

# Specific Dietary Practices in Female Athletes and their Association with Positive Screening for Disordered Eating

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## Research article

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# Abstract

**BACKGROUND:** To determine if following specific diets was associated with responding positively to eating disorder/disordered eating (ED/DE) screening tools compared to non-diet-adherent athletes. We hypothesized that athletes adhering to specific diets were more likely to respond positively on ED/DE screening tools than those not following a diet.

**METHODS:** 1000 female athletes (15-30 y) completed a comprehensive survey about athletic health and wellness. Athletes were asked to specify their diet and completed 3 ED/DE screening tools: the Brief Eating Disorder in Athletes Questionnaire, the Eating Disorder Screen for Primary Care, and self-reported current or past history of ED/DE. Descriptive statistics were calculated for all study measures and chi-squared tests assessed relationships between athletes' dietary practices and their responses to ED/DE screening tools. Statistical significance was defined as  $p < 0.05$ .

**RESULTS:** 234 of 1000 female athletes reported adherence to specific diets. 69 of the 234 diet-adhering athletes (29.5%) were excluded due to medically-indicated dietary practices or vague dietary descriptions. Of the 165 diet-adherent athletes, 122 (67.9%) responded positively to  $\geq 1$  of the 3 ED/DE screening tools. Athletes practicing vegetarian, vegan, low-carbohydrate, low-dairy, or  $\geq 2$  diets were more likely to respond positively to  $\geq 1$  ED/DE screening tool vs. athletes without dietary restrictions (70.0%, 77.8%, 79.5%, 60.0%, and 65.6%, respectively vs. 41.8%;  $p \leq 0.048$ ).

**CONCLUSION:** Specific diet adherence in female athletes is associated with positive responses to ED/DE screening tools. Health practitioners should consider further ED/DE questioning of athletes reporting specific diet adherence in order to enhance nutritional knowledge and help treat and prevent ED/DE.

## Plain English Summary

Female athletes may follow special diets for various reasons including sociocultural practices, environmental concerns, or health and weight-management benefits. These practices may put them at risk for developing eating disorders/disordered eating (ED/DE), which peak during adolescence, and are more common among athletes. ED/DE in athletes may lead to inadequate fueling or low energy availability (EA) and its subsequent health and performance-related complications, also known as Relative Energy Deficiency in Sport (RED-S). It may be difficult to detect ED/DE among athletes due to the secretive nature behind these behaviors. In addition, objective information such as low weight or body mass index (BMI) may not be reliable due to their increased muscle mass. The results of this study revealed that female athletes who reported practicing special diets, specifically vegan, vegetarian, low-carbohydrate, low-dairy, or  $\geq 2$  diets were more likely to screen positive on eating disorder questionnaires compared to female athletes who did not report any dietary restrictions. These findings should prompt healthcare providers to evaluate these individuals further in order to enhance their nutritional knowledge and help treat and prevent consequences linked to ED/DE.

## Background

Many female athletes choose to follow specific diets.<sup>1-3</sup> Common motivations for these dietary practices are religious, social, or environmental concerns.<sup>2</sup> For some athletes, specific diets are used to manage certain medical conditions, such as celiac disease (gluten free), lactose intolerance (dairy free), or epilepsy (ketogenic). Health, weight-management, weight-class restrictions, and aesthetic requirements for sport may also influence an athlete's decision regarding specific dietary practices.<sup>2,4,5</sup> Claims of performance enhancement by professional or high profile athletes, often propagated on social media, have also motivated young athletes to adopt specific dietary practices despite insufficient scientific evidence.<sup>3</sup>

Specific dietary preferences or restrictive diets may predispose athletes to developing eating disorders or disordered eating (ED/DE).<sup>4-6</sup> ED/DE are more common in athletes than non-athletes.<sup>4-7</sup> A study published in 2004 revealed that the prevalence of ED/ED amongst Norwegian elite athletes was 13.5% compared to 4.6% ( $p < 0.001$ ) of the general population.<sup>8</sup> Prevalence of ED/DE is higher in female athletes compared to male athletes, ranging from 0–19% for men, and 6–45% for women.<sup>8,9</sup> Sport-specific risk factors include endurance and aesthetic sports for women, and weight-class sports for men.<sup>9</sup> The incidence usually peaks during adolescence,<sup>10,11</sup> due to a combination of pubertal changes, social stigmas revealing body image dissatisfaction, and increased intensity and competitiveness of athletic pursuits. Early detection and treatment of athletes with ED/DE can prevent development of serious complications.<sup>12</sup> However, identifying athletes who are at highest risk for developing ED/DE is difficult because of underreporting of symptoms or eating habits, likely due to the secretive nature and denial surrounding these behaviors.<sup>4,7</sup> The most recent updates in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) have also made diagnosis of ED somewhat more challenging because some of the objective criteria for diagnosis of anorexia nervosa (AN) (e.g., low weight or BMI and amenorrhea) have been modified, and the epidemiology of ED diagnoses may change.<sup>13,14</sup>

Fueling an athlete requires ensuring that basic dietary requirements are met and sports-specific diet-related objectives are achieved.<sup>15,16</sup> Ongoing growth and development also need to be factored into nutritional considerations for a young or adolescent athlete.<sup>15</sup> A concern with restrictive diets and ED/DE in athletes is that inadequate education or poor understanding of an athlete's nutritional and energy requirements may lead to low energy availability (EA), and consequently some of the various negative sequelae of Female Athlete Triad and Relative Energy Deficiency in Sport (RED-S).<sup>12</sup>

Detection of ED/DE in adolescents is difficult, yet prognosis is better the earlier ED/DE are detected and treated. Thus, determining other risk factors or markers of ED/DE is important. In this study, we hypothesized that athletes who report adhering to special diets would respond positively to validated ED/DE screening tools when compared to non-diet adherent athletes.

## Methods

### Participants

Female athletes, 15–30 years of age, completing  $\geq 4$  hours of self-reported physical activity per week for at least 6 months, and seen at the sports medicine clinic at Boston Children’s Hospital, were invited to participate in the survey. Non-athletes, males, and female athletes not able to participate in sports (e.g., due to injury) within the past 6 months were excluded from the study. The Institutional Review Board (IRB) at Boston Children’s Hospital approved this study. Informed consent was obtained from participants who were  $\geq 18$  years of age and parents of those  $< 18$  years of age; assent was obtained from participants  $< 18$  years of age.

### Anthropometric measurements

Heights and weights of participants were collected as part of their clinic visits. Heights were measured to the nearest 0.1 cm with a wall-mounted or free-standing stadiometer depending on clinic site. Weights were measured on medical electronic scales to the nearest 0.1 kg. Participants were in light clothing with no footwear.

### Survey

A detailed description of the survey has been reported previously.<sup>17</sup> The survey was administered through an online questionnaire, which included 133 questions pertaining to general health, illness, injury, sports performance and Triad/RED-S risk factors. The present study is a secondary analysis of the specific dietary practices of the participating female athletes.

### Assessment of dietary practices

Patients were asked if they followed a specific diet or if they were avoiding certain types of foods/food groups and to specify which dietary practice they were following. These questions are displayed in Table 1. Athletes following diets in association with specific health issues mentioned in their medical history (e.g., gluten free due to diagnosed celiac disease, dairy free for lactose intolerance) or vague dietary descriptions that did not fall into any of the main categories (e.g., “eating healthy,” “exclude junk”) were excluded from the analysis.

Table 1  
Summary of ED/DE assessment tools used in the survey.

Dietary practices	BEDA-Q <sup>18</sup>	ESP <sup>19</sup>	Self-report
<ul style="list-style-type: none"> <li>• Are you on a special diet or do you avoid certain types of foods or food groups? <sup>†</sup></li> <li>• Please explain what type of diet you are on (e.g. Gluten free/ Dairy free/ Vegetarian/ Low carb)</li> </ul>	<ul style="list-style-type: none"> <li>• I feel extremely guilty after overeating<sup>*</sup></li> <li>• I am preoccupied with the desire to be thinner<sup>*</sup></li> <li>• I think that my stomach is too big<sup>*</sup></li> <li>• I feel satisfied with the shape of my body<sup>*</sup></li> <li>• My parents have expected excellence of me<sup>*</sup></li> <li>• As a child, I tried very hard to avoid disappointing my parents and teachers<sup>*</sup></li> <li>• Are you trying to lose weight now?<sup>†</sup></li> <li>• Have you tried to lose weight? <sup>†</sup></li> <li>• If yes, how many times have you tried to lose weight?<sup>‡</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Are you satisfied with your eating patterns?<sup>†</sup></li> <li>• Do you ever eat in secret?<sup>†</sup></li> <li>• Does your weight affect the way you feel about yourself?<sup>†</sup></li> <li>• Do you currently suffer with or have you ever suffered in the past with an eating disorder?<sup>†</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Do you or have you ever suffered from disordered eating?<sup>†</sup></li> <li>• Do you currently suffer with or have you ever suffered in the past from an eating disorder?<sup>†</sup></li> </ul>
<p>Brief Eating Disorder in Athletes Questionnaire (BEDA-Q)</p>			
<p>Eating Disorder Screen for Primary Care (ESP)</p>			
<p>*Answer choices: always, usually, often, sometimes, rarely never</p>			
<p>†Answer choices: yes, no</p>			
<p>‡Answer choices: 1–2, 3–5, &gt; 5 times</p>			

## Eating disorder assessment

Two validated eating disorder questionnaires, the Brief Eating Disorder in Athletes Questionnaire (BEDA-Q)<sup>18</sup> and the Eating Disorder Screen for Primary Care (ESP),<sup>19</sup> and self-reported current or past history of ED/DE (SR) were included in the survey. The BEDA-Q is a validated screening tool for ED/DE specific for female athletes with a sensitivity of 82.1% and specificity of 84.6% for detecting ED. The ESP is a four-item questionnaire used in the primary care setting wherein responding positively to  $\geq 3$  questions is associated with an increased risk of ED [likelihood ratio (95% CI) = 11 (6.4–18)]. The questions for each tool are displayed in Table 1.

## Data Analysis

Statistical analyses were performed using the JMP statistical package (version 11.0 Pro, SAS Institute Inc., Cary, NC). Descriptive statistics were calculated for all study measures and chi-squared tests assessed relationships between athletes' dietary practices and their responses to ED/DE screening tools. Statistical significance was set at  $p < 0.05$ .

## Results

### Sample characteristics

One-thousand female athletes completed the survey and were included in the parent study<sup>17</sup> (age mean  $\pm$  SD  $18.92 \pm 3.34$  years) relating ED/DE screening and RED-S correlates. As previously reported, out of 1000 female athletes who participated in this study, 473 (47.3%) responded positively to at least one of the 3 ED/DE screening tools.<sup>17</sup> Two-hundred thirty four (23.4%) of participants reported adhering to specific diets; sixty-nine of these athletes (29.5% of subset; 6.9% of total sample) reported that their specific diet was medically indicated ( $n = 27$ ) or had vague dietary descriptions that did not fall into any of the main categories ( $n = 42$ ).

The mean age of athletes who reported adherence to non-medically indicated specific dietary practices ( $n = 165$ ) was slightly higher compared to those who were not on any special diets. Mean weight was also slightly higher for the diet adherent group, but mean BMI and height were similar for both groups. Descriptive characteristics of each group are displayed in Table 2.

Table 2  
Descriptive characteristics of each group. Mean  $\pm$  SD.

	No dietary preference (n = 766)	(+) Dietary preference (n = 165)	Excluded due to medically-indicated or non-specific response (n = 69)
Age (years)	18.66 $\pm$ 3.20	19.81 $\pm$ 3.5	21.45 $\pm$ 3.40
BMI (kg/m <sup>2</sup> )	22.90 $\pm$ 3.70	22.85 $\pm$ 3.74	22.70 $\pm$ 3.46
Height (cm)	165.20 $\pm$ 6.92	165.13 $\pm$ 6.41	166.07 $\pm$ 7.05
Weight (kg)	62.54 $\pm$ 11.16	63.03 $\pm$ 10.63	63.01 $\pm$ 12.97

## Dietary practices among female athletes

Of the 165 athletes who were diet-adherent without medical indication, 80.6% reported following only one diet and 19.4% reported following  $\geq 2$  diets. Of the 133 athletes who reported following only one diet, the most common dietary practices were: low carbohydrate (29%), vegetarian (22.5%), dairy restrictive (22.5%), gluten free (14%), vegan (6.7%), and pescatarian (4.5%). The distributions of specific dietary practices in female athletes are displayed in Fig. 1.

## Dietary practices and response to ED/DE screening tools

Of all the diet-adherent athletes included in the analysis (n = 165), 67.9% responded positively to  $\geq 1$  of the 3 ED/DE screening tools compared to 41.8% of the non-diet-adherent athletes (n = 766) ( $p < 0.0001$ ) (Table 3). Athletes practicing low-carbohydrate (79.5%), vegan (77.8%), vegetarian (70%),  $\geq 2$  diets (65.6%), or low-dairy (60%) diets were more likely to respond positively to  $\geq 1$  ED/DE screening tool when compared to athletes without dietary restrictions (41.8%) ( $p \leq 0.048$ , Table 4). Athletes following pescatarian (33%,  $p = 0.67$ ) or gluten-free diets (63%,  $p = 0.0624$ ) did not have higher rates of ED/DE compared to athletes without dietary restrictions.

Table 3  
Dietary practices and response to Eating Disorder/Disordered Eating (ED/DE) screening tools ( $p < 0.0001$ )

	No dietary preference (n = 766)	(+) Dietary preference (n = 165)
(+) ED/DE	320	112
(-) ED/DE	446	53

Table 4  
 Specific dietary practices and correlation with Eating Disorder/Disordered Eating (ED/DE) screening tools. \* as compared to athletes without dietary restrictions

Dietary Practice	+ ED/DE	*p-value
Low carbohydrate	79.5%	< 0.0001
Vegan	77.8%	0.0297
Vegetarian	70%	0.0022
≥ 2 diets	65.6%	0.0075
Gluten free	63%	0.0624
Low dairy	60%	0.0476
Pescatarian	33%	0.6761

## ED/DE screening tools

Twenty nine percent of diet-adherent athletes screened positively on the BEDA-Q alone, while 7% screened positively by SR. None of the diet-adherent athletes screened positively on ESP alone. Overlapping areas represent the subset of athletes who screened positively on 2 or more screening tools. Twelve percent (12%) of athletes responded positively on all three screening tools (Fig. 2).

## Discussion

Special diets or food restrictions have been recognized in the athletic population.<sup>1-3</sup> In our original 1000 patient study, about one-quarter (23.4%) of female athletes reported restrictive diets. The most common diets were plant-based diets (vegan, vegetarian, and pescatarian) and elimination diets (gluten-free, low-carbohydrate, and low-dairy diets).

Plant-based diets may be differentiated based on their restriction of certain food groups.<sup>2</sup> A pescatarian diet excludes meat and poultry but includes fish, dairy and eggs; a lacto-ovo vegetarian diet excludes meat, poultry, and fish, but includes eggs and dairy; a vegan diet excludes all meat, poultry, fish, eggs, and dairy.<sup>2</sup> Different types of plant-based diets are described in Table 5. Of the athletes following only one diet (n = 133), 22.5% were vegetarian, 6.7% were vegan, and 4.5% were pescatarian. Plant-based diets have been linked to lower body mass index (BMI) and decreased risk of chronic disease, such as hypertension, diabetes, and obesity.<sup>2,20</sup> However, these plant-based diets with high fiber content may also lead to early satiety and appetite blunting. These effects, in turn, can cause low energy intake and lead to low EA and its associated health and performance consequences.<sup>2,21</sup> In addition, individuals practicing

plant-based diets who do not consume dairy products or fish may be deficient in vitamin D, which is vital in maintaining adequate bone health.<sup>2,20-22</sup>

Table 5  
Different types of plant-based diets.<sup>2</sup>

	<b>Avoid meat/poultry</b>	<b>Avoid fish</b>	<b>Avoid eggs/dairy</b>
<b>Vegan</b>	X	X	X
<b>Vegetarian</b>	X	X	
<b>Pescatarian</b>	X		

A gluten-free diet restricts foods that contain the protein gluten, commonly in wheat, rye, or barley. Gluten-free diets are clinically indicated in managing gastrointestinal symptoms in patients who have celiac disease or non-celiac gluten sensitivity.<sup>2,3</sup> Other common forms of elimination diets include low-carbohydrate and low-dairy diets, which restrict the intake of sugars/starches and milk-derived products, respectively. Low-carbohydrate diets have been around for decades; however, this dietary practice remains poorly defined. Individuals adhering to a low-carbohydrate diet may vary from simply avoiding these food groups, reducing the amount of daily carbohydrate intake (< 100 g/day), to severely restricting the amount of daily carbohydrate intake (< 50 g/day) to induce ketosis.<sup>23,24</sup> In addition to medical indications or health and weight management benefits, popular trends initiated by professional or high profile athletes have also driven young athletes to participate in specific diets despite the absence of scientific evidence of performance benefits.<sup>3-5</sup> Recent studies have shown that the majority of athletes practicing gluten-free diets have chosen to do so based on self-diagnosis, and despite lacking substantial evidence to support performance benefits, there has been an increase in the prevalence of non-celiac, non-gluten sensitive athletes adopting a gluten-free diet in attempt to optimize health and enhance athletic performance.<sup>3</sup> Based on our study, there were 133 athletes who reported following only one diet, of which 19 (14%) followed a gluten-free diet, while 39 (29%) athletes followed a low-carbohydrate diet, and 30 (22.5%) athletes followed a low-dairy diet, without reporting any clinical indications. Gluten-free diets may be associated with suboptimal intake of carbohydrates and protein and can lead to micronutrient deficiencies (e.g., B vitamins, calcium, vitamin D, iron, and potassium), while low-dairy diets may be deficient in vitamin D and fat.<sup>2,3</sup> Recommended macronutrient intake for female athletes range from 3–10 g/kg of the athlete’s body weight per day for carbohydrates, 1.2-2.0 g/kg/day for protein, and 20–35% of total kcal/day for fat.<sup>2</sup> Athletes who fail to consume sufficient levels of these macronutrients may be at risk for RED-S; high-risk consequences specifically include impaired glycogen and muscle protein synthesis and bone remodeling, which may affect how athletes recover from exercise and their overall bone health.<sup>2</sup>

Previous studies have found a positive correlation between special diets and disordered eating.<sup>25-30</sup> Specifically, patients diagnosed with anorexia nervosa have a higher prevalence of practicing

vegetarianism at some point in their lives compared to the general population.<sup>27,28</sup> Although there may be many reasons for special dietary practices, researchers have suggested that adherence to dietary restrictions may be used as a socially acceptable way to disguise disordered eating habits or behaviors.<sup>25,26</sup> Restrictive dietary adherence amongst athletes is recognized as a risk factor for low EA and its subsequent RED-S health and performance-related consequences.<sup>4-6</sup> However, we are unaware of any studies that have examined the relationship between specific diets and DE in the athletic population. Our study shows that of the 165 non-medically indicated diet-adherent athletes, 67.9% responded positively to  $\geq 1$  of the 3 ED/DE screening tools compared to 41.8% of the non-diet-adherent athletes ( $p < 0.0001$ ).

ED/DE are more prevalent among athletes compared to their non-athletic peers.<sup>4-7</sup> Peak onset is usually around puberty or adolescence (15–19 years old)<sup>11</sup> due to the combination of biological and psychosocial changes that occur, which results in issues with body dissatisfaction, self-esteem, and mood.<sup>10</sup> Objective information, such as low weight and BMI, may not be reliable among athletes due to their increased muscle mass, wherein energy deficient athletes can present with normal BMIs.<sup>4,7</sup> Indeed, in our parent study, the inadequate EA group had a higher BMI than the adequate EA group.<sup>17</sup> In the present study, however, we found an association between athletes reporting specific dietary practices and responding positively to ED/DE screening tools. Athletes who practiced vegetarian, vegan, low-carbohydrate, low-dairy, or  $\geq 2$  diets were more likely to respond positively to  $\geq 1$  ED/DE screening tool when compared to athletes without dietary restrictions. In terms of plant-based diets, vegan and vegetarian athletes who avoided more food groups were found to have a stronger association with responding positively to ED/DE screening tools, in contrast to athletes who practiced a pescatarian diet. Additionally, we found that individual athletes screened positively on some ED/DE screening tools and negatively on others, highlighting that it is may be clinically important to ask athletes about eating behaviors with various questions, framing the questions slightly differently to detect ED/DE.

Early detection of ED/DE among athletes is highly recommended to facilitate prompt treatment and prevention of health and performance-related consequences,<sup>4,31</sup> such as menstrual dysfunction, impaired bone health and metabolism, increased injury risk, decreased endurance, performance, and coordination.<sup>12,17,32-34</sup> The findings in this study may help bridge the gap in recognizing athletes at risk for developing ED/DE. The presence of specific dietary practices in female athletes should urge healthcare providers to consider further evaluation through validated ED/DE questionnaires even before the presence of subjective (e.g., desire to lose weight, body image dissatisfaction) or objective findings (e.g., low weight/BMI, oligomenorrhea) that are commonly used to diagnose ED/DE. Applying this in clinical practice may encourage healthcare providers to address behaviors linked to ED/DE in athletes, discuss their health implications, and offer access to appropriate resources, including nutritional and psychological support. Management of ED/DE in the athletic population requires a thorough evaluation and an interdisciplinary approach that focuses on patient-centered care.<sup>2,7,35</sup> A registered dietitian who is experienced in treating athletes with ED/DE may help with managing nutritional adjustments, safe and effective supplementation, and monitoring of energy intake.<sup>2,7,31,35</sup> In our study, the gluten-free diet for

celiac disease and dairy-free diet for lactose intolerance were the most common reasons why female athletes follow special diets due to medical indications. In these cases, it is important for healthcare providers to educate these athletes regarding the possible macronutrient and micronutrient deficiencies associated with these diets that can lead to low EA, and guide them towards proper adjustments with nutritional intake or supplementation.<sup>2</sup>

There were several limitations to this study. This study was a survey, with inherent biases associated with self-report rather than more direct food monitoring. Questions pertaining to the athlete's motivation behind these dietary adherences (e.g., socio-cultural, weight management, performance benefits, etc.), as well as the duration and compliance surrounding these practices were not included in the survey. This study is the first to show the association between various dietary practices and ED/DE specifically in adolescent and young adult female athletes. A larger study of athletes with each of the specific dietary practices highlighted in this paper is needed to elucidate possible associations between such restrictive diets and the various health and performance-related consequences of RED-S.

## Conclusion

ED/DE are not uncommon among the athletic population and the behaviors peak during adolescence. Identification of athletes who will eventually develop ED/DE is difficult due to underreporting of eating habits and often limited objective physical and laboratory measurements to detect ED/DE early on. Gaps in knowledge among healthcare providers and athletic staff may also leave these issues undiagnosed or inappropriately managed.<sup>36</sup> This study found an association between the presence of specific dietary practices in female athletes and screening positively on an ED/DE survey. Athletes with ED/DE may be at risk for low EA and consequently health and performance-related consequences of RED-S. Thus, healthcare providers should consider further ED/DE questioning of athletes reporting specific dietary practices in order to enhance their nutritional knowledge and help treat and prevent consequences linked to ED/DE.

## Abbreviations

ED/DE: Eating Disorder/Disordered Eating

BMI: Body Mass Index

EA: Energy Availability

RED-S: Relative Energy Deficiency in Sport

BEDA-Q: Brief Eating Disorder in Athletes Questionnaire

ESP: Eating Disorder Screen for Primary Care

SR: Self-Reported current or past history of ED/DE

DSM 5: 5<sup>th</sup> edition of the Diagnostic and Statistical Manual of Mental Disorders

AN: Anorexia Nervosa

## **Declarations**

## **Ethics approval and consent to participate**

This Institutional Review Board at Boston Children's Hospital approved the ethics of the study as a part of protocol IRB-P00019420.

## **Consent for publication**

All authors gave their consent for publication.

## **Availability of data and materials**

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

## **Competing interests**

There are no competing interests declared by the authors.

## **Funding**

Not applicable.

## **Authors' contributions**

CDB envisioned the topic for the study, which was designed by CBD, LJM, NF, and KEA. BH and LMM processed and analyzed the data. The main draft of the paper was done by CDB with contributions from KEA, BH, and LMM. All authors read and approved the final manuscript.

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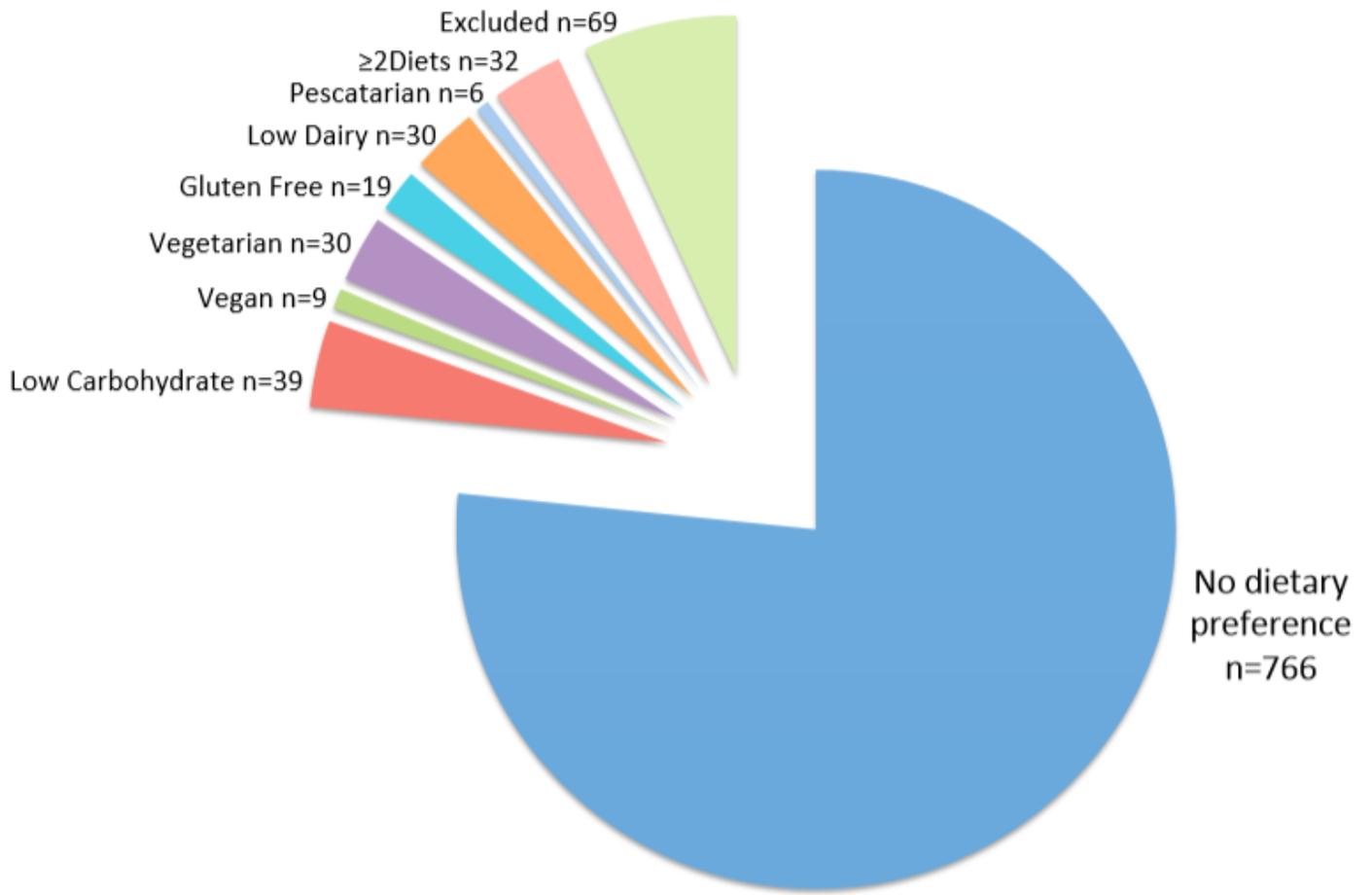
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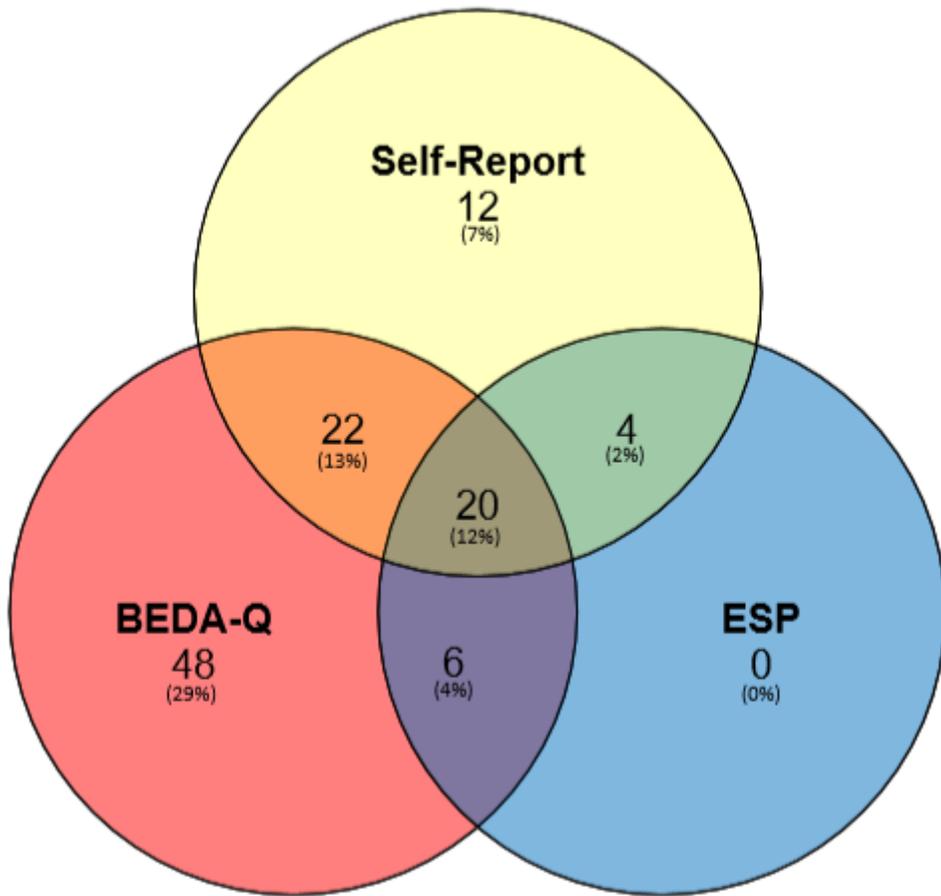
## Figures

### Specific Dietary Practices in Female Athletes



**Figure 1**

Specific dietary preferences in female athletes



**Figure 2**

Distribution of non-medically indicated diet-adherent athletes who screened positively on each Eating Disorder/Disordered Eating (ED/DE) screening tool. Brief Eating Disorder in Athletes Questionnaire (BEDA-Q) Eating Disorder Screen for Primary Care (ESP)