

INVITED REVIEW

TRENDS in
Sport Sciences

2014; 2(21): 65-72.

ISSN 2299-9590

Relationship between sport type and body image of female athletes

MARIA-CHRISTINA KOSTELI, JUDY L. VAN RAALTE, BRITTON W. BREWER, ALLEN E. CORNELIUS

Introduction. Research suggests that sport involvement enhances body image [1]. Research also indicates that athletes involved in certain sports, such as gymnastics and distance running, are at risk for body image disturbances [2]. **Aim of the Study.** The purpose of this research was to explore this apparent paradox, that physical activity enhances body image but athletes in certain sports may be at risk for body image concerns. **Material and Methods.** The sport and societal attractiveness body image ideals of female long distance runners ($n = 21$) and throwers ($n = 18$) were assessed via questionnaires, line drawings, and digital body image software. **Results.** Consistent with social comparison theory, long distance runners were more satisfied with their bodies than were throwers when considering societal attractiveness ideals. Throwers, however, were more satisfied with their bodies than were distance runners when considering sport ideals. When considering body image without regard to the different body ideals, distance runners reported a more favorable body image overall than did throwers. **Conclusions.** These results suggest that complex factors affect the body image of women athletes. With regard to body image measurement, digital body image software may be more sensitive than line drawings in detecting predicted relationships.

KEYWORDS: body schema, ideal body mass, track and field, thrower, software.

Received: 13 May 2014

Accepted: 29 May 2014

Corresponding author: bbrewer@springfieldcollege.edu

Department of Psychology, Springfield College, USA

What is already known on this topic?

Sport can play a crucial role in the development of a functional body image. However, an increased risk for body image concerns appears in certain types of sport. Although there are studies comparing athletes involved in sports that require larger and smaller body sizes for optimal performance, there are no data available on track and field athletes.

Introduction

According to Western societal norms, extremely thin women are particularly feminine and attractive [3]. Women who internalize the societal ideal of attractiveness but do not meet it often become dissatisfied with their bodies [4]. Research indicates that body dissatisfaction is associated with weight-related concerns and unhealthy weight loss practices (e.g., crash dieting, vomiting) even in underweight and healthy weight individuals [5], and can lead to a variety of health problems, including depression and eating disorders [6]. Hausenblas and Fallon [7] noted that one way to improve body image is through exercise. Their meta-analysis indicated that exercisers have more favorable body image than non-exercisers, however competitive athletes were not included in their research. Researchers who have studied competitive female athletes note that body dissatisfaction and eating disorders are prevalent [8] due to the pressure to attain a specific athletic physique and the social pressure to be thin [9]. The body image of female athletes has been examined in different contexts in several studies. Russell [10] found

that female rugby players, cricketers, and netballers reported feeling good about their bodies in a sport context, but had a different, more negative perception of their bodies when focused on norms of heterosexual physical attractiveness. George [11] interviewed female soccer players who said that they actively participated in practice and competition to develop strong bodies, thereby ignoring the attractiveness ideals of society. However, they reported that their male peers perceived them as less feminine than other women. Krane et al. [12] interviewed female collegiate athletes who were about 20 years old participating in college varsity sports (i.e., basketball, cross-country distance running, gymnastics, soccer, softball, swimming, tennis, track, volleyball) as well as club sports (i.e., rugby and hockey). They found these athletes had developed dual and incompatible identities. They expressed pride in their strong athletic bodies, but they said that other people perceived them to be different from normal women and that their large athletic bodies were not attractive to men. Not surprisingly, some female athletes report that they experience a paradox, wanting to achieve the societal ideal of an ultrathin body [13] while at the same time working to develop a strong and muscular body for optimal sport performance [12].

Social comparison theory [14] offers a conceptual framework that explains how sociocultural values of appearance may shape the development of body image disturbance and eating disorders. According to social comparison theory, individuals base their self-evaluations on the comparisons they make between themselves and others, especially those to whom they are similar in a particular domain. Franzoi and Klaiber [15] examined the application of social comparison theory to their work with female Olympic athletes, fashion models, and college students. They found that elite athletes tended to compare themselves to other elite athletes, professional models tended to compare themselves to other models, and college students tended to compare themselves to other people in general. Further, they found that the more female athletes compared themselves to professional models, the more body image concerns they expressed. Thus, it is not surprising that participation in sports that emphasize the importance of a thin body shape or a low body weight has been linked to elevated body dissatisfaction [16].

The present study was designed to explore the body dissatisfaction, sport, and societal attractiveness ideals of female intercollegiate athletes. Consistent with

social comparison theory, it was expected that lean sport athletes (i.e., those in sports for which a thin body shape and/or low body weight are associated with success) would report greater body satisfaction than non-lean sport athletes because the bodies of lean sport athletes most closely resemble the societal attractiveness ideal (e.g., thin, toned body). When considering sport ideals, however, it was hypothesized that lean sport athletes (i.e., distance runners) would report lower body satisfaction relative to their extremely thin body shape and low body weight sport ideal than would non-lean sport athletes (i.e., throwers).

Most body image measurement tools have been created for non-sport populations. Thus, figure drawing body image measures do not tend to include the muscular development typical of competitive athletes. A secondary aim of this research was to examine the utility of digital photographs as compared to questionnaires and figure drawings to assess body image [17]. It was expected that assessment of body image via digital photographs would be more sensitive to variations in body image of athletes than figure drawing approaches.

Material and Methods

Approval to conduct this research was granted by the Institutional Review Board, college athletic directors, and track and field coaches. To ensure a sample of sufficient size, a sensitivity analysis was conducted. Based on the results of that analysis (power = 0.80), 39 female intercollegiate track and field student-athletes who ranged in age from 18 to 24 ($M = 19.41$, $SD = 1.43$) years, were recruited for the study. The participants represented all levels of college study with 12 first-year students, 14 second-year students, 9 third-year students, 2 fourth-year students, and 2 fifth-year students. Ethnicity of the participants was 38 of non-Hispanic origin (97%) and 1 of Hispanic origin (3%). Race of the participants was 4 Black (10%), 1 Native American (3%), and 34 White (87%).

Each participant came to the laboratory individually for a 30-minute session, gave informed consent, and completed a packet of questionnaires consisting of the Body Image States Scale (BISS) [18], the Multidimensional Body Self-Relations Questionnaire-Appearance Scales (MBSRQ-AS) [19], and the Figure Rating Scale (FRS) [20].

The BISS [18] is a 6-item scale on which participants are asked to respond to statements describing feelings about their body. For example, participants are asked

to answer the question “Right now I feel ... with my physical appearance”. Each statement is scored on a Likert-type scale from 1 (*extremely dissatisfied*) to 9 (*extremely satisfied*). Summed scores range from a low of 6 points, indicating the least body satisfaction, to a high of 54 points, indicating the most body satisfaction. Cash, Fleming, Alindogan, Steadman, and Whitehead [21] administered the BISS to 116 women and found that the BISS had acceptable convergent validity. The 34-item MBSRQ-AS [19] is a shorter version of the MBSRQ that includes Appearance Evaluation, Appearance Orientation, Overweight Preoccupation, Self-Classified Weight, and Body Areas Satisfaction subscales. The MBSRQ-AS subscales have been shown to be internally consistent (Cronbach’s $\alpha = 0.80$ to 0.96) and stable over a 1-month period [22] ($r = 0.74$ to 0.92). The FRS [20] is a figure drawing continuum that is used to measure body dissatisfaction (see Figure 1). Participants viewed a series of nine female body figure drawings ranging from *most slim* to *most heavy* and selected the drawing that best represented their current figure, the ideal figure for a long distance runner and for a thrower, and the ideal figure to be attractive to men. The ideal to be attractive to men was used to represent societal attractiveness ideals providing a clear distinction from sport ideals. Research has shown that societal attractiveness ideals are shared by members of the same sex regardless of sexual orientation [23]. Two FRS scores were computed: sport ideal and societal attractiveness ideal. The sport ideal was calculated by subtracting the value for the ideal for participant’s sport

(either long distance runner or thrower) from the value for their current figure. The societal attractiveness ideal was calculated by subtracting the value for the ideal to be attractive to men from the value for their current figure. Scores on the FRS societal attractiveness ideal and sport ideal ranged from -8 to 8 , with higher absolute scores indicating greater body dissatisfaction.

Participants were then photographed wearing a form fitting top and shorts against a dark background. After returning to their own clothing, they used the digital body image software Body Form Imaging (BFI) designed by Sands, Maschette, and Armatas [24] to indicate their sport ideal (BFI-S), the size representing the ideal body for an athlete in their sport (runner or thrower), and the attractiveness ideal (BFI-A), the ideal body to be attractive to men, by manipulating photographic images of themselves. Specifically, participants increased or decreased the size of their bodies at five body sites: shoulders, chest, hips, thighs, and calves (see Figure 2). After participants changed the images, the program stored the percentage of the pixel density changed. An unchanged part of the body was scored as 100. The total score was computed by adding the total of the pixel density changes related to the five body parts. A score higher than 500 indicated that participants resized their image to be larger than their actual image, a score lower than 500 indicated that participants decreased the size of the original image. The smaller the absolute value of the discrepancy of the total score from 500, the more satisfied participants are with their bodies. That is, the less they manipulated photographic images to reach an

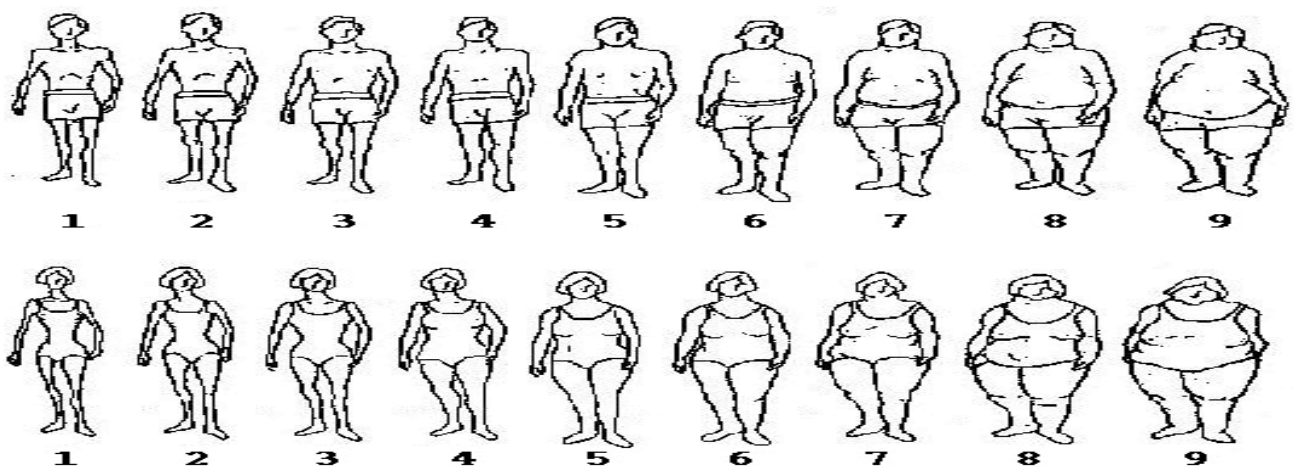


Figure 1. Figure Rating Scale drawings. From *The Genetics of Neurological and Psychiatric Disorders*, edited by SS Kety, LP Rowland, RL Sidman and SW Matthyse, 1983, New York: Raven Press, 1983. Copyrighted 1983 by A Stunkard, T Sorenson, & F Schulsinger. Reprinted with permission

ideal. Finally, participants were debriefed, asked not to discuss the study, and thanked for their participation. The BFI computer program was standardized on a sample of 56 women between the ages of 17 and 22 years old. Convergent validity for this measure was established by Sands, Maschette, and Armatas [24]. Significant correlations ($p < 0.05$) were demonstrated between BFI scores and Body Mass Index (BMI; $r = -0.32$) and Body Parts Satisfaction Scale (BDSS; $r = -0.32$).

Results

Multivariate analysis of variance (MANOVA) was used to compare the body image of long distance runners and throwers on the dependent measures of the BISS and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction, Overweight Preoccupation, and Self-Classified Weight subscales of the MBSRQ-AS. Results indicated a significant multivariate effect, Wilks' lambda = 0.43, $F(1,37) = 7.02$, $p < 0.001$, partial $h^2 = 0.57$. Follow up one-way analyses of variance (ANOVAs) were completed for each of the six body image measures. Long distance runners and throwers differed significantly on four of the dependent variables such that long distance runners rated themselves more favorably in terms of Appearance Evaluation, $F(1,37) = 15.94$, $p < 0.001$, partial $h^2 = 0.30$, Body Areas Satisfaction, $F(1,37) = 7.58$, $p = 0.009$, partial $h^2 = 0.17$, Self-Classified Weight, $F(1,37) = 32.07$, $p < 0.001$, partial $h^2 = 0.46$, and BISS, $F(1,37) = 13.45$, $p = 0.001$, partial $h^2 = 0.27$ (see Table 1). These results are consistent with the hypothesis that long distance runners have a more favorable body image than throwers. Long

distance runners and throwers did not significantly differ in terms of Appearance Orientation and Overweight Preoccupation.

A 2 (sport type: long distance runners, throwers) \times 2 (body ideal: sport, societal attractiveness) mixed factorial MANOVA with repeated measures on the second factor was conducted to determine how sport type and body ideal were related to body dissatisfaction. The FRS and BFI served as the dependent variables. The main effect for body ideal was statistically significant, Wilks' Lambda = 0.69, $F(2,36) = 8.00$, $p = 0.001$, partial $h^2 = 0.31$. The interaction between body ideal and sport type was also statistically significant, Wilks' Lambda = 0.32, $F(2,36) = 38.2$, $p < 0.001$, partial $h^2 = 0.68$. Follow-up univariate ANOVAs for FRS and BFI revealed significant interactions for the FRS, $F(1,37) = 49.08$, $p = 0.004$, partial $h^2 = 0.57$, and BFI, $F(1,37) = 61.81$, $p = 0.001$, partial $h^2 = 0.63$. Interpretation of the pattern of these interactions is similar for the FRS and BFI (see Table 1) for means and standard deviations). For long distance runners, the ideal sport body was smaller than that desired to meet societal attractiveness ideals, FRS: $t(20) = 2.75$, $p = 0.012$; BFI: $t(20) = 3.93$, $p = 0.001$, whereas for throwers the body desired for sport was significantly larger than for societal attractiveness ideals, FRS: $t(17) = -7.38$, $p < 0.001$; BFI: $t(17) = -6.51$, $p < 0.001$. With regard to the ideal for sport, runners reported greater dissatisfaction with their bodies than did throwers on the BFI, but not on the FRS. With regard to societal attractiveness, however, runners expressed less dissatisfaction with their bodies than throwers, who desired smaller bodies (see Table 1 for t values).



Figure 2. Body Form Imaging manipulated photographs (anonymous)

Discussion

The purpose of this study was to address an apparent paradox regarding the impact of sport participation on body image. Some evidence suggests that sport participation can have a positive impact on the way individuals perceive their bodies, whereas other evidence suggests that athletic participation in certain sports is linked to body image concerns [25]. That is, female athletes who participate in lean sports requiring low body weights for optimal performance

Table 1. Descriptive Statistics of Body Image for Female Long Distance Runners and Throwers

	α	Long distance runners		Throwers		<i>t</i>	<i>d</i>
		<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)		
BISS	0.83	6.35*	(1.04)	5.02*	(1.22)		
MBSRQ							
Appearance Evaluation	0.85	3.89*	(0.51)	3.18*	(0.59)		
Appearance Orientation	0.86	3.39	(0.71)	3.36	(0.46)		
Body Areas Satisfaction	0.86	3.91*	(0.57)	3.38*	(0.63)		
Overweight Preoccupation	0.81	2.21	(0.88)	2.19	(0.64)		
Self-Classified Weight	0.80	2.67*	(0.56)	3.64*	(0.51)		
FRS							
Sport Ideal	-0.52	(1.17)	0.06	(1.11)	-1.58	0.51	
Attractiveness Ideal	0.00*	(0.95)	-1.28*	(0.75)	4.61**		1.49
BFI							
Sport Ideal	471.62*	(25.86)	502.67*	(27.63)	-3.62**	1.16	
Attractiveness Ideal	485.33*	(19.14)	464.50*	(28.61)	2.71*	0.85	

* $p < 0.05$

BISS – Body Image States Scale, MBSRQ – Multidimensional Body Self-Relations Questionnaire, FRS – Figure Rating Scale, BFI – Body Form Imaging

exhibit more body image dissatisfaction than athletes in non-lean sports [26]. Consistent with social comparison theory, it was found that the type of sport women engage in is related to body image. That is, long distance runners reported greater satisfaction with their bodies and indicated less body dissatisfaction than throwers overall. This finding replicates previous research on body image [27]. When different body ideals were examined, however, results were complex. With regard to the ideal body type for their sport, women long distance runners were less satisfied with their bodies than throwers, even though long distance runners tend to match societal body size ideals. Thus, sport does not always offer a protective environment for athletes. Rather, distance runners can face such strong sport-related pressures to be slim and physically fit that they become dissatisfied with their bodies in sport contexts [28]. Negative body image associated with participation in these sports is concerning because individuals with poor body image and/or high body dissatisfaction are vulnerable to eating disorders [28]. Thus, it seems likely that athletes involved in aesthetic and lean sports, such as ballet, figure skating, gymnastics, distance running, and synchronized swimming may be at greater risk for eating pathologies and may be

Table 2. Correlations among BISS, MBSRQ, BIRS, and BFI

Measure	BISS	BIRS-S	BIRS-A	BFI-S	BFI-A
BISS	–				
BIRS-S	0.15				
BIRS-A	0.80**	0.38**			
BFI-S	-0.22	0.61**	-0.10		
BFI-A	0.52**	0.30*	0.56**	0.32*	
APPEVAL	0.75**	0.14	0.67**	-0.18	0.50**
APPOR	-0.23	-0.34*	-0.25	-0.28*	-0.18
BASS	0.76**	0.16	0.65**	-0.19	0.46**
OWPRE	-0.30*	-0.28*	-0.31*	-0.21	-0.33*
SCLASWT	-0.66**	-0.18	-0.73**	0.15	0.57**

* $p < 0.05$ level (2-tailed), ** $p < 0.01$ level (2-tailed)

BISS – Body Image States Scale, BIRS-S – Body Image Rating Scale-Sport Ideal, BIRS-A – Body Image Rating Scale-Attractiveness Ideal, BFI-S – Body Form Imaging-Sport Ideal, BFI-A – Body Form Imaging-Attractiveness Ideal, APPEVAL – Appearance Evaluation; APPOR – Appearance Orientation, BASS – Body Areas Satisfaction, OWPRE – Overweight Preoccupation, SCLASWT – Self-Classified Weight

more likely to develop eating disorders than athletes involved in other sports such as basketball, field hockey, and soccer [29].

A limitation noted in previous body image research is that of measurement. Studies that rely upon line drawings that participants use to rate their body size [30] have been criticized because they do not fully reflect the variety of body sizes, proportions, musculature, and shape of female athletes of various ethnicities in diverse sports. The BFI gives participants the chance to manipulate a photograph of themselves and ensures that the full range of racial and ethnic groups and muscular athletic sizes of a particular sample are represented. The results of this study show that the BFI is more sensitive to detecting hypothesized relationships among relevant variables. Therefore, researchers may want to consider using the BFI rather than the FRS when investigating body image topics, especially when studying athletes.

The current study highlights the complexity of body dissatisfaction issues with regard to sport populations. Limitations should also be noted, however. Specifically, this research focused only on athletes involved in long distance running and throwing. These sports were selected because they involved athletes who were members of the same track and field teams and were therefore more likely to be similar in their experiences and social pressure burdens than other groups of athletes. Additional research is needed to determine if the identified relationships hold in other sports.

Conclusions

This study was designed to examine the body dissatisfaction and sport and attractiveness ideals of female athletes. Consistent with social comparison theory, participants' body dissatisfaction varied when considering sport versus societal attractiveness ideals. Throwers reported significantly more body dissatisfaction relative to the societal attractiveness ideal when compared to long distance runners. When considering the sport ideal, however, long distance runners reported more body dissatisfaction than throwers. With regard to measurement issues, the BFI was found to be more sensitive than the FRS in detecting body image differences. The findings suggest that body image is a malleable construct subject to complex influences.

What this paper adds?

This is the first study to examine body image as it relates to sport and societal attractiveness ideals. Long distance runners, who appear to meet societal norms, seem to be vulnerable to body image concerns while throwers, who appear to have larger bodies, seem comfortable with their bodies, particularly relative to certain sport ideals. This is the first study to use a novel measure of body image, a computer software program, along with questionnaires.

Acknowledgements

No external funding was provided for this project. This research is based on the master's thesis of the first author conducted under the supervision of the second author. The material presented in this paper formed the basis of a presentation at the annual meeting of the Association for Applied Sport Psychology in Providence, Rhode Island, USA, October 2010. Maria-Christina Kosteli is now at the School of Sport and Exercise Sciences, University of Birmingham, UK. Allen E. Cornelius is now at the School of Professional Psychology, University of the Rockies, Colorado.

References

1. Robinson K, Ferraro FR. The relationship between types of female athletic participation and female body type. *J Psychol.* 2004; 138: 115-128.
2. Crissey SR, Honea JC. The relationship between athletic participation and perceptions of body size and weight control in adolescent girls: The role of sport type. *Sociol Sport J.* 2006; 23: 248-272.
3. Brown FL, Slaughter V. Normal body, beautiful body: Discrepant perceptions reveal a pervasive "thin ideal" from childhood to adulthood. *Body Image.* 2011; 8: 119-125.
4. Halliwell E, Dittmar H. Does size matter? The impact of model's body size on women's body-focused anxiety and advertising effectiveness. *J Soc Clin Psychol.* 2004; 23: 104-122.
5. Stice E, Shaw H. Role of body dissatisfaction in the onset and maintenance of bulimic pathology: A synthesis of research findings. *J Psychosom Res.* 2002; 53: 985-993.
6. Stice E, Marti CN, Durant S. Risk factors for onset of eating disorders: Evidence of multiple risk pathways from an 8-year prospective study. *Behav Res Ther.* 2011; 49: 622-627.
7. Hausenblas HA, Fallon EA. Exercise and body image: A meta-analysis. *Psychol Health.* 2006; 21: 33-47.

8. Torstveit MK, Rosenvinge J, Sundgot-Borgen J. Prevalence of eating disorders and the predictive power of risk models in female elite athletes: A controlled study. *Scand J Med Sci Sports*. 2008; 18: 108-118.
9. Thompson RA, Sherman RT. The last word: Athletes, eating disorders and the four-minute mile. *Eat Disord*. 2005; 13: 321-324.
10. Russell KM. On versus off the pitch: The transiency of body satisfaction among female rugby players, cricketers, and netballers. *Sex Roles*. 2004; 51: 561-574.
11. George M. Making sense of muscle: The body experiences of collegiate women athletes. *Sociol Inq*. 2005; 75: 317-345.
12. Krane V, Choi PL, Baird SM, et al. Living the paradox: Female athletes negotiate femininity and muscularity. *Sex Roles*. 2004; 50: 315-329.
13. Sypeck MF, Gray JJ, Ahrens AH. No longer just a pretty face: Fashion magazines' depictions of ideal female beauty from 1959 to 1999. *Int J Eat Disord*. 2004; 36: 342-347.
14. Festinger L. A theory of social comparison processes. *Human Relations*. 1954; 7: 117-140.
15. Franzoi SL, Klaiber JR. Body use and reference group impact. *Sex Roles*. 2007; 56: 205-214.
16. Ferrand C, Magnan C, Rouveix M, et al. Disordered eating, perfectionism and body esteem in elite swimmers. *Eur J Sport Sci*. 2007; 7: 223-230.
17. Myers T, Crowther J. Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *J Abnorm Psychol*. 2009; 118: 683-698.
18. Cash TF. Manual for the Multidimensional Body Self-Relations Questionnaire. Unpublished test manual, Old Dominion University, Norfolk, VA; 1990.
19. Cash TF. Cognitive-behavioral perspectives on body image. In: C Thomas, ed., *Body image: A handbook of theory, research, and clinical practice* (pp. 38-46). New York: Guilford, 2002.
20. Cash TF, Fleming EC, Alindogan J, et al. Beyond body image as a trait: The development and validation of the Body Image States Scale. *Eat Disord*. 2002; 10: 103-113.
21. Stunkard A, Sorenson T, Schulsinger F. Use of the Danish adoption register for the study of obesity and thinness. In: SS Kety, LP Rowland, RL Sidman & SW Matthysse, eds., *The Genetics of Neurological and Psychiatric Disorders*. New York: Raven Press, 1983; pp. 115-120.
22. Cash TF. Users' manual for the Multidimensional Body-Self Relations Questionnaire, the Situational Inventory of Body-Image Dysphoria, and the Appearance Schemas Inventory. 2000; Retrieved from <http://www.body-images.com>.
23. Lucas M, Koff E, Grossmith S, et al. Sexual orientation and shifts in preferences for a partner's body attributes in short-term versus long-term mating contexts. *Psychol Rep*. 2011; 108: 699-710.
24. Sands R, Maschette W, Armatas C. Measurement of body image satisfaction using computer manipulation of a digital image. *J Psychol*. 2004; 138: 325-338.
25. Varnes JR, Stellefson ML, Janelle SM, et al. A systematic review of studies comparing body image concerns among female college athletes and non-athletes. *Body Image*. 2013; 10: 421-432.
26. Parsons EM, Betz NE. The relationship of participation in sports and physical activity to body objectification, instrumentality, and locus of control among young women. *Psychol Women Q*. 2001; 25: 209-222.
27. Watkins JA, Christie C, Chally P. Relationship between body image and body mass index in college men. *J Am Coll Health*. 2008; 57: 95-99.
28. Anderson CM, Petrie TA, Neumann CS. Psychosocial correlates of bulimic symptoms among NCAA division-I female collegiate gymnasts and swimmers/divers. *J Sport Exerc Psychol*. 2011; 33: 483-505.
29. Abbott BD, Barber BL. Differences in functional and aesthetic body image between sedentary girls and girls involved in sports and physical activity: Does sport type make a difference? *Psychol Sport Exerc*. 2011; 12: 333-342.
30. Furnham A, Badmin N, Sneade I. Body image dissatisfaction: Gender differences in eating attitudes, self-esteem, and reasons for exercise. *J Psychol*. 2002; 136: 581-596.