



Understanding athletic and exercise identity in relation to disordered eating behaviors

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Abstract

Purpose This study investigated the associations between athletic and exercise identities and a range of disordered eating and exercise behaviors.

Method Study 1 ($N=441$; 53.5% female) included online questionnaires of athletic identity and disordered eating behaviors, anthropometrics, and demographic information. Study 2 ($N=225$; 50.2% female) added measures of: exercise identity, exercise behaviors, and a broader measure of disordered eating behaviors. Multiple linear regressions were used to test hypotheses. Dominance analysis was used in Study 2 to determine the unique variance accounted for by each predictor.

Results Controlling for body mass index (BMI), age, and sex, athletic identity was not significantly associated with disordered eating in Study 1 ($p>0.039$) but was significantly associated with lower cognitive restraint in Study 2 ($p=0.012$). In Study 2, stronger exercise identity was significantly associated with more cognitive restraint ($p<0.001$), more body dissatisfaction ($p=0.016$), more compulsive exercise ($p<0.001$), and more positive and healthy exercise ($p<0.001$), after controlling for BMI, age, sex, and athletic identity. Dominance analyses suggested that exercise identity was more strongly associated with these outcomes than athletic identity.

Conclusion Exercise identity, but not athletic identity, may be an important risk factor for disordered eating and exercise behaviors in broad populations.

Level of evidence Level IV, results from uncontrolled trial.

Keywords Feeding and eating disorders · Exercise · Self concept · Risk factors · Compulsive behavior

Introduction

Literature suggests that eating disorders often stem from disturbances in identity development [1]. Importantly, identity may be a key component of eating disorder development for individuals who view physical activity as a core aspect of who they are, especially among individuals who engage in problematic exercise behaviors. College represents a unique time period during which identity development [2] and changes in eating and exercise-related thoughts and behaviors co-occur [3]. Therefore, college students who have strong physical activity-related identities may be at increased risk for developing disordered eating and exercise behaviors. Although identity is important to the maintenance and

treatment of eating disorders [1, 4], little research examines associations between different aspects of identity and disordered eating and exercise behaviors. This study sought to address this limitation by investigating the associations between athletic and exercise identities and disordered eating and exercise behaviors among college students.

Evidence suggests that athletic and exercise identities are associated with disordered eating and problematic exercise behaviors. Athletic identity—the degree to which an individual identifies with the athlete role [5]—is associated with compulsive exercise (e.g., high exercise frequency combined with the inability to reduce or stop exercise behaviors [6]), drive for thinness, and perfectionism in athletes [7, 8]. Similarly, exercise identity—the extent to which one holds the role of “exerciser” as a core aspect of identity [9]—is associated with compulsive exercise in community samples [10] and disordered eating behaviors in ultra-marathoners [11]. However, Voelker et al. [12] found no association between athletic identity

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and disordered eating behaviors in female and male figure skaters [13] suggesting findings are not entirely consistent.

Importantly, these identities are typically measured in different samples. Exercise identity is primarily measured in community samples, while athletic identity is primarily assessed in athlete samples. This approach disregards research suggesting that individuals competing at lower levels of competition may still self-identify as athletes [14] and that individuals participating in athletics may still self-identify as “exercisers”. Given the mixed findings about athletic identity and disordered eating behaviors, and the fact a variety of individuals may self-identify as “athlete”, Study 1 investigated the association between athletic identity and disordered eating behaviors in a broad sample. Study 2 sought to replicate and extend Study 1 by investigating whether exercise identity uniquely predicted disordered eating and exercise behaviors above and beyond athletic identity in a similarly broad sample of individuals.

Study 1

Given the lack of research investigating athletic identity in broad samples, Study 1 examined the association between athletic identity and disordered eating behaviors among a sample of university students. Findings are mixed as to whether athletic identity is associated with disordered eating behaviors [8, 13]. Athletic identity is, however, consistently associated with compulsive exercise [7, 8], and compulsive exercise may serve as an indicator for the presence of subclinical eating pathology in regular exercisers [15]. Therefore, it was hypothesized that stronger athletic identity would be associated with more disordered eating behaviors among a broad sample of university students.

Methods

Study 1 used a pre-existing dataset to replicate previous athletic identity findings in a broad sample of college students. Two papers have been published using subsets of individuals from this dataset [14, 16]. Participants were recruited using convenience sampling from a large southeastern university’s research participant pool that included students enrolled in undergraduate psychology classes. All individuals in the participant pool were eligible to complete the study. After providing informed consent, participants completed measures via an online survey and received partial course credit for study participation. This study was deemed exempt by the university’s Institutional Review Board (IRB) due to there being minimal risk to participants.

Participants

The original sample included 508 individuals. Fifteen participants were removed due to inattentive responding [17] and an additional 52 individuals were removed for missing athletic identity data. This left a final sample of 441 undergraduate students (53.5% female) for analysis, with 45.7% of individuals self-identifying as athletes. Of those who self-identified as an athlete, the majority reported participating in sports like soccer, basketball, baseball/softball, football, field hockey, lacrosse, volleyball ($n = 118$); 32 individuals reported participating in sports like swimming, track, or cross country; 31 individuals engaged in “other sports”; and 17 individuals reported participating in sports like cheerleading, dance, equestrian, and gymnastics. The sample was primarily Non-Hispanic/Non-Latinx (75.6%; White: 66.7%; Black or African American: 16.3%; Asian: 13.8%; Other: 7.9%; American Indian or Alaska Native: 1.6%; Native Hawaiian or other Pacific Islander: 0.9%). Hispanic/Latinx individuals primarily identified as White (72%; Other: 19.6%; Black or African American: 14%; American Indian or Alaska Native: 1.9%; Asian: 1.9%; and Native Hawaiian or other Pacific Islander: 0.9%).

Measures

Demographic information Participants self-reported height, weight, age, sex, race, and ethnicity, and self-reported athlete status (yes/no). Body mass index (BMI) was calculated using self-reported height and weight (kg/m^2).

Athletic identity The 22-item Athletic Identity Measurement Scale–Plus (AIMS-Plus; [18] measured the degree to which participants identified as an athlete, using a response scale from 0 (strongly disagree) to 100 (strongly agree). Higher mean scores indicate stronger endorsement of athletic identity. For this study, the seven items from the original AIMS [19] was used. The total score demonstrated excellent internal consistency in the current sample ($\alpha = 0.87$).

Disordered eating cognitions and behaviors The Eating Disorder Examination-Questionnaire (EDE-Q) [20] is a 28-item measure that measures a range of disordered eating cognitions and behaviors. Only the 22 scaled items that are rated from 0 (no days) to 6 (every day) are used to calculate a global score, with higher mean scores reflecting more disordered eating cognitions and behaviors. Excellent internal consistency was observed in the current sample ($\alpha = 0.92$).

Data analysis

Analyses were conducted in SPSS v24. The EDE-Q Global subscale was right skewed and square root

transformed. Missing data were minimal and listwise deletion was used (four participants excluded), resulting in a final analytic sample size of 437. Bonferroni corrections were applied to the correlation analyses to control for multiple comparisons. A multiple linear regression was conducted to examine associations between athletic identity and the EDE-Q Global score. Covariates included sex, BMI, and age.

Results

Contrary to hypotheses, athletic identity was not significantly correlated with (Table 1) or associated with global disordered eating behaviors ($p = 0.232$, see Table 2).

Discussion

Inconsistent with hypotheses, but replicating mixed findings [12, 13], athletic identity was not associated with global disordered eating behaviors in a broad university sample. Athletic identity primarily is assessed among objectively defined athletes and the current sample included a broad range of university students, which may have attenuated associations. Nonetheless, approximately 45% of participants self-identified athletes and there was no evidence of floor or ceiling effects on the measure of athletic identity (AIMS scores ranged from 0 to 100; $M = 33.35$, $SD = 27.57$), suggesting adequate variability in athletic identity. It is possible that athletic identity is not strongly associated with disordered eating cognitions or behaviors, particularly in broad non-competitive samples. For example, female athletes report less eating disorder symptomology than female non-athletes [21, 22], and athletes tend to have more positive body image than non-athletes [23]. It also may be that athletic identity primarily is associated with exercise behaviors [8], which were not measured in the current study.

Table 2 Study 1 regression analyses examining associations between athletic identity and global disordered eating behaviors ($N = 438$)

Predictor	<i>b</i>	SE	β	<i>p</i>
EDE-Q Global				
Intercept	– 0.06	0.18		
Athletic identity	– 0.01	0.01	– 0.05	0.232
BMI	0.05	0.01	0.41	< 0.001
Gender (1 = female)	0.24	0.05	0.20	< 0.001
Age	– 0.01	0.01	– 0.02	0.663

B unstandardized regression coefficient, *SE* standard error, *p* *p*-value, β standardized estimate

Study 2

Study 2 sought to replicate and extend the findings from Study 1 in three ways. First, specific disordered eating behaviors outcomes (e.g., cognitive restraint) were measured to replicate and extend the null results of Study 1. It is possible the EDE-Q Global score was too general and obscured an association between athletic identity and disordered eating behaviors. It may be that athletic identity is associated with specific disordered eating behaviors when investigated in a sample that includes both self-identified athletes and non-athletes. Nonetheless, we expected to replicate findings from Study 1 that athletic identity was not associated with disordered eating attitudes and behaviors in a broad population.

Second, this study included both adaptive and maladaptive exercise behaviors as outcomes to test the hypothesis that athletic identity may be more strongly associated with exercise than disordered eating behaviors. Consistent with existing research [7, 10], it was hypothesized that stronger athletic identity would be associated with more compulsive exercise behaviors. Research has yet to investigate the association of athletic identity with positive and healthy exercise (i.e., engagement in physical activity for health

Table 1 Descriptive statistics and Correlations for All Study 1 Variables ($N = 441$)

Variable	1	2	3	4	5	6
1. BMI	–					
2. EDE-Q Global	0.38*	–				
3. Athletic Identity	– 0.02	– 0.11	–			
4. Athlete (1 = yes)	– 0.04	– 0.16*	– 0.71*	–		
5. Sex (1 = female)	– 0.10	0.14	– 0.28*	– 25*	–	
6. Age	0.23*	0.07	– 0.10	– 0.11	– 0.03	–
Sample Mean	24.52	1.48	33.35	45.7% Athlete	53.5% Female	20.93
Sample SD	5.50	1.34	27.57			3.81

SD standard deviation, *BMI* body mass index

* $p < 0.003$ (Bonferroni-corrected level of significance). Athlete = Self-identified athlete status

promotion, enjoyment, and social reasons) and this construct was included for exploratory purposes.

Given the null findings of Study 1, the third aim investigated whether exercise identity may be uniquely associated with disordered eating and exercise outcomes above and beyond athletic identity in a broad college sample. Athletic and exercise identities are associated with similar behaviors [7, 8], yet they are posited to be separate aspects of identity. Exercise identity is associated with disordered eating and both maladaptive exercise behaviors [10, 11], as well as physical activity more broadly among broad populations [24], thus, it was anticipated that exercise identity would be more strongly associated with disordered eating and maladaptive exercise behaviors than athletic identity in a broad college sample. As there is no research observing the relationship between exercise identity and positive and healthy exercise, this was an exploratory aim.

Methods

A second set of participants was recruited from a large southeastern university's research participant pool using the same convenience sampling procedures as Study 1. After providing informed consent, participants completed measures via an online survey and received partial course credit for study participation. Similar to Study 1, this study was deemed exempt by the university's IRB.

Participants

A total sample of 304 individuals completed the survey; 27 participants were removed for having no data, 51 participants were removed for failure of attention checks [17], and one individual was removed for implausible BMI data. This left a final sample of 225 undergraduate students (50.2% female) for analysis. Approximately 39.6% of individuals reported identifying as an athlete. Of those who played sports, the majority of this sample reported participating in sports like soccer, basketball, baseball/softball, football, field hockey, lacrosse, volleyball ($n=59$); 23 individuals reported participating in sports like swimming, track, or cross country; 30 individuals engaged in "other sports"; and 14 individuals reported participating in sports like cheerleading, dance, equestrian, and gymnastics. The sample was primarily Non-Hispanic (75.1%; White: 66.7%; Black or African American: 11.6%; Asian: 11.6%; Other: 4.0%; American Indian or Alaska Native: 0.9%). Hispanic individuals primarily identified as White (76.4%; Other: 9.1%, and Black or African American: 9.1%).

Measures

Study 2 included the self-identified athlete status (single item), the 22-item AIMS-PLUS [18], and demographic information used in "Study 1". As in "Study 1", the original 7-item AIMS total score was calculated. Study 2 also included three additional measures.

Exercise identity The Exercise Identity Scale [9] is a 9-item measure that reflects the extent to which exercise behavior is descriptive of one's concept of self. Items are rated on a scale from 1 (strongly disagree) to 7 (strongly agree), with higher mean scores indicating stronger endorsement of exercise identity. The total score demonstrated excellent internal consistency in the current sample ($\alpha=0.95$).

Disordered eating behaviors The Eating Pathology Symptoms Inventory (EPSI) is a 45-item self-report measure that comprehensively assesses clinically relevant dimensions of eating disorder psychopathology over the past 4 weeks [25]. Items are rated on a scale from 0 (never) to 4 (very often), with higher scores indicating greater eating pathology. The current study used the Body Dissatisfaction ($\alpha=0.86$), Binge Eating ($\alpha=0.81$), Cognitive Restraint ($\alpha=0.70$), and Purging ($\alpha=0.76$) subscales, all of which demonstrated acceptable internal consistency in the current sample.

Exercise behaviors The Exercise and Eating Disorder Questionnaire (EED) is an 18-item measure that assesses attitudes towards compulsive exercise [26]. Items are rated on a scale from 0 (never) to 5 (always). The current study used the Compulsive ($\alpha=0.85$) and Positive and Healthy Exercise subscales ($\alpha=0.81$), and both subscales demonstrated excellent internal consistency in the current sample. Positive statements are reverse scored on this measure, however, for ease of interpretation, items were left untransformed such that higher scores represent more positive and healthy exercise.

Data analysis

An a priori power analysis in G*Power [27] suggested that a sample of 196 participants was sufficient to detect a small-to-medium effect size ($f^2=0.05$) with a power level of 0.8 and an alpha of 0.05, from two predictors and three covariates, suggesting the final sample of 225 provided sufficient power to test hypotheses. All analyses were conducted in SPSS v24. The EPSI Purging subscale was right skewed and square root transformed. Missing data were minimal and listwise deletion was used (18 participants excluded), resulting in a final sample size of 208. Bonferroni corrections were applied to the correlation analyses to control for multiple comparisons. One set of multiple linear regressions tested associations between athletic and exercise identities and disordered eating behaviors. A second set of multiple linear regressions

tested associations between athletic and exercise identities and exercise behaviors. Sex, age, and BMI were included as covariates. Follow-up dominance analysis were conducted to determine the unique contributions of athletic and exercise identity to disordered eating and exercise behaviors [28].

Results

Descriptive statistics

The samples from Study 1 and Study 2 did not differ by sex, $\chi^2(1, N = 666) = 0.65, p = 0.421$, self-reported athlete status, $\chi^2(1, N = 666) = 2.20, p = 0.138$, ethnicity (Hispanic; $\chi^2(1, N = 665) = 0.007, p = 0.934$), race; $\chi^2(1, N = 654) = 6.04, p = 0.302$), BMI ($M_{\text{study1}} = 24.52, SD_{\text{study1}} = 5.50$ vs. $M_{\text{study2}} = 26.64, SD_{\text{study2}} = 5.75, t(662) = -0.25, p = 0.616, d = 0.02$), or age ($M_{\text{study1}} = 20.93, SD_{\text{study1}} = 3.81$ vs. $M_{\text{study2}} = 20.95, SD_{\text{study2}} = 4.54, t(660) = -0.06, p = 0.951, d = 0.004$).

Athletic identity was significantly and positively correlated with positive and healthy exercise (Table 3). Consistent with Study 1, athletic identity was not significantly correlated with any other measures of disordered eating. Exercise identity was significantly positively correlated with cognitive restraint and compulsive and positive and healthy exercise, but no other measures of disordered eating. Athletic and exercise identities were significantly and moderately correlated ($r = 0.57, p < 0.001$), suggesting that these role identities may exist simultaneously within an individual.

Disordered eating behaviors

Hypotheses were partially supported (Table 4). Stronger exercise identity was significantly associated with more cognitive restraint ($B = 0.60, SE = 0.11, p < 0.001, f^2 = 0.25$) and more body dissatisfaction ($B = 0.55, SE = 0.23, p < 0.016, f^2 = 0.32$). Athletic identity only was significantly associated with cognitive restraint ($B = -0.03, SE = 0.01, p < 0.012, f^2 = 0.09$). Dominance analysis indicated that exercise identity ($R^2 = 0.101$) accounted for more variance in cognitive restraint than athletic identity ($R^2 = 0.018$).

Exercise behaviors

Consistent with hypotheses, greater exercise identity was associated with greater levels of compulsive exercise ($B = 1.82, SE = 23, p < 0.001, f^2 = 0.39$; Table 5) and more positive and healthy exercise ($B = 1.49, SE = 0.13, p < 0.001, f^2 = 1.02$; Table 5). Unexpectedly, athletic identity was not significantly associated with either adaptive or maladaptive exercise behaviors ($ps > 0.264$).

Discussion

In Study 2 we sought to replicate and extend Study 1 by examining associations between athletic identity and disordered eating and exercise behaviors in a broad college sample. In anticipation of replicating Study 1 results, a second aim was to investigate the extent to which exercise and athletic identities may represent two distinct facets of identity and demonstrate different patterns of associations

Table 3 Descriptive statistics and correlations for all study 2 variables ($N = 225$)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. BMI	–											
2. Body dissatisfaction	0.28*	–										
3. Purging	0.14	0.40*	–									
4. Binge eating	0.09	0.47*	0.38*	–								
5. Cognitive restraint	0.23	0.55*	0.30*	0.23	–							
6. Positive exercise	–0.17	–0.14	–0.13	–0.12	0.13	–						
7. Compulsive exercise	–0.02	0.42*	0.20	0.31*	0.47*	0.29*	–					
8. Exercise identity	–0.07	0.05	0.02	0.07	0.28*	0.70*	0.53*	–				
9. Athletic identity	–0.10	–0.16	–0.05	–0.04	–0.02	0.45*	0.21	0.57*	–			
10. Athlete (1 = yes)	–0.11	–0.25*	–0.07	–0.09	–0.11	0.41*	0.14	0.48*	0.64*	–		
11. Sex (1 = female)	0.09	0.42*	0.17	.23	0.17	–0.15	0.07	–0.10	–0.27*	–0.18	–	
12. Age	0.39*	0.17	0.11	0.04	0.20	–0.07	0.12	0.04	0.03	–0.07	0.06	–
Sample mean	24.64	10.04	0.99	8.32	4.28	9.79	9.71	4.93	33.90	39.6% Athlete	59.2% Female	
Sample SD	5.75	6.68	2.36	5.89	3.14	4.85	7.17	2.23	25.07			

SD standard deviation, BMI body mass index

* $p < 0.0007$ (Bonferroni-corrected level of significance); Athlete = Self-Identified Athlete Status

Table 4 Study 2 regression analyses examining associations between athletic and exercise identity and disordered eating behaviors (N=207)

Predictor	<i>b</i>	SE	β	<i>p</i>	Dominance <i>R</i> ²
Body dissatisfaction					
Intercept	- 2.56	2.62			
Exercise identity	0.55	0.23	0.18	0.016	0.014
Athletic Identity	- 0.04	0.02	- 0.14	0.071	0.012
BMI	0.28	0.08	0.23	0.001	0.059
Sex (1 = female)	4.79	0.86	0.36	<0.001	0.148
Age	0.09	0.10	0.06	0.383	0.012
Binge eating					
Intercept	2.82	2.56			
Exercise identity	0.30	0.22	0.11	0.177	0.008
Athletic identity	- 0.01	0.02	- 0.04	0.606	0.003
BMI	0.13	0.08	0.12	0.105	0.010
Sex (1 = female)	2.26	0.84	0.20	0.008	0.044
Age	0.01	0.10	0.01	0.966	- 0.002
Cognitive restraint					
Intercept	- 2.76	1.26			
Exercise identity	0.60	0.11	0.43	<0.001	0.101
Athletic identity	- 0.03	0.01	- 0.20	0.012	0.018
BMI	0.13	0.04	0.22	<0.001	0.044
Sex (1 = female)	0.77	0.41	0.12	0.063	0.023
Age	0.07	0.05	0.09	0.170	0.021
Purging					
Intercept	- 0.44	0.48			
Exercise identity	0.03	0.03	0.08	0.371	0.002
Athletic identity	- 0.01	0.01	- 0.09	0.314	0.001
BMI	0.02	0.01	0.15	0.049	0.027
Sex (1 = female)	0.22	0.12	0.13	0.076	0.023
Age	0.01	0.01	0.05	0.484	0.006

Bolded significant *p*-value

b unstandardized regression coefficient, *SE* standard error, *p*=*p*-value, β standardized estimate

with disordered eating and exercise behaviors. Across Study 1 and Study 2, athletic identity generally was not associated with disordered eating behaviors. Inconsistent with hypotheses, athletic identity also was not associated with either compulsive or positive exercise behaviors. Supporting the uniqueness of athletic and exercise identities, dominance analyses demonstrated that exercise identity was a unique and significant predictor of disordered eating and exercise behaviors, above and beyond athletic identity. Taken together, exercise identity may be more relevant to disordered eating and exercise behaviors than athletic identity in a broad college sample.

Importantly, athletic identity appeared to be associated with *less* cognitive restraint and was not significantly associated with other measures of disordered eating. Athletic identity may not increase risk for disordered eating behaviors in

Table 5 Study 2 regression analyses examining associations between athletic and exercise identity and exercise behaviors (N=207)

Predictor	<i>b</i>	SE	β	<i>p</i>	Dominance <i>R</i> ²
Compulsive exercise					
Intercept	- 2.95	2.68			
Exercise Identity	1.82	0.23	0.57	<0.001	0.253
Athletic identity	- 0.03	0.02	- 0.09	0.246	0.018
BMI	- 0.02	0.08	- 0.02	0.771	0.001
Sex (1 = female)	1.14	0.88	0.08	0.196	0.008
Age	0.22	0.10	0.14	0.034	0.019
Positive and healthy exercise					
Intercept	5.72	1.54			
Exercise identity	1.43	0.13	0.65	<0.001	0.381
Athletic identity	0.01	0.01	0.07	0.261	0.096
BMI	- 0.08	0.05	- 0.09	0.094	0.018
Sex (1 = female)	- 0.35	0.50	- 0.04	0.489	0.008
Age	- 0.06	0.06	- 0.05	0.309	0.005

Bolded significant *p*-value

b unstandardized regression coefficient, *SE* standard error, *p* *p*-value, β standardized estimates

a broad sample; however, this was a relatively small effect and merits replication. Surprisingly, athletic identity was not associated with any exercise behaviors. Athletic identity may be more related to certain aspects of sport participation (e.g., playing on a team, importance of performing well in a game) than actual physical activity behaviors among a broad sample. Among non-competitive populations, athletic identity may not be a strong risk factor for disordered eating or exercise behaviors.

Despite a moderate correlation between athletic and exercise identities, only exercise identity was associated with disordered eating and exercise outcomes. This is consistent with previous research [10, 11]. Interestingly, stronger exercise identity was associated with both greater compulsive and positive and healthy exercise, which also is reflected in extant work [10, 24]. Current findings may represent two sets of individuals—one in which strong exercise identity is associated with maladaptive exercise behaviors and one in which strong exercise identity is associated with adaptive exercise behaviors. It is also possible that individuals could endorse both compulsive exercise and exercise for health-promoting reasons. For example, an individual could feel compelled to engage in exercise because they believe that exercise behavior is health-promoting.

There is some preliminary evidence suggesting the EIS may have a two-factor structure, with subscales reflecting “role identity” (e.g., “I consider myself an exerciser”) and “exercise beliefs” (e.g., “I need to exercise to feel good about myself”) [29]. Post-hoc investigation revealed that both stronger exercise role identity (*B* = 0.38, *p* < 0.001)

and stronger exercise beliefs ($B = 0.34$, $p < 0.001$) were associated with positive and healthy exercise. Interestingly, weaker exercise role identity ($B = -0.31$, $p = 0.003$) and stronger exercise were associated with compulsive exercise ($B = 0.840$, $p < 0.001$). These findings are consistent with identity theory suggesting that identity is a multifaceted construct [30] and also support conceptualizations of compulsive exercise that suggest it is the underlying cognitions, rather than the exercise behaviors themselves, that define and promote maladaptive exercise behavior [31]. More nuanced identity research is needed to understand how exercise identity may be protective of, or a risk factor for, disordered eating and exercise behaviors.

A primary strength of this study is the replication and extension of athletic identity findings across Study 1 and Study 2 using large, diverse university samples. Both studies had comparable distributions across sex and self-identified athlete status, and substantial variability in the range of responses for both athletic and exercise identities. Nonetheless, there are a number of limitations to consider. First, different disordered eating measures were used across Study 1 and Study 2. Despite this, athletic identity results were conceptually replicated across studies. Second, neither Study 1 nor Study 2 collected data about level of sport participation. While athletic identity may increase with level of sport competition [32], other work suggests no differences in athletic identity across levels of competition [33]. Replication and extension of these findings in the context of varying levels of athletic competition is needed. Third, there is some evidence to suggest that certain sport types (e.g., lean or aesthetic sports) are associated with disordered eating behaviors [34]. Given that this study was inclusive of both self-identified athletes and non-athletes, we did not directly test this relationship. Future research should investigate whether both sport competitive level and sport type impact the association between athletic and/or exercise identity and disordered eating and exercise outcomes. Fourth, both studies were cross-sectional, precluding causal conclusions about the extent to which either identity may increase risk or buffer against disordered eating and exercise behaviors. Lastly, this study included a broad sample of university students and findings may not generalize to other populations (e.g., competitive collegiate athletes, clinical samples, adult exercisers).

What is already known on this subject?

Limited research suggests that athletic and exercise identities are associated with compulsive exercise and disordered eating behaviors [7, 8]; however, research on athletic identity and disordered eating is inconclusive [12, 13]. Additionally, while athletic and exercise identity are posited to be different constructs, there is no literature providing empirical support for this.

What your study adds?

Contrary to hypotheses, athletic identity generally was not associated with more disordered eating or compulsive exercise behaviors. However, individuals with high exercise identity reported more compulsive exercise and disordered eating cognitions, as well as more adaptive exercise. Exercise identity may be an important risk factor to consider in future research related to disordered eating and exercise behaviors in college students.

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Data availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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