

Strong is (Sometimes) Beautiful: Sport-Specific Preferences for Thinness, Muscularity, and Leanness

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body image | muscularity | disordered eating
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Methods

Body Stimuli. As with Crossley and colleagues (1), female bodies were created using DAZStudio. The Genesis 2 add for DAZStudio was used to independently vary emaciation, muscular detail, and muscular size. The DAZStudio software allows the user to adjust body dimensions continuously between 0 and 1, with 0 representing the lowest level of that characteristic and 1 representing the highest level of that characteristic. Therefore, a body with an emaciation level of 1, a muscular detail level of 1, and a muscular size level of 1 would be a figure with the maximum amount of emaciation, muscle detail, and muscle size permitted by the software. Because creating permutations at many different levels would result in an untenable number of stimuli (e.g., creating permutations of the three dimensions at 10 different levels would result in 1,000 unique stimuli), only four evenly spaced levels were chosen (0, 0.25, 0.50, and 0.75). By permuting each feature at these four levels, a total of 64 different figures were created. The figure with an emaciation level of 0, a muscular detail level of 0, and a muscular size level of 0 served as a reference image. The 63 remaining images served as test images to be compared to the reference image. Body image scales were also created by varying the overall body size, level of emaciation, level of muscular detail, and level of muscular size.

Pilot Testing Participants and Procedure. To validate the stimuli, a total of 19 participants (M=6, F=13) completed an

initial survey for course credit in an introductory psychology course. All participants were asked to provide informed consent by typing their name in at the bottom of an electronic consent form. After reporting background demographic information, participants were shown each of the 63 test images. For each image, they were asked four questions. To assess perception of emaciation, participants were asked how visible is the model's bone structure was using a 5-point Likert scale from "1-Not at all visible" to "5-Extremely visible." To assess perception of muscular detail, participants were asked how defined the model's muscles were using a 5-point scale from "1-Not at all defined" to "5-Extremely defined." To assess muscular size, participants were asked how bulky the model's muscles were using a 5-point scale from "1-Not at all bulky" to "5-Extremely bulky." The pilot testing protocol as well as the main study protocol was approved by Bard College's Institutional Review Board.

Main Study Participants. A total of 256 CrossFit athletes (M=115; F=141), 302 rock climbers (M=125; F=177), and 331 runners (M=169; F=162) completed the survey. Participants were recruited by postings to sport-specific forums, gym listservs, gym Facebook pages, and messages to Meetup.com groups. Participants were informed that by completing the survey, they would be entered into a drawing to win one of 10 \$100 gift certificates to Amazon.com. All participants had to report being 18 years of age or older and identify as male or female. All participants reported their sexual orientation by indicated to whom they were attracted on a five-point scale from "1-exclusively attracted to women" to "5-exclusively attracted to men." Because previous literature has indicated that non-heterosexual women generally do not differ from heterosexual women in terms of body dissatisfaction (2–5), no women were excluded based on sexual orientation. Because men were being asked about body ideals for a female mate, men who reported that they were not attracted to women were excluded from further participation in the survey.

Main Study Procedure. Upon clicking on a link to the survey, participants were first asked to provide informed consent by typing their name at the bottom of an electronic consent form. They were then asked to indicate which sport was their primary sport (CrossFit, rock climbing, running, or other). Participants who indicated a sport other than the one to which

the survey version was tailored were redirected to a disqualification page. Participants were asked to report demographic information. They were also asked to rate how many days per week they participated in their sport, how many years they had participated in their sport (1-Less than on year, 2-One to three years, 3-Four to six years, 4-Seven to nine years, 5-10 or more years), and what percentage of their workout partners were women (1-I do not [run, rock climb, do CrossFit] with other people, 2-Less than 25%, 3-About 25%, 4-About 50%, 5-About 75%, 6-More than 75%). Female participants were asked to indicate their current body frame size and their ideal frame size on a 9 point scale with bodies ranging from small body frame size to large body frame size (created by varying the body size feature of the Genesis 2 figure). Using a 5 point scale, participants were then asked to report their current level of thinness (created by varying emaciation), level of muscular tone (created by varying detail), and muscular size (created by varying size). Male participants were asked to indicate the body frame size of their ideal female partner using the same 9-point scale.

After providing demographic and sport information, participants then began the main body decision task. Because the stimuli differed along three dimensions (i.e., muscular size, muscular detail, and emaciation) instead of only along one dimension (e.g., thinness), the typical method of asking participants to choose an ideal figure from a scale of body images (e.g., (6)) was not feasible. That is, asking participants to select a preferred image from images varying simultaneously along three dimensions would necessitate that the participant be able to access a three dimensional matrix of images, which is not possible. Two alternative forced choice tasks (TAFCT) have been used to assess participants decision preferences for canonical rewards (7) and for visual perception (8) as well as for body preferences in clinical (9) and non-clinical (10, 11) samples. In other contexts, the forced choice format has been shown to reduce some of the biases associated with Likert-scale response formats (12), provide a more accurate measure of participants' preferences than Likert-scale responses (13), and predict real-world decisions well (14). Therefore, a TAFCT was adopted for this task. For each trial, participants were shown the reference image and one of the test images and were asked to choose which body more closely resembled their ideal body for female participants or their ideal partner for men. In the instructions, participants were asked not to think about each decision for too long and to go with their initial reaction. Participants made a total of 63 decisions, one for each of the permutations of the four levels of the three body dimensions (minus the reference image). After completing the body decision task, participants then completed the Drive for Muscularity scale (McCreary & Sasse 2000) and the Drive for Leanness scale (Smolak & Murnen, 2008).

Survey Measures. Drive for Muscularity (DFM; (15)). The DFM is a 15-item scale used to assess drive for muscle mass. Participants provide responses on a 6-point scale from "never" to "always.". In a sample of adolescent to young adult females, average score on the DFM was 1.91 ($SD =$

0.66). In the initial validation, Cronbach's alpha for females was .78 (McCreary & Sasse 2000), indicating acceptable internal consistency (Kline, 1999). For girls, DMS scores were not significantly correlated with scores on the Eating Attitudes Test or scores on the Body Dissatisfaction scale on the Eating Disorders Inventory indicating that the DFM also has good discriminant validity (McCreary & Sasse 2000). A final DFM score was created by averaging scores on the 15 items.

Drive for Leanness (DFL; (16)). The DFL is a 10-item scale used to assess the degree to which individuals value muscular tone. In the original instrument, participants were instructed to provide a 1-6 rating from "always" to "never;" however, to provide a more intuitive response scale (items in the DFL ask about attitudes rather than frequency of behaviors), participants in the current study provided a 1-5 rating from "strongly agree" to "strongly disagree." In the original validation of the instrument, Cronbach's alpha in women was .71 (Smolak & Murnen, 2008), indicating acceptable internal consistency (Kline, 1999). A final score by averaging scores on the 10 items.

Eating Attitudes Test-26 (EAT; (17)). In the EAT-26 participants report their height, current weight, highest weight, lowest adult weight, and ideal weight. They then answer 26 questions using a 6-point scale from "always" to "never." The EAT has three subscales: dieting, oral control, and bulimia and food preoccupation. The abbreviated 26-item version is highly correlated with the original 40-item instrument ($r = .98$). Means for healthy females have been reported as 9.9 ($SD = 9.2$) for the full scale, 7.1 ($SD = 7.2$) for dieting, 1.0 ($SD = 2.1$) for bulimia and food preoccupation, and 1.9 ($SD = 2.1$) for oral control. Inter-item correlations were .83 for the full scale, .86 for dieting, .61 for bulimia and food preoccupation, and .46 for oral control indicating the EAT-26 has good internal consistency overall, though individual subscales are somewhat less internally consistent (Garner et al., 1982).

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