



Appearance-based exercise motivation moderates the relationship between exercise frequency and positive body image



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ABSTRACT

Individuals with a positive body image appreciate their bodies, hold an internal perspective of their bodies, and are satisfied with the functionality of their bodies. Research shows that positive body image is more complex than the absence of body dissatisfaction. Although exercise reduces women's body dissatisfaction, very little research has explored how, or even whether, exercise is associated with positive body image. Therefore, we examined whether exercise frequency was positively related to three aspects of positive body image (body appreciation, internal body orientation, and functional body satisfaction) among 321 college women. Appearance-based exercise motivation (the extent exercise is pursued to influence weight or shape) was hypothesized to moderate these associations. Hierarchical moderated regression analyses showed that exercise frequency was related to higher positive body image, but high levels of appearance-based exercise motivation weakened these relationships. Thus, messages promoting exercise need to de-emphasize weight loss and appearance for positive body image.

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Introduction

Positive body image refers to attitudes and behaviors that reflect a healthy acceptance of and appreciation for the body that go beyond the absence of body dissatisfaction. This construct provides a broader perspective to the study of embodiment, which has traditionally focused on problematic behaviors and attitudes. Research that explores the correlates and characteristics of positive body image has important implications for prevention and treatment because it provides clients and practitioners with an understanding of what body-related attitudes and behaviors to strive toward, not just what to avoid. Reflecting on the importance of positive body image in their recent handbook, Smolak and Cash (2011, p. 472) declared that focusing on positive body image is "essential to the future of the field."

Although positive body image has appeared in the scholarly literature only within the past decade, research suggests that it is a multi-faceted construct consisting of body appreciation, an internal orientation toward the body, and satisfaction with the body's capabilities. *Body appreciation* refers to unconditional approval and respect for the body (Avalos, Tylka, & Wood-Barcalow, 2005; Frisén & Holmqvist, 2010; Wood-Barcalow, Tylka, & Augustus-Horvath,

2010). Individuals who appreciate their bodies recognize that their bodies are unique and they accept their flaws as well as their assets. They show respect for the body by attending to its needs, engaging in health-promoting behaviors, and cognitively rejecting cultural messages that promote unrealistic standards for thinness. *Internal body orientation* refers to a focus on what the body can do and how it feels as opposed to how it looks (Frisén & Holmqvist, 2010; Wood-Barcalow et al., 2010). Instead of habitually monitoring their outward appearance, individuals with an internal body orientation are concerned with comfort. Finally, *functional body satisfaction* refers to approval of and satisfaction with the body's physical capabilities (Abbott & Barber, 2010; Frisén & Holmqvist, 2010; Wood-Barcalow et al., 2010).

Curiously, little research has explored the connection between positive body image and exercise, despite substantial evidence that physical activity reduces women's negative feelings about their bodies. A variety of methodologies have demonstrated this connection, including self-report correlational studies (Hausenblas & Fallon, 2002), ecological momentary assessment (Lepage & Crowther, 2010), quasi-experimental designs in which exercisers were compared with non-exercisers (Davis, 1990), and experimental designs (Vocks, Hochler, Rohrig, & Legenbaugher, 2009). Three major meta-analyses, including one that focused on pre/posttest experimental designs, have concluded that exercise is consistently associated with reduced body dissatisfaction (Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006; Reel et al., 2007). In addition, a review of six exercise interventions directed toward

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eating disorder patients found generally positive effects, such as decreased drive for thinness and body dissatisfaction (Hausenblas, Cook, & Chittester, 2008).

Given the consistent inverse relationship between exercise and body dissatisfaction, it is likely that exercise also improves the positive ways that women experience their bodies. However, reducing negative features (such as body dissatisfaction) is not the same as increasing positive features (Fredrickson, 2001; Tylka, 2011), and to date, no studies have empirically tested this potential benefit of exercise. Three qualitative studies provide indirect support. First, women who have a positive body image often mentioned regular exercise as a way to promote care of their bodies and overall well-being (Wood-Barcalow et al., 2010). These women viewed exercise as a way to relieve stress, enjoy themselves, and improve their health rather than to lose weight. Second, the vast majority (i.e., 93%) of adolescents with a positive body image were exceptionally active, participating in various sports and other physical activity (e.g., dancing, jogging) and found exercise “joyful and health-promoting” and “natural part of life” (Frisén & Holmqvist, 2010, p. 208). Only 20% of the adolescents mentioned that they exercised in order to take care of or change their appearance. Third, female collegiate athletes described feeling proud of their strong and developed bodies (Krane, Choie, Baird, Aimar, & Kauer, 2004). They focused on the function of their well-developed muscles and appreciated how their strength helped them in their sport. They recognized that the female athletic body has distinctive desirable features, despite the ways that it diverges from the cultural ideal of femininity. Many of the feelings and attitudes described by these athletes are similar to the characteristics of positive body image, suggesting a connection between physical activity and positive body image. Two quantitative studies also have provided support for a connection between exercise and positive body image: modern dancers and street dancers demonstrated higher body appreciation relative to non-dancers and college women (Langdon & Petracca, 2010; Swami & Tovée, 2009).

It is likely that the psychological benefits of exercise are not the same for all women. Various characteristics of the exerciser have been shown to moderate the psychological outcomes associated with exercise, including pre-existing body image disturbance, enjoyment of the activity, and cognitions during the activity (Blanchard, Rodgers, & Gauvin, 2004; Lepage & Crowther, 2010; Raedeke, 2007; Vocks et al., 2009). For example, women randomly assigned to a bout of physical activity reported feeling slimmer following the exercise session, and the effect was stronger for women with greater pre-experimental desire for thinness and weight concerns (Vocks et al., 2009). Among college students and corporate fitness participants, an acute exercise bout was generally associated with enhanced positive and reduced negative affect (Raedeke, 2007). However, participants who enjoyed the exercise experienced the greatest gains in positive affect. An experimental study randomly assigned participants to a bout of running or a no-exercise control group (Blanchard et al., 2004). Those in the exercise condition experienced increases in positive affect (such as revitalization and positive engagement) relative to the control participants. The participants' cognitions moderated the effects; when participants focused on the exercise (such as their breathing) they experienced reduced gains in positive affect relative to those who allowed their minds to wander during the running session. Results such as these indicate that multiple characteristics of the participant can influence the psychological effects of exercise.

A potentially key moderator is the individual's motivation for exercising. Previous research has shown that women who exercise primarily for appearance reasons are likely to experience elevated rates of eating disorder symptoms (including negative feelings about the body), elevated depressive symptoms, and lower self-esteem (DiBartolo, Lin, Montoya, Neal, & Shaffer, 2007; Goncalves

& Rui Gomes, 2012; Mond, Hay, Rodgers, & Owen, 2006). In contrast, among women who engaged in physical activity for health and enjoyment reasons, there was a negative correlation between exercise and eating disorder symptoms, including body dissatisfaction (DiBartolo et al., 2007). Even the physical health effects of exercise appear to depend upon exercise motivation; exercise motivated by health and enjoyment was correlated with lower pulse, systolic blood pressure, and salivary stress hormone levels while exercise motivated by weight was unrelated to these physical measures (DiBartolo et al., 2007). Together, these findings imply that exercise for weight or shape reasons is qualitatively distinct from exercise that is not motivated by appearance.

Thus, it is likely that whether the relationship between exercise and body image is adaptive depends upon the extent to which the physical activity is intended to influence weight or shape. However, this idea has not yet been explored in regard to positive body image. Such investigations would be worthwhile because (a) empirical research has shown that positive body image is a more comprehensive construct than low levels of body dissatisfaction (Avalos et al., 2005); (b) quantitative research has not explored the relationship between exercise and positive body image beyond dance despite qualitative research supporting this connection (Frisén & Holmqvist, 2010); and (c) knowing whether appearance-based motivation for exercise assuages the potential beneficial qualities of exercise on body appreciation, internal body orientation, and functional body satisfaction has important clinical implications for the promotion and maintenance of positive body image and healthy exercise.

Therefore, the purpose of the present study was to examine the relationships between exercise frequency and three aspects of positive body image: body appreciation, internal body orientation, and functional body satisfaction. We hypothesized that exercise frequency would show a positive relationship with each positive body image criterion, but that the strength of this relationship would depend upon the extent to which exercise is motivated by weight or shape reasons. We operationalized exercise as exercise frequency because it has been shown that frequency, not duration, is the major factor related to body concerns (Reel et al., 2007). We explored these connections with an undergraduate sample because colleges usually provide opportunities for regular physical activity for their students (e.g., gymnasiums, sports clubs or teams). These opportunities are generally available without an additional expense as the use of facilities is typically embedded in tuition.

Method

Participants

The final data set included 321 female college students who ranged in age from 18 to 51 years ($M = 19.88$, $SD = 3.73$), from a small liberal arts college in Western Pennsylvania ($n = 217$) and a regional campus of a large public university in Ohio ($n = 104$). Students identified themselves as Caucasian American (88.5%), African American (5.2%), Asian American (2.0%), Native American (1.6%), Latino (1.2%), or multiracial (1.4%). They described themselves as middle class (45.3%), upper middle class (41.6%), working class (10.3%), or upper class (2.8%).

Measures

Body appreciation. The 13-item Body Appreciation Scale (BAS; Avalos et al., 2005) was used to assess participants' acceptance of and appreciation for their bodies (e.g., “Despite its flaws, I accept my body for what it is”). Its items are rated on a 5-point scale ranging

from 1 (*never*) to 5 (*always*), with higher average scores reflecting greater body appreciation. Among college women, scores on the BAS demonstrated strong internal consistency reliability and 3-week test–retest reliability, a unidimensional factor structure, and positive relationships to appearance evaluation and body esteem (Avalos et al., 2005). The BAS is currently regarded as the most comprehensive measure of positive body image (Menzel & Levine, 2011). In the present study, Cronbach's alpha was .93.

Internal body orientation. The Body Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996) measures the extent to which women focus on how their bodies appear to others versus how their bodies feel or function (i.e., an external versus internal body orientation, respectively). Because six of its eight items specifically ask about individuals' attention to how their bodies feel or function (e.g., "I think more about how my body feels than how my body looks"), researchers (e.g., Avalos & Tylka, 2006) have used it as a measure of internal body orientation. Items were rated using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). In this study, all items were scored such that higher average scores reflect higher internal body orientation. The internal consistency reliability and convergent validity of its scores have been supported among college women (McKinley & Hyde, 1996). In the present study, Cronbach's alpha was .86.

Functional body satisfaction. The Functional Satisfaction subscale of the Embodied Image Scale (Abbott & Barber, 2010) measures how an individual feels about what her or his body can do. Three statements (e.g., "I feel really good about what I can do physically") are rated on a 5-point scale (1 = *not at all true for me*, 5 = *very true for me*), with higher average scores indicating greater functional body satisfaction. Among adolescents, this subscale yielded internally consistent scores and validity evidence via its positive relationship to self-esteem (Abbott & Barber, 2010). In the present study, Cronbach's alpha was .91.

Exercise frequency. As the primary measure of exercise frequency, we used the first section of the Godin Leisure-Time Exercise Questionnaire (Godin & Shephard, 1985). Participants report how many times a week, on average, they perform strenuous ("heart beats rapidly"), moderate ("not exhausting"), and mild ("minimal effort") exercise for more than 15 min. Many examples of strenuous (e.g., running), moderate (e.g., fast walking), and mild (e.g., easy walking) exercise are provided. It is recommended that only the strenuous and moderate activities are computed, because mild exercise is more ambiguous (Godin, 2011) and unreliable (Sallis & Saelens, 2000). Therefore, as suggested by Godin (2011), we computed participants' exercise frequency score by multiplying their strenuous exercise total by 9 and moderate exercise total by 5, and summing these scores. The Godin has been recognized as a validated measure of exercise by the American College of Sports Medicine (1997), and its psychometric properties (e.g., 1-month test–retest reliability, convergent, and criterion validity) have been upheld with adolescent and adult samples (Godin & Shephard, 1997; Jacobs, Ainsworth, Hartman, & Leon, 1993; Miller, Freedson, & Kline, 1994; Sallis & Saelens, 2000; Winters, Petosa, & Charlton, 2003).

As a secondary measure of exercise frequency, we used a 3-item composite consisting of two items from the Obligatory Exercise Questionnaire (OEQ; Thompson & Pasmann, 1991): "I engage in physical exercise on a daily basis" and "I exercise more than three days a week" as well as the only item asked within the second part of the Godin, "During a typical week, how often do you engage in exercise long enough to work up a sweat (heart beats rapidly)?" Respondents indicated agreement using a scale ranging from 1 (*never*) to 4 (*always*) for the first two items and 1 (*often*) to 3 (*never/rarely*) for the third item. After the third item was reverse-scored, the items were averaged to create a total score. Alpha for this 3-item composite was .86.

Appearance-based exercise motivation. This variable was assessed with a single question that asked, "To what extent do you exercise in order to influence your weight, shape, or body tone?" Participants responded using a scale ranging from 1 (*never or not at all intended to influence weight, shape, or body tone*) to 5 (*always or solely intended to influence weight, shape, or body tone*). The wording and scoring of this item was identical to that used by Mond et al. (2006) to assess appearance-based exercise motivation. Mond et al. found that this item was strongly related to eating disorder symptomatology, upholding its concurrent validity among community women.

Procedure

After obtaining approval from the college and university ethics review boards, participants were recruited from undergraduate courses. At the liberal arts college, prospective participants heard a brief description of the study in class. Interested participants received an envelope of materials which they completed at their own convenience. They dropped off the completed materials in a box located in a central area of the Psychology department. At the public university, students enrolled in introductory psychology courses volunteered to participate through the psychology department's organized research program at their own convenience. Three validity check questions (e.g., "To make sure you are paying attention, please do not answer this item") were embedded in the online surveys to detect those participants who were inattentive or randomly responding, due to these response styles being particularly common within online surveys (Huang, Curran, Keeney, Poposki, & DeShon, 2011). Those who failed one or more of the validity check questions were not included in the data set. For both campuses, measures were counterbalanced to control for order effects. All students received extra credit in their course for participating.

Results

Preliminary Analyses

Prior to the analysis of the hypotheses, data were examined for missing values and outliers (both univariate and multivariate). Of the initial 325 participants who were included in the data set, only 301 completed the first section of the Godin (all 325 participants completed the items for the 3-item exercise composite measure, including the "sweat" item on the second part of the Godin). For other measures, a total of eight (0.03%) participants had at least one missing data point, and the count for item-level missingness ranged from 0 to 1.5% ($M=0.16\%$), which is considered extremely low (Parent, 2013). Therefore, mean substitution was used to replace missing values for the non-exercise measures. For all measures, item-level data points were missing completely at random according to Little's analysis, $\chi^2(276, N=321)=279.65$, $p=.427$.

An outlier analysis detected seven univariate outliers, all from the Godin exercise frequency component. All seven univariate outliers were extreme (i.e., ranging from 5 *SD* to 49 *SD* above average), with each surpassing the criterion for detection and removal ($z_s > 3.29$, $ps < .001$; Tabachnick & Fidell, 2013). For these participants, we deleted their Godin exercise frequency score but retained their responses to other variables. Analyses for multivariate outliers revealed four cases with extremely large Mahalanobis distance values (i.e., values at or above 20) across all regression analyses performed. These four cases were deleted, leaving 321 participants in the final data set. While we had 290 participants with Godin exercise frequency scores, we had the 3-item composite exercise score for all 321 participants.

Table 1
Variable means, standard deviations, and intercorrelations.

Variable	M	SD	1	2	3	4 ^a	5
1. Body Appreciation	3.56	0.73					
2. Internal Body Orientation	3.39	1.10	.55***				
3. Functional Body Satisfaction	3.46	0.94	.52***	.39***			
4. Godin Strenuous & Moderate Exercise ^a	36.38	21.62	.10	.16**	.36***		
5. Exercise Composite Measure	2.42	0.78	.12*	.08	.41***	.73***	
6. Appearance-based Exercise Motivation	3.37	1.04	-.07	-.19**	.12*	.38***	.47**

Note. $N = 321$.

^a $n = 290$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Descriptive statistics and intercorrelations for the major study variables are presented in Table 1. Skew and kurtosis values were well below established values that pose problems in regression analyses (i.e., skew > 3.00 and kurtosis > 10.00 ; Kline, 2010); skew ranged from -0.61 to 0.39 and kurtosis ranged from -1.05 to 0.21 . Thus, no variable was transformed.

We evaluated the psychometric properties of the 3-item exercise composite before examining it as a measure of exercise in the main analyses. Item-total correlations ranged from $.75$ to $.85$ ($\alpha = .86$). The Kaiser–Meyer–Olkin measure of sampling adequacy indicated that the three items had adequate common variance (.714), and Bartlett's Test of Sphericity revealed that the correlation matrix was factorable, $\chi^2(3) = 460.41$, $p < .001$. Principal axis factoring with parallel analysis demonstrated that the items loaded on one factor and accounted for 78.54% of this factor's variance (eigenvalue = 2.36). Item-factor loadings ranged from $.73$ to $.91$, and communalities ranged from $.47$ to $.64$. As indicated in Table 1, the 3-item composite was correlated $r = .73$ with the Godin exercise frequency score, upholding its convergent validity.

Hierarchical Moderated Regression Analyses

In order to test the hypothesis that appearance-based exercise motivation would moderate the link between exercise frequency and positive body image, three separate hierarchical regression analyses were performed (i.e., one analysis for each measure of positive body image). Because the Godin Leisure-Time Exercise

Questionnaire is established as a psychometrically sound measure of exercise frequency, we used it as the primary measure to estimate exercise frequency in the analyses. However, because we only had responses on the Godin from a subset of the total sample ($n = 290$), we also ran the analyses using the 3-item exercise composite to determine whether findings were upheld for the full sample ($N = 321$).

For each regression, exercise frequency and appearance-based exercise motivation were centered, and an interaction term was created by multiplying the centered values. In Step 1, exercise frequency and appearance-based exercise motivation were entered. In Step 2, the interaction term was entered. To control for Type I error, the Bonferroni adjustment was applied (i.e., $p = .05/3 = .017$). For each regression, a simple slopes analysis (Aiken & West, 1991) was conducted and a graph generated to compare the relationships between exercise frequency and the criterion at low ($-1 SD$), average (mean), and high ($1 SD$) levels of the moderator.

In the first analysis (see Table 2), body appreciation was the criterion variable. At Step 1, Godin exercise frequency and appearance-based exercise motivation were both associated with body appreciation in a positive and negative direction, respectively. Consistent with our hypothesis, there was a significant interaction at Step 2, indicating that the positive contribution of exercise frequency to body appreciation was weakened by the extent to which exercise was pursued for appearance reasons. The graph of the interaction is illustrated in Fig. 1, and the simple slopes analyses are included in Table 3. When women had low to average

Table 2
Hierarchical multiple regression analyses predicting positive body image.

Step/variable	Regression Analyses Using the Godin Exercise Frequency Score ^a					Regression Analyses Using the 3-Item Composite Exercise Score ^b				
	R ²	ΔR^2	β	t	p	R ²	ΔR^2	β	t	p
	Body Appreciation F(3, 286) = 9.998, p < .001					Body Appreciation F(3, 317) = 10.144, p < .001				
Step 1	.041					.035				
Exercise Frequency			.172	2.76	.006			.196	3.14	.002
Appearance Motivation			-.192	-3.07	.002			-.163	-2.61	.009
Step 2	.095	.054				.088	.053			
Exercise \times Appearance Motivation			-.241	-4.11	<.001			-.242	-4.28	<.001
	Internal Body Orientation F(3, 286) = 14.797, p < .001					Internal Body Orientation F(3, 317) = 12.600, p < .001				
Step 1	.109					.071				
Exercise Frequency			.276	4.58	<.001			.213	3.47	.001
Appearance Motivation			-.314	-5.21	<.001			-.290	-4.72	<.001
Step 2	.135	.025				.107	.036			
Exercise \times Appearance Motivation			-.166	-2.89	.004			-.199	-3.55	<.001
	Functional Body Satisfaction F(3, 286) = 16.535, p < .001					Functional Body Satisfaction F(3, 317) = 25.018, p < .001				
Step 1	.129					.174				
Exercise Frequency			.369	6.19	<.001			.454	7.85	<.001
Appearance Motivation			-.028	-0.48	.635			-.097	-1.69	.093
Step 2	.148	.019				.192	.018			
Exercise \times Appearance Motivation			-.142	-2.51	.013			-.141	-2.65	.008

^a $n = 290$.

^b $n = 321$.

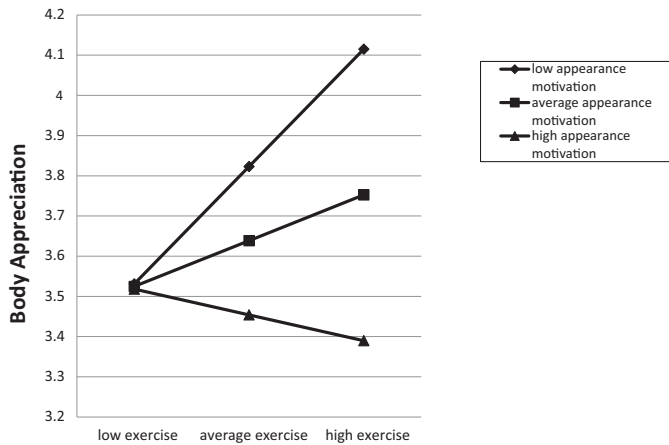


Fig. 1. Regression lines showing the relationship between exercise frequency and body appreciation by appearance-based exercise motivation. The estimates for exercise were based on Godin Strenuous × moderate exercise frequency scores.

levels of appearance-based exercise motivation, exercise frequency was positively related to body appreciation. But when appearance-based exercise motivation was high, this relationship was not significant.

Similar results were obtained for internal body orientation (see Table 2). In Step 1, Godin exercise frequency and appearance-based exercise motivation were significantly associated with internal body orientation in a positive and negative direction, respectively. As predicted, the interaction of exercise frequency and appearance-based exercise motivation was significant at Step 2, suggesting that the positive contribution of exercise to internal body orientation was weakened by the extent to which exercise was pursued for appearance reasons. Fig. 2 presents these regression lines. Among women with low to average levels of appearance-based exercise motivation, exercise frequency was associated with higher rates of internal body orientation (Table 3). However, among those who exercised primarily for appearance-based reasons, exercise frequency was not associated with internal body orientation.

In the third regression analysis, functional body satisfaction was the criterion variable. At Step 1, Godin exercise frequency, but not appearance-based exercise motivation, was associated with functional body satisfaction (Table 2). As hypothesized, there was a significant interaction between these two predictors, which is illustrated in Fig. 3. Again, exercise frequency was positively associated with satisfaction with what one's body can do, but this relationship

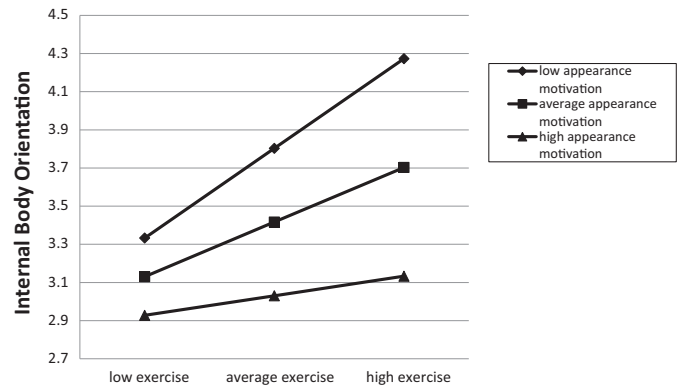


Fig. 2. Regression lines showing the relationship between exercise frequency and internal body orientation by appearance-based exercise motivation. The estimates for exercise were based on Godin Strenuous × moderate exercise frequency scores.

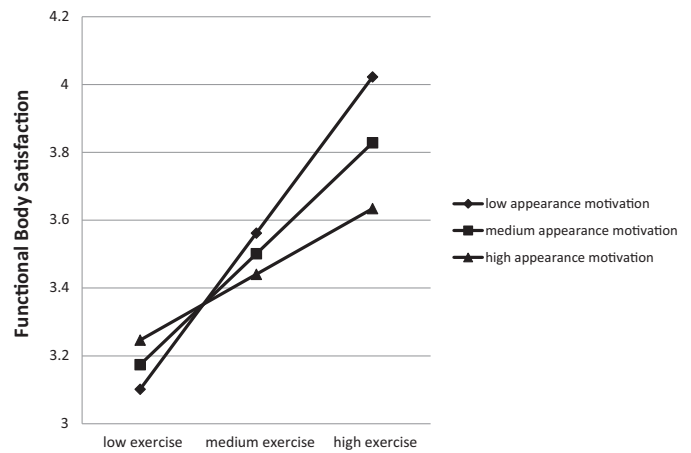


Fig. 3. Regression lines showing the relationship between exercise frequency and functional body satisfaction by appearance-based exercise motivation. The estimates for exercise were based on Godin Strenuous × moderate exercise frequency scores.

was weaker for women who exercised primarily for appearance-based reasons (Table 3).

These regressions were repeated using the exercise composite score in lieu of the Godin exercise frequency score to ensure that findings were similar within the full data set. Thus, the 3-item exercise composite score and appearance-based motivation

Table 3
Simple slopes analyses.

	Simple Slopes Using the Godin Exercise Frequency Score ^a			Simple Slopes Using the 3-Item Composite Exercise Score ^b		
	β	<i>t</i>	<i>p</i>	β	<i>t</i>	<i>p</i>
Body Appreciation						
1 SD below mean on appearance motivation	.428	4.92	<.001	.442	5.38	<.001
mean	.171	2.81	.005	.187	3.06	.002
1 SD above mean on appearance motivation	−.086	−0.99	.325	−.068	−0.81	.420
Internal Body Orientation						
1 SD below mean on appearance motivation	.452	5.31	<.001	.411	5.01	<.001
mean	.275	4.63	<.001	.206	3.37	.001
1 SD above mean on appearance motivation	.098	1.15	.252	.002	0.02	.983
Functional Body Satisfaction						
1 SD below mean on appearance motivation	.521	6.16	<.001	.602	7.77	<.001
mean	.368	6.24	<.001	.448	7.77	<.001
1 SD above mean on appearance motivation	.216	2.54	.012	.294	3.74	<.001

^a *n* = 290.
^b *n* = 321.

were entered in Step 1, and the interaction between the exercise composite exercise score and appearance-based motivation was entered in Step 2, in the prediction of body appreciation, internal body orientation, and functional body satisfaction. As can be seen in [Tables 2 and 3](#), identical trends were found with the exercise composite score and the Godin exercise frequency score, ensuring that appearance-related motivation weakened the relationship between exercise and positive body image with the full sample. Given this consistency, we do not provide graphs for the results using the composite exercise measure; however, these graphs can be obtained from the corresponding author.

Discussion

This study tested the hypotheses that exercise frequency would show a positive relationship with three aspects of positive body image, and that appearance-based exercise motivation would weaken that relationship. These hypotheses were supported. According to hierarchical regression analyses, women who frequently engaged in moderate to strenuous exercise tended to report higher levels of body appreciation, internal body orientation, and functional body satisfaction. Moreover, across all positive body image measures, the relationship was weaker for those who exercised primarily for weight and shape reasons. It is essential to note that positive body image is not equivalent to low or absent body dissatisfaction, but instead represents a unique aspect of psychological well-being in the body image domain ([Abbott & Barber, 2010](#); [Avalos et al., 2005](#)). Thus, these findings uniquely contribute to the positive body image and exercise literatures.

Although our data indicate that exercise frequency is associated with higher positive body image, we acknowledge that the correlational design precludes conclusions regarding directionality. However, substantial experimental work has shown that exercise can cause increases in positive affect and reductions in body dissatisfaction, anxiety, and depression ([Campbell & Hausenblas, 2009](#); [Raedeke, Focht, & Scales, 2007](#); [Reed & Ones, 2006](#)). For this reason, a logical interpretation of our results is that exercise can also contribute to positive body image. A direct implication of this interpretation is to encourage young women to become more physically active. This encouragement should unambiguously stress the health and enjoyment benefits of exercise rather than the possibility of weight loss or shape change. For women who are already active, effective interventions would focus on lowering weight and/or appearance motivations to exercise, and increasing an appreciation for the health or enjoyment aspects of working out. This recommendation is supported by a study that randomly assigned women to a group exercise class in which the instructor emphasized either the health benefits of exercise or the appearance benefits. Those in the health-oriented class reported more positive affective experiences than those in the appearance oriented class ([Raedeke et al., 2007](#)). In addition, [Calogero and Pedrotty \(2004\)](#) have shown that an exercise intervention that challenges women's reasons for exercise and builds connections between physical activity and its benefits can successfully reduce maladaptive attitudes about exercise and improve overall treatment outcomes among eating disorder patients. Thus, in light of the present results, it is reasonable to think that engaging in physical activity while focusing on health benefits unrelated to weight loss could also produce improvements in positive body image. Future research should test this hypothesis.

Although the purpose of this study was to describe rather than to explain the relationship between exercise and positive body image, it is important to consider the process linking these constructs. Previous research has shown that improvements in feelings about the body are related more to the exerciser's perceptions and

interpretation of changes in physical abilities than to actual fitness changes (such as body composition; [Ginis, Bassett, & Conlin, 2012](#)). The present study supports this idea in two ways. First, regular exercise was strongly and directly related to higher satisfaction with what the body can do physically (i.e., our functional body satisfaction variable). The correlation between these two variables is considered a medium to large effect based on [Cohen's \(1992\)](#) criteria. Second, it is plausible that women who exercise primarily for weight loss or shape change interpret their experience differently from those who are primarily motivated by other reasons. The former are likely to focus on factors such as the number of calories burned, immediate reductions in body weight, or visible changes in appearance. Concern with these issues may overshadow positive emotions such as satisfaction that can arise from completing a physical challenge or appreciating the body's capabilities. In contrast, those who exercise for reasons unrelated to appearance (which presumably would include health or enjoyment) may be more likely to attend to the sensations that typically accompany exercise, such as heightened mood. They may be more likely to notice and appreciate what their bodies can do, which may help them to accept their bodies despite cultural messages about the desirability of thinness. Furthermore, exercising as a means of improving health is, by definition, a form of honoring and caring for one's body, which is a key element of body appreciation ([Avalos et al., 2005](#)).

Our speculation regarding women's interpretation of their exercise experience is consistent with experimental research that showed that participants' cognitions can influence the psychological impact of exercise. Runners who focused on aspects of the physical exertion (such as breathing) experienced reduced increases in positive affect relative to runners who allowed their thoughts to wander ([Blanchard et al., 2004](#)). It is also consistent with research that showed that women who enjoyed their assigned group fitness class experienced greater increases in positive affect ([Raedeke, 2007](#)). It is plausible that the cognitions and enjoyment levels of women who work out for weight loss would differ from those of women who exercise for reasons unrelated to appearance. An intriguing direction for future research would be to further explore the ways that these different groups of exercisers interpret their experience.

This study had some limitations. First, 24 participants did not complete the exercise frequency part of the Godin measure, and an additional seven provided scores that were classified as extreme outliers. The most likely explanation for the relatively high rate of nonresponses was that these items were open-ended, requiring more mental effort than the rest of the survey (which used rating scales.) In order to respond, participants had to mentally rehearse a typical week and tally the number of bouts of various intensities of activity. In regard to the extreme outliers, it is likely that these participants misunderstood the instructions, perhaps reporting total minutes exercised or each bout of 15-min activity that they completed (rather than the times per week they exercised for at least 15 min). Given these problems, it is reassuring that we replicated our results with another measure of exercise.

Second, we used a single item to evaluate exercise motivation. Single-item measurement is considered appropriate when (a) the construct being assessed is unambiguous and concrete and (b) respondents are adults ([Bergkvist & Rossiter, 2007](#); [Robins, Hendin, & Trzesniewski, 2001](#); [Sackett & Larson, 1990](#)). Although both these criteria were met in this study, a multi-item scale such as the Reasons for Exercise Inventory ([Silberstein, Striegel-Moore, Timko, & Rodin, 1988](#)) may have produced a more reliable measurement.

Third, the study design was correlational; as a result, inferences regarding direction of effects remain tentative until tested with an experimental design. We concluded that exercise promotes positive body image, but it is also plausible that women who feel better

about their bodies are more likely to exercise. Positive body image and exercise may even impact each other in a bidirectional manner, perhaps in an upward spiral (see Garland et al., 2010, for a discussion of upward spirals). For example, regular engagement in exercise may help women feel good about their bodies, which then may direct them to take care of their bodies by choosing to eat foods higher in nutrients, which then may provide more energy to keep them participating in exercise. Future research should test whether physical activity interventions can produce broad improvements in the positive features of body image and also whether these variables impact each other in an upward spiral.

Last, our sample consisted primarily of young adult, White, middle to upper middle class college women who completed self-report measures. Thus, these findings cannot be generalized to other age, ethnic, or socioeconomic groups, and findings are confined to participants' perceptions of their body image, exercise behaviors, and motives for exercise rather than their actual levels of these variables.

Despite these limitations, this study makes an important contribution to the body image and exercise literatures. Only recently has positive body image emerged as a distinct construct in the research literature, and there is much more to learn about it. Most treatment and prevention programs focus on eliminating dysfunctional symptoms, but as positive body image is more fully understood, programs might include elements that would increase female clients' appreciation of and respect for their bodies and help them view their bodies more in functional terms. This study is a preliminary step in that direction because it suggests that moderate-to-strenuous physical activity with a focus on the health and enjoyment benefits of exercise and minimization of potential weight loss, shape change, and appearance, contributes to positive body image.

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