey on body image, weight, and diet of college students. *Journal of the American Dietetic Association, 77*(5), 561–566.
- Mintz, L. B., & Betz, N. E. (1986). Sex differences in the nature, realism, and correlates of body image. *Sex Roles, 15*(3/4), 185–195.
- Mishkind, M. E., Rodin, J., Silberstein, L. R., & Striegel-Moore, R. H. (1986). The embodiment of masculinity: Cultural, psychological, and behavioral dimensions. *American Behavioral Scientist, 29*(5), 545–562.
- Pope, H. G., & Katz, D. L. (1987). Bodybuilder's psychosis. *Lancet, 1*, 863.
- Pope, H. G., & Katz, D. L. (1988). Affective and psychotic syndromes associated with use of anabolic steroids. *American Journal of Psychiatry, 145*, 487–490.
- Pope, H. G. & Katz, D. L. (1994). Psychiatric and medical effects of anabolic-androgenic steroid use: A controlled study of 160 athletes. *Archives of General Psychiatry, 51*, 375–382.
- Pope, H. G., Katz, D. L., & Hudson, J. I. (1993). Anorexia nervosa and "reverse anorexia" among 108 male bodybuilders. *Comprehensive Psychiatry, 34*, 406–409.
- Rodin, J., Silberstein, L., & Striegel-Moore, R. (1985). Women and weight: A normative discontent. In T. B. Sonderegger (Ed.), *Nebraska symposium on motivation: Psychology and gender* (Vol. 32). Lincoln: University of Nebraska Press, pp. 267–307.
- Rosen, J. C. & Gross, J. (1987). Prevalence of weight reducing and weight gaining in adolescent girls and boys. *Health Psychology, 6*, 131–147.
- Rosenberg, M. (1965). *The Self-Perceptions Inventory. Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Wadden, T. A., Brown, G., Foster, G. D., & Linkowitz, J. (1991). Salience of weight related worries in adolescent males and females. *International Journal of Eating Disorders, 10*, 407–414.
- Wadden, T. A., Foster, G. D., Stunkard, A. J., & Linkowitz, J. (1989). Dissatisfaction with weight and figure in obese girls: Discontent but not depression. *International Journal of Obesity, 13*, 89–97.