Journal of Psychopathology and Clinical Psychology / Revista de Psicopatología y Psicología Clínica, 29 **(2), 99-112, 2024**
https://doi.org/10.5944/rppc.38491
https://revistas.uned.es/index.php/rppc
J. Psychopathol. Clin. Psychol. / Rev. Psicopatol. Psicol. Clin.
ISSN 1136-5420

Factors associated with eating disorders in Colombian gym-going women: A risk model for exercise dependence

Tatiana Castañeda[1], Ana M. Gaviria[2], Rodolfo Casadiego-Alzate[1] and Jorge E. Restrepo[3]

[1]*Politécnico Grancolombiano, Medellín, Colombia*
[2]*Fundación Universitaria María Cano, Medellín, Colombia*
[3]*Tecnológico de Antioquia, Medellín, Colombia*

Abstract: The aim of this study was to examine a risk model for eating disorders and exercise dependence in women who regularly attend the gym. This study explored the impact of early maladaptive schemas, parental styles, coping mechanisms, sociocultural attitudes toward appearance, and anxious-depressive symptomatology. A total of 338 women (age range 18-40 years) participated in the study. The results suggest that early maladaptive schemas of imperfection/shame and inflexible standards, generated by parental styles characterized by less affective availability and focused on devaluative criticism, overexertion and internalization of guilt when stipulated standards are not met, lead to increased anxiety for social approval. Being approved becomes the only resource of self-validation found by the individual. Specifically, the results show that women who scored at risk for eating disorders and exercise dependence had higher levels of anxiety and depression. In turn, they more frequently used desiderative thinking and escape as coping mechanisms.

Keywords: Eating disorders; exercise dependence; early maladaptive schemas; parental styles; coping strategies, body image.

Factores asociados a los trastornos de la conducta alimentaria en mujeres colombianas que van al gimnasio: Un modelo de riesgo para la dependencia del ejercicio físico

Resumen: El objetivo de este estudio fue examinar un modelo de riesgo para los trastornos alimentarios y la dependencia del ejercicio en mujeres que asisten regularmente al gimnasio. Este estudio exploró el impacto de esquemas desadaptativos tempranos, estilos parentales, mecanismos de afrontamiento, actitudes socioculturales hacia la apariencia y sintomatología ansioso-depresiva. Participaron en el estudio un total de 338 mujeres (con un rango de edad entre 18 y 40 años). Los resultados sugieren que los esquemas desadaptativos tempranos de imperfección/vergüenza y estándares inflexibles, generados por estilos parentales caracterizados por una menor disponibilidad afectiva y centrados en la crítica devaluativa, el exceso de esfuerzo y la internalización de la culpa cuando no se alcanzan las normas estipuladas, conducen a una mayor ansiedad por la aprobación social. Ser aprobado se convierte en el único recurso de autovalidación que encuentra el individuo. Específicamente, los resultados muestran que las mujeres que obtuvieron puntuaciones de riesgo para trastornos alimentarios y dependencia del ejercicio poseían niveles más altos de ansiedad y depresión. A su vez, utilizaban con mayor frecuencia el pensamiento desiderativo y la evasión como mecanismos de afrontamiento.

Palabras clave: Trastornos alimentarios; dependencia del ejercicio; esquemas tempranos desadaptativos; estilos parentales; estrategias de afrontamiento; imagen corporal.

Introduction

Eating disorders (EaD) are a group of disorders related to eating habits and attitudes. They are pathologies in which the fear of gaining weight, altered perception of body image and weight, as well

Received: 03 October 2023; accepted: 18 June 2024.
Corresponding author: Tatiana Castañeda, Politécnico Grancolombiano. Carrera 74 # 52-20. Medellín, Colombia. E-mail: lcastaneda@poligran.edu.co

as obsessive preoccupation with food, result in serious changes in eating behavior. These changes can lead to physical and nutritional problems with high levels of severity that could put the life of the person suffering from this type of disorder at risk (Fairburn et al., 2003). Sicilia and González-Cutre (2011) define exercise dependence (ExD) as an obsessive preoccupation with physical activity and note that it has clinical implications related to chronic injury and psychological dysfunction. The concept of exercise addiction has been suggested to include compulsive and dependent behaviors; however, the most frequent designation in the literature is exercise dependence.

EaD have been described in various ways, including an obsessive fear of fatness, the pursuit of thinness, and weight gain phobia. The essence of these disorders lies in the fact that self-worth is almost exclusively tied to figure and weight, leading to a recurrent preoccupation with body shape, a relentless avoidance of gaining weight at any cost, and a continuous effort to maintain a slim physique. Another common characteristic of these diagnoses is the utilization of behaviors to control body weight, such as restrictive diets, self-induced vomiting, the abuse of purgatives or diuretics, and excessive physical exercise. In the case of anorexia nervosa (AN), the outcome is that the weight falls below the expected range for age and height. Conversely, in bulimia nervosa (BN), the weight typically falls within normal or even overweight standards since episodes of binge eating (BE) counteract these patients' attempts to adhere to a diet.

It has been suggested that ExD can manifest in two forms: primary dependence, characterized by an addiction to exercise itself, and secondary dependence, where reliance on exercise is a consequence of an underlying disorder, such as a disturbance in eating behavior. Brosof et al. (2020) report that increased withdrawal symptoms, extended time spent exercising, and diminished control over sport behavior predict heightened eating symptoms. The interest in establishing a model to explain the risk of EaD and ExD arises from various pieces of evidence supporting that excessive exercise is a consequence of an underlying eating pathology (secondary dependence), induced by dysfunctional cognitive schemas that have a negative impact on weight perception and body image (Meneguzzo et al., 2021). Specifically, women who engage in sports have been identified as a population with an increased risk of developing disturbances in eating behavior due to a higher level of internalization of thinness.

According to Young et al. (2013), early maladaptive schemas (EMS) refer to generalized cognitive and emotional patterns about the self, relationships with others, and the world. They represent underlying stable character traits and reflect more than just symptomatic states. Recent models conceptualizing EaD suggest that these pathologies emerge due to insecure attachments in childhood and the negative emotions associated with this experience. In his review of schemas and schematic processes in EaD, De Paoli et al. (2017) mention that restrictive disorders, such as AN, exhibit a stronger correlation with schemas of dependence/incompetence and emotional inhibition. In this context, the intense affect associated with schema activation (primary avoidance of affect) is avoided through compensation, such as excessive exercise compensating for an underlying defect. On the other hand, in the case of bulimic behaviors, emotional distress is actively sought after the schema has been activated (secondary avoidance of affect), using more impulsive strategies like binge eating (BE).

Regarding the parental styles, According to Young (2013), parental styles refer to the set of attitudes transmitted to the child, shaping an emotional environment through parental behaviors. These styles are directed towards the socialization of the child and adolescent, encompassing the overall characteristics of parent-child interactions that create an emotional atmosphere. Additionally, parental styles include specific parenting practices and other elements of the parent-child interaction. Kerr et al. (2021) observe that demanding parenting styles are associated with restrictive dieting behaviors observed in patients with AN. High levels of parental control were found to predict unhealthy weight control and body dissatisfaction. Similarly, Hampshire et al. (2021) concluded that exposure to demanding parenting styles, insensitive parenting styles, or a combination of both, predicts symptoms of AN. Cella et al. (2022) reported that low levels of parental care, coupled with maternal overprotection, were linked to higher negative self-esteem. This, in turn, predicted lower emotional regulation and a pattern of unhealthy eating habits.

Regarding the coping strategies used by individuals with EaD, Brytek-Matera and Schiltz (2013) discovered that women with these disorders typically employ strategies focused on tolerating or minimizing problematic situations. These strategies include escape, social isolation, renunciation, self-pity, waiting, use of drugs, alcohol, and medication, positive reappraisal, and religion. It has been suggested that these coping strategies may elevate the level of perceived stress and increase the risk of developing EaD. Additionally, there have been findings indicating that perceived self-efficacy in

problem-solving is lower in the clinical population with EaD compared to normal groups. A positive relationship between deficits in self-esteem and low self-efficacy has also been reported. Farid and Kamrani (2015) concluded in their study with adolescent females in high school that those at risk of developing an EaD were more likely to use avoidant coping strategies such as rationalization and conformity.

Additionally, sociocultural attitudes toward appearance refer to the extent to which an individual accepts socially defined ideals of physical attractiveness. Al-Kloub et al. (2019) point out that these social attitudes internalize the aesthetic body model, encompassing all social practices and beliefs disseminated through mass media and social networks, which exclusively promote thinness for aesthetic reasons. Specifically, research has shown that the more social networks are utilized to seek approval for body image, the higher the likelihood of presenting disordered eating attitudes and experiencing lower satisfaction with self-image. This increased vulnerability raises the risk for the onset or perpetuation of an EaD (Restrepo & Castañeda, 2018). Uchôa et al. (2019) reported that 45.3% of the adolescent girls assessed in their study indicated that their body image was influenced by the media. Body image was significantly more negative when they were exposed to images promoting thinness, suggesting that constant exposure to these beauty standards contributes to a negative self-image.

Anxiety is a common pathology in cases of EaD. Specifically, it has been identified that anxiety results from excessive preoccupation with the body and fear of gaining weight, leading to the drastic food restrictions characteristic of AN. Freire et al. (2021) notes that patients with anorexia are not only anxious about their figure and weight but also about food, contributing to a high comorbidity with generalized anxiety. Similarly, it has been observed that depression and rejection sensitivity are associated with increased food consumption, which could lead to binge eating (BE) in patients with BN or AN. Depression and rejection sensitivity have been identified as being related to increased food consumption, which could lead to binge eating in patients with BN or BED. Freire et al. (2021). argue that depressive symptoms increase vulnerability to binge eating as a means of coping with feelings of negative affect, as depression is associated with reduced cognitive and affective flexibility, leading to ineffective emotional regulation. The study by Sanders et al. (2021) demonstrated that higher levels of anxiety were associated with more severe eating disorder symptomatology. It was hypothesized that age, mood dysregulation, self-esteem, and perfectionism could explain the variability found in the association between anxiety and EaD symptomatology. Likewise, Garcia et al. (2020) reported that women with a history of depression and anxiety had a high probability of developing an EaD, and almost 40% presented clinically significant disordered eating behaviors in their lifetime.

Based on the previous findings, the following question arises: Is there a risk of eating disorders (EaD) and exercise dependence (ExD) in women who regularly attend the gym, and is it related to early maladaptive schemas, parental styles, coping systems, sociocultural attitudes towards appearance, and anxious-depressive symptomatology? To address this question, the aim of this research was to test the fit of a predictive risk model, integrating the main variables identified in theoretical and empirical evidence. This model allows inferences to be made about the magnitude of the causal effects of early maladaptive schemas (EMTS) on the risk of EaD and ExD.

Having a predictive causal model of such scope represents an advancement in understanding these diagnostic categories. It enables an understanding of the most significant predictors of EaD and ExD, and the nature of the relationships between the identified variables. This provides valuable insights for the clinical conceptualization of such cases, especially for the development of prevention and early intervention programs for EaD in fitness centers. Excessive exercise is associated with a worse prognosis for recovery from eating disorders, longer hospital treatment (Solenberger, 2001), and a higher risk of relapses.

Method

Participants and procedure

A non-experimental cross-sectional quantitative study was conducted. This study exclusively involved female gym users in the city of Medellín, targeting a population segment at a high risk of developing an eating disorder (Mendia et al. 2022) and, consequently, a secondary dependence on physical exercise for weight loss. A non-probabilistic convenience sampling method was employed, including only women aged between 18 and 40 years (M = 28.92, SD = 6.33) residing in Medellín (Colombia) who had been attending the gym for more than three consecutive months. Individuals with any personal history of a diagnosis on the psychosis spectrum were excluded. A total of 338 women participated in the study. To access the study population, initial contact was established with the administrators of each gym. They

were provided with an executive report outlining the research objectives, methodology, and the scope and limitations of the entity's participation. A total of 12 gyms participated, with four specializing in crossfit, three in functional training, and five in traditional training. For each participant, three sessions were scheduled for the application of the protocol of instruments, with a weekly frequency and an approximate duration of 60 minutes per session. The instruments were applied between May 2021 and June 2022. All participants read and signed the informed consent form, which had received approval from the ethics committee of one of the universities involved in the study.

Measures

Young Schema Questionnaire (YSQ; Young & Brown, 1994). For this research, the version validated by Londoño et al. (2012) with Colombian population was used. The questionnaire is composed of 75 items that are scored on a 6-point Likert scale ranging from "totally false" (1) to "describes me perfectly" (6). This instrument measures 15 early maladaptive schemas grouped into 5 domains, which are: disconnection and rejection, impaired autonomy and performance, impaired boundaries, orientation towards others and inhibition. The schemas measured are emotional deprivation, abandonment, mistrust/abuse, defectiveness/shame, social isolation, failure, dependence, vulnerability to harm, attachment, subjugation, self-sacrifice, emotional inhibition, unrelenting standards/hypercriticalness, grandiosity and insufficient self-control. The internal consistency of the total scale was Cronbach's alpha of .95, while, for each of the 15 dimensions, the reported values ranged from .74 to .89. In this study, an overall Cronbach's alpha (α) of .89 was identified. The reported values for each of the 15 dimensions ranged between .90 and .91. Additionally, an omega coefficient (ω) of .91 was determined for the overall dimension, with ω values falling between .90 and .91 for the 15 dimensions.

Young Parental Inventory (YPI; Young, 2003). It is a self-report questionnaire consisting of 72 statements that individuals could use to describe their parents. It is composed of two six-point Likert scales: 1 (totally false), 2 (most of the time false), 3 (more false than true), 4 (more true than false), 5 (most of the time true), and 6 (describes you perfectly). Higher scores indicate a perception that the parent behaved in a way that was more likely to generate the related core beliefs. The Spanish version of the YPI has been used previously with adults in both clinical and nonclinical populations. Each of these scales had good test-retest reliability and adequate internal consistency. An alpha between .78 and 0.91 was reported for each dimension. In this study, a Cronbach's alpha coefficient (α) of .97 was identified. For each of the 15 dimensions, reported values ranged between .92 and .95. Additionally, an omega coefficient (ω) of .97 was found for the overall dimension, and ω values between .93 and .96 were observed for the 17 evaluated dimensions.

Coping Strategies Questionnaire (CEA; Rodríguez-Marín et al., 1992). Was developed by Rodríguez-Marín et al. (1992) based on previous studies by Lazarus and Folkman (1986). It consists of 36 questions with Likert-type response options (1 = never; 2 = rarely; 3 = sometimes; 4 = often; 5 = almost always), which assess various coping behaviors in stressful situations. The factorial decomposition of the questionnaire resulted in the creation of 11 scales: positive thinking, blaming others, desiderative thinking, seeking social support, solution seeking, emotional repression, advantage accounting, religiosity, self-blame, resignation and escape. In the Spanish validation conducted by Mayo et al. (2012), overall reliability of the questionnaire was found by Cronbach's α (.80). In this study, a Cronbach's alpha coefficient of .80 was obtained. Additionally, alpha values ranging between 0.71 and .80 were obtained for each of the 11 analyzed dimensions. Regarding the omega coefficient (ω), it was found to have a value of .82 for the overall dimension, while for individual dimensions, ω values ranged between 0.72 and .81.

Eating Attitudes Test (EAT-26, Garner & Garinkel,1979) The validation of Constaín et al. (2014) was used because it shows an appropriate factorial structure, excellent reliability (Cronbach's α of .92) and sensitivity values, as well as an adequate specificity value, which makes it appropriate for screening for possible ED in at-risk populations. The risk of ED is established with a score ≥ 20. The test is comprised of 26 Likert-type response items, which explore concerns and symptoms associated with ED. It is composed of 3 factors: diet, which includes items on fattening food avoidance behaviors and concerns about thinness; bulimia and preoccupation with food, which contains items on bulimic behaviors and thoughts about food; and oral control, which encompasses items on self-control of intake and pressure from others to gain weight. In this study, a Cronbach's alpha coefficient of 0.84 was established. Additionally, an omega coefficient (ω) value of .93 was identified. The assessed dimensions yielded alpha (α) and omega (ω) values ranging between .82 and0.91.

Yale Food Addiction Scale (YFAS; Gearhardt et al., 2009). It is used to measure addictive eating behavior, also known as food addiction. It is based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) criteria for substance dependence and is adapted to the context of food consumption. The YFAS consists of 25 items that assess the frequency and severity of problems related to food consumption, including eating large amounts of food and feelings or emotions associated with a BE episode. Responses are rated on a dichotomous scale (yes/no). In the Mexican validation by Moreno et al. (2016), adequate psychometric properties of the YFAS were found, with a Cronbach's alpha value of .79 and an excellent Kuder-Richardson internal consistency of .94. In this study, a Cronbach's alpha coefficient of .90 was found, and for the omega coefficient (ω), a value of .93 was obtained. Values for both alpha (α) and omega (ω) were reported between 0.90 and .92 for the 8 evaluated dimensions.

Exercise Dependence Scale-Revised (EDS-R; Downs et al., 2004). The Spanish version validated by Sicilia and González-Cutre (2011) was used. It is an instrument designed to assess physical exercise dependence by means of 21 items with response on a 6-point Likert scale ranging from 1 (never) to 6 (always). The items are divided into seven factors: abstinence, continuation, tolerance, lack of control, reduction of other activities, time, and desired effects. The EDS-R allows individuals to be classified into three groups: at risk of exercise dependence, symptomatic non-dependent and asymptomatic non-dependent. Recently, Restrepo et al. (2021) evaluated the psychometric properties of the EDS-R in a population of the city of Medellín, finding adequate internal consistency and factorial validity confirmed through goodness-of-fit indices for the seven-dimensional model. Cronbach's alpha coefficient was .91. In this study, a Cronbach's alpha coefficient of .89 was obtained. Regarding the omega coefficient (ω), a value of .90 was identified. Furthermore, alpha (α) values ranging between .75 and .80 were achieved for each of the 7 analyzed dimensions, while omega (ω) values varied between .90 and .93.

Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-4; Schaefer et al., 2012). Is a self-report test composed of 22 items to assess sociocultural attitudes towards appearance. The Spanish version has been validated and consists of five subscales measuring: internalization of the muscular ideal, internalization of the thinness ideal, family pressures, peer pressures and media pressures. The response scale is Likert-type, where 1 corresponds to "completely disagree" and 5 to "completely agree". In the Colombian validation conducted by Villegas-Moreno et al. (2021), the instrument was found to have a high level of reliability, evidenced both in the separation index (2.63) and Cronbach's alpha (α = .87) from traditional theory. The current study disclosed a Cronbach's alpha coefficient of .74 and an omega coefficient (ω) of .82. Across the 5 assessed dimensions, Cronbach's alpha values ranged from .70 to .73, while omega values fluctuated between .78 and .82.

Beck Depression Inventory – II (BDI-II; Beck et al., 1996). Is a questionnaire designed to assess the severity of symptoms of depression, both cognitive, affective, behavioral and physiological. It consists of 21 items with four response options ranging from 0 (no depression) to 3 (maximum depression). The psychometric properties of the BDI-II for the Colombian population have been investigated by Maldonado-Avendaño et al. (2023), who found a Cronbach's alpha coefficient of 0.91, indicating good internal consistency. In addition, statistically significant item-test correlations were found ($p < 0.001$) ranging from .31 to .67, suggesting good content validity of the questionnaire. A good fit of a bifactor model was also identified, supporting the factorial structure of the questionnaire. This study reported Cronbach's alpha coefficient and an omega coefficient (ω) of .93.

Zung Anxiety Scale (Zung, 1971). It is a self-report measure composed of 20 statements that allow the identification of anxiety levels through affective and physiological symptoms. The questions are statements referring to the experience of symptoms during the last 30 days and the response options are organized on a Likert-type frequency scale (1 = Never, 2 = Sometimes, 3 = Many times and 4 = Always). Each item is rated according to severity, in terms of intensity, duration and frequency of each symptom. The anxiety scale was validated with Colombian population by De la Ossa et al. (2009), who reported adequate reliability and validity. A Cronbach's α coefficient of .77 and three main factors responsible for 40.1% of the total variance were found. This study found a Cronbach's alpha coefficient of .75 and an omega coefficient (ω) of .82.

Ad hoc sociodemographic, habits and background questionnaire. Information was obtained on sex, age, marital status, educational level, occupation, socioeconomic stratum, weight, height, medical conditions suffered, personal and family psychological history, time spent attending the gym, number of days attending the gym, duration of training routines, consumption of supplements to improve sports performance, training modality and dietary behaviors.

Data analysis

Considering that the objective of this research was to test a risk model, PLS-SEM was used using the SEMinR R package (Hair et al., 2021). Initially, rescaling of variables was performed to homogenize the scales. This scaling was applied only to variables that were on binary or multinomial scales. The scaling included normalization, with the aim of facilitating the interpretation of the parameters to be estimated by assuming a normal distribution. Next, the backup variables were renamed to specify the formative constructs and the direction of the model relationships to be tested, avoiding conflicts with the functions specified in the script.

Four steps were followed to validate the measurement model: 1) identification of the reliability of the indicators, where $\lambda \geq .3$ was considered acceptable; 2) assessment of internal consistency reliability, in this case the rho_c (composite reliability) was reported. Values between .60 and .70 are considered "acceptable in exploratory research", while values between .70 and .90 are considered "satisfactory to good". Values above .90 (and above .95) are problematic, as they indicate that the indicators are redundant and reduce construct validity (Diamantopoulos et al., 2012); 3) assessment of convergent validity, where the minimum acceptable of average variance extracted (AVE) is .50. An AVE of .50 or higher indicates that the construct explains 50% or more of the variance of its component indicators (Hair et al., 2021); and 4) assessment of discriminant validity. Hair et al., (2021) proposed the traditional metric and suggested comparing the AVE of each construct with the inter-construct quadratic correlation (as a measure of the shared variance between constructs) of that same construct and all the other constructs measured reflexively in the structural model. The shared variance among all constructs in the model should not be greater than their AVEs.

Finally, an evaluation of the structural model was performed in three steps: 1) collinearity detection, evaluating the correlation of the predictor constructs with each endogenous construct, with a variance inflation factor (VIF) value ≤ 5 considered acceptable; 2) evaluation of the importance and relevance of the dependent constructs, verifying that the estimated path coefficients are significant through the Bootstrap of 1000 resamples and that they have a value ≥ 1.96 for statistical significance; and 3) analysis of the explanatory power of the model, where the R^2 of the endogenous constructs was evaluated. All analyses were carried out in the R-Studio software version 4.2.2.

Results

The women who participated in the study had a mean age of 28.92 years (*SD* = 6.33). They were mostly single women (66.6 %) with university or postgraduate studies (73.1 %), of medium-high socioeconomic level (83.4 %) who only worked or studied and worked (71 %). Table 1 shows the personal and family medical and psychological history and sporting routine. It was found that most of the women evaluated reported having a personal history of polycystic ovary disease and were normal weight. Anxiety was the most prevalent psychological antecedent at both personal and family levels. With respect to sports habits, there was a high prevalence of women who reported following dieting behaviors and consuming supplements. Most of the participants performed traditional training with machines.

Table 2 shows the summary statistics for all the factors and variables evaluated for the construction of the structural equation model.

Table 1. Personal and family medical and psychological history and sporting routine

Variable	Categories	*f*	%
Personal medical history	Obesity	33	10.3
	Gastrointestinal disease	25	7.8
	Hyperthyroidism	19	5.9
	Hypothyroidism	21	6.6
	Polycystic Ovarian Syndrome	78	24.4
	Other diagnoses	16	5.0
Classification of Weight	Underweight	14	4.4
	Normal weight	215	67.2
	Overweight	75	23.4
	Obesity class I	8	2.5

Table 1. Personal and family medical and psychological history and sporting routine

Variable	Categories	*f*	%
	Obesity class II	6	1.9
	Obesity class III	2	0.6
Personal psychological history	Anorexia	2	0.6
	Bulimia	7	2.2
	Binge eating disorders	8	2.5
	Depression	61	19.1
	Anxiety	76	23.8
	Personality disorder	5	1.6
Family psychological history	Anorexia	0	0.0
	Bulimia	8	2.5
	Binge eating disorders	4	1.3
	Depression	6	1.9
	Anxiety	154	48.1
	Personality disorder	135	42.2
Gym routine	High performance competitor	15	4.7
	Consume supplements	198	61.9
	Diets	183	57.2
Type of training	Traditional with machines	159	49.7
	Functional	81	25.3
	CrossFit	78	24.4
	Calisthenics	2	0.6
		M	*SD*
	Time attending the gym (in months)	38.62	41.48
	Days per week attending the gym	4.58	1.04
	Hours of routine duration	1.70	0.57
	Weight	61.68	10.32
	Size	1.61	0.06
	BMI	23.54	3.90

Table 2. Statistical summary measures of the variables

Factor	Variable	*M*	*SD*
Eating disorders	Bulimia	3.44	3.43
	Diet	7.68	5.41
	Preoccupation with food	8.38	5.00
	Oral Control	2.11	2.70
	Total	22.74	14.20
Exercise dependence	Abstinence	11.28	5.17
	Continuation	5.38	3.29
	Tolerance	11.40	5.09
	Lack of control	8.41	4.29
	Reduction of activities	4.85	2.52
	Time	7.86	4.62
	Desired effects	6.92	4.24
	Total	53.84	24.96

Table 2. Statistical summary measures of the variables (continuación)

Factor	Variable	*M*	*SD*
Early maladaptive schemas	Abandonment and instability	11.74	6.45
	Mistrust and abuse	9.50	4.76
	Emotional deprivation	13.06	7.92
	Defectiveness/Shame	10.69	6.22
	Social isolation	12.39	6.49
	Dependency Incompetence	9.46	4.25
	Vulnerability to harm	11.75	5.12
	Confusing attachment	8.99	4.57
	Failure	9.38	5.97
	Grandiosity	10.17	5.32
	Insufficient self-control	12.62	7.28
	Subjugation	10.14	5.20
	Self-sacrifice	12.31	6.42
	Emotional inhibition	16.22	8.29
	Unrelenting Standards	19.19	6.84
Parental styles	Overprotective	8.97	4.66
	Depriving	13.04	7.99
	Punitive	19.30	6.91
	Perfectionist	20.73	7.36
	Insufficient discipline	12.50	7.27
	Imperfectionist	10.74	6.36
	Mistrust abuse	9.40	4.71
Coping strategies	Positive Thoughts	16.25	4.59
	Blaming others	10.11	3.19
	Desiderative Thinking	15.55	3.88
	Searching for social support	9.27	3.19
	Solution Seeking	15.02	4.36
	Emotional Repression	13.66	1.73
	Advantage-counting	6.09	1.85
	Religiosity	4.98	2.72
	Self-blame	6.04	2.02
	Resignation	5.51	1.80
	Escape	7.33	2.83
Sociocultural attitudes toward appearance	Muscular Internalization	9.12	2.98
	Internalization of thinness	16.31	5.20
	Family pressures	7.88	4.55
	Peer pressures	7.68	4.18
	Media pressure	14.84	5.71
	Total	59.88	16.27
Binge eating disorder	Total	2.84	2.26
Anxiety	Total	38.74	6.76
Depression	Total	8.93	9.29

Table 3 shows the variables that, according to the results of the analyses, met the parameters for inclusion in the measurement model. The table includes the reliability indices of internal consistency (IC), which in

Table 3. Latent variables included in the measurement model and their indices

	IC	CV	DV									
Latent variable			1	2	3	4	5	6	7	8	9	10
1. EMTS	.700	.600	.756									
2. Parental styles	.700	.500	.693	.697								
3. Sociocultural attitudes	.800	.600	.621	.620	.759							
4. Coping	.800	.600	.62	.616	.603	.805						
5. Clinical components	.900	.800	.496	.483	.628	.439	.803					
6. Personal history	.800	.700	.363	.36	.442	.378	.48	.848				
7. Family history	.700	.500	.247	.251	.272	.189	.148	.318	.737			
8. Risk of ExD	.800	.600	.663	.675	.717	.618	.441	.382	.271	.747		
9. Risk of EaD	.800	.700	.226	.231	.221	.134	.115	.078	.056	.214	1.000	
10. Type of training	1.00	1.00	.431	.45	.477	.397	.326	.219	.089	.532	.287	.825

this case corresponds to Cronbach's Alpha. According to the standards in PLS-SEM, the minimum established value is .7, ensuring compliance with this first criterion. Additionally, the table displays the convergent validity (CV), indicating the degree to which the construct explains the variance in its indicators. Here, the minimum value is .5, which is consistent with the recommendations given by Hair et al. (2021). Finally, the table also identifies the discriminant validity (DV), ensuring that the studied dimensions measure and represent very different objects of study. For this purpose, the Fornell-Larcker criterion was employed, which states that each value in the main diagonal – the square root of the CV – must be higher compared to the individual figures in each column (1 – 10).

From the results of the four previous steps (described in the data analysis section), it was possible to affirm the satisfactory fulfillment of the validity conditions of the theoretical measurement model proposed. The evaluation of the structural model was performed in three steps, as described in the data analysis section. Figure 1 shows the relationships between the latent variables, the factor loadings of the observed variables and the structural coefficients of the PLS-SEM model with statistical significance.

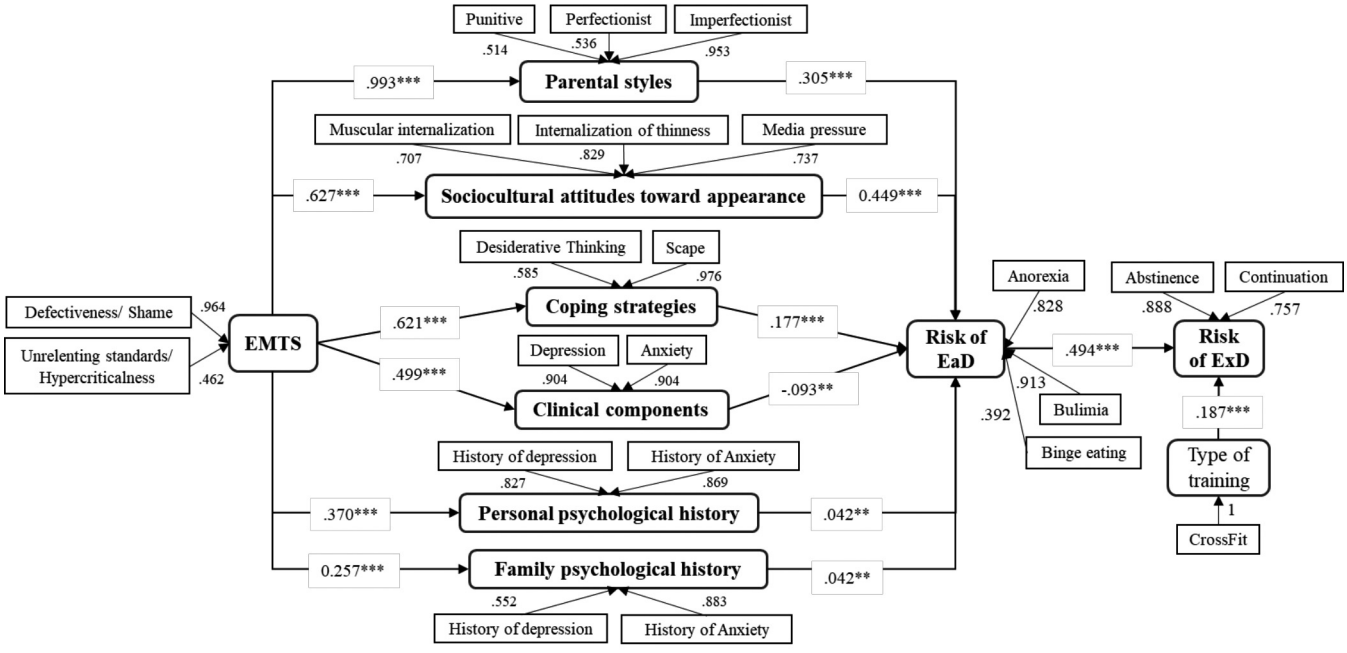

Figure 1. *Structural equations model with PLS – SE.*

Table 4 shows the estimates of R^2 for each of the endogenous constructs that make up the model. The overall R^2 value for the regression of the composite endogenous variable Risk of EaD was .617. That is, the model was able to explain 61.7 % of the variance of this variable from Parental styles, Sociocultural attitudes, Coping, Clinical components, Personal history and Family history. On the other hand, the regression of the variable Risk of ExD was able to explain 51% from Risk of EaD and Type of training, indicating a high explanatory power in accordance with what is suggested by Hair et al. (2021) who estimates a minimum predictive value of .10 in endogenous variables.

Table 4. R^2 of the endogenous constructs in the PLS-SEM model

Direction	Estimates	
	Partial R^2	Global R^2
EMTS → Parental styles	.986	
EMTS → Sociocultural attitudes	.486	
EMTS → Coping	.484	
EMTS → Clinical components	.446	
EMTS → Personal history	.432	
EMTS → Family history	.461	
Parental styles → Risk of EaD	.509	
Sociocultural attitudes → Risk of EaD	.450	
Coping → Risk of EaD	.474	
Clinical components → Risk of EaD	.490	
Personal history → Risk of EaD	.437	
Family history → Risk of EaD	.441	.617
Risk of EaD → Risk of ExD	.493	
Type of training → Risk of ExD	.482	.510

Discussion

This research aimed to evaluate a risk model for EaD ExD. Key findings indicate that early maladaptive schemas of imperfection/shame and inflexible standards serve as predictors for the risk of EaD and ExD. Additionally, the relationship between these schemas and the risk of EaD and ExD is influenced by parental styles of perfectionism, punitiveness, and imperfection; coping strategies of desiderative thinking and escape; clinical levels of anxiety and depression; and the internalization of sociocultural attitudes promoting ideals of muscularity and thinness. These results are consistent with those proposed by other authors developing explanatory and predictive models for EaD (Hovrud et al., 2020).

The findings suggest that the belief of being defective originates from early experiences of devaluative criticism and consistent pointing out of negative aspects, fostering a sense of frequent rejection. This prompt compensatory behaviors in adulthood, like restrictive diets, excessive exercise, and purging, aimed at avoiding the activation of this distressing schema. Additionally, the inflexible standards schema, emphasizing achievement and control, establishes personal norms, heightened self-criticism, and an excessive focus on weight. This results in a relentless pursuit of socially imposed body ideals through physical exercise. This aligns with studies like Mavrandrea & Gonidakis (2023) linking compulsory exercise in female athletes to perceived ability, fear of errors, and high personal standards.

The first objective of the study aimed to assess the role of parental styles as mediators between EMTS and the risk of EaD and ExD. The results indicate that when EMTS related to imperfection/shame and inflexible standards are associated with parental styles characterized by reduced affective availability, devaluative criticism, and punitive attitudes for unmet standards, individuals experience heightened anxiety for social approval. This is due to the approval-seeking becoming the primary means of self-validation. Furthermore, the internalization of performance demands from punitive parental styles leads to the establishment of excessively high standards, creating an ongoing need for approval and recognition.

The argument is that both punitive and imperfection parenting styles involve high demands and low affective responsiveness, contributing to the development of cognitive schemas associated with perfectionism and imperfection/shame. This sheds light on why women at risk of EaD consistently feel the need to lose weight, fear becoming fat, and struggle with regulating negative emotions. Within the family context, the belief that there are always aspects of the self, including body image, that can be improved, makes weight and thinness synonymous with ability, achievement, and discipline, influenced by EMTS.

The second objective of the study aimed to explore how sociocultural attitudes toward appearance mediate the relationship between EMTS and the likelihood of developing EaD and ExD. The findings indicate that internalizing demanding norms to avoid parental criticism translates into accepting social precepts that emphasize validation and recognition. This aligns with Vázquez-Arévalo et al. (2021) report that attitudes toward appearance mediate the risk of ExD. The conclusion is that gaining interpersonal approval and avoiding negative social criticism related to body shape involve adopting control patterns like purging and restrictive

diets. This underscores the impact of social and cultural factors on internalizing specific values about the body, becoming a primary focus in an individual's life (Al-Kloub et al., 2019).

Excessive preoccupation with weight and figure is a common diagnostic criterion in EaD, as acknowledged by Craven & Fekete (2019). However, poor self-concept and low self-esteem may drive individuals to seek greater approval from others, as highlighted by Coyne & Woodruff (2020). This dynamic underscore the emergence of sociocultural attitudes toward appearance as a mediating factor for EaD risk, and consequently, exercise dependence in the research model. Persistent exposure to beauty stereotypes is noted to contribute to a negative self-image, intensifying feelings of imperfection and the need for discipline to achieve societal body ideals.

The reinforcement of imperfection schemas (feeling unattractive) and inflexible standards (a need for more discipline to attain body ideals) implies not just being thin but also achieving marked muscular definition. Recent research by Scott et al. (2023) indicates that body ideals focused on thinness and, more recently, on muscle definition, contribute to the development of obsessive thoughts related to weight control and the fear of gaining weight. Consequently, this promotes the emergence of dysfunctional eating behaviors and body dissatisfaction.

The third objective of the study aimed to assess the mediating role of coping strategies in the relationship between EMTS and the risk of EaD and ExD. The results indicate that escape strategies and desiderative thinking act as mediators in the onset of EaD, serving as mechanisms to regulate emotions associated with the fear of weight gain and early imperfection schemas. These findings are consistent with Henderson et al. (2022) and Bedoya Cardona (2023) research, highlighting the role of emotion-focused coping strategies in mediating stress perception related to weight concerns.

The inference drawn is that parental styles characterized by imperfection, perfectionism, and punitiveness, with an excessive emphasis on control, impede women at risk of EaD from relying on their emotional self-control and problem-solving strategies. This is due to the fact that parents often either dictated specific ways to handle stressful situations (as observed in women at risk of Anorexia Nervosa) or, conversely, were unavailable to provide support in resolving conflict situations (as seen in women at risk of Bulimia Nervosa and Binge Eating). Such dynamics contribute to the formation of a pervasive sense of inefficacy, leading to difficulties in perceiving body signals (like hunger and satiety) and regulating aversive emotional states (frustration, guilt) that may arise when complete control over weight is unattainable (Cella et al., 2022).

The emphasis lies in the fact that the utilization of avoidance-focused coping involves valuing coping strategies for environmental stressors as insufficient or inadequate. This occurs because excessive parental control may have hindered the independent development of problem-solving skills and the regulation of negative affect. As a result, there is an increased risk of developing abnormal eating behaviors, which aim to compensate for the feeling of imperfection or regulate aversive emotional states like guilt and shame associated with appearance. It's noteworthy that, although the avoidant coping style might offer initial stress relief (Henderson et al., 2022), it is generally considered less effective over time. This is because it fails to modify the stressor or its negative impact on the individual, essentially preventing any type of schema modification. In simpler terms, even if the negative affect is avoided, the belief of imperfection remains intact.

The fourth objective of the study was to explore the impact of clinical levels of anxiety and depression as mediators between early maladaptive schemas and the risk of EaD and ExD. In this context, it's crucial to note that depressive and anxiety disorders are commonly associated with the exacerbation of eating disorders. Low mood has been linked to social isolation, a lack of motivation for change, anhedonia, and poor appetite in individuals with AN. While there is no conclusive stance on whether these disorders precede, are comorbid with, or result from BE behavior (Keshishian et al., 2021), the findings of this research affirm the presence of pathological levels of depression and anxiety in individuals with BE and BN, as indicated by the proposed model.

The study suggests that heightened stress levels may interact with anxiety and depression, escalating the risk of EaD. Specifically, in the case of BN and BE, stressful environmental circumstances appear to selectively increase food consumption in individuals with higher anxiety traits. The perception of stress influences the utilization of more emotional (avoidant) coping strategies, thereby intensifying the risk of BE behaviors. Additionally, it is conceivable that as the significance of body image grows in adolescence, anxious traits could magnify preoccupation with weight and figure. Research indicates that perfectionism and imperfection-shame schemas correlate with high levels of social anxiety (Fatemi et al., 2022), potentially leading to the development of depression when coexisting with negative body image. Moreover, a greater predisposition to anxiety, whether due to family history or direct exposure to environmental situations, heightens the concern for conforming to social standards dictating how

body image is used to obtain validation and recognition from others.

The fifth objective highlights that the connection between success, physical appearance, sports performance, and control prompts female athletes to view sports competition as an avenue for achievement. Consequently, they may develop cognitive and affective responses associated with ExD. The findings suggest that women exhibiting cognitive schemas linked to perfectionism and control face an elevated risk of developing eating behavior pathologies and subsequent exercise dependence. The results of the risk model proposed in this study suggest that ego goals serve as a coping mechanism for dealing with the constant criticism experienced in childhood. This coping strategy leads to the establishment of rigorous performance standards.

These findings align with previous research indicating that punitive parental styles contribute to the development of perfectionism and control schemas, which are associated with the symptoms of individuals with EaD. Moreover, individuals dominated by ego goals tend to repeatedly demonstrate their abilities to establish self-esteem and avoid failure. To protect themselves from undesirable outcomes, they adopt compulsive exercise behavior. The desire for self-validation leaves them with limited options for rest in case of injury, leading to withdrawal from social relationships and an inability to reduce training hours. In this research's risk model, the dimensions of abstinence and continuation were identified as the most significant factors explaining the risk of ExD.

To comprehend distinctive aspects of ExD in various EaD, it's essential to consider the methods employed. In AN, weight loss is achieved through restrictive diets and excessive exercise. In BN, compensatory modes, such as physical activity, are used after binge eating behavior. According to the DSM-5 (APA, 2014), a key difference between BE and BN is the absence of compensatory behaviors in BE. Thus, one must revert to explanatory theories of BE, specifically the negative affect avoidance model, which proposes that binge eating serves as a maladaptive regulation strategy triggered by negative emotions (Bohórquez-Borda, 2023). The findings of this study suggest that physical exercise may serve to modulate the guilt or shame experienced after overeating in individuals with BE.

In this context, it can be asserted that, in BN, compensatory behaviors of a behavioral nature are predominantly utilized, while in BE, an emotional form of compensation might be employed. It is important to clarify that frequent or prolonged exercise sessions are not inherently problematic. Nevertheless, physical exercise undertaken with the sole intention of influencing weight (regardless of the training modality) is linked to the risk of EaD in women who regularly engage in exercise. This population exhibits characteristics such as heightened guilt, obsessive thoughts, motivations related to weight/appearance, inflexibility in workouts, and avoidance of negative affect as primary features associated with exercise.

Finally, the practice of CrossFit has been identified as associated with the risk of exercise dependence. This aligns with previous research findings, indicating that engaging in CrossFit is among the significant predictors of dependence symptoms (Mavrandrea & Gonidakis, 2023). Although CrossFit does not prioritize a lean-focused training approach, it is centered around building muscle (Mavrandrea & Gonidakis, 2023). As muscle is situated beneath body fat, women aspiring for a muscular physique may also need to maintain a low percentage of body fat (lean model). This pursuit can contribute to dissatisfaction with self-image and serve as a factor in sustaining EaD.

This research holds significance for clinical and sport psychology, shedding light on the pathways leading to ED in athletes and recreational individuals. The findings have clinical implications for treatment plans and prevention strategies in fitness centers. The importance of raising awareness among fitness instructors about eating disorders, body image, and exercise motivation is emphasized. The study suggests that understanding how psychological variables, like EMTS, impact the risk of ED and ExD enables the proposal of optimal treatments. Parental training is identified as a crucial preventive measure against ED, contributing to mental health professionals' knowledge and potentially inspiring innovative approaches in schema therapy.

For future research, there is a need to delve deeper into the factors contributing to eating disorders among female athletes in gyms, highlighting the high risk observed in this population. This underscores the necessity for preventive strategies related to psychoeducation. Limitations of the study, such as the cross-sectional design and reliance on self-report measures, are acknowledged. Recommendations for future research include implementing longitudinal designs, combining interviews with self-report questionnaires, and employing random sampling techniques to enhance the reliability and validity of the findings.

Conflicts of interest

The authors have no conflicts of interest to disclose.

References

Al-Kloub, M. I., Al-Khawaldeh, O. A., ALBashtawy, M., Batiha, A. M., & Al-Haliq, M. (2019). Disordered eating in Jordanian adolescents. *International Journal of Nursing Practice*, *25*(1), e12694. https://doi.org/10.1111/ijn.12694

American Psychiatric Association (2014). *Manual Diagnóstico y Estadístico de los Trastornos mentales (5th ed.)*. Editorial Médica Panamericana.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *BDI-II. Beck Depression Inventory Second Edition*. The Psychological Corporation.

Bedoya Cardona, E. Y., Pereira Moreno, L. J., Popa, I., Morandi, A., Molina-Fernández, A., Hansen-Rodríguez, G., Filgueiras, A., Hernández Montaño, A., González Tovar, J., Vilagrá Ruiz, R., Pinto Marques, M., Bueno Castellanos, C., y Montomoli, C. (2023). Estrés percibido y estrategias de afrontamiento durante el confinamiento por COVID-19 en cinco países. *Revista de Psicopatología y Psicología Clínica*, *28*(1), 13–26. https://doi.org/10.5944/rppc.32578

Bohórquez-Borda, D., Gómez-Villarraga, D., Bernal-Cundy, M., Iriarte-Becerra, S., Ramírez-Moreno, V., y Riveros-Munévar, F. (2023). Escala de Dificultades de Regulación Emocional (DERS): Evidencia de validez y fiabilidad en muestras colombianas. *Revista de Psicopatología y Psicología Clínica*, *28*(2), 129–138. https://doi.org/10.5944/rppc.36318

Brosof, L. C., Williams, B. M., & Levinson, C. A. (2020). Exploring the contribution of exercise dependence to eating disorder symptoms. *International Journal of Eating Disorders*, *53*(1), 123–127. https://doi.org/10.1002/eat.23156

Brytek-Matera, A., & Schiltz, L. (2013). Comparative structural study of the configuration of coping strategies among female patients with eating disorders and a non-clinical control group. *Psychiatria Danubina*, *25*(4), 359–365.

Cella, S., Cipriano, A., Aprea, C., & Cotrufo, P. (2022). Risk factors for binge eating severity among adolescent girls and boys. A structural equation modeling approach. *Appetite*, *169,* 105825. https://doi.org/10.1016/j.appet.2021.105825

Constaín, G. A., Ricardo, C., Rodríguez-Gázquez, M. D. L. Á., Álvarez, M., Marín, C., y Agudelo, C. (2014). Validez y utilidad diagnóstica de la escala EAT-26 para la evaluación del riesgo de trastornos de la conducta alimentaria en población femenina de Medellín, Colombia. *Atencion Primaria*, *46*(6), 283–289. https://doi.org/10.1016/j.aprim.2013.11.009

Coyne, P., & Woodruff, S. J. (2020). Examining the influence of crossfit participation on body image, self-esteem, and eating behaviours among women. *Journal of Physical Education and Sport, 20*(3), 1314–1325. https://doi.org/10.7752/jpes.2020.03183

Craven, M. P., & Fekete, E. M. (2019). Weight-related shame and guilt, intuitive eating, and binge eating in female college students. *Eating Behaviors*, *33*, 44–48. https://doi.org/10.1016/j.eatbeh.2019.03.002

De La Ossa, S, Martínez, Y., Herazo, E., y Campo, A. (2009). Estudio de la consistencia interna y estructura factorial de tres versiones de la escala de Zung para ansiedad. *Colombia Médica, 40*(1), 71-77.

Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P., & Kaiser, S. (2012). Guidelines for choosing between multi-item and single-item scales for construct measurement: A predictive validity perspective. *Journal of the Academy of Marketing Science, 40*(3), 434–449. https://doi.org/10.1007/s11747-011-0300-3

De Paoli, T., Fuller-Tyszkiewicz, M., & Krug, I. (2017). Insecure attachment and maladaptive schema in disordered eating: The mediating role of rejection sensitivity. *Clinical Psychology and Psychotherapy*, *24*(6), 1273–1284. https://doi.org/10.1002/cpp.2092

Downs, D. S., Hausenblas, H. A., & Nigg, C. R. (2004). Factorial validity and psychometric examination of the Exercise Dependence Scale-Revised. *Measurement in Physical Education and Exercise Science, 8*(4), 183–201. https://doi.org/10.1207/s15327841mpee0804_1

Fairburn, C. G, Cooper, Z, & Shafran R. Cognitive behaviour therapy for eating disorders: A "transdiagnostic" theory and treatment (2003*). Behaviour Research Therapy, 41*(5), 509-528. https://doi.org/10.1016/S0005-7967(02)00088-8

Farid, M., & Kamrani, M. A. (2015). The Relationship between Body Image Coping Strategy and Eating Disorders among Iranian Adolescent Girls. *Journal of Eating Disorders*, *5*(2), 15-19. https://doi.org/10.15562/bmj.v5i1.151

Fatemi, M., Bakhtiarpour, S., Pasha, R., & Hafezi, F. (2022). Model for predicting social anxiety based on perfectionism, social self-efficacy, and cognitive distortions in male and female adolescents. *Tehran Press Journal of Applied Psychological Research*, *13*(4), 187–202. https://doi.org/10.22059/japr.2023.332120.644036

Freire, C. C., Zanella, M. T., Segal, A., Arasaki, C. H., Matos, M. I. R., & Carneiro, G. (2021). Associations between binge eating, depressive symptoms and anxiety and weight regain after Roux-en-Y gastric bypass surgery. *Eating and Weight Disorders*, *26*(1), 191–199. https://doi.org/10.1007/s40519-019-00839-w

Garcia, S. C., Mikhail, M. E., Keel, P. K., Burt, S. A., Neale, M. C., Boker, S., & Klump, K. L. (2020). Increased rates of eating disorders and their symptoms in women with major depressive disorder and anxiety disorders. *The International journal of eating disorders*, *53*(11), 1844–1854. https://doi.org/10.1002/eat.23366

Garner, D. M., & Garfinkel, P. E. (1979). The Eating Attitudes Test: an index of the symptoms of anorexia nervosa. *Psychological medicine, 9*(2), 273–279. https://doi.org/10.1017/s0033291700030762

González-Cutre, D., y Sicilia, Á. (2012). Dependencia del ejercicio físico en usuarios españoles de centros de acondicionamiento físico (FITNESS): Diferencias según el sexo, la edad y las actividades practicadas. *Behavioral Psychology/ Psicologia Conductual*, *20*(2), 349–364.

Gearhardt, A. N., Corbin, W. R., & Brownell, K. D. (2009). Preliminary validation of the Yale Food Addiction Scale. *Appetite, 52*(2), 430–436. https://doi.org/10.1016/j.appet.2008.12.003

Hair, J. F., Hult, T., Ringle, C., Sarstedt, M., Danks, N., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R*. Springer.

Hampshire, C., Mahoney, B., & Davis, S, K. (2022) Parenting Styles and Disordered Eating Among Youths: A Rapid Scoping Review. *Frontiers in Psychology*, *12*, 1-8. https://doi.org/10.3389/fpsyg.2021.802567

Henderson, K. A., Obeid, N., Buchholz, A., Schubert, N., Flament, M. F., Thai, H., & Goldfield, G. S. (2022). Coping in adolescents: A mediator between stress and disordered eating. *Eating Behaviors*, *47,* 101626. https://doi.org/10.1016/j.eatbeh.2022.101626

Hovrud, L., Simons, R., & Simons, J. (2020). Cognitive Schemas and Eating Disorder Risk: the Role of Distress Tolerance. *International Journal of Cognitive Therapy*, *13*(1), 54–66. https://doi.org/10.1007/s41811-019-00055-5

Kerr, K. L., Ralph-Nearman, C., Colaizzi, J. M., DeVille, D. C., Breslin, F. J., Aupperle, R. L., Paulus, M. P., & Morris, A. S. (2021). Gastric symptoms and low perceived maternal warmth are associated with eating disorder symptoms in young adolescent girls. *International Journal of Eating Disorders, 54*(6), 1009–1018. https://doi.org/10.1002/eat.23516

Keshishian, A. C., Tabri, N., Becker, K. R., Franko, D. L., Herzog, D. B., Thomas, J. J., & Eddy, K. T. (2021). Comorbid depression and substance use prospectively predict eating disorder persistence among women with anorexia nervosa and bulimia nervosa. *Journal of Behavioral and Cognitive Therapy, 31*(4), 309–315. https://doi.org/10.1016/j.jbct.2021.09.003

Londoño, N. H., Schnitter, M., Marín, C., Calvete, E., Ferrer, A., Maestre, K., Chaves, L., y Castrillón, D. (2012). Young Schema Questionnaire – Short Form: Validación en Colombia. *Universitas Psychologica, 11*(1), 147-164.

Maldonado-Avendaño, N., Castro-Osorio, R., y Cardona-Gómez, P. (2023). Propiedades psicométricas del Inventario de Depresión de Beck-II (BDI-II) en población universitaria colombiana. *Revista Colombiana de Psiquiatría*, *52*(S1), S51-S59. https://doi.org/10.1016/j.rcp.2021.08.007

Mayo, E., Eulogio, J., Taboada, E., Iglesias, P., y Dosil, A. (2012). Análisis de las propiedades psicométricas del Cuestionario de Formas de Afrontamiento de Acontecimientos Estresantes (C.E.A.), aplicado a padres de niños con discapacidad visual. *Anales de Psicología, 28*(1), 83-88 http://www.redalyc.org/pdf/167/16723161010.pdf

Mavrandrea, P., & Gonidakis, F. (2023). Exercise dependence and orthorexia nervosa in Crossfit: exploring the role of perfectionism. *Current Psychology*, *42*, 25151–25159. https://doi.org/10.1007/s12144-022-03585-y

Meneguzzo, P., Tenconi, E., Todisco, P., & Favaro, A. (2021). Cognitive remediation therapy for anorexia nervosa as a rolling group intervention: Data from a longitudinal study in an eating disorders specialized inpatient unit. *European Eating Disorders Review*, *29*(5), 770–782. https://doi.org/10.1002/erv.2848

Mendia, J., Pascual, A., y Conejero, S. (2022). Diferencias de género en variables asociadas a los trastornos alimentarios. *Revista de Psicopatología y Psicología Clínica, 27*(2), 103-111. https://doi.org/10.5944/rppc.30998

Moreno, M. I. V., Márquez, M. C. R., Navarrete, J. J. C., Camarena, B., & de Gortari, P. (2016). Spanish translation of the Yale Food Addiction Scale and its evaluation in a sample of Mexican population. Factorial analysis. *Salud Mental*, *39*(6), 295–302. https://doi.org/10.17711/SM.0185-3325.2016.034

Restrepo, J. E., & Castañeda, T. (2018). Risk of Eating Disorders and Use of Social Networks in Female Gym-Goers in the City of Medellín, Colombia. *Revista Colombiana de Psiquiatría*, *49*(3), 162–169. https://doi.org/10.1016/j.rcp.2018.08.003

Restrepo, J. E., Castañeda, T., y Cuartas Montoya, G. P. (2021). Propiedades psicométricas de la Escala de Dependencia al Ejercicio–Revisada (EDS-R) en usuarios colombianos de gimnasios. *Retos*, *41*, 782–790. https://doi.org/10.47197/retos.v41i0.86228

Rodgers, R. F., Schaefer, L. M., Thompson, J. K., Girard, M., Bertrand, M., & Chabrol, H. (2016). Psychometric properties of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4) in French women and men. *Body Image, 17*, 143-151. https://doi.org/10.1016/j. bodyim.2016.03.002

Rodríguez-Marín, J., Terol, M. C., López-Roig, S., y Pastor, M. A. (1992). Evaluación del afrontamiento del estrés: Propiedades psicométricas del cuestionario de formas de afrontamiento de acontecimientos estresantes. *Revista Psicología de la Salud, 4,* 59-84.

Sanders, L. M., Zhu, Y., Wilcox, M. L., Koecher, K., & Maki, K. C. (2021). Effects of Whole Grain Intake, Compared with Refined Grain, on Appetite and Energy Intake: A Systematic Review and Meta-Analysis. *Advances in Nutrition, 12*(4), 1177–1195. https://doi.org/10.1093/advances/nmaa178

Sicilia, A., & González-Cutre, D. (2011). Dependence and Physical Exercise: Spanish Validation of the Exercise Dependence Scale-Revised (EDS-R). *Spanish Journal of Psychology*, *14*(1), 421–431.

Scott, G. G., Pinkosova, Z., Jardine, E., & Hand, C. J. (2023). "Thinstagram": Image content and observer body satisfaction influence the when and where of eye movements during Instagram image viewing. *Computers in Human Behavior*, *138*. https://doi.org/10.1016/j.chb.2022.107464

Schaefer, L. M., Harriger, J. A., Heinberg, L. J., Soderberg, T., & Kevin Thompson, J. (2017). Development and validation of the sociocultural attitudes towards appearance questionnaire-4-revised (SATAQ-4R). *The International Journal of Eating Disorders, 50*(2), 104–117. https://doi.org/10.1002/eat.22590

Uchôa, F. N. M., Uchôa, N. M., Daniele, T. M. D. C., Lustosa, R. P., Garrido, N. D., Deana, N. F., Aranha, Á. C. M., & Alves, N. (2019). Influence of the mass media and body dissatisfaction on the risk in adolescents of developing eating disorders. *International Journal of Environmental Research and Public Health, 16*(9), 1508. https://doi.org/10.3390/ijerph16091508

Vázquez-Arévalo, R., Aguilar, M. V., López Aguilar, X., & Mancilla-Diaz, J. M. (2021). Instruments for the evaluation of sociocultural influences in the internalization of body ideals in the Hispanic population. *Revista Mexicana de Trastornos Alimentarios*, *11*(1), 76–89. https://doi.org/10.22201/fesi.20071523e.2020.1.614

Villegas-Moreno, M. J., Pérez, C. L., & Adames, C. P. (2021). Validation of the sociocultural attitudes questionnaire on appearance (SATAQ-4) in the Colombian population. *Acta Colombiana de Psicologia*, *24*(1), 86–95. https://doi.org/10.14718/ACP.2021.24.1.8

Young, J. E. (2003). *Young parenting inventory*. Cognitive Therapy Center of New York.

Young, J. E., & Brown, G. (1994). Young Schema Questionnaire. In J. E. Young, *Cognitive therapy for personality disorders: A schema-focused approach* (pp. 63–76). Professional Resource Exchange.

Young, J. E., Klosko, J. S. ,y Weishaar, M. E. (2013). *Terapia de esquemas. Guía práctica*. Descleé de Brouwer.

Zung, W. W. (1971). A rating instrument for anxiety disorders. *Psychosomatics, 12*(6), 371–379. https://doi.org/10.1016/S0033-3182(71)71479-0