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Healthy Orthorexia and Orthorexia Nervosa Among Young Adult Female College Students: An Examination of the Relationships with Exercise Addiction, Body Awareness, and Social Appearance Anxiety

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Abstract

Purpose

This study aimed to examine the relationships of healthy orthorexia and orthorexia nervosa with exercise addiction, body awareness, and social appearance anxiety in young adult female university students, and to determine whether these patterns differ between the two orthorexia dimensions.

Methods

This cross-sectional study included 619 female university students at a public university in southeastern Türkiye. Data were collected using the Teruel Orthorexia Scale, the Body Awareness Questionnaire, the Exercise Addiction Scale, and the Social Appearance Anxiety Scale. Pearson correlation analysis, Steiger's test for dependent correlations, and hierarchical multiple linear regression analyses were performed.

Results

The mean age of the participants was 22.35 ± 2.01 years. Exercise addiction was positively correlated with both healthy orthorexia ($r = 0.409$) and orthorexia nervosa ($r = 0.463$). Body awareness correlated with healthy orthorexia ($r = 0.215$) but not with orthorexia nervosa, whereas social appearance anxiety correlated with orthorexia nervosa ($r = 0.306$) but not with healthy orthorexia; both differences were significant ($p < 0.001$). In the regression models, exercise addiction and social appearance anxiety predicted orthorexia nervosa ($R^2 = 0.258$), whereas exercise addiction and body awareness predicted healthy orthorexia ($R^2 = 0.213$).

Conclusions

Exercise addiction constitutes a common behavioural component of both orthorexia dimensions, whereas body awareness is specific to the healthy dimension and social appearance anxiety to the pathological dimension. These findings support the bidimensional conceptualisation of orthorexia and underline the importance of distinguishing healthy orthorexia from orthorexia nervosa in preventive and clinical practice.

Level of Evidence

Level V, descriptive crosssectional study.

INTRODUCTION

The concept of orthorexia nervosa was first defined in 1997 by American physician Steven Bratman, derived from the words “orthos,” meaning “correct,” and “orexis,” meaning “appetite/nutrition” [1]. The concept refers to an obsessive preoccupation with “pure/healthy” eating and is characterized by this interest—which initially emerges as a well-intentioned effort to protect one’s health—gradually transforming into a pathological pattern that can lead to rigid rules, excessive restrictions, and impaired functioning. Orthorexia nervosa differs from classic eating disorders such as anorexia nervosa and bulimia nervosa in a fundamental way: rather than being driven by a concern about weight loss or being thin, the individual focuses on the quality of the food they consume and on maintaining a diet they believe to be healthy and correct (Dunn & Bratman, 2016). Despite the functional impairment caused by these symptoms, orthorexia nervosa is not yet recognized as a separate psychiatric disorder in diagnostic classification systems such as the DSM-5. Nevertheless, it

is attracting attention as an increasingly prevalent problem. A meta-analysis reported a general prevalence rate of orthorexia symptoms at 27.5% and found that this rate has been on the rise over the years (López-Gil et al., 2023). Studies conducted in Turkey also report that the prevalence of orthorexia nervosa among college students is at a level that cannot be ignored (Kavsara et al., 2025).

Although early approaches to orthorexia viewed this tendency as a one-dimensional and inherently pathological construct, subsequent research has highlighted that not all interest in healthy eating is pathological. In this vein, Barrada & Roncero (2018) proposed that orthorexia exhibits a two-dimensional structure, establishing a distinction between healthy orthorexia and orthorexia nervosa. Healthy orthorexia represents a flexible and harmonious interest in healthy foods and nutrition that is integrated into a person's identity; orthorexia nervosa, on the other hand, represents a pathological pattern associated with obsessive-compulsive symptoms and negative emotional states, in which the effort to achieve a pure/healthy eating style leads to negative emotional and social consequences (Barrada & Roncero, 2018). Various studies have shown that these two dimensions differ not only in terms of their level of pathology but also in terms of their relationships with other psychological and behavioral variables; thus, it has been emphasized that healthy orthorexia and orthorexia nervosa should be evaluated as distinct constructs (Depa et al., 2019). Indeed, findings showing that depression, anxiety, and stress exhibit different mediating patterns in the relationships between impulsivity and orthorexia dimensions also support this distinction (Awad et al., 2021).

Young adult female college students are a high-risk group in terms of the development of orthorexic tendencies and, therefore, a group that should be prioritized for study. The college years, which coincide with the transition from adolescence to adulthood, are considered a critical period during which irregular eating behaviors can become pronounced due to factors such as increased independence, the shift of responsibility for food choices to the individual, and the search for identity (Howard et al., 2020). During this period, women are in a more vulnerable position regarding eating disorders because they are exposed to more intense sociocultural pressures related to body image and appearance (McComb & Mills, 2019); indeed, orthorexic eating tendencies are reported at higher levels among women (Strahler, 2019). Therefore, examining these tendencies among young adult female college students holds particular importance for understanding both protective and pathological processes.

Among the variables reported to be associated with orthorexic tendencies, exercise addiction, body awareness, and concerns about social appearance stand out. Exercise addiction is often considered alongside orthorexia as another manifestation of excessive preoccupation with healthy living and has been found to be positively associated with orthorexic tendencies in various studies (Oberle et al., 2018; Strahler et al., 2021a). Body awareness, which refers to the awareness of bodily cues, plays a decisive role in an individual's regulation of eating behavior by perceiving hunger, satiety, and physical needs. While it is positively associated with a healthy interest in nutrition, it does not show the same association with the pathological dimension (Anastasiades & Argyrides, 2022; Strahler, 2021). Social appearance anxiety, which reflects the fear that one's outward appearance will be negatively evaluated by others, has been reported as a significant predictor of body dissatisfaction and eating concerns (Levinson & Rodebaugh, 2012; Claes et al., 2012). It is associated with orthorexia nervosa through appearance-based sociocultural pressures (Eriksson et al., 2008; Tóth-Király et al., 2021).

However, the majority of existing studies address orthorexia in a one-dimensional manner or focus solely on the pathological dimension; studies that simultaneously compare the relationships between these variables and both healthy orthorexia and orthorexia nervosa within the same sample are quite limited. This makes it difficult to clearly identify the factors that distinguish the two dimensions from one another and those they have in common. Therefore, jointly examining the relationships between these variables and both dimensions of orthorexia among young adult female college students will help address this gap in the field.

The aim of this study is to examine the relationships between healthy orthorexia and orthorexia nervosa tendencies and exercise addiction, body awareness, and social appearance anxiety among young adult female college students; to

determine whether the patterns of relationships established with these variables differ between the healthy and pathological dimensions of orthorexia; and to evaluate the independent predictors of both orthorexia dimensions.

Research Hypotheses

H1: The relationship between body awareness, exercise addiction, and social appearance anxiety with the dimensions of healthy orthorexia and orthorexia nervosa differs.

H2: Exercise addiction and social appearance anxiety significantly predict the level of orthorexia nervosa.

H3: Exercise addiction and body awareness significantly predict the level of healthy orthorexia.

METHOD

Study design and participants

This analytical cross-sectional study was conducted at a public university in southeastern Türkiye. The data were collected between July 6 and July 21, 2026, through a structured survey conducted both in face-to-face and online. The target population consisted of female university students aged 18–35 years. According to institutional records, approximately 18,000 students were enrolled at the university, nearly half of whom were female. Therefore, the target population was estimated to comprise approximately 9,000 female students. Based on this population size, the minimum required sample size was calculated as 369 participants, assuming a 95% confidence level, a 5% margin of error, and a 50% response distribution. Participants were recruited consecutively from the accessible population of female university students who met the eligibility criteria during the data collection period. The study was completed with 619 female university students who met the eligibility criteria and provided informed consent prior to participation. Written informed consent was obtained from participants recruited face-to-face, while electronic informed consent was obtained from participants who completed the online questionnaire.

The inclusion criteria were being female, being between 18 and 35 years of age, being actively enrolled as a university student, being able to read and understand Turkish, and providing written informed consent for face-to-face participation or electronic informed consent for online participation. Participants were excluded if they were outside the age range of 18–35 years, were not currently enrolled as university students, reported a physician-diagnosed psychiatric disorder or eating disorder, had a condition that could affect their ability to complete the questionnaire, were pregnant or in the postpartum period, or provided incomplete questionnaire responses.

Data Collection Tools: The questionnaire consists of a total of 6 sections: (1) Sociodemographic information, (2) the Teruel Orthorexia Scale (TOÖ), (3) the Body Awareness Questionnaire, (4) the Exercise Addiction Scale, and (5) the Social Appearance Anxiety Scale.

Sociodemographic Information

This section included questions assessing participants' age, marital status, educational level, smoking and alcohol use habits, meal skipping behaviours and reasons for skipping meals, as well as meal consumption time.

The Teruel Orthorexia Scale (TOÖ)

Developed by Barrada and Roncero (2018), the TOÖ (Teruel Orthorexia Scale) is a 4-point Likert-type (0 = strongly disagree, 1 = somewhat disagree, 2 = somewhat agree, 3 = strongly agree). Consisting of a total of 17 items, the scale has a two-factor structure (Barrada and Roncero, 2018). While the healthy orthorexia subscale assesses the tendency to show interest in healthy foods and healthy eating, the orthorexia nervosa subscale evaluates the negative social and emotional effects of striving to achieve a pure/healthy eating path. In this context, high scores on the healthy orthorexia subscale

indicate that interest in healthy eating is not pathological, whereas high scores on the orthorexia nervosa subscale indicate an increase in pathological interest in healthy eating and a tendency toward orthorexia nervosa (Asarkaya and Arcan, 2021).

Body Awareness Questionnaire

The Body Awareness Questionnaire, developed by Shields et al. (1989) to assess participants' levels of body awareness and validated and reliability-tested in Turkish by Karaca (2017), was used. This questionnaire aims to determine individuals' levels of sensitivity to bodily sensations. The Body Awareness Questionnaire consists of a total of 18 items. Each item is rated by participants on a scale from 1 to 7 (1 = not at all true for me, 7 = completely true for me). The questionnaire is scored based on the total score. The lowest possible score on the scale is 18, and the highest is 126. A higher total score indicates a higher level of body awareness (Karaca, 2017).

Exercise Addiction Scale (EAS)

The Exercise Addiction Scale (EAS), developed by Tekkurşun-Demir and Türkeli in 2019, was administered to participants in the study. The EAS consists of a total of 17 items. A 5-point Likert scale was used. There are no reverse-scored items on the scale. Scores range from 17 to 85 on the scale, and exercise addiction increases as the score rises (Tekkurşun-Demir and Türkeli, 2019).

Social Appearance Anxiety Scale

Developed by Hart et al. (2008), the scale consists of 16 items. It was adapted into Turkish by Doğan (2010). The Cronbach's alpha internal consistency coefficient was reported as .93. Scale items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Higher scores on the scale indicate a higher level of appearance anxiety.

Ethical Considerations

The study was approved by the ….. University Non-Interventional Clinical Research Ethics Committee (approval date [XXXXX], decision no. [XXXX]). Written informed consent was obtained from participants completing the questionnaire face-to-face, and electronic informed consent was obtained from participants responding through the online survey platform. The study was conducted in compliance with the principles of the Declaration of Helsinki.

Statistical analysis

Statistical analyses were performed using IBM SPSS Statistics version 26.0 and JASP version 0.19.1. Continuous variables were summarised using the mean, standard deviation, median, and minimum–maximum values, whereas categorical variables were presented as frequencies and percentages. Relationships among healthy orthorexia, orthorexia nervosa, exercise addiction, body awareness, and social appearance anxiety were examined using Pearson correlation analysis.

Steiger's test was used to compare the dependent correlations of healthy orthorexia and orthorexia nervosa with body awareness, exercise addiction, and social appearance anxiety. These comparisons involved correlations obtained from the same sample and sharing one common variable. The difference in correlations was calculated by subtracting the correlation with orthorexia nervosa from the corresponding correlation with healthy orthorexia. Accordingly, positive values indicated a stronger correlation with healthy orthorexia, whereas negative values indicated a stronger correlation with orthorexia nervosa.

Hierarchical multiple linear regression analyses were conducted separately for orthorexia nervosa and healthy orthorexia. In the model predicting orthorexia nervosa, exercise addiction was entered in the first step, followed by social appearance anxiety in the second step. In the model predicting healthy orthorexia, exercise addiction was entered in the first step,

followed by body awareness in the second step. Variables within each model were entered using the Enter method. Regression results were reported using unstandardised regression coefficients (B), standard errors, standardised regression coefficients (β), t-statistics, and p-values. Model performance was evaluated using R^2, adjusted R^2, change in R^2 (ΔR^2), and the F-statistic. Multicollinearity was assessed using tolerance and variance inflation factor values. Statistical significance was set at a $p < 0.05$.

RESULTS

A total of 619 young adult female college students were included in the study. The participants' mean age was 22.35 ± 2.01 years, ranging from 18 to 35 years. Of the participants, 97.9% were single, 83.5% were nonsmokers, and 96.4% did not consume alcohol. When meal habits were examined, it was determined that 60.3% of the participants skipped main meals, while 80.6% skipped snacks. 63.0% of the participants reported eating a meal in 10–20 minutes, 22.8% in more than 20 minutes, and 14.2% in less than 10 minutes (Table 1).

Table 1
Sociodemographic and Eating-Related Characteristics of the Participants

Characteristic	Category/Statistic	n (%)
Age, years	Mean ± SD	22.35 ± 2.01
	Median (min–max)	22.00 (18–35)
Marital status	Single	606 (97.9)
	Married	13 (2.1)
Smoking status	Yes	102 (16.5)
	No	517 (83.5)
Alcohol consumption	Yes	22 (3.6)
	No	597 (96.4)
Skipping main meals	Yes	373 (60.3)
	No	246 (39.7)
Skipping snacks	Yes	499 (80.6)
	No	120 (19.4)
Time spent eating a meal	< 10 minutes	88 (14.2)
	10–20 minutes	390 (63.0)
	> 20 minutes	141 (22.8)

The participants' mean score for healthy orthorexia was 14.07 ± 4.88, while the mean score for orthorexia nervosa was 7.23 ± 4.68. The mean total score on the Exercise Addiction Scale was 45.61 ± 12.73, the mean total score on the Body Awareness Questionnaire was 86.05 ± 16.16, and the mean total score on the Social Appearance Anxiety Scale was 36.09 ± 14.62. The observed score ranges were 0–27 for healthy orthorexia, 0–21 for orthorexia nervosa, 17–85 for exercise addiction, 34–123 for body awareness, and 16–80 for social appearance anxiety (Table 2).

Table 2
Descriptive Statistics of the Study Variables

Study variable	Mean ± SD	Median	Min.-Max.
Healthy Orthorexia	14.07 ± 4.88	14.00	0–27
Orthorexia Nervosa	7.23 ± 4.68	7.00	0–21
Exercise Addiction Scale total score	45.61 ± 12.73	46.00	17–85
Body Awareness Questionnaire total score	86.05 ± 16.16	88.00	34–123
Social Appearance Anxiety Scale total score	36.09 ± 14.62	34.00	16–80
SD = Standard deviation.. Min.:Minimum Max.:Maximum			

According to the results of the Pearson correlation analysis (Table 3), a positive, strong, and statistically significant relationship was found between healthy orthorexia and orthorexia nervosa ($r = 0.603$; $p < 0.001$). Exercise addiction was found to be positively and moderately correlated with both healthy orthorexia ($r = 0.409$; $p < 0.001$) and orthorexia nervosa ($r = 0.463$; $p < 0.001$). Body awareness was weakly and positively associated with healthy orthorexia ($r = 0.215$; $p < 0.001$), but showed no significant association with orthorexia nervosa ($r = -0.072$; $p = 0.072$). Social appearance anxiety was found to have a weak positive correlation with orthorexia nervosa ($r = 0.306$; $p < 0.001$). In contrast, the relationship between social appearance anxiety and healthy orthorexia was not found to be statistically significant ($r = 0.043$; $p = 0.283$).

Table 3
Correlations Among Healthy Orthorexia, Orthorexia Nervosa, Exercise Addiction, Body Awareness, and Social Appearance Anxiety

Variable	1	2	3	4	5
1. Healthy Orthorexia	—				
2. Orthorexia Nervosa	.603***	—			
3. Exercise Addiction	.409***	.463***	—		
4. Body Awareness	.215***	−.072	.004	—	
5. Social Appearance Anxiety	.043	.306***	.219***	−.213***	—

Values represent Pearson's correlation coefficients. ***p < .001.

Table 4 presents the findings from a comparison, using the Steiger test, of the correlations between body awareness, exercise addiction, and social appearance anxiety with healthy orthorexia and orthorexia nervosa. Accordingly, the correlation between body awareness and healthy orthorexia was found to be significantly stronger than the correlation with orthorexia nervosa ($r = 0.215$ and $r = -0.072$; $z = 8.076$; $p < 0.001$). Although the correlation between exercise addiction and orthorexia nervosa was higher than that with healthy orthorexia, the difference between the two correlations was not statistically significant ($r = 0.463$ and $r = 0.409$; $z = -1.713$; $p = 0.087$). The correlation between social appearance anxiety and orthorexia nervosa is significantly stronger than the correlation with healthy orthorexia ($r = 0.306$ and $r = 0.043$; $z = -7.514$; $p < 0.001$).

Table 4
Comparison of the Correlations of Healthy Orthorexia and Orthorexia Nervosa with the Study Variables

Study variable	Healthy Orthorexia, r	Orthorexia Nervosa, r	Difference in r	Steiger's z	p
Body Awareness	.215	−.072	.287	8.076	< .001
Exercise Addiction	.409	.463	−.054	−1.713	.087
Social Appearance Anxiety	.043	.306	−.263	−7.514	< .001

Steiger's test was used to compare dependent correlations sharing one variable. The difference was calculated as the correlation with healthy orthorexia minus the correlation with orthorexia nervosa. Positive values indicate a stronger correlation with healthy orthorexia, whereas negative values indicate a stronger correlation with orthorexia nervosa

Table 5 presents the results of a hierarchical multiple linear regression analysis examining the predictive role of exercise addiction and social appearance anxiety in orthorexia nervosa levels. In the first model, exercise addiction was found to predict levels of orthorexia nervosa positively and significantly (B = 0.170; β = 0.463; p < 0.001). This model explained 21.4% of the variance in orthorexia nervosa scores (R^2 = 0.214; adjusted R^2 = 0.213; F(1,617) = 167.90; p < 0.001).

With the addition of social appearance anxiety to the second model, the explained variance increased to 25.8%, and the model's explanatory power increased by 4.4% (R^2 = 0.258; adjusted R^2 = 0.256; ΔR^2 = 0.044; F(2,616) = 107.20; p < 0.001). In the final model, both exercise addiction (B = 0.153; β = 0.415; p < 0.001) and social appearance anxiety (B = 0.069; β = 0.216; p < 0.001) are significant positive predictors of orthorexia nervosa levels.

Table 5
Hierarchical Multiple Linear Regression Analysis Predicting Orthorexia Nervosa

Model and predictor	B	SE	β	t	p	Tolerance	VIF	R^2	Adjusted R^2	ΔR^2	F
Model 1								.214	.213	.214	167.90***
Exercise Addiction	.170	.013	.463	12.958	< .001	1.000	1.000				
Model 2								.258	.256	.044	107.20***
Exercise Addiction	.153	.013	.415	11.678	< .001	.952	1.050				
Social Appearance Anxiety	.069	.011	.216	6.061	< .001	.952	1.050				

The dependent variable was orthorexia nervosa. Model 1 included exercise addiction. Model 2 included exercise addiction and social appearance anxiety. B = Unstandardised regression coefficient; SE = Standard error; β = Standardised regression coefficient; R^2 = Coefficient of determination; ΔR^2 = Change in the coefficient of determination; VIF = Variance inflation factor. Model 1: F(1, 617) = 167.90, p < .001. Model 2: F(2, 616) = 107.20, p < .001. ***p < .001.

Table 6 presents the results of a hierarchical multiple linear regression analysis examining the predictive role of exercise addiction and body awareness in healthy orthorexia levels. In the first model, it was found that exercise addiction positively and significantly predicted levels of healthy orthorexia (B = 0.157; β = 0.409; p < 0.001). This model explained 16.8% of the variance in healthy orthorexia scores (R^2 = 0.168; adjusted R^2 = 0.166; F(1,617) = 124.24; p < 0.001).

With the addition of body awareness to the second model, the explained variance increased to 21.3%, and the model's explanatory power increased by 4.5% (R^2 = 0.213; adjusted R^2 = 0.211; ΔR^2 = 0.045; F(2,616) = 83.44; p < 0.001). In the final

model, both exercise dependence (B = 0.157; β = 0.409; p < 0.001) and body awareness (B = 0.064; β = 0.213; p < 0.001) are significant positive predictors of healthy orthorexia levels.

Table 6
Hierarchical Multiple Linear Regression Analysis Predicting Healthy Orthorexia

Model and predictor	B	SE	β	t	p	Tolerance	VIF	R^2	Adjusted R^2	ΔR^2	F
Model 1								.168	.166	.168	124.24***
Exercise Addiction	.157	.014	.409	11.146	< .001	1.000	1.000				
Model 2								.213	.211	.045	83.44***
Exercise Addiction	.157	.014	.409	11.434	< .001	.952	1.050				
Body Awareness	.064	.011	.213	5.972	< .001	.952	1.050				

The dependent variable was healthy orthorexia. Model 1 included exercise addiction. Model 2 included exercise addiction and body awareness. B = Unstandardised regression coefficient; SE = Standard error; β = Standardised regression coefficient; R^2 = Coefficient of determination; ΔR^2 = Change in the coefficient of determination. Model 1: $F(1, 617) = 124.24$, $p < .001$. Model 2: $F(2, 616) = 83.44$, $p < .001$. N = 619. ***p < .001.

DISCUSSION

The aim of this study was to examine the relationships between healthy orthorexia and orthorexia nervosa tendencies among young adult female college students and their exercise addiction, body awareness, and social appearance anxiety. The findings revealed a strong, positive correlation between healthy orthorexia and orthorexia nervosa; however, the two forms of orthorexia differed significantly in terms of their relationships with other variables. Exercise addiction was found to be positively and moderately correlated with both dimensions, emerging as a common component shared by the two forms of orthorexia. In contrast, body awareness and social appearance anxiety served as the variables distinguishing the two dimensions: while body awareness was positively associated only with healthy orthorexia and showed no significant relationship with orthorexia nervosa, social appearance anxiety, on the other hand, was found to be associated with orthorexia nervosa. This distinct pattern of relationships was confirmed by both correlation and regression analyses; levels of orthorexia nervosa were significantly and positively predicted by exercise addiction and social appearance anxiety, while levels of healthy orthorexia were significantly and positively predicted by exercise addiction and body awareness. While exercise addiction serves as a common ground that fuels both dimensions of orthorexia, the key factor distinguishing healthy from pathological orthorexia is the unique predictor for each dimension: healthy orthorexia is predicted by body awareness, whereas orthorexia nervosa is predicted by social appearance anxiety.

The sample for this study consisted of young adult female college students with a mean age of 22.35 ± 2.01 years. This demographic profile aligns with the group that has been the focus of orthorexia research; this is because orthorexia tendencies are most frequently studied in young adults and college students, as this developmental stage stands out as a period in which concerns about body image and appearance, as well as sensitivity toward eating attitudes, become more pronounced (Dell'Osso et al., 2016; McComb & Mills, 2019). In a meta-analysis encompassing 67 studies and 39,255 participants, Strahler (2019) demonstrated that orthorexic eating tendencies are higher among women. When examined in terms of the two dimensions of orthorexia, the present study found that the level of healthy orthorexia was higher than that of orthorexia nervosa. This pattern is consistent with the literature. In the original validation study of the Teruel Orthorexia Scale, the mean healthy orthorexia score

among university students (Barrada & Roncero, 2018). Similarly, in a study conducted with the same scale on a sample of 985 women, the mean healthy orthorexia score was significantly higher than the mean orthorexia nervosa score, indicating that participants' healthy, adaptive interest in nutrition takes precedence over pathological tendencies (Yalçın et al., 2025). In conclusion, this sample of young adult female college students represents a group in which orthorexic tendencies and appearance-related pressures are prominent; the fact that participants scored higher on the healthy orthorexia scale indicates that interest in healthy eating within this group is predominantly of a healthy nature; however, due to the potential for a shift toward the pathological dimension, this group constitutes a risk group that requires close monitoring in terms of preventive measures.

In this study, exercise addiction was found to be positively and moderately associated with both healthy orthorexia and orthorexia nervosa; moreover, it was a significant positive predictor of both dimensions. This finding is consistent with the literature indicating that orthorexia and exercise addiction are often co-occurring extreme health behaviors. Oberle et al. (2018) reported that, in their sample of college students, orthorexia symptoms were positively associated with all measures of exercise addiction. Similarly, Strahler et al. (2021a) identified a moderate positive relationship between orthorexia and exercise addiction among women, a pattern that aligns with the findings obtained in the present study regarding orthorexia nervosa. The fact that the relationship between these two variables is moderate has also been confirmed in a meta-analysis encompassing numerous studies and participants (Strahler et al., 2021b). However, while the majority of previous studies associated exercise addiction solely with the pathological form of orthorexia, the present study—using a two-dimensional scale—demonstrates that exercise addiction is associated with healthy orthorexia with similar strength. This suggests that exercise serves as a common behavioral component in both the adaptive and pathological forms of interest in healthy eating. In this context, it is believed that exercise addiction reflects a general tendency that can push a healthy eating orientation toward excess, rather than being specific to a particular form of orthorexia; therefore, exercise level alone is not sufficient to distinguish between healthy and pathological orthorexia, and the distinguishing role belongs to other psychological variables.

In this study, body awareness was found to be positively associated only with healthy orthorexia and served as a significant predictor of this dimension; in contrast, it did not show a significant association with orthorexia nervosa. This variable stands out as one of the factors distinguishing healthy orthorexia from orthorexia nervosa. This finding is consistent with the conceptual framework that views awareness of internal bodily signals as a adaptive and functional capacity; it supports the idea that this awareness helps individuals perceive their hunger, fullness, and bodily needs more accurately, thereby guiding them toward healthy eating. Indeed, Anastasiades & Argyrides (2022) reported that indicators of positive body image, intuitive eating, and body integration are positively associated with healthy orthorexia but not with orthorexia nervosa. Similarly, Strahler (2021) demonstrated that mindful awareness is positively associated with healthy orthorexia and negatively associated with orthorexia nervosa, showing that it distinguishes between two dimensions of harmonious attention toward the body. The fact that body awareness is not associated with orthorexia nervosa suggests that the pathological dimension relies more on external rules and anxiety-based strict control than on internal bodily cues. Consequently, body awareness can be considered a protective factor that keeps healthy eating tendencies within a harmonious framework, thereby limiting their transformation into pathology.

In this study, social appearance anxiety was found to be positively associated with orthorexia nervosa and served as a significant predictor of this dimension, whereas it did not show a significant association with healthy orthorexia. Furthermore, social appearance anxiety was found to be positively associated with exercise addiction and negatively associated with body awareness. This pattern indicates that social appearance anxiety aligns with anxiety-based tendencies such as exercise addiction and orthorexia nervosa, and in the opposite direction to body awareness, which reflects a functional orientation toward signals from the body. This suggests that orthorexia nervosa is fueled more by anxiety regarding the negative evaluation of one’s external appearance than by an internal health orientation. Indeed, Eriksson et al. (2008) found that social physical anxiety and sociocultural attitudes toward appearance are associated with symptoms of orthorexia; Tóth-Király et al. (2021), meanwhile, demonstrated that orthorexia nervosa is predicted by the

internalization of appearance ideals and media pressure. Consequently, social appearance anxiety shows a positive correlation with exercise addiction and orthorexia nervosa, distinguishing itself from body-conscious, adaptive tendencies and emerging as a key factor in the shift from healthy eating toward pathology. This finding suggests that interventions aimed at reducing appearance-related anxiety may serve a protective function against orthorexia nervosa. In this context, cognitive-behavioral interventions, media literacy programs aimed at reducing the internalization of beauty and thinness ideals, and psychoeducational practices that reinforce a positive body image can be considered among the priority approaches.

A comparison using the Steiger test revealed that body awareness was significantly more strongly associated with healthy orthorexia, while social appearance anxiety was significantly more strongly associated with orthorexia nervosa; no significant difference was found in the relationships between exercise addiction and the two dimensions, indicating that exercise is a common component for both dimensions and does not play a distinguishing role. This finding suggests that healthy orthorexia and orthorexia nervosa are not two ends of the same continuum but rather distinct dimensions rooted in different psychological sources, thereby supporting the two-dimensional structure of orthorexia (Barrada & Roncero, 2018). This distinction is also corroborated by studies showing that these dimensions are associated with different variables (Anastasiades & Argyrides, 2022; Strahler, 2021).

Strengths and Limitations

This study has several strengths. First, it offers a comprehensive approach that integrates key psychological and behavioral determinants—such as exercise addiction, body awareness, and social appearance anxiety—into a single model. In the literature, this study is one of the few that separately examines healthy orthorexia and orthorexia nervosa in young adult women using the two-dimensional Teruel Orthorexia Scale, while simultaneously investigating the relationships between these dimensions and exercise addiction, body awareness, and social appearance anxiety. The large sample size (n = 619), which significantly exceeded the calculated minimum sample size, enhanced the reliability and statistical power of the findings. The use of measurement tools with established validity and reliability in the study has strengthened the consistency of the findings; the application of the Steiger test in comparing dependent correlations and hierarchical multiple regression in evaluating predictive relationships has enabled the statistical examination of the differing relationship patterns of the two orthorexia dimensions. In these respects, the study lays the groundwork for future preventive and intervention-oriented research based on distinguishing between healthy and pathological orthorexia.

However, certain limitations should be taken into account. The cross-sectional design prevents causal inferences about the relationships between variables and makes it impossible to determine the direction of these relationships. The fact that participants were taken from a single public university limits the generalizability of the findings to the broader young adult population. The fact that the sample consisted solely of female college students aged 18–35 limits the generalizability of the results to men, different age groups, and clinical populations. The use of self-report scales to collect data carries the risk of recall bias and social desirability bias. It is recommended that future studies employ longitudinal or experimental designs and be conducted with representative samples that include different age groups and broader populations.

What is already known on this subject?

Orthorexia is increasingly conceptualised as a two-dimensional construct comprising healthy orthorexia, a non-pathological interest in healthy eating, and orthorexia nervosa, a rigid preoccupation with dietary purity. Although orthorexic tendencies have been linked to exercise addiction, body image concerns, and appearance-related pressures, most evidence treats orthorexia as a single construct or focuses only on its pathological form. It therefore remains unclear which factors are shared by the two dimensions and which specifically distinguish adaptive from pathological orthorexia, particularly among young adult women.

What your study adds?

This study shows that exercise addiction is similarly associated with both dimensions of orthorexia and therefore does not distinguish between them, whereas body awareness is specific to healthy orthorexia and social appearance anxiety specific to orthorexia nervosa. These differential patterns indicate that adaptive and pathological orthorexia are shaped by distinct psychological processes rather than representing two ends of a single continuum. Clinically, this suggests that interventions targeting orthorexia nervosa may benefit from addressing appearance-related concerns while supporting body awareness as a protective resource.

CONCLUSION

This study demonstrates that, among young adult female college students, healthy orthorexia and orthorexia nervosa are two distinct dimensions that, while interrelated, may stem from different processes. Exercise addiction emerged as a common behavioral component associated with both dimensions; however, it was found that the primary factor distinguishing the two dimensions was dimension-specific variables. Body awareness emerged as a significant predictor of healthy orthorexia, while concern about social appearance was a significant predictor of orthorexia nervosa. This pattern indicates that healthy orthorexia is based on a harmonious sensitivity to signals from one's own body, whereas orthorexia nervosa is rooted in anxiety regarding how one's appearance is evaluated by others, thereby supporting the two-dimensional structure of orthorexia.

These findings indicate that not every interest in healthy eating should be interpreted as pathological in clinical assessment; healthy orthorexia and orthorexia nervosa must be carefully distinguished from one another. While promoting a functional and flexible approach to eating based on body awareness is a desirable goal, individuals with pronounced social appearance anxiety constitute a high-risk group for orthorexia nervosa, and their early identification is crucial. Since exercise addiction is a common component associated with both dimensions of orthorexia, monitoring whether exercise habits have taken on an anxiety-based and compulsive nature will provide a comprehensive perspective in assessing orthorexic tendencies. In this regard, it would be beneficial for preventive and therapeutic interventions to include cognitive-behavioral approaches that reduce anxiety about negative evaluations based on appearance, and psychoeducational practices that strengthen a positive body image.

Declarations

Conflict of interest

The authors have no relevant financial or nonfinancial interests to disclose.

Ethical approval

The study was approved by the ….. University Non-Interventional Clinical Research Ethics Committee (approval date [XXXXX], decision no. [XXXX]). The study was conducted in compliance with the principles of the Declaration of Helsinki.

Informed consent

Written informed consent was obtained from participants completing the questionnaire face-to-face, and electronic informed consent was obtained from participants responding through the online survey platform.

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Author Contribution

Conceptualization: [M.Ö.], [Ç.A.], [F.B.Y]; Methodology: [M.Ö.], [Ç.A.], [F.B.Y]; Formal analysis: [M.Ö.]; Investigation: [M.Ö.], [Ç.A.], [F.B.Y]; Data check: [M.Ö]; Writing—original draft preparation: [M.Ö.], [Ç.A.], [F.B.Y]; Writing—review and editing: [M.Ö.], [Ç.A.], [F.B.Y]. All authors have read and approved the final version of the manuscript.

Data Availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

References

1. Anastasiades, E., & Argyrides, M. (2022). Healthy orthorexia vs orthorexia nervosa: Associations with body appreciation, functionality appreciation, intuitive eating and embodiment. Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 27(8): 3197–3206.
2. Asarkaya, B., & Arcan, K. (2021). Teruel Ortoreksiya Ölçeği'nin (TOÖ) uyarlama, geçerlik ve güvenirlik çalışması. Klinik Psikoloji Dergisi, 5(2): 113–127.
3. Awad, E., Salameh, P., Sacre, H., Malaeb, D., Hallit, S., & Obeid, S. (2021). Association between impulsivity and orthorexia nervosa/healthy orthorexia: any mediating effect of depression, anxiety, and stress? BMC Psychiatry, 21(1): 604.
4. Barrada, J. R., & Roncero, M. (2018). Bidimensional structure of the orthorexia: Development and initial validation of a new instrument. Anales de Psicologia, 34(2): 283–291.
5. Bratman, S., & Knight, D. (2000). Health food junkies: Orthorexia nervosa—Overcoming the obsession with healthful eating. New York: Broadway Books.
6. Claes, L., Hart, T. A., Smits, D., Van den Eynde, F., Mueller, A., & Mitchell, J. E. (2012). Validation of the Social Appearance Anxiety Scale in female eating disorder patients. European Eating Disorders Review, 20(5): 406–409.
7. Dell'Osso, L., Abelli, M., Carpita, B., Pini, S., Castellini, G., Carmassi, C., & Ricca, V. (2016). Historical evolution of the concept of anorexia nervosa and relationships with orthorexia nervosa, autism, and obsessive–compulsive spectrum. Neuropsychiatric Disease and Treatment, 12: 1651–1660.
8. Depa, J., Barrada, J. R., & Roncero, M. (2019). Are the motives for food choices different in orthorexia nervosa and healthy orthorexia? Nutrients, 11(3): 697.
9. Doğan, T. (2010). Sosyal Görünüş Kaygısı Ölçeği'nin (SGKÖ) Türkçe uyarlaması: geçerlik ve güvenirlik çalışması. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 39: 151–159.
10. Dunn, T. M., & Bratman, S. (2016). On orthorexia nervosa: A review of the literature and proposed diagnostic criteria. Eating Behaviors, 21: 11–17.
11. Eriksson, L., Baigi, A., Marklund, B., & Lindgren, E. C. (2008). Social physique anxiety and sociocultural attitudes toward appearance impact on orthorexia test in fitness participants. Scandinavian Journal of Medicine & Science in Sports, 18(3): 389–394.
12. Hart, T. A., Flora, D. B., Palyo, S. A., Fresco, D. M., Holle, C., & Heimberg, R. G. (2008). Development and examination of the social appearance anxiety scale. Assessment, 15(1): 48–59.
13. Howard, L. M., Romano, K. A., & Heron, K. E. (2020). Prospective changes in disordered eating and body dissatisfaction across women's first year of college: The relative contributions of sociocultural and college adjustment risk factors. Eating Behaviors, 36: 101357.

14. Karaca, S. (2017). Vücut farkındalığı anketinin Türkçe uyarlaması: geçerlik ve güvenirlik çalışması [Yüksek lisans tezi]. Muğla Sıtkı Koçman Üniversitesi.
15. Kavsara, H. K., Gül Koyuncu, A., Dere Yelken, H., Barthels, F., & Stroebele-Benschop, N. (2025). Validity and reliability of the Turkish version of the Düsseldorf Orthorexia Scale (TR-DOS) and the prevalence of orthorexia nervosa among Turkish university students. Psychology, Health & Medicine, 30(4): 1–17.
16. Levinson, C. A., & Rodebaugh, T. L. (2012). Social anxiety and eating disorder comorbidity: The role of negative social evaluation fears. Eating Behaviors, 13(1): 27–35.
17. López-Gil, J. F., Tárraga-López, P. J., Hershey, M. S., López-Bueno, R., Gutiérrez-Espinoza, H., Soler-Marín, A., Fernández-Montero, A., & Victoria-Montesinos, D. (2023). Overall proportion of orthorexia nervosa symptoms: A systematic review and meta-analysis including 30 476 individuals from 18 countries. Journal of Global Health, 13: 04087.
18. McComb, S. E., & Mills, J. S. (2019). Orthorexia nervosa: A review of psychosocial risk factors. Appetite, 140: 50–75.
19. Oberle, C. D., Watkins, R. S., & Burkot, A. J. (2018). Orthorexic eating behaviors related to exercise addiction and internal motivations in a sample of university students. Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 23(1): 67–74.
20. Shields, S. A., Mallory, M. E., & Simon, A. (1989). The Body Awareness Questionnaire: Reliability and validity. Journal of Personality Assessment, 53(4): 802–815.
21. Strahler, J. (2019). Sex differences in orthorexic eating behaviors: A systematic review and meta-analytical integration. Nutrition, 67–68: 110534.
22. Strahler, J. (2021). Trait mindfulness differentiates the interest in healthy diet from orthorexia nervosa. Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 26(4): 1013–1020.
23. Strahler, J., Wachten, H., Stark, R., & Walter, B. (2021a). Alike and different: Associations between orthorexic eating behaviors and exercise addiction. International Journal of Eating Disorders, 54(8): 1415–1425.
24. Strahler, J., Wachten, H., & Mueller-Alcazar, A. (2021b). Obsessive healthy eating and orthorexic eating tendencies in sport and exercise contexts: A systematic review and meta-analysis. Journal of Behavioral Addictions, 10(3): 456–470.
25. Tekkurşun-Demir, G., & Türkeli, A. (2019). Spor bilimleri fakültesi öğrencilerinin egzersiz bağımlılığı ve zihinsel dayanıklılık düzeylerinin incelenmesi. Spor Bilimleri Araştırmaları Dergisi, 4(1): 9–24.
26. Tóth-Király, I., Gajdos, P., Román, N., Vass, N., & Rigó, A. (2021). The associations between orthorexia nervosa and the sociocultural attitudes: The mediating role of basic psychological needs and health anxiety. Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 26(1): 125–134.
27. Yalçın, T., Çiftçi, S., & Öztürk, E. E. (2025). Food neophobia and two facets of orthorexia among women: Cross-sectional study. Behavioral Sciences, 15(1): 70.