The importance of the function of exercise in the relationship between obligatory exercise and eating and body image concerns

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ARTICLE INFO

Article history:
Received 23 April 2009
Accepted 1 September 2009

Keywords:
Obligatory exercise
Negative affect
Eating disorders
Body image

ABSTRACT

This study tested whether exercising in response to negative affect moderates the association between obligatory exercise and eating and body image psychopathology. Participants (n = 226) completed the Eating Disorders Examination-Questionnaire (EDE-Q), Obligatory Exercise Questionnaire (OEQ), and a question assessing whether they ever exercise in response to negative affect. In total, 132 (58.4%) participants endorsed exercising in response to negative affect. Multiple regression analyses revealed significant main effects of negative affect motivated exercise, OEQ total scores, and gender on all four EDE-Q subscales and significant interactions of negative affect motivated exercise and OEQ scores on the Eating Concern, Shape Concern, and Weight Concern scales but not the Restraint scale of the EDE-Q. Obligatory exercisers may not demonstrate elevated eating and body image concerns in the absence of negative affect motivated exercise, providing further support of the importance of the function of exercise.

1. Introduction

Obligatory exercise is exercise that one feels compelled to undertake. Studies have found that obligatory exercise is associated with drive for thinness in obligatory weight-lifters and runners (Pasman & Thompson, 1988), eating and body image attitudes in appearance-motivated exercisers (Adkins & Keel, 2005), and eating disordered behaviors in a community sample (Mond, Hay, Rodgers & Owen, 2006). These studies indicate that experiencing guilt after missing an exercise session, adhering to a strict exercise schedule, and prioritizing exercise over other activities characterize this behavior and distinguish it from non-obligatory exercise. It may also be these qualities that make it problematic. However, Mond et al. found that obligatory exercise was not related to reduced quality of life after statistically controlling for eating disorder psychopathology. Thus, obligatory exercise may not be problematic if it is present in the absence of eating disordered attitudes and behaviors.

The factors that link obligatory exercise to eating-related psychopathology have not been extensively studied. Ackard, Brehm and Steffen (2002) examined obligatory exercise as a multi-dimensional construct and found that eating pathology was particularly high in individuals who reported an emotional fixation to exercise. They suggested that other aspects of obligatory exercise, such as high frequency of exercise and a commitment to exercise, are not necessarily related to eating problems. De Young and Anderson (in press) also found the emotional component of exercise to be useful for discriminating individuals with and without eating and body image psychopathology. Specifically, more pathological eating attitudes and behaviors and poorer body image were found in a sample of college students who indicated they exercised in response to negative affect compared to individuals who reported that they did not. These groups did not differ in the frequency or intensity of exercise. This research suggested that the function of exercise behavior may be more useful than the frequency or intensity of the behavior for identifying exercise that is related to eating pathology. This was also suggested by Adkins and Keel (2005) who found exercise quantity to be a negative predictor of eating and body image pathology in college students while obligatory exercise was a positive predictor.

Further efforts to determine the factors that differentiate a strong commitment to exercise and frequent exercise behavior (i.e., what may be present in professional and devoted amateur athletes) from exercise associated with eating and body image psychopathology (i.e., what is often observed in individuals exhibiting disordered eating behaviors) is indicated. This research has the potential to increase the extent knowledge about the relationship between exercise and eating disordered behaviors and attitudes while decreasing the pathologization of healthy exercise behavior. In order to extend previous findings about the importance of the function of exercise (i.e., De Young & Anderson, in press), this study tested the hypothesis that the tendency to exercise in response to negative affect would moderate the relationship between obligatory exercise and eating and body image psychopathology.
2. Materials and methods

2.1. Participants

A total of 226 undergraduate students participated in this study for credit toward a course requirement. A study that used a portion of this dataset has been previously published (De Young & Anderson, in press). The mean (SD) age of participants was 19.3 (2.6) years. Women comprised 52.7% of the sample. A total of 67.7% of participants identified themselves as Caucasian, 10.6% as Asian American, 8.8% as African American, 8.8% as Hispanic, and 4.0% as other. Participants had to engage in physical exercise at least occasionally in order to participate in this study.

2.2. Materials

The Obligatory Exercise Questionnaire (OEQ; Pasman & Thompson, 1988) is a 20-item self-report questionnaire that assesses exercise one feels compelled to undertake. Participants rate each item on a 4-point scale from “Never” to “Always.” Cronbach’s alpha was .89 for the OEQ in the present study.

The Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994) is a 28-item self-report questionnaire that assesses eating and body image and contains four subscales: Restraint, Eating Concern, Shape Concern, and Weight Concern. In the present study, Cronbach’s alphas for the EDE-Q subscales were .82, .87, .91, and .86, respectively.

2.3. Design and procedure

After consenting to participate in the study, participants completed a number of questionnaires about their exercise attitudes/behaviors, eating attitudes/behaviors, and body image including the OEQ and EDE-Q. In addition, participants answered the following yes/no question: “Do you ever exercise BECAUSE you are feeling bad?” Participants were split into negative affect exercisers (NAE; n = 132; 58.4%) and comparison exercisers (CE; n = 94; 41.6%) based upon their answer to this question.

2.4. Data analyses

Multiple regression analyses were conducted in order to determine whether the negative affect exercise grouping variable (NAE versus CE) moderated the relationship between obligatory exercise, as measured by the OEQ total score, and eating and body image psychopathology, as measured by the EDE-Q subscale scores. OEQ total score and EDE-Q subscale scores were mean-centered in order to decrease multicollinearity with the interaction term. In the first step of the regression analyses, the contrast-coded NAE/CE grouping variable, mean-centered OEQ total score, and contrast-coded gender were entered. Gender was included in the analyses in order to ensure that any moderation observed was not better accounted for by gender. In the second step, the interaction term of the NAE/CE grouping variable and OEQ total score was added. Statistical significance was set at p < .05. The results of the moderation analyses are displayed in Fig. 1.

3. Results

3.1. Restraint

OEQ total score (β = .21, t = 3.52, p < .05), NAE/CE grouping (β = .29, t = 4.60, p < .05), and gender (β = .27, t = 4.66, p < .05) were all significant predictors of EDE-Q Restraint, accounting for 29.5% of the variance in this variable. The interaction term failed to significantly improve the model (ΔR² = .007, F(1, 220) = 2.30, p = .13).

Fig. 1. Moderation of the relationship between obligatory exercise and EDE-Q subscales by negative affect motivated exercise. Note: Axes represent standardized scores on the OEQ and EDE-Q subscales; EDE-Q = Eating Disorder Examination-Questionnaire; OEQ = Obligatory Exercise Questionnaire; NAE = negative affect exercisers; CE = comparison exercisers.
3.2. Eating concern

OEQ total score ($\beta = 2.4$, $t = 3.88, p < .05$), NAE/CE grouping ($\beta = 2.1$, $t = 3.38, p < .05$), and gender ($\beta = 3.1$, $t = 5.17, p < .05$) were all significant predictors of EDE-Q Eating Concern. In addition, the interaction term significantly improved the model ($\Delta R^2 = .026, F(1, 221) = 8.25, p < .05$). In total, these four variables accounted for 30.1% of the variance of EDE-Q Eating Concern.

3.3. Shape concern

OEQ total score ($\beta = 2.3$, $t = 3.84, p < .05$), NAE/CE grouping ($\beta = 2.1$, $t = 3.28, p < .05$), and gender ($\beta = 3.3$, $t = 5.56, p < .05$) significantly predicted EDE-Q Shape Concern, as well. The addition of the interaction term significantly improved the model ($\Delta R^2 = .019, F(1, 221) = .98, p < .05$). These four variables accounted for 30.1% of the variance in Shape Concern.

3.4. Weight concern

OEQ total score ($\beta = .19$, $t = 3.15, p < .05$), NAE/CE grouping ($\beta = .23$, $t = 3.64, p < .05$), and gender ($\beta = .31$, $t = 5.27, p < .05$) were also significant predictors of EDE-Q Weight Concern. The addition of the interaction term significantly improved the model ($\Delta R^2 = .023, F(1, 221) = 7.04, p < .05$). In total, these four variables accounted for 28.9% of the variance in EDE-Q Weight Concern.

4. Discussion

The results of this study suggest that obligatory exercise is associated with eating and body image concerns only in individuals who exercise in response to negative affect. This was true for eating, weight, and shape concerns as measured by the EDE-Q. Interestingly, the relationship between obligatory exercise and dietary restraint was not moderated by negative affect motivated exercise. It is possible that EDE-Q measures multiple aspects of dietary restraint, such as restriction of intake to avoid weight gain or to lose weight and restrictive eating habits aimed at increasing athletic performance.

Engaging in exercise in response to negative affect appears to be an important factor in differentiating exercise that is associated with eating and body image concerns from exercise that is not. Importantly, this variable was asked of participants in the context of other negative and positive affect variables and not in relation to body image or eating behaviors. Participants were asked if they ever exercise because they feel generally bad and not because they were feeling bad specifically about their weight and shape or because they felt like they ate too much. Previous research has found that experiencing guilt after missing an exercise session is associated with eating disordered behavior (Mond et al., 2006). The results of this study add to this knowledge by suggesting that the experience of negative affect prior to actually engaging in exercise distinguishes obligatory exercise that is associated with eating pathology from obligatory exercise that is not.

These findings indicate that the function of exercise behavior may be as important as the topology. It is possible that individuals who experience disordered eating attitudes and behaviors are more likely to turn to exercise when feeling particularly distressed since it may function to decrease the experience of the affective state like other disordered eating behaviors (e.g., binge eating (Heatherton & Baumeister, 1991) and purging (Cooper et al., 1988)). The tendency to turn to exercise in times of heightened negative affect may be evidence that these individuals possess a more limited repertoire of coping skills and/or are more likely to be in a highly negative affective state than individuals who do not exercise in response to negative affect. It is possible that exercising in response to negative affect is an adaptive coping strategy for some individuals, but it is currently not known for whom it may function in this capacity (De Young & Anderson, in press). Future research should attempt to identify for whom this type of exercise behavior is helpful and for whom it is harmful.

The cross-sectional nature of this study preclude making any causal conclusions about the influence of engaging in exercise in response to negative affect in tandem with holding obligatory attitudes toward exercise on disordered eating attitudes and behaviors. Future research should investigate exercising in response to negative affect alongside other measures of psychosocial functioning and quality of life to determine for whom it is an adaptive coping strategy, for whom it is one of a number of disordered eating behaviors, and for whom it may represent an eating disorder in itself. The findings of the present study add valuable information to the field by further refining what exercise-related qualities distinguish exercise that is and is not related to eating disordered psychopathology.

Role of funding sources

There was no funding source for this study.

Contributors

Kyle De Young designed this study, performed data analyses, and wrote the first draft of the manuscript. Drew Anderson aided in study design and manuscript preparation. Both authors approved the final manuscript.

Conflict of interest

Neither author has any conflicts of interest.

References