UDC 612

EATING DISORDERS IN FEMALE ATHLETES: A REVIEW OF PREVALENCE AND PATHOGENIC BEHAVIORS

Toni M. Torres-McGehee[1], Nancy A. Uriegas[1], Carli Mendelow[1], Alexis Soucy[1]

[1]The University of South Carolina, Department of Exercise Science, Columbia, South Carolina, United States; torresmc@mailbox.sc.edu

https://doi.org/10.29038/2220-7481-2024-01-84–94

Abstracts

Relevance of Research Topic. Eating disorders can be a result of multiple factors including disordered eating, which is an array of abnormal eating behaviors including restrictive eating, fasting, frequently skipped meals, diet pills, overeating, binge-eating and then purging (vomiting). The athletic and performing art populations, specifically females, are at high risk of eating disordered compared to non-athletes and may be predisposed further depending on the nature of their sports. ***Purpose.*** The intention of this review article is to identify and review the types of feeding and eating disorders, pathogenic behaviors, prevalence of eating disorders, and risk factors for eating disorders in female athletes. ***Results.*** The review of the literature revealed that female athletes are at risk for eating disorders and pathogenic behavior engagement. ***Conclusions.*** As more information is provided to the public regarding the determinants and distribution of factors present in potentially at-risk females to developing an eating disorder, more awareness is made to continue the research and promotion of treatment. Appropriate interventions should follow best practices, incorporating a multidisciplinary care team, including a physician, dietitian, mental health professional, and athletic trainer.

Key words: disordered eating, purging behaviors, physically active, risk factors, mental health.

Тоні М. Торрес-МакГіхі, Ненсі А. Уріегас, Карлі Менделоу, Алексіс Сусі. Розлади харчової поведінки в спортсменок: огляд поширеності та патогенної поведінки. ***Актуальність теми дослідження.*** Розлади харчової поведінки можуть бути наслідком багатьох факторів, зокрема порушення харчової поведінки, що є сукупністю аномальних харчових практик: обмеження в харчуванні, голодування, вибіркове харчування, вживання медичних препаратів для схуднення, переїдання з подальшим викликанням блювання. Спортсмени та артисти, особливо жінки, мають високий ризик розладів харчової поведінки порівняно з неспортсменами, ступінь схильності до якої залежить від видів спорту, якими вони займаються. ***Мета*** статті полягала у визначенні та аналізі різних типів розладів харчової поведінки, зокрема патогенної поведінки, поширеності розладів харчової поведінки та факторів ризику розладів харчової поведінки в спортсменок. ***Результати дослідження.*** Огляд та аналіз наукової літератури засвідчив, що спортсменки належать до групи ризику щодо розладів харчової поведінки та достатньо схильні до патогенної поведінки. ***Висновки.*** У зв`язку зі зростанням у жінок, які профе-сійно займаються спортом, потенційної схильності до розвитку розладів харчової поведінки, необхідним є подальше поглиблене вивчення детермінант і факторів, що впливають на зростання ризиків. Корекція розладів харчової поведінки та превентивні заходи розвитку захворювань у спортсменок повинні відповідати найкращим світовим практикам і включати рекомендації кваліфікованої команди, до якої входять лікар, дієтолог, фахівець із психічного здоров‟я та спортивний тренер.

Ключові слова: розлади харчової поведінки, самоочищення організму, фізична активність, фактори ризику, психічне здоров‟я.

Introduction

The National Eating Disorder Association estimates that 20 million women and 10 million men in America will have an eating disorder at some point in their lives [41]. For many female athletes, competition is one of the primary sectors of sport, which provides an outlet to not only collaborate as a team to "win"; but to also foster positive personal growth and development. As sports are quite beneficial for personal success and responsibility, other facets of the overarching "game" of competition can interfere with an athlete‟s physical and mental health. Since the COVID-19 global pandemic, female athletes have been diagnosed with a higher prevalence of disordered eating and eating disorders in the athletic community [9]. In comparison with the non-athletic population, those who participate in athletics have an increased risk of fostering an eating disorder [25]. The intention of this review article is to identify and review the types of feeding and eating disorders, pathogenic behaviors, prevalence of eating disorders, and risk factors for eating disorders in female athletes. As more information is provided to the public regarding the determinants and distribution of factors present in potentially at-risk females to developing an eating disorder, more awareness is made to continue the research and promotion of treatment.

Eating Disorders, Disorder Eating, & Pathogenic Behaviors

Feeding and eating disorders are characterized by the persistent disturbance of maladaptive behaviors that alter the process of food consumption and/or absorption and could lead to psychosocial and physical health impairments [2]. Feeding and eating disorders have strict, specific criteria for diagnosis which are categorized by Diagnostic Manual of Mental Disorders (DSM-5). Feeding disorders consists of Pica, Avoidant/restrictive Food Intake Disorder (ARFID), and Rumination Disorder, whereas EDs are Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Binge Eating Disorder (BED). In contrast, disordered eating is a more general term characterized as an array of unhealthy eating habits and attitudes to promote weight loss [16]. Some studies use the term disordered eating since it is general verbiage and encompasses criterions of eating disorders including poor nutrition, body weight concerns, binge eating, and more extreme weight control methods (pathogenic behaviors: binge eating, fasting, vomiting, use of diet pills, laxatives and diuretics, and excessive exercise) [7].

Types of Eating Disorders

Anorexia Nervosa (AN)

Anorexia nervosa is a serious eating disorder that could potentially have long- term negative effects [2]. Of all mental health disorders, AN has one of the highest mortality rates resulting from complications of starvation or suicide [43]. According to DSM- 5, an athlete must have three conditions to be clinically classified as anorexic: (1) a restriction of energy intake, (2) intense fear of gaining weight, and (3) a disturbance in one‟s self-perceived body weight [2; 43]. Risk factors for AN include an amalgamation of biological factors (gender, family member diagnosed with an eating disorder), psychological factors (obsessive-compulsive disorder (OCD), perfectionism), and environmental factors (Western culture values thinness) [43].

Anorexia nervosa may be classified into two subtypes: restrictive or binge- eating/purging type depending on the behaviors an individual utilizes to accomplish weight loss [2]. In the restriction subgroup, individuals will use diet, fast, and/or engage in excessive exercise; in contrast, individuals within the purging subgroup will use self-induced vomiting, laxatives, and diuretics in an attempt to lose weight [43]. Each subgroup is categorized by a 3-month time frame [2]. The DSM-5 reports that the 12-month prevalence of AN among adolescent females is approximately 0,4 %.

Diagnoses of AN come with associated risks, one being increases in suicide risk, and medical complications (e.g., cardiovascular, gastrointestinal, endocrine function), ultimately leading to increases in the crude mortality rate. Comorbidities typically include bipolar, depressive and anxiety disorders, as well as obsessive- compulsive disorder and alcohol and other substance abuse or misuse [2]. Multidimensional treatment approaches are important for these patients, medical professionals in the field of psychology, psychiatry, nutrition, and general physicians must work together to provide adequate treatment. Some interventions may include family interventions, cognitive behavioral therapy, psychodynamic therapy, cognitive analytic therapy, and interpersonal therapy [24].

Bulimia Nervosa (BN)

Bulimia nervosa is characterized by persistent episodes of binge eating followed by compensatory behaviors to prevent weight gain. These compensatory behaviors include extreme unhealthy weight loss measures such as self-induced vomiting, diuretics, fasting, and excessive exercise [2]. These maladaptive actions tend to occur at least once a week for a period approximately to three months. Severity of diagnoses is based upon the frequency of binging and compensatory behaviors used, with 14 episodes of binge eating and compensatory behaviors in one week being severe Individuals with BN have similar negative body image perception like AN; but typically appear to be within the normal to overweight range (body mass index [BMI] 18,5 to over 30) and attempt to restrict caloric intake through low-calorie food. A daily scheduled routine is typically created in order to control weight behaviors and avoid intermittent binge eating episodes where they sense a loss of control [2].

Similar to AN, BN is often seen more in females compared to males and expresses itself in adolescence and early adulthood. Comorbidities may include depressive symptoms, bipolar and depressive disorder, mood disturbances, anxiety disorder and substance abuse. Additionally, patients are at high risk for suicide, therefore suggesting a thorough assessment of suicidal ideations [2]. A multidisciplinary health approach is also recommended, and psychotherapy is commonly utilized for treatment, as well as cognitive-behavioral therapy, which is known as the most effective form of treatment.

Binge Eating Disorder (BED)

Binge eating disorder is depicted by having recurrent episodes of binge eating such as eating a surplus amount of food within a 2-hour window and/or having a lack of self-control during an eating episode [2; 7]. These occurrences are accompanied with characteristics such as eating more rapidly, eating until uncomfortably full, eating when not hungry, or feeling guilty after eating [2; 12]. The severity is dependent on how frequent the episodes occur. It could range from one to three binge eating episodes per week, which is considered „mild" to 14 or more, corresponding to „extreme" severity [2; 12]. BED shares similar behaviors to BN, however a key difference is individuals with BED do not engage in inappropriate compensatory behavior following a binge episode, and it does not have a diagnostic criterion focusing on body image, as do BN and AN. There has been growing evidence that BED has just as high of a clinical prevalence as AN and BN [29]. The DSM-5 criteria added BED as its own independent disorder to decrease the number of eating disorders that were previously classified into the Eating Disorder Not Otherwise Specified (EDNOS), now known as Other Specified Feeding and Eating Disorders (OSFED) [2].

Other Specified Feeding or Eating Disorder (OSFED)

Prior to the publication of the DSM-5, disordered eating that did not meet the criteria for AN or BN, was diagnosed as EDNOS. Currently if criteria are not met for one of the specific feeding or eating disorders, a patient can be diagnosed with OSFED [2; 7; 25]. These symptoms have a wide range of potential, hazardous actions that DSM-5 regards as „clinically significant distress or impairment" in any social setting [2; 32]. This umbrella classification will comprise of cases such as atypical AN, BN (of low regularity), BED (of low regularity), purging disorder, and night eating syndrome [2]. Studies have shown that applying the DSM-5 criteria impacted the diagnosis of EDNOS/OSFED from 47,6 % to 39 %. This is a significant change, and better allows clinicians to treat and manage the appropriate disorder [75].

Unspecific Feeding or Eating Disorder (UFED)

Unspecified feeding and eating disorders (UFED) are cases where criteria are not met for a specific feeding and eating disorders, but there is still distress and social impairment [2]. The differential factor is the clinician will use this to not specify the reason that the guidelines are not met for any other feeding and eating disorders. This is predominantly for cases when there is not adequate information given in order to make a specific diagnosis, such as an emergency room [2; 7].

Prevalence of Eating Disorders in Female Athletes

Athletes are a specialized population who may be viewed as having a favorable well-being because their roles as athletes tend to be associated with physical fitness, increased confidence, enhanced mood, and improved cardiorespiratory health [65]. They are also generally stereotyped to eat in a healthy manner; however, student-athletes have an increased risk for developing eating disorders [25; 57]. This higher risk may be due to the increased internal and external pressures of the sport along with the increased physiological demands. When examining eating disorders and disordered eating, they are both reported to be higher for athletes than non-athletes [21; 31; 49; 59; 62]; and literature also suggests specific sport types are at an even higher risk [30; 45; 59; 66–69; 72]. The prevalence of eating disorders has also been identified across sex with varying demographics; however, literature has consistently identified females to be at higher risk for eating disorders and disordered eating compared to males (9:1 ratio) [8; 25; 59]. More specifically, a more recent study, found males at lower risk than females (17,3 % vs. 28,9 % respectively); with 25,3 % (n=520/2054) overall eating disorder risk [69]. Furthermore, approximately 10,4 % young male athletes are engaging in disordered eating behaviors with a mean dieting age of 13,4 and are dissatisfied with their weight (59,3 %) [53]. Findings in Norway are similar, where mean dieting age is 14,6 for males and 13,2 for females with disordered eating [37], further revealing a 7 % prevalence of eating disorders in athletes (females 14 %; males 3,2 %) in comparison to a control group. It is a concern that disordered eating and eating disorder behaviors begin at such a young age, as these young athletes face similar risk factors as athletes of other levels (e.g., collegiate, elite, professional), but receive less awareness, education and support from coaches, athletic trainers, and other allied health professionals [63].

Aside from higher rates in females, it is also common for females to under- report symptoms and behaviors of disordered eating, specifically in endurance and aesthetic sports. These sport-types may include cheerleading, track and field, cross- country, gymnastics, dance/ballet, wrestling and boxing [8; 25]. Over approximately a 10-year span, Sundgot-Borgen (1993, 2004, 2010) and Torstveit (Sundgot-Borgen & Torstveit, 2004, 2010; 2008) conducted multiple prevalence studies observing gradual increases in both female athletes (20 % to 28 %) and non- athletes (5 % to 21 %). Additionally, older large studies revealed 13,5 % athletes had subclinical or eating disorders compared to their non-athlete control (4,6 %) (Sundgot-

Borgen & Torstveit, 2004). When the results were broken down into sport type for females, there was a higher prevalence in aesthetic sports (42 %) than endurance (24 %), technical (17 %), and ball sport athletes (16 %) [59]. Additionally, a German study conducted compared aesthetic, ball game athletes, and non-athlete controls displayed supporting results using a clinical interview and eating disorder questionnaires and again aesthetic sports had a significantly higher prevalence (17 %) compared to ball game athletes (3 %) and non-athletes (2 %) [62]. However, a more recently study by Torre- McGehee et al. (2023) revealed a lower prevalence rate for females in aesthetic sports (5,9 %), endurance (11,2 %) technical (2,9 %), and ball sports (6,1 %) [69].

Performing artists are also considered physically active individuals and consists of dancers, actors/actresses, marching artists, musicians, and aerial performers to name a few. While at times not recognized as traditional athletes, they face similar physical active demands and mental stressor as athletes. Artists face mental stressors associated with performance, these can include anxiety, being over critical and worrying about their appearance in performance and increase nerves [34; 77]. Few of these, considered comorbidities of eating disorders [2]. Prevalence rates of eating disorders in artists vary, specifically based on their performing skills. Dancers are a highly studies population with eating disorder risk reported at approximately 12 % (AN 2 %, BN 4,4 %, EDNOS 9,5 %); and specifically looking at ballet dancers those rates increase to overall eating disorder risk of 16,4 % (AN: 4 %, BN: 2 %, EDNOS 14,9 %) [4]. Furthermore, some form of eating pathology was reported in 83 % of ballet dancers (AN 6,9 %, BN 10,3 %, AN & BN 10,3 %, EDNOS 55,2 %) [51].

Dancers specifically face unique vulnerabilities to developing eating disorders, including the aesthetic nature of the activity, where they are expected to maintain objectively low eight, pressures to maintain thin/lean bodies, resulting in a potentially unrealistic drive for thinness [20].

While being an under-researched population, eating disorder risk has also been reported in marching band artists, where over 70 % of the studied population was engaging in pathogenic behaviors and/or had clinical or elevated clinical scores in the Eating Disorder Inventory-3 [72]. Self-identified musicians were reported to have a lifetime prevalence of eating disorders of 32,3 % with higher rates observed in females compared to males [27]. Risk factors identified in musicians included travel within country (84,8 %), travel outside country (14,8 %), income (41,8 %), and food addictions/dependance (20,5 %) [27]. Lastly, rates reported among Australian actors were AN: 1,4 %, BN: 11,2 %, and BED 4,0 % [61]. All these study, clearly identifying that performing artists are also a population at risk for eating disorders and more education and prevention should be implemented. Table 1 presents additional literature on specific female athletes that have displayed risk for eating disorders.

Table 1

Comparison of Eating Disorder Risk Prevalence Among Similar Population Studies

Studies	Sample Size and Type	Instrument	ED Prevalence
1	2	3	4
Torres-McGehee et al., 2023	Collegiate athletes (males: n=631, females: n=1423)	EAT - 26	25,2 % (n=518)
Torres-McGehee et al., 2021	College athletes (females: n=121)	EDI-3, EDI-SC	76 % (n=92)
Uriegas et al., 2021	Marching band artist (males: n=66; females (n=84)	EDI-3, EDI-SC	45,3 % (n=68)
Abbott et al., 2021	Elite soccer athletes (n=males: 157; females: n=70)	EAT-26	15 % (n=24); 11 % (n=8)
Smith et al., 2020	ROTC cadets (males: n=75, females: n=27)	EAT - 26	32,4 % (n=33)
Meng et al., 2020	Aesthetic athletes (females: n=166)	EDI-3	41,6 % (n=69)
Baldó Vela & Bonfanti, 2019	Semiprofessional team sports players (males: n=49)	EAT-40 & EDI- 2	14 % (n=7)
Devrim et al., 2018	Bodybuilders (males: n=120)	EAT-40	67,5 % (n=81)

The End of the Table 1

1	2	3	4
Prather et al., 2016	Collegiate & elite soccer athletes (females: n = 220)	EAT-26	8,1 % (n=18)
Robbeson et al., 2015	Student dancers (females: n=26)	EDI-3	69 % (18/26)
Escobar-Molina et al., 2015	High-level judo athletes (males: n=78, females: n=66)	EAT-40	7,6 % (n= 11)
Torres-McGehee et al., 2012	Collegiate cheerleaders (females: n=136)	EAT-26	33,1 % (n=45)
Dwyer et al., 2012	Elite competitive figure skaters (females: n=33)	EAT-40	24 % (n=8)
Torres-McGehee et al., 2011	NCAA Division I varsity equestrian (females: n=138)	EAT-26	42 % (n=58)
Greenleaf et al., 2009	NCAA Division I female athletes (n=204)	QEDD/BUILIT- R	25,5 % (n=52)
Quah et al., 2009	Adolescent and adult elite athletes (females: n=67)	EDI	89,2 % (n=60)
Torres-McGehee et al., 2009	Auxiliary units (females and males: n=101)	EAT - 26	29,7 % (n=30)
Riebl et al., 2007	Cyclists (males: n=61)	EAT - 26	19,6 % (n=12)
Vardar et al., 2007	Athletes in Edirne, Turkey age 15-25 (females: n= 243)	EAT-40	16,7 % (40)
Ravaldi et al., 2006	Non-Elite ballet dancers (females: n=110)	EDE & EAT-26	13,6 % (n=15)
Toro et al., 2005	Elite athletes (females: n=283)	EAT-26	11 % (n=31)
Torstveit & Sundgot-Borgen, 2005	Elite athletes in Norway age 13-39yr (females: n=938)	EDI	60,4 % (n= 567)
Sundgot-Borgen & Torstveit, 2004	Norwegian elite athletes (male: n=687; female: n=572)	EDI/EDE	13,5 % (n=170)
Ravaldi et al., 2003	Non-elite ballet dancers (females: n=113)	EDE	26,6 % (n=300)
Sundgot-Borgen, 1993	Elite athletes (females: n=522)	EDI	22 % (n=117)

Pathogenic Behaviors in Female Athletes

Due to the higher risk for eating disorders in female athletes, it is important to note female athletes may also engaged in pathogenic behaviors (e.g., binge eating, self- induced vomiting, use of diet pills, laxatives and diuretics to lose weight, excessive exercise, etc.). Previous literature has compiled this pathogenic behaviors with other abused over-the-counter drugs (laxatives and diuretics), especially when using the Eating Attitudes Test-26 assessment tool [54; 56; 66–69]. Torres-McGehee et al. (2023) revealed the two most used pathogenic behaviors were use of diet pills, diuretics and/or laxatives to lose weight and binge-eating [69]. The use of diet laxatives, diet pills and or diuretics were also shown to have a large discrepancy across sex with diet pill use among females being double compared to males, and they varied across sport type. Nevertheless, studies have reported lower percentages (1,5–6 %), except for studies examining National Collegiate Athletic Association (NCAA) Division I equestrian athletes (15,2 %) [67] and marching band auxiliary units (color guard, dance line, majorettes; 18,9 %) [66].

As for binge-eating, Torres-McGehee et al. (2023) revealed a difference between females (10 %, n=143/1423) vs. males (6,5 %, n=41/631) [69]. Binge-eating behavior prevalence fluctuates from 3–25 %l and only two studies having higher rates, with gymnasts at 36,7 % (n = 25/68) [14] and female body builders and recreational lifters at 60 % (n=12/55) [19]. Both sports could be considered aesthetic sports as they focus

on appearance and participants are scored based on their performances. Finally, excessive exercise is also a common pathogenic behavior and previous studies have reported rates ranging from 4 % to 80 % [14; 19; 33; 54–56; 66; 67; 69]. Higher prevalence rates of exercise addiction (pathological behavior with working out) and exercise dependency (feeling the need to exercise and experiencing withdrawal symptoms if unable or exercising interfering with personal relationships) have been reported in endurance athletes [6]. A recent study [69] revealed endurance athletes had the highest average (8,5 %) of excessive exercise prevalence range; however, comparatively, it remains in the lowest quartile. The subsequent pathogenic behavior is vomiting (3,7 %) [69] and this percentage aligns with previous evidence in athletic populations (0,7–11,6) [10; 14; 33]. Additional literature on pathogenic behaviors can be found in table 2.

Table 2

Comparison of Prevalence Rates of Pathogenic Behaviors Among Similar Population Studies. Values are presented in % *(n)*

Studies	Study Information			Pathogenic Behaviors, *% (n)*						
	Sample Size	Sample Type	Instrument	Binge Eating	Vomiting	Laxatives	Diet Pills	Diuretics	Exercise	Lost <20 lb
1	2	3	4	5	6	7	8	9	10	11
Torres- McGehee et al., 2023	2,054	Collegiate athletes	EAT-26	9 (184)	3,7 (75)	n/a	9,5 (195)	n/a	5,1 (104)	2,2 (46)
Torres- McGehee et al., 2021	121	College athletes (females)	EDI-3, EDI- SC	19,8 (24)	12,4 (15)	3,3 (4)	7,4 (9)	1,7 (2)	38 (46)	n/a
Uriegas et al., 2021	150	Marching band artist (males & females)	EDI-3, EDI- SC	18,7 (28)	12,0 (18)	3,3 (7)	48 (72)	2,0 (3)	20,7 (31)	n/a
Smith et al., 2020	102	ROTC Cadets (males & females)	EAT-26	11,8 (12)	2,0 (2)	n/a	8,8 (9)	n/a	8,8 (9)	8,8 (9)
Lee et al., 2020	152	Collegiate weight class athletes	WCWCQ	n/a	4 (6)	9,3 (14)	n/a	9,3 (14)	80,1 (121)	n/a
van Niekerk & Card, 2018	278	Amateur club athletes (South Africa)	EAT-26 & SCAT	20,4 (56)	12,4 (34)	21,9 (60)	n/a	n/a	5,8 (16)	15,7 (43)
Dakanalis et al., 2016	2,555	Male, 1st year college students	EDDS & BSEDs	7,9 (202)	2,7 (69)	1,6 (43)	n/a	n/a	4,4 (113)	n/a
Torres- McGehee et al., 2012	136	Female collegiate cheerleaders	EAT-26	11,8 (16)	9,6 (13)	19,9 (27)	n/a	n/a	1,5 (2)	2,2 (3)
Anderson & Petrie, 2012	414	Female D1 gymnasts	EDD &Bulimia	13,7 (57)	6,2 (26)	3,3 (14)	n/a	4,5 (19)	44 (182)	n/a

Risk Factors for Eating Disorders in Female Athletes

Risk factors for feeding and eating disorders and pathogenic behaviors of disordered eating include being an athlete within a sport that values low body weight, small physique, being evaluated based on subjective ideals, frequent weight cycling, early specialized sport specific training, or previous injury [21; 42]. Predisposing factors include biological, psychological, sociocultural components. Biological factors would include genetics and family history of eating disorders or disordered eating. Psychological risk factors span from body dissatisfaction and low self-esteem to personality traits like perfectionism. Sociocultural factors would include peer pressure, media influence, history of being bullied, and comments made by parents and coaches [21; 13]. Triggers are typically negative comments regarding weight and shape from individuals in power positions such as coaches or those who hold influence over the individual [11]. Perpetuating factors are things such as approval from coaches or significant others and the drive for success. Warning signs for eating disorders that warrant further evaluation include decline in athletic performance, frequent mood changes, frequent illness and injury, recurrent fractures that exceed normal healing times, and outspoken dissatisfaction with body size or shape [38].

Finally, when we differentiate athletes by sport-type, „lean focused" sports seem to be at higher risk for eating disorders. Sport classifications may include aesthetic, weight-class, endurance, technical (e.g., lean field: high jump, long jump, triple jump), and power (e.g., sprinters) sports [30; 33]. These classifications of sport may have different sociocultural risk for eating disorders. For example, aesthetic athletes tend to be at a higher risk for eating disorders due to the evaluation on the execution of their sport-specific techniques/abilities, team coordination, and appeal [17; 39; 67]. Additionally, within aesthetic sport, there is a strong physical and training component; yet the public experiences a visual presentation that is centered on appearance [17; 40]. In endurance athletes there is a predominant view that a low body weight can lead to more optimal performance [6; 35; 76]. Overall, the „lean" sport- types are more inclined to be at eating disorders and disordered eating risk because specific body makeup is considered more imperative [3; 39]. Early detection of eating disorders within each sport classification are necessary to alter eating disorder attitudes, thoughts, and perceptions before becoming more severe clinical conditions.

Sport-type has also previously been established as a predictor for body image dissatisfaction and, consequently, eating disorder risk [26; 30]. Previous findings amount from accumulated sport-specific demands that accentuate „thinness" attributes and appearance features that may benefit performance, such as with aesthetic and endurance sport-types [3; 26; 35; 45]. Aesthetic and endurance-based sports could be considered „lean" sport-types because of the existing misconception that a lower body weight will result in more favorable performance outcomes [17; 26; 35; 39].

Conclusion

The prevalence of eating disorders in the athletic population has been on the rise since the 1990s and was further impacted by the COVID-19 global pandemic. Research suggests female athletes face internal and external pressures associated with sport, which in tandem with the physiological demands of sports may predispose them to disorder behaviors and/or eating disorders. Risk for eating disorders further increases in aesthetic sports where athletes may be judged based on their appearance. It is crucial to recognized signs and symptoms associated with disordered eating behaviors among female athletes for early recognition and prevention of eating disorders. Additionally, athletic medical teams should screen athletes regularly as part of pre-participation exams to identify those at-risk. Appropriate interventions should follow best practices, incorporating a multidisciplinary care team, including a physician, dietitian, mental health professional, and athletic trainer.

References

1. Abbott, W., Brett, A., Brownlee, T. E., Hammond, K. M., Harper, L. D., Naughton, R. J., Anderson, L., Munson, E. H., Sharkey, J. V., Randell, R. K., & Clifford, T. (2021). The prevalence of disordered eating in elite male and female soccer players. *Eating and Weight Disorders – Studies on Anorexia, Bulimia and Obesity*, 26(2), 491–498. https://doi.org/10.1007/s40519-020-00872-0 (in English).
2. American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*, vol. 5. American Psychiatric Association, Washington, DC (in English).
3. Anderson, C., & Petrie, T. A. (2012). Prevalence of disordered eating and pathogenic weight control behaviors among NCAA division I female collegiate gymnasts and swimmers. *Research Quarterly for Exercise and Sport*, 83(1), 120–124. https://doi.org/10.1080/02701367.2012.10599833 (in English).

4. Arcelus, J., Witcomb, G. L., & Mitchell, A. (2014). Prevalence of eating disorders amongst dancers: A systemic review and meta-analysis. *European Eating Disorders Review*, 22(2), 92–101. https://doi.org/https://doi.org/10.1002/erv.2271 (in English).
5. Baldó Vela, D., & Bonfanti, N. (2019). Eating disorders risk assessment on semi- professional male team sports players. *Nutricion Hospitalaria*, 36(5), 1171–1178. https://doi.org/10.20960/nh.02630 (in English).
6. Barrack, M. T., Rauh, M. J., Barkai, H. S., & Nichols, J. F. (2008). Dietary restraint and low bone mass in female adolescent endurance runners. *American Journal of Clinical Nutrition*, 87(1), 36–43. https://doi.org/10.1093/ajcn/87.1.36 (in English).
7. Bonci, C. M., Bonci, L. J., Granger, L. R., Johnson, C. L., Malina, R. M., Milne, L. W., Ryan, R. R., & Vanderbunt, E. M. (2008). National athletic trainers‟ association position statement: preventing, detecting, and managing disordered eating in athletes. *Journal of Athletic Training*, 43(1), 80–108. https://doi.org/10.4085/1062-6050-43.1.80 (in English).
8. Bratland-Sanda, S., & Sundgot-Borgen, J. (2013). Eating disorders in athletes: overview of prevalence, risk factors and recommendations for prevention and treatment. *European Journal of Sport Science*, 13(5), 499–508. https://doi.org/10.1080/17461391.2012.740504 (in English).
9. Buckley, G. L., Hall, L. E., Lassemillante, A. M., & Belski, R. (2021). Disordered eating & body image of current and former athletes in a pandemic; a convergent mixed methods study – What can we learn from COVID-19 to support athletes through transitions? *Journal of Eating Disorders*, 9(1), 73. https://doi.org/10.1186/s40337-021-00427-3 (in English).
10. Chatterton, J. M., & Petrie, T. A. (2013). Prevalence of disordered eating and pathogenic weight control behaviors among male collegiate athletes. *Eating Disorders*, 21(4), 328–341. https://doi.org/10.1080/10640266.2013.797822 (in English).
11. Cheng, Z. H., Perko, V. L., Fuller-Marashi, L., Gau, J. M., & Stice, E. (2019). Ethnic differences in eating disorder prevalence, risk factors, and predictive effects of risk factors among young women. *Eating Behaviors*, 32, 23–30. https://doi.org/10.1016/j.eatbeh.2018.11.004 (in English).
12. Citrome L. (2019). Binge eating disorder revisited: what‟s new, what‟s different, what‟s next. *CNS Spectrums*, 24(S1), 4–13. https://doi.org/10.1017/S1092852919001032 (in English).
13. Dakanalis, A., Clerici, M., Caslini, M., Gaudio, S., Serino, S., Riva, G., & Carrà, G. (2016). Predictors of initiation and persistence of recurrent binge eating and inappropriate weight compensatory behaviors in college men. *International Journal of Eating Disorders*, 49(6), 581–590. https://doi.org/10.1002/eat.22535 (in English).
14. de Bruin, A. P., Oudejans, R. R. D., & Bakker, F. C. (2007a). Dieting and body image in aesthetic sports: A comparison of Dutch female gymnasts and non-aesthetic sport participants. *Psychology of Sport and Exercise*, 8(4), 507–520. https://doi.org/https://doi.org/10.1016/j.psychsport.2006.10.002 (in English).
15. Devrim, A., Bilgic, P., & Hongu, N. (2018). Is there any relationship between body image perception, eating disorders, and muscle dysmorphic disorders in male bodybuilders? *American Journal of Men's Health*, 12(5), 1746–1758. https://doi.org/10.1177/1557988318786868 (in English).
16. DiPasquale, L. D., & Petrie, T. A. (2013). Prevalence of disordered eating: A comparison of male and female collegiate athletes and nonathletes. *Journal of Clinical Sport Psychology*, 7(3), 186–197 (in English).
17. Dwyer, J., Eisenberg, A., Prelack, K., Song, W. O., Sonneville, K., & Ziegler, P. (2012). Eating attitudes and food intakes of elite adolescent female figure skaters: A cross sectional study. *Journal of the International Society of Sports Nutrition*, 9(1), 53. https://doi.org/10.1186/1550-2783-9-53 (in English).
18. Escobar-Molina, R., Rodríguez-Ruiz, S., Gutiérrez-García, C., & Franchini, E. (2015). Weight loss and psychological-related states in high-level judo athletes. *International Journal of Sport Nutrition and Exercise Metabolism*, 25(2), 110–118. https://doi.org/10.1123/ijsnem.2013-0163 (in English).
19. Goldfield G. S. (2009). Body image, disordered eating and anabolic steroid use in female bodybuilders. *Eating Disorders*, 17(3), 200–210. https://doi.org/10.1080/10640260902848485 (in English).
20. Gorrell, S., Schaumberg, K., Boswell, J. F., Hormes, J. M., & Anderson, D. A. (2021). Female athlete body project intervention with professional dancers: A pilot trial. *Eating Disorders*, 29(1), 56–73. https://doi.org/10.1080/10640266.2019.1632592 (in English).
21. Greenleaf, C., Petrie, T. A., Carter, J., & Reel, J. J. (2009). Female collegiate athletes: Prevalence of eating disorders and disordered eating behaviors. *Journal of American College Health*, 57(5), 489–495. https://doi.org/10.3200/JACH.57.5.489-496 (in English).
22. Gutgesell, M. E., Moreau, K. L., & Thompson, D. L. (2003). Weight concerns, problem eating behaviors, and problem drinking behaviors in female collegiate athletes. *Journal of Athletic Training*, 38(1), 62–66 (in English).
23. Javed, A., Tebben, P. J., Fischer, P. R., & Lteif, A. N. (2013). Female athlete triad and its components: Toward improved screening and management. *Mayo Clinic Proceedings*, 88(9), 996–1009. https://doi.org/10.1016/j.mayocp.2013.07.001 (in English).
24. Jones, W. R., Saeidi, S., & Morgan, J. F. (2013). Knowledge and attitudes of psychiatrists towards eating disorders. *European Eating Disorders*, 21(1), 84–88. https://doi.org/10.1002/erv.2155 (in English).

25. Joy, E., Kussman, A., & Nattiv, A. (2016). 2016 update on eating disorders in athletes: A comprehensive narrative review with a focus on clinical assessment and management. *British Journal of Sports Medicine*, 50(3), 154–162. https://doi.org/10.1136/bjsports-2015-095735 (in English).
26. Kantanista, A., Glapa, A., Banio, A., Firek, W., Ingarden, A., Malchrowicz-Mośko, E., Markiewicz, P., Płoszaj, K., Ingarden, M., & Maćkowiak, Z. (2018). Body image of highly trained female athletes engaged in different types of sport. *BioMed Research International*, 6835751. https://doi.org/10.1155/2018/6835751 (in English).
27. Kapsetaki, M. E., & Easmon, C. (2019). Eating disorders in musicians: a survey investigating self-reported eating disorders of musicians. *Eating and Weight Disorders*, 24(3), 541–549. https://doi.org/10.1007/s40519-017-0414-9 (in English).
28. Karlson, K. A., Becker, C. B., & Merkur, A. (2001). Prevalence of eating disordered behavior in collegiate lightweight women rowers and distance runners. *Clinical Journal of Sport Medicine*, 11(1), 32–37. https://doi.org/10.1097/00042752- 200101000-00006 (in English).
29. Kessler, R. C., Berglund, P. A., Chiu, W. T., Deitz, A. C., Hudson, J. I., Shahly, V., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Benjet, C., Bruffaerts, R., de Girolamo, G., de Graaf, R., Maria Haro, J., Kovess-Masfety, V., O'Neill, S., Posada-Villa, J., Sasu, C., Scott, K., Viana, M. C., Xavier, M. (2013). The prevalence and correlates of binge eating disorder in the World Health Organization World Mental Health Surveys. *Biological Psychiatry*, 73(9), 904–914. https://doi.org/10.1016/j.biopsych.2012.11.020 (in English).
30. Kong, P., & Harris, L. M. (2015). The sporting body: Body image and eating disorder symptomatology among female athletes from leanness focused and nonleanness focused sports. *Journal of Psychology*, 149(1–2), 141–160. https://doi.org/10.1080/00223980.2013.846291 (in English).
31. Kristjánsdóttir, H., Sigurðardóttir, P., Jónsdóttir, S., Þorsteinsdóttir, G., & Saavedra, J. (2019). Body image concern and eating disorder symptoms among elite Icelandic athletes. *International Journal of Environmental Research and Public Health*, 16(15), 2728. https://doi.org/10.3390/ijerph16152728 (in English).
32. Le Grange, D., Swanson, S. A., Crow, S. J., & Merikangas, K. R. (2012). Eating disorder not otherwise specified presentation in the US population. *International Journal of Eating Disorders*, 45(5), 711–718. https://doi.org/10.1002/eat.22006(in English).
33. Lee, J. S., Cho, S. S., & Kim, K. W. (2020b). Weight control practices, beliefs, self- efficacy, and eating behaviors in college weight class athletes. *Nutrition Research and Practice*, 14(1), 45–54 (in English).
34. Levy, J. J., Castille, C. M., & Farley, J. A. (2011). An investigation of musical performance anxiety in the marching arts. *Medical Problems of Performing Artists*, 26(1), 30–34 (in English).
35. Mancine, R. P., Gusfa, D. W., Moshrefi, A., & Kennedy, S. F. (2020). Prevalence of disordered eating in athletes categorized by emphasis on leanness and activity type – a systematic review. *Journal of Eating Disorders*, 8, 47. https://doi.org/10.1186/s40337-020-00323-2(in English).
36. Martinsen, M., Bratland-Sanda, S., Eriksson, A. K., & Sundgot-Borgen, J. (2010). Dieting to win or to be thin? A study of dieting and disordered eating among adolescent elite athletes and non-athlete controls. *British Journal of Sports Medicine*, 44(1), 70–76. https://doi.org/10.1136/bjsm.2009.068668(in English).
37. Martinsen, M., & Sundgot-Borgen, J. (2013). Higher prevalence of eating disorders among adolescent elite athletes than controls. *Medicine and Science in Sports and Exercise*, 45(6), 1188–1197. https://doi.org/10.1249/MSS.0b013e318281a939 (in English).
38. Melin, A., Tornberg, A. B., Skouby, S., Faber, J., Ritz, C., Sjödin, A., & Sundgot- Borgen, J. (2014). The LEAF questionnaire: A screening tool for the identification of female athletes at risk for the female athlete triad. *British Journal of Sports Medicine*, 48(7), 540–545. https://doi.org/10.1136/bjsports- 2013-093240 (in English).
39. Meng, K., Qiu, J., Benardot, D., Carr, A., Yi, L., Wang, J., & Liang, Y. (2020). The risk of low energy availability in Chinese elite and recreational female aesthetic sports athletes. *Journal of the International Society of Sports Nutrition*, 17(1), 13. https://doi.org/10.1186/s12970-020-00344-x (in English).
40. Monsma, E. V., Gay, J. L., & Torres-McGehee, T. M. (2016). Body image, maturation, and psychological functioning in college cheerleaders: A matter of position? *Translational Journal of The American College of Sports Medicine*, 1(8), 71–81 (in English).
41. National Eating Disorders Association (2018). *What are eating disorders?* National Eating Disorders Association. https://www.nationaleatingdisorders.org/what- are-eating-disorders/ (in English).
42. Nichols, J. F., Rauh, M. J., Lawson, M. J., Ji, M., & Barkai, H. S. (2006). Prevalence of the female athlete triad syndrome among high school athletes. *Archives of Pediatrics & Adolescent Medicine*, 160(2), 137–142. https://doi.org/10.1001/archpedi.160.2.137 (in English).
43. Peterson, K., & Fuller, R. (2019). Anorexia nervosa in adolescents: An overview. *Nursing*, 49(10), 24–30. https://doi.org/10.1097/01.NURSE.0000580640.43071.15 (in English).
44. Prather, H., Hunt, D., McKeon, K., Simpson, S., Meyer, E. B., Yemm, T., & Brophy, R. (2016). are elite female soccer athletes at risk for disordered eating attitudes, menstrual dysfunction, and stress fractures?. *Journal of Injury, Function, and Rehabilitation*, 8(3), 208–213. https://doi.org/10.1016/j.pmrj.2015.07.003(in English).

45. Prnjak, K., Jukic, I., & Tufano, J. J. (2019). Perfectionism, body satisfaction and dieting in athletes: The role of gender and sport type. *Sports*, 7(8), 181. https://doi.org/10.3390/sports7080181 (in English).
46. Quah, Y. V., Poh, B. K., Ng, L. O., & Noor, M. I. (2009). The female athlete triad among elite Malaysian athletes: Prevalence and associated factors. *Asia Pacific Journal of Clinical Nutrition*, 18(2), 200–208 (in English).
47. Ravaldi, C., Vannacci, A., Bolognesi, E., Mancini, S., Faravelli, C., & Ricca, V. (2006). Gender role, eating disorder symptoms, and body image concern in ballet dancers. *Journal of Psychosomatic Research*, 61(4), 529–535. https://doi.org/10.1016/j.jpsychores.2006.04.016 (in English).
48. Ravaldi, C., Vannacci, A., Zucchi, T., Mannucci, E., Cabras, P. L., Boldrini, M., Murciano, L., Rotella, C. M., & Ricca, V. (2003). Eating disorders and body image disturbances among ballet dancers, gymnasium users and body builders. *Psychopathology*, 36(5), 247–254. https://doi.org/10.1159/000073450 (in English).
49. Reardon, C. L., Hainline, B., Aron, C. M., Baron, D., Baum, A. L., Bindra, A., Budgett, R., Campriani, N., Castaldelli-Maia, J. M., Currie, A., Derevensky, J. L., Glick, I. D., Gorczynski, P., Gouttebarge, V., Grandner, M. A., Han, D. H., McDuff, D., Mountjoy, M., Polat, A., Purcell, R., Engebretsen, L. (2019). Mental health in elite athletes: International Olympic Committee consensus statement (2019). *British Journal of Sports Medicine*, 53(11), 667–699. https://doi.org/10.1136/bjsports-2019-100715 (in English).
50. Riebl, S. K., Subudhi, A. W., Broker, J. P., Schenck, K., & Berning, J. R. (2007). The prevalence of subclinical eating disorders among male cyclists. *Journal of the American Dietetic Association*, 107(7), 1214–1217. https://doi.org/10.1016/j.jada.2007.04.017 (in English).
51. Ringham, R., Klump, K., Kaye, W., Stone, D., Libman, S., Stowe, S., & Marcus, M. (2006). Eating disorder symptomatology among ballet dancers. *International Journal of Eating Disorders*, 39(6), 503–508. https://doi.org/10.1002/eat.20299 (in English).
52. Robbeson, J. G., Kruger, H. S., & Wright, H. H. (2015). Disordered eating behavior, body image, and energy status of female student dancers. *International Journal of Sport Nutrition and Exercise Metabolism*, 25(4), 344–352. https://doi.org/10.1123/ijsnem.2013-0161 (in English).
53. Rosendahl, J., Bormann, B., Aschenbrenner, K., Aschenbrenner, F., & Strauss, B. (2009). Dieting and disordered eating in German high school athletes and non- athletes. *Scandinavian Journal of Medicine & Science in Sports*, 19(5), 731–739. https://doi.org/10.1111/j.1600-0838.2008.00821.x (in English).
54. Smith, A., Emerson, D., Winkelmann, Z., Potter, D., & Torres-McGehee, T. (2020). Prevalence of Eating Disorder Risk and Body Image Dissatisfaction among ROTC Cadets. *International Journal of Environmental Research and Public Health*, 17(21). https://doi.org/10.3390/ijerph17218137
55. Prevalence of eating disorder risk and body image dissatisfaction among ROTC cadets. *International Journal of Environmental Research and Public Health*, 17(21), 8137. https://doi.org/10.3390/ijerph17218137 (in English).
56. Smith, A., Torres-McGehee, T., Monsma, E., & Gay, J. (2018). Prevalence of eating disorder risk and body image perceptions of collegiate cheerleading coaches. *Journal of Sports Medicine & Allied Health Sciences*, 4(1), 1. https://doi.org/10.25035/jsmahs.04.01.07 (in English).
57. Smith, A. B., Gay, J. L., Monsma, E. V., Arent, S. M., Sarzynski, M. A., Emerson, D. M., & Torres-McGehee, T. M. (2022). Investigation of eating disorder risk and body image dissatisfaction among female competitive cheerleaders. *International Journal of Environmental Research and Public Health*, 19(4), 2196. https://doi.org/10.3390/ijerph19042196 (in English).
58. Sundgot-Borgen J. (1993). Nutrient intake of female elite athletes suffering from eating disorders. *International Journal of Sport Nutrition*, 3(4), 431–442. https://doi.org/10.1123/ijsn.3.4.431 (in English).
59. Sundgot-Borgen J. (1993). Prevalence of eating disorders in elite female athletes. *International Journal of Sport Nutrition*, 3(1), 29–40. https://doi.org/10.1123/ijsn.3.1.29 (in English).
60. Sundgot-Borgen, J., & Torstveit, M. K. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical Journal of Sport*, 14(1), 25–32. https://doi.org/10.1097/00042752-200401000-00005 (in English).
61. Sundgot-Borgen, J., & Torstveit, M. K. (2010). Aspects of disordered eating continuum in elite high-intensity sports. *Scandinavian Journal of Medicine & Science in Sports*, 20 Suppl 2, 112–121. https://doi.org/10.1111/j.1600- 0838.2010.01190.x (in English).
62. Szabó, M., Cunningham, M. L., Seton, M., & Maxwell, I. (2019). Eating disorder symptoms in Australian actors and performing artists. *Medical Problems of Performing Artists*, 34(4), 171–178. https://doi.org/10.21091/mppa.2019.4028 (in English).
63. Thiemann, P., Legenbauer, T., Vocks, S., Platen, P., Auyeung, B., & Herpertz, S. (2015). Eating disorders and their putative risk factors among female German professional athletes. *European Eating Disorders Review*, 23(4), 269–276. https://doi.org/10.1002/erv.2360 (in English).
64. Thompson, R. A., & Sherman, R. (2014). Reflections on athletes and eating disorders. *Psychology of Sport and Exercise*, 15(6), 729–734. https://doi.org/10.1016/j.psychsport.2014.06.005 (in English).
65. Toro, J., Galilea, B., Martinez-Mallén, E., Salamero, M., Capdevila, L., Mari, J., Mayolas, J., & Toro, E. (2005). Eating disorders in Spanish female athletes. *International Journal of Sports Medicine*, 26(8), 693–700. https://doi.org/10.1055/s-2004-830378 (in English).

66. Torres-McGehee, T. M., Emerson, D. M., Pritchett, K., Moore, E. M., Smith, A. B., & Uriegas, N. A. (2021). Energy availability with or without eating disorder risk in collegiate female athletes and performing artists. *Journal of Athletic Training*, 56(9), 993–1002. https://doi.org/10.4085/JAT0502-20 (in English).

67. Torres-McGehee, T. M., Green, J. M., Leeper, J. D., Leaver-Dunn, D., Richardson, M., & Bishop, P. A. (2009). Body image, anthropometric measures, and eating- disorder prevalence in auxiliary unit members. *Journal of Athletic Training*, 44(4), 418–426. https://doi.org/10.4085/1062-6050-44.4.418 (in English).

68. Torres-McGehee, T. M., Monsma, E. V., Dompier, T. P., & Washburn, S. A. (2012). Eating disorder risk and the role of clothing in collegiate cheerleaders‟ body images. *Journal of Athletic Training*, 47(5), 541–548. https://doi.org/10.4085/1062-6050-47.5.03 (in English).

69. Torres-McGehee, T. M., Monsma, E. V., Gay, J. L., Minton, D. M., & Mady-Foster, M. S., ATC (2011). Prevalence of eating disorder risk and body image distortion among National Collegiate Athletic Association Division I varsity equestrian athletes. *Journal of Athletic Training*, 46 (4), 431–437. https://doi.org/10.4085/1062-6050-46.4.431 (in English).

70. Torres-McGehee, T. M., Uriegas, N. A., Hauge, M., Monsma, E. V., Emerson, D. M., & Smith, A. B. (2023). Eating disorder risk and pathogenic behaviors among collegiate student-athletes. *Journal of Athletic Training*, 58(10), 803–812. https://doi.org/10.4085/1062-6050-0539.22 (in English).

71. Torstveit, M. K., Rosenvinge, J. H., & Sundgot-Borgen, J. (2008). Prevalence of eating disorders and the predictive power of risk models in female elite athletes: A controlled study. *Scandinavian Journal of Medicine & Science in Sports*, 18(1), 108–118. https://doi.org/10.1111/j.1600-0838.2007.00657.x (in English).

72. Torstveit, M. K., & Sundgot-Borgen, J. (2005). The female athlete triad: Are elite athletes at increased risk?. *Medicine and Science in Sports and Exercise*, 37(2), 184–193. https://doi.org/10.1249/01.mss.0000152677.60545.3a (in English).

73. Uriegas, N. A., Emerson, D. M., Smith, A. B., Kelly, M. R., & Torres-McGehee, T. M. (2021). Examination of eating disorder risk among university marching band artists. *Journal of Eating Disorders*, 9(1), 35. https://doi.org/10.1186/s40337-021-00388-7 (in English).

74. van Niekerk, R. L., & Card, M. (2018). Eating attitudes: The extent and risks of disordered eating among amateur athletes from various sports in Gauteng, South Africa. *South African Journal of Psychiatry*, 24, 1179. https://doi.org/10.4102/sajpsychiatry.v24i0.1179 (in English).

75. Vardar, E., Vardar, S. A., & Kurt, C. (2007). Anxiety of young female athletes with disordered eating behaviors. *Eating Behaviors*, 8(2), 143–147. https://doi.org/10.1016/j.eatbeh.2006.03.002 (in English).

76. Vo, M., Accurso, E. C., Goldschmidt, A. B., & Le Grange, D. (2017). The impact of DSM-5 on eating disorder diagnoses. *International Journal of Eating Disorders*, 50(5), 578–581. https://doi.org/10.1002/eat.22628 (in English).

77. Weber, S. E., Harris, M. M., Wright, H. H., & Manore, M. M. (2017). Assessment of disordered eating and orthorexia nervosa in endurance athletes following gluten and wheat-free diets. *Medicine & Science in Sports & Exercise*, 49(5S), 712. https://doi.org/10.4085/1062-6050-0539.22 (in English).

78. Werner, M. J., Rosenthal, S. L., & Biro, F. M. (1991). Medical needs of performing arts students. *The Journal of Adolescent Health*, 12(4), 294–300. https://doi.org/10.1016/0197-0070(91)90002-4 (in English).

Стаття надійшла до редакції 19.02.2024 р.