ORIGINAL ARTICLE

Men, muscles, and body image: comparisons of competitive bodybuilders, weight trainers, and athletically active controls

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Br J Sports Med 2005;**39**:217–222. doi: 10.1136/bjsm.2004.012013

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Accepted 25 July 2004

Objectives: To investigate body image and psychosocial adjustment among competitive bodybuilders, non-competitive weight trainers, and athletically active men.

Methods: Participants were 40 men in each of the three groups who were assessed on body composition and multiple facets of body image evaluation, investment and anxiety, eating attitudes, and social self esteem.

Results: Relative to the other two groups, competitive bodybuilders had greater body mass due to fat-free body mass. Although groups did not differ in their situational body image discomfort, competitive bodybuilders and weight trainers had a more positive global appearance evaluation and were more psychologically invested in their physical appearance. Compared with active controls, men in both weightlifting groups were more satisfied with their upper torso and muscle tone. Competitive bodybuilders reported more mid torso satisfaction than the other two groups. Competitive bodybuilders also wished to be significantly heavier than controls did and reported higher social self esteem but greater eating disturbance.

Conclusions: The findings suggest that competitive bodybuilders as a group are not more ''muscle dysmorphic'' than either non-competitive weight trainers or physically active men who do not train with weights.

Historically, the research literature on body image has focused predominantly on women and girls.[1 2] Recently, however, greater interest in male body image has emerged.[3] Men and women differ in terms of their ideal body image preferences. Whereas women seem to idealise a thinner, toned appearance, a large percentage of men idealise a heavily muscular, yet lean physique.[4 5] Gruber *et al*[6] found that adult men typically select an ideal body that is more muscular, but not fatter, than their own. In comparison with women, who tend to become increasingly dissatisfied with increases in body weight, both underweight and overweight men report more body dissatisfaction than their average-weight peers.[7–10]

Many of today's media images of muscularity are unattainable for most men. For example, a 1998 GI Joe action figure would have a 55 inch chest, a 27 inch bicep, and a 36 inch waist if he were adult height.[11] Leit *et al*[12] calculated that the average *Playgirl* centrefold man had dropped 12 pounds of fat and put on 27 pounds of muscle over the past 25 years. Davis *et al*[13] asserted that men will increasingly exhibit body image dissatisfaction to the extent that media images are impossible to achieve by natural means. Given the sociocultural emphasis placed on muscularity, many men have pursued weightlifting or bodybuilding as the means to this end.[14] A drive for muscularity clearly exists among boys and men.[3 4 15]

Although relatively little research has examined body image in bodybuilders, a few studies suggest their higher levels of ''body image disturbance.''[16–18] Goldfield *et al*[19] cautioned that some individuals who are unhappy with their physical size or with low self esteem may ''gravitate towards bodybuilding to achieve personal or societal standards of attractiveness'' (p 150). Bodybuilding may be self selected among a subset of persons with a form of psychopathology classified as ''body dysmorphic disorder.''[5 20] More specifically, this subgroup experiences ''muscle dysmorphia,'' characterised by a preoccupation with being lean and muscular, a negative self conscious view of one's body weight/definition, and an associated impairment in psychosocial functioning.[4 5 21–23]

The demands of competitive bodybuilding mandate behaviours such as intense weight training to gain lean muscle and intentional fat loss through a combination of aerobic exercise and dietary manipulation. To be successful, there is a contextually normative focus on body shape and body modification. Perhaps not all subgroups of men who exercise using weights are at risk of pathological body image disturbance, as some research suggests.[16] Other contrasting views propose that the method of training required in competitive bodybuilding can be an excellent tool for the development and delivery of positive feedback to participants about their gains in physical competence, strength, and body appearance. Some support for this assertion comes from a study by Finkenberg and Teper,[24] who found that male and female competitive bodybuilders had significantly higher scores than non-bodybuilders on personal, social, and satisfaction dimensions of self concept, and significantly lower self criticism scores. Other research suggests that weight training can actually improve one's body image.[25 26]

The purpose of this study was to elucidate differences among three groups of athletic men on body image and psychosocial adjustment. Relative to extant research on this topic, we uniquely compared competitive bodybuilders, men who regularly train with weights, and physically active men who exercise but do not train with weights. Competitive

Abbreviations: BASS, body areas satisfaction scale; EAT, eating attitudes test; FFMI, fat-free mass index; MBSRQ, multidimensional body self relations questionnaire; SPAS, social physique anxiety scale; SUDS, subjective units of distress scale; TSBI, Texas social behaviour inventory

bodybuilders were included in this study because their exercise and lifestyle behaviours seem to embody the outward expression of an internalised societal pressure to aspire to the ideal male physique. Thompson[27] also observed that the failure to distinguish among subgroups of weightlifters is a methodological concern in bodybuilding research to date. Therefore we compared competitive bodybuilders with men who regularly engage in non-competitive weight training. Our inclusion of a physically active control group is empirically more precise than a group that consists of more sedentary men. Furthermore, we addressed problems with using body mass index and body fat percentages in research with athletes[28] by measuring relative muscularity in a formula that uses height, weight, and approximate percentage of body fat to calculate a fat-free mass index (FFMI).[29] We used the FFMI because groups of athletic men, although potentially similar in body fat percentage, can differ considerably in levels of muscularity. As is essential in body image research,[1] we assessed multiple facets of the construct to include measures of global or overall appearance evaluation, satisfaction with specific body areas, emotional body image experiences—for example, social physique anxiety—and the extent of psychological investment in one's physical appearance. Furthermore, we compared these cohorts on established measures of eating pathology and social self esteem.

METHODS

Participants

Participants were 120 men recruited from bodybuilding competitions, gyms, martial arts schools, and other recreational athletic organisations in the southeastern United States. At bodybuilding competitions, the principle investigator approached contestants located backstage or elsewhere in the competition hall. Audience members were also approached. For the remaining recruitment sites, the principal investigator requested space near the establishment entrance and approached individuals as they were arriving or leaving. Potential subjects were given a written notification form that outlined study expectations, inclusion/exclusion criteria, risks and benefits, costs and payments, withdrawal privilege, and investigator contact information. Those who met inclusion/exclusion criteria either accepted or refused study involvement after reading the notification form. As a recruitment incentive, a lottery offered five prizes from $15 to $100.

After informed consent procedures, subjects completed a questionnaire that included basic information, along with items querying current and ideal height and weight, frequency of nutritional—for example, protein powders—or performance enhancing supplement use—for example, creatine monohydrate—and associated monthly costs for supplementation. Participants were invited to list the type and brand of supplements used. The questionnaire did not explicitly interrogate use of anabolic-androgenic steroids.

Group 1 (n = 40) consisted of competitive bodybuilders who met the following criteria: (*a*) had competed in a bodybuilding show (not a strength or power lifting competition) within the preceding year; (*b*) planned to compete in another such competition within the next year; (*c*) had trained using weights an average of at least three times a week during the preceding six months. Overall, competitive bodybuilders had been in an average of 4.4 competitions, and were an average of six months from competing again. The most common rank in the most recent bodybuilding competition was reported as 3rd place, and 78% of these men had ranked in the top 10.

Group 2 (n = 40) consisted of non-competitive weight trainers who met the following criteria: (*a*) had never competed in a bodybuilding competition; (*b*) had no plan to do so; (*c*) had trained with weights an average of at least three times a week during the preceding six months.

Group 3 (n = 40) consisted of athletically active controls who: (*a*) had trained with weights no more than once a week (on average) during the preceding six months; (*b*) were involved in an athletic exercise regimen at least three times a week—for example, basketball, running, martial arts.

The mean (SD) age of the participants was 28.0 (6.6) years (range 18–44), with educational levels of 14.6 (2.18) years (range 8–19). Most men were white (80%), and 16% were African American; 70% were single, separated, or divorced, and 30% were married.

Measures

Multidimensional body self relations questionnaire (MBSRQ)

The MBSRQ[30 31] is a standardised measure of body image attitudes, using a five point scale from "definitely disagree" (1) to "definitely agree" (5). Three subscales were used in this study. Appearance evaluation is a seven item subscale reflecting attitudes towards and satisfaction with overall physical appearance—for example, "I like my looks just the way they are". The appearance orientation subscale is a 12 item measure of the extent of cognitive behavioural investment in one's appearance, including, for instance, efforts spent on "grooming behaviours"—for example, "I check my appearance in the mirror whenever I can". In this study, internal consistencies (Cronbach's α) of these two subscales were 0.77 and 0.83. Finally, the nine item body areas satisfaction scale (BASS) assesses satisfaction with discrete body areas or attributes. Although its items do not specifically query satisfaction with body fat in different body areas, the BASS was included to examine satisfaction with weight, muscle tone, upper torso, mid torso, and lower torso.

Social physique anxiety scale (SPAS)

The SPAS[32 33] asks subjects to respond to statements about the amount of discomfort felt when others observe or evaluate their physiques. Participants rate statements on a five point scale from "not at all" (1) to "extremely characteristic" (5) of them, with higher summed scores reflecting more anxiety—for example, "Unattractive features of my physique make me nervous in certain social settings". Martin *et al*[34] questioned the appropriateness of three of the 12 original SPAS items and recommended use of a nine item scale. In the current study, this version of the SPAS was internally consistent (α = 0.85).

Texas social behaviour inventory (TSBI)

The TSBI[35] measures social self esteem and consists of 16 items rated on a five point Likert scale, from "not at all characteristic of me" (0) to "very much characteristic of me" (4)—for example, "I make a point of looking other people in the eye"; "When in a group of people, I usually do what the others want rather than make suggestions". Higher scores reflect self perceived confidence, social dominance, and social competence. In this study, the TSBI's Cronbach's α was 0.85.

The eating attitudes test (EAT-26)

The 26 item EAT[36] is a widely used screening assessment for eating disorders. The EAT-26 was included in this study because of expectations that dietary restraint or even frank eating disorders could be present in athletes invested in leanness or appearance. Subjects rate statements on a six point scale from "never" (1) to "always" (6). Ratings are transformed and summed such that, after reverse scoring,

responses of 1, 2, and 3 are all coded as 0 and ratings of 6, 5, and 4 are coded 3, 2, and 1, respectively. The measure's internal consistency was 0.87 in the current study.

Rating of weigh in distress

This rating was incorporated as a simple, face valid measure of body image affect. This assessment provides a simple, face valid measure of situational body image anxiety.[37] With the examiner absent, participants weigh themselves on a standard scale and then rate their discomfort on a subjective units of distress scale (SUDS) from 0 to 100, with 100 being extremely distressed/anxious.

Percentage body fat and distress rating

Percentage body fat was estimated from the sum of skinfold caliper measurements taken at four sites (biceps, triceps, subscapular, and suprailiac), using the equations of Durnin and Wormersley.[38] The validity of this method of estimation has been reconfirmed in a study that compared six different methods of assessing body fat content using underwater weighing as a reference.[39] A percentage body fat distress rating was incorporated as another face valid measure of body image affect. Because removing the shirt is necessary to ensure accurate assessment, participants were offered the choice to undergo this procedure in a private setting if desired. Immediately after caliper measurements were taken, participants rated their anxiety on the SUDS (from 0 to 100) described above.

FFMI

The FMMI is a measure of muscularity derived from height, weight, and approximate body fat percentage. We used the FFMI because groups of athletic men can differ considerably in levels of muscularity. The following FFMI computation was used[5]:

$$\text{FFMI} = (\text{lean body mass}/\text{height}^2) + 6.1 \times (1.8 - \text{height (m)})$$

In this formula, lean body mass is calculated from body fat percentage (caliper measurement) and body weight in kg.

Procedure

Before data collection, the research was approved by an institutional review board. Questionnaires were administered in the same order for all participants—that is, basic information, MBSRQ, SPAS, TSBI, and EAT-26. Competitive bodybuilders answered additional questions about their bodybuilding involvement. Some participants arranged times to return the questionnaires, at which time weigh in and body fat measurement procedures were completed. Others opted to complete these procedures before the questionnaires, mailed anonymously to the investigator in a stamped addressed envelope. Most participants completed the questionnaire on site, immediately followed by weigh in, and then body fat procedures. For the weigh in, a portable scale was used in locations where a balance beam scale was unavailable. Immediately afterwards, participants rated their discomfort on the SUDS. Skinfold measurement was taken using calipers at four locations: biceps, triceps, subscapular, and suprailiac. Immediately afterwards, participants rated their emotional discomfort on the SUDS. After completing the study, participants were offered the opportunity for debriefing.

RESULTS

The plan for data analysis in this study entailed one way, between group analysis of variance for comparing the three cohorts on all continuous variables, calculation of a partial η^2 index of effect size, followed where significant by Tukey's HSD post hoc comparisons. Firstly, these analyses were carried out on the basic and body composition variables. Secondly, analysis of variance was used to compare the groups on the study's several measures of body image. Finally, group comparisons were made on the two psychosocial adjustment variables—that is, social self esteem and eating attitudes.

Comparison of basic data and body compositions

Table 1 indicates that the three groups did not differ significantly with respect to age, education, or percentage body fat. However, significant ($p<0.001$) group differences were observed for body mass index (kg/m^2) ($F_{2,117} = 20.46$, $\eta^2 = 0.26$) and FFMI ($F_{2,117} = 28.66$, $\eta^2 = 0.33$). Competitive bodybuilders weighed more relative to height and had a higher FFMI—that is, greater muscularity—than the other two groups, who did not differ.

Group comparisons on body image measures

Analysis of variance was used to compare the three groups on two indices of global body image evaluation: MBSRQ appearance evaluation and the SPAS. As table 2 shows, groups differed reliably on appearance evaluation: $F_{2,117} = 12.13$, $p<0.001$, $\eta^2 = 0.17$. Both competitive bodybuilders and weight trainers reported a significantly more positive evaluation of their appearance than did the athletically active controls. The effect on the SPAS was marginal: $F_{1,117} = 2.57$, $p = 0.061$, $\eta^2 = 0.05$. Controls reported only slightly more social physique anxiety than the other groups.

Participants reported their actual and ideal body weights. An examination of these data indicated that a higher ideal weight was desired by 88% of competitive bodybuilders, 75% of weight trainers, and 50% of active controls. An analysis of variance on the signed self ideal weight discrepancy scores (ideal minus current weight) indicated significantly greater weight gain desires by the bodybuilders than the active controls ($F_{2,117} = 9.43$, $p<0.001$, $\eta^2 = 0.15$). Bodybuilders' weight gain desires were only marginally higher than those of weight trainers ($p<0.08$), whose ideals were only marginally higher than those of active controls ($p<0.09$).

To evaluate group differences in satisfaction with specific body areas pertinent to body weight and physique, one way analysis of variance was conducted on the BASS items for weight, muscle tone, upper torso, mid torso, and lower torso. With Bonferroni adjustment to reduce type 1 error, α was set at 0.01 for each F test. Reliable group effects were observed on three pertinent areas of body satisfaction: satisfaction with mid torso, upper torso, and muscle tone, $F_{2,117} = 5.83$, 5.19, and 6.80 respectively and $p<0.01$, $\eta^2 = 0.09$, 0.08, 0.10 respectively. Group differences did not occur on satisfaction with lower torso ($p<0.08$) or weight ($p<0.69$). As shown in table 2, post hoc tests indicated that bodybuilders and weight trainers alike were more satisfied with their muscle tone and upper torso than were active control participants ($p<0.05$). Bodybuilders were also more content with their mid torso than were weight trainers or controls ($p<0.01$), who did not differ.

Analysis of variance was used to compare groups with respect to distress during weigh in and body fat assessments. Table 2 indicates that they did not differ significantly on body image discomfort in either context.

Finally, a significant group effect was found on the MBSRQ appearance orientation measure of the extent of cognitive behavioural investment in one's appearance ($F_{2,117} = 4.80$, $p<0.01$, $\eta^2 = 0.08$). As table 2 shows, both competitive bodybuilders and non-competitive weight trainers were more appearance invested than active controls ($p<0.05$).

Table 1 Comparisons of groups with respect to basic and body composition variables

Variable	Competitive bodybuilders	Non-competitive weight trainers	Active controls
Age	27.03 (6.42)	27.40 (5.91)	29.60 (7.29)
Education	14.73 (1.81)	14.98 (2.24)	14.18 (2.43)
Body mass index*	29.10 (3.20)[a]	26.22 (2.78)[b]	24.96 (2.92)[b]
Percentage body fat	14.77 (3.73)	16.20 (4.36)	16.19 (3.94)
Fat-free mass index*	24.91 (2.91)[a]	22.04 (2.10)[b]	20.91 (2.22)[b]

Values are mean (SD).
*Significant analysis of variance at $p<0.001$. Rows not sharing a common superscript letter are significantly different at least at $p<0.05$.

Group comparisons on psychosocial adjustment measures

A significant group effect occurred on the TSBI measure of social self esteem ($F_{2,117} = 3.99$, $p<0.05$, $\eta^2 = 0.07$). Table 2 shows that competitive bodybuilders reported higher social self esteem than controls ($p<0.02$). Weight trainers did not differ from the other groups.

A significant effect on the EAT-26 measure of eating disturbance ($F_{2,117} = 4.79$, $p<0.01$, $\eta^2 = 0.08$) revealed that competitive bodybuilders reported more eating disturbance than active controls ($p<0.01$) (table 2). Five participants (two competitive bodybuilders, three non-competitive weight trainers) scored at or above 20 on the EAT-26, a clinical cutoff score.

DISCUSSION

This investigation compared multiple facets of body image, social self esteem, and eating attitudes among three cohorts of athletic men who were comparable in age and educational level. Competitive bodybuilders were heavier in body mass than were either non-competitive weight trainers or athletically active controls. As would be expected, however, competitive bodybuilders possessed greater fat-free body mass—that is, muscularity—than did the other two groups. Even with their larger body size, the competitive bodybuilders wished to weigh an average of 17.2 pounds more, presumably in muscle mass, and significantly more compared with controls.

Of particular importance among the results was the fact that the three groups differed significantly on overall appearance satisfaction (MBSRQ appearance evaluation scale). Both competitive bodybuilders and regular weight trainers held more favourable overall views of their physical appearance than athletically active controls. The former two cohorts also reported marginally less physique anxiety on the SPAS ($p = 0.061$). The three groups were comparable in their level of comfort during a weigh in assessment as well as during the caliper measurement of their adiposity. Reliable differences were apparent on participants' satisfaction with specific aspects of their body. Relative to the other two groups, competitive bodybuilders were more satisfied with their abdominal area. Perhaps they spend more time working on abdominal muscles than non-competitive weight trainers, who may work more exclusively on upper body definition—that is, arms and chest. Both bodybuilders and weight trainers were more satisfied with their upper torso and their body's overall muscle tone than were active controls. Thus, the differences in global body image satisfaction among groups also incorporate differences in specific body site satisfaction. Furthermore, it appears that weight training rather than competition per se is associated with greater satisfaction with muscularity.

Our body image findings do not support the proposition of greater muscle dysmorphia among competitive bodybuilders in particular or more generally among men who regularly lift weights, relative to athletically active men. Of course, there probably exists a minority of weightlifting men who, despite their substantial muscularity, view themselves as too ''scrawny'' and are obsessed with and self conscious about this distorted self perception. Pope *et al*[40] found that nine of 108 bodybuilders—that is, about 8%—met criteria for muscle dysmorphia. Although the highly muscular, competitive bodybuilders in our study (mean FFMI = 24.9) wished to be even larger (by an average of 17 pounds), this aspiration did not diminish their body image satisfaction in other respects.

Both competitive bodybuilders and non-competitive weight trainers reported more cognitive behavioural investment in their physical appearance than did active controls. Somewhat surprisingly, we found that men who compete in public competitions were no more invested in their appearance than non-competitive weight trainers. Also using the

Table 2 Comparison of groups with respect to body image and psychosocial adjustment

Measure	Competitive bodybuilders	Non-competitive weight trainers	Active controls
Body image measures			
Appearance evaluation**	4.10 (0.45)[a]	4.00 (0.51)[a]	3.58 (0.55)[b]
Physique anxiety	18.73 (6.49)	18.70 (6.85)	21.73 (6.12)
Weight discrepancy**	17.08 (13.85)[a]	10.02 (14.45)[ab]	3.05 (15.00)[b]
Satisfaction mid torso**	3.98 (0.86)[a]	3.35 (1.08)[b]	3.33 (0.94)[b]
Satisfaction upper torso**	4.10 (0.67)[a]	4.15 (0.74)[a]	3.68 (0.76)[b]
Satisfaction muscle tone**	4.22 (0.58)[a]	4.08 (0.69)[a]	3.63 (0.95)[b]
Weigh in anxiety	11.25 (13.59)	14.90 (14.97)	6.50 (15.78)
Body fat anxiety	22.23 (19.78)	27.65 (22.00)	28.48 (20.01)
Appearance orientation**	3.67 (0.65)[a]	3.62 (0.55)[a]	3.28 (0.64)[b]
Adjustment measures			
Social self esteem*	62.23 (8.45)[a]	60.23 (8.80)[ab]	56.68 (9.13)[b]
Eating attitudes**	8.88 (6.49)[a]	6.53 (6.59)[ab]	4.78 (3.90)[b]

Values are mean (SD).
*Significant analysis of variance at $p<0.05$. **Significant analysis of variance at $p<0.01$.
Rows not sharing a common superscript letter are significantly different at least at $p<0.05$.

What is already known about this topic

Accounts of body image disturbance and eating disordered behaviour have been documented in male athletes in sports emphasising leanness or appearance. Researchers have described a subgroup of weight trainers who experience profound body image dissatisfaction as they pursue unrealistic body image ideals through weight training and dietary manipulation.

What this study adds

Our findings do not support a common assumption that competitive bodybuilders as a group are more ''muscle dysmorphic'' than either non-competitive weight trainers or physically active men who do not train with weights. Competitive bodybuilders showed better global body image among the groups in this study.

MBSRQ appearance orientation scale to measure this construct, Choi *et al*[23] found that muscle dysmorphic weightlifters were more invested in their appearance than were non-dysmorphic weightlifters. It is noteworthy that the researchers reported a mean score for the latter group ($M = 3.56$) that was comparable to the scores for the two weightlifting groups in the current study. Thus, men who engage in regular weightlifting, and not solely those with muscle dysmorphia, seem to be more appearance invested than physically active men who do not regularly lift weights. These results suggest that men who lift weights to build muscle may be motivated, in part, by their psychological investment in their looks. It should be noted that the appearance orientation measure of body image investment does not necessarily tap maladaptive investment. For instance, attending to one's looks and engaging in appearance management or grooming behaviours may reflect ''taking pride in one's appearance'' rather than appearance preoccupation that defines one's sense of self worth.[41] An alternative explanation for higher appearance orientation scores among weightlifters may be that these men are more preoccupied with their looks, while also perceiving themselves as closer to some physical or aesthetic ideal.

Competitive bodybuilders scored significantly higher than active controls, but not weight trainers, on measures of social self esteem and disordered eating attitudes. Although higher social self confidence may be a consequence of developing and possessing a mesomorphic body ideal that few men attain, such confidence may also be a prerequisite for the public display of one's physique, whether in competition or in gym workouts. The finding with the EAT-26 is consistent with the assertion that a degree of eating restraint accompanies successful bodybuilding, especially in competition. Still, the fact that two competitive bodybuilders and three non-competitive weight trainers, relative to none of the control participants, met the clinical criterion for eating pathology on this measure indicates that eating disturbance may be present among a minority of men who lift weights.

Limitations of this study include potential self selection effects during recruitment of subjects and not including a direct measure of muscularity. Regarding the former, one investigator approached all potential subjects. It is possible that some avoided the study process altogether because they overheard talk about study requirements, or because a consideration of body image issues might be distressing. Future researchers might consider tracking the number of persons citing limited time, lack of interest, or distress as reasons for declining participation. Future studies may incorporate recently developed assessments of muscularity specific body image and/or muscle dysmorphia or body dysmorphic disorder—for example, the drive for muscularity scale,[15] the somatomorphic matrix,[6] the muscle appearance satisfaction scale,[42] the bodybuilder image grid,[43] and the muscle dysmorphic disorder inventory.[43] These measures were unavailable when data collection began in this investigation.

In conclusion, this investigation did not confirm greater body image disturbances among either competitive or non-competitive bodybuilders relative to athletically active men. In fact, our findings were more consistent with the conclusion of a better global body image and a more favourable self evaluation of body definition among bodybuilders. Future research is crucial to distinguish those men for whom bodybuilding is a self enhancing activity from those for whom it is a self perpetuating facet of excessive and dysphoric preoccupation with the muscularity and adiposity of the body. Longitudinal studies would be quite valuable to discern the body image experiences of bodybuilders in specific contexts—for example, during or after competitions—and as they approach ''retirement'' from competition. Furthermore, research on female bodybuilders is essential. Finally, the role of the body image disturbance in the use of androgenic-anabolic steroids also represents an important direction for scientific study.[4 5]

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Competing interests: none declared

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COMMENTARY

This paper offers useful new data on the issue of body image among bodybuilders, and suggests that even at the competitive level, most bodybuilders do not suffer from muscle dysmorphia or related body image problems. This finding emphasises the important fact that bodybuilding is not inherently pathological (in contradiction to the beliefs of many clinicians and members of the general public), and that only a small minority of bodybuilders suffer from serious body image disorders. However, the possibility remains that bodybuilders with severe body image problems may have been more likely to decline participation in this study, thus biasing the results towards the null.

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Announcement

We are pleased to announce that the British Association of Sports Exercise Medicine (BASEM) has achieved specialist recognition from the Department of Health for sports and exercise medicine in the UK.