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AN INVESTIGATION OF BODY IMAGE AND EATING BEHAVIORS IN FORMER NCAA HEPTATHLETES

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AN INVESTIGATION OF BODY IMAGE AND EATING BEHAVIORS IN FORMER NCAA HEPTATHLETES

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in
Sport and Exercise Psychology
at the University of Kentucky

By

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2024

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ABSTRACT OF THESIS

AN INVESTIGATION OF BODY IMAGE AND EATING BEHAVIORS IN FORMER NCAA HEPTATHLETES

Research consistently supports associations between body image dissatisfaction and disordered eating pathologies in collegiate athletes (e.g., Reel & Voelker, 2012; Sundgot-Borgen, 1994). More specifically, female NCAA athletes report feeling torn between peak performance body composition and body fat levels fitting ideal feminine standards (Beckner & Record, 2016; Carson et al., 2020). Examining track and field, most event groups hold a lean-promoting perspective. However, heptathletes warrant further investigation due to the multifaceted and contradictory nature of events. Specifically, heptathletes encounter complex pressures training for a wide range of physical demands, which can create confusion in expected body types (Heazlewood et al., 2014). Therefore, the current study's purpose was to explore body image and eating behaviors of former NCAA heptathletes. Interview questions followed the sociocultural model of disordered eating (Fitzsimmons-Craft et al., 2014) and were grounded in past research studies (Carson et al., 2020; Greenleaf, 2020; Lichtenstein et al., 2022). A thematic analysis of interview responses revealed categories of sport specific pressures, general and social pressures, individual pathologies, and support systems. Within these categories, themes and subthemes were discussed. Findings contribute to growing knowledge of athletes' body image, eating behaviors, and existing pressures, while subsequently creating a foundation for future initiatives.

KEYWORDS: Body Image, Eating Behaviors, Disordered Eating, Heptathlete, Collegiate Athlete, NCAA

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04/09/2024

Date

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CHAPTER 1. INTRODUCTION

1.1 Background

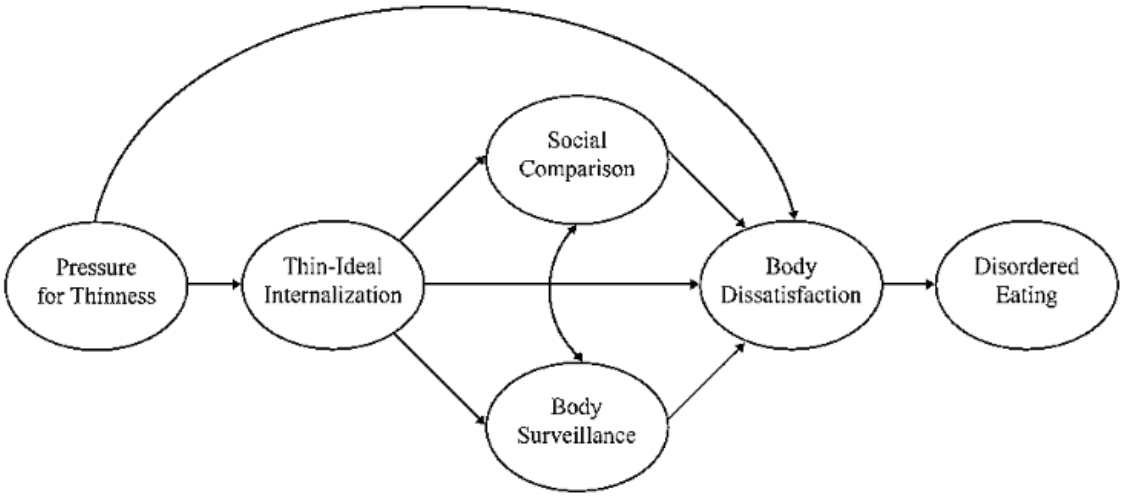
Body image is a unique and unavoidable aspect of being human. Body image and body image dissatisfaction are complex psychological constructs that impact an increasing number of individuals and can be viewed both based on bodily appearance and bodily function (Sabiston et al., 2019). There are three dimensions of body image, which include perceptual, cognitive, and attitudinal aspects. Perceptual body image refers to how an individual sees and describes their body appearance and function, cognitive body image concerns an individual's thoughts about body appearance and function, and attitudinal body image involves specific attitudes and feelings an individual has towards their body image (Sabiston et al., 2019; Slade, 1994). One of the major manifestations of a negative perception and attitude towards one's body is body image dissatisfaction (BID). BID occurs when dissonance exists between an individual's actual body image (i.e., perceptions, thoughts, and feelings towards one's actual appearance) and their ideal body image (i.e., internalized ideals) and is prevalent during adolescent years (Heider et al., 2018; Kong & Harris, 2015; Davies, 2021). BID has been found to predict poor self-esteem, depression, and overall quality of life (Lo Coco et al., 2014). It is clear BID has the potential to heavily impact the psychological and physiological functioning and well-being of individuals.

The negative impact BID can have on individuals is important to consider, given a complex array of body and weight-related pressures exist in modern society. Western cultures place extensive pressure on female populations, given the existence of the feminine thin-ideal (McCarthy, 1990; Thompson & Stice, 2001). Specifically, the

feminine thin-ideal involves the societal expectation that the "ideal" body type to achieve is one as thin as possible, which is often subsequently internalized. Thin ideal internalization refers to the extent to which an individual accepts the cultural beauty ideal of thinness as a part of their own beliefs and standards and is found to predict BID and eating disorder (ED) risk (Stice,1994; Thompson & Stice, 2001).

Eating behaviors and body image are often interconnected. Specifically, individuals found to experience BID are at an increased risk of EDs (Monsama et al., 2016). For instance, an individual who is dissatisfied with their physical appearance may use food (e.g., restricted eating) as a method to control and change their external physique. Fitzsimmons-Craft and colleagues created a model (2014) that explores internalization, body dissatisfaction, and DE. This sociocultural model of disordered eating (see Figure 1.1) is specifically catered towards female college students and suggests pressure for thinness may lead to body dissatisfaction, and ultimately disordered eating. The model highlights pressure for thinness leads to thin-ideal internalization and identifies social comparison and body surveillance as potential mediators for this process. It is argued that through social comparison and body surveillance, individuals may discover they have not reached their ideal appearance state, through observation of others or themself respectively (2014). Incorporating an exploration of the role of both social comparison and body surveillance may be important to better understand athletes' risk of BID and DE behaviors.

Figure 1.1 Sociocultural Model of Disordered Eating



EDs are considered psychiatric illnesses that often involve disordered eating pathologies that include DE attitudes (e.g., negative feelings towards food, negative biases towards gaining weight), and the use of intentional methods to control one's weight (Pereira & Alvarenga, 2007). The DSM-V currently recognizes seven types of EDs, which include anorexia nervosa, bulimia nervosa, binge eating disorder, other specified feeding or eating disorders (OSFED), avoidant restrictive food intake disorder (AFRID), PICA, and rumination disorder (American Psychiatric Association, 2013). An examination of the existing literature has revealed the most investigated types of EDs include anorexia nervosa, bulimia nervosa, and binge eating disorder, likely given these are the three most commonly occurring EDs (Qian et al., 2021; Martinez, 2022). Further, EDs include aspects of disordered eating (DE). DE is a subclinical condition that involves a range of irregular eating behaviors and negative body image experiences that do not fit into the diagnostic criteria of EDs (Lichtenstein et al., 2022). More specifically, DE refers to the continuum that includes dieting and restrictive eating, abnormal eating behaviors, and clinical EDs (Sundgot-Borgen & Torstveit, 2010). DE does not include all the diagnostic criteria that clinical diagnosed EDs hold, meaning it is possible, and likely, for an individual to have DE pathologies without a clinically diagnosed ED (de Oliverira Coelho et al., 2010).

DE and EDs are two examples of manifestations athletes may experience because of the expectations placed on them. Athletes are faced with numerous expectations and stereotypes that can add to the complexity to their body image and eating behaviors. For instance, Reel & Voelker (2012) highlighted how athletes are required to both consistently perform at their best, but also are expected to ‘look the part’ while they do it.

Athletes have expectations placed on them to maintain a body that is ideal for performance, a body that fits societal ideals, and a body that matches their personal ideal standards. Different sports have traditionally held respective sport body stereotypes (Petrie & Greenleaf, 2012). For instance, aesthetic sports (e.g., cheer, gymnastics, figure skating, and diving) are those where one's appearance is a major factor in judging. While scores do not directly reflect an athlete's body type, research has indicated a strong prevalence of DE (and even ED) among athletes in aesthetic sports (Mancine et al., 2020). Furthermore, several non-aesthetic sports may also contribute to the risk of ED/DE, such as "lean focused" and "lean promoting" sports. Examples of sports classified as "leanness" sports include dancing, judo, cycling, rowing, swimming, middle and long-distance running, and multi-event track athletes (Martinsen et al., 2009). Previously referred to as endurance sports, these include sports with a specific weight emphasis, or as an interchangeable option to aesthetic sports (Varnes et al., 2013). Lean-promoting sports do not necessarily include this subjective evaluation of performance within scoring parameters, but still include an expectation for athletes to maintain a certain lean body physique. These stereotypes create an unrealistic expectation for what is deemed acceptable for different athletes in their sport. These expectations conceivably place added pressure on athletes to alter their bodies to fit a pre-existing standard that may not be possible or healthy.

An important population within elite athletics to consider is collegiate athletes, given the NCAA houses over 500,000 college athletes across its three division levels (NCAA, 2021). Collegiate athletes, especially those at the Division I level, are impacted by elite sport culture, which places an emphasis on being supervised, needing to make

sacrifices, and constantly striving for success. The various pressures that come with this elite level of competition can play a role in the development of BID, DE pathologies, and clinically diagnosed EDs. Research has supported the association between BID and DE pathologies in collegiate athletes (e.g., Reel & Voelker, 2012; Sundgot-Borgen, 1994; Thompson et al., 1999). Collectively, the pressures that come with competing at an elite level are suggested to reinforce DE pathologies (Papathomas, 2018). For example, a strong relationship was found in a sample of student athletes between BID and susceptibility to developing anorexia and bulimia (Dawkins, 2009). Therefore, it appears, regardless of gender, athletes who compete at an elite level, particularly those who compete in lean-promoting sports, are at higher risk of developing an ED (Chapa et al., 2022; Joy et al., 2016; Kong & Harris, 2015; Lichtenstein et al., 2022).

These risk factors, paired with the newly established NCAA Name, Image, and Likeness (NIL) rules, may create new pressures for athletes that are yet to be fully understood. Beyond athletic performance and satisfying fans, NIL places pressures on student-athletes to satisfy endorsement deals and have their social media posts perform well (Stephenson, 2022). Athletes, and track athletes specifically, are adding the role of 'public figure' or 'influencer' to their plate, seen in the cases of Sam Hurley, Matthew Boling, Masai Russell, Emily Cole, to name a few. The complexities of NIL deals could play a role in the reflection on physical appearance and on the perceived body image of NCAA athletes.

Given the risks that exist for collegiate athletes and for female populations, it is important to explore female athlete populations. Sport culture, sport body stereotypes, and the feminine thin ideal, serve as risk factors contributing to the prevalence of DE and

EDs within female athlete populations (Papathomas, 2019; Petrie & Greenleaf, 2012; Stice, 1994). Female athletes face complex dilemmas in terms of their body image (Beckner & Record, 2016; Buckley et al., 2021; Carson et al., 2020; Green, 2015). Female athletes face a unique dilemma of grappling with this feminine thin ideal while maintaining a body that allows them to perform at their highest abilities. A study of NCAA athletes revealed female athletes feel torn between peak performance levels and body fat levels that fit the ideal feminine standard of beauty, regardless of sport type (Larabee, 2011). What's more, female athletes have been found to display symptoms of ED at the subclinical level (Greenleaf et al., 2009). However, past research has revealed female athletes are still at a higher risk of developing a clinical ED. Specifically, Godoy-Izquierdo and Diaz (2021) found female soccer players with higher levels of BID were 12 times more likely to develop an ED when compared to soccer players with more positive body image. Additionally, some findings suggest as many as 45% of female athletes struggle with an ED (Conviser et al., 2018). More specifically, a study of NCAA Division I female athletes revealed over a third of female athletes report attitudes and symptoms classifying them as at-risk for anorexia nervosa (Mond et al., 2014). Taken together, it is apparent female athletes are a high-risk population for BID, DE, and EDs.

Track and field athletes face similar risks that general female athlete populations face. Most event groups within the sport of track and field have historically held a lean-promoting aspect. Running, and distance running in particular, has been known to have a culture that can be predispositional to BID, DE, and/or EDs. The belief "thinner is faster" is pervasive within running communities and other lean promoting sports and may serve as a contributor for many of the body image issues seen in this population (Sundgot-

Borgen, 1993). This higher risk of body image issues could contribute to a higher risk of DE behaviors. A study involving female collegiate runners recorded a pattern of restrictive food intake in hopes of losing weight to improve performance (Arthur-Cameselle & Quatromoni, 2011). More broadly, past research has revealed common themes in the sport of track and field including the existence of a blurred line between appearance and performance and a culture of comparison, which may create an environment that predisposes athletes to BID and DE (Mosewich et al., 2009). Each of these themes may be not only experienced by distance runners, but track and field athletes as a whole, and could add to the many pressures these athletes face when competing at an elite level.

The sport of track and field includes a variety of specific event groups, including distance and mid-distance runners, sprinters, jumpers, throwers, and multi-event athletes. Each of these event groups may have different experiences and pressures related to their body image and eating behaviors. Regardless of the event group, track athletes face complex pressures in relation to their body image, due to perceived expectations, perceptions of others, uniform type, and team culture (Nemeth et al., 2020; Pallotto et al., 2022, Steinfeldt et al., 2012; Sundgot-Borgen, 1993; Sundgot-Borgen, 1994).

A group that holds a unique position within the sport of track and field includes multi-event athletes. Multi-event athletes in the past have been specifically classified as having a lean-promoting aspect (Martinsen et al., 2009). Multi-event is a term for athletes who compete in either the decathlon, for male athletes, or the heptathlon, for female athletes. For females, the heptathlon consists of 7 events over the course of two consecutive days, with 4 events being contested the first day and 3 events the second. The

respective order of the events in the heptathlon is the 100m hurdles, high jump, shot put, 200m, long jump, javelin, and the 800m. Given the events listed, multi-event athletes are expected to perform at a high level in events that require strength, power, speed, and endurance. Martinsen and colleagues identified the heptathlon being a weight-sensitive sport, with high jump, long jump, distance running, and hurdling specifically holding weight-sensitive, lean-promoting components (2009). Holding a non-lean promoting aspect, sprinting events, and throwing events (i.e., 200m, javelin, shot put) are identified as power and high mass events, respectively. These different physical expectations of heptathletes can create confusion in what their body type is expected to be (Heazlewood et al., 2014).

1.2 Purpose

The limited research investigating BID and ED risk within the sport of track and field has primarily used distance runner populations (Carson et al., 2020; Sundgot-Borgen, 1993), while multi-event athletes, heptathletes specifically, have not been represented in past literature. Heptathletes face the complex challenge of receiving sport-specific pressures of training for a wide range of physical demands, societal pressures of maintaining a specific, yet unclear, physique as female athletes, and potential external pressures as competing as elite athletes. Consequently, it is conceivable these components play a role in the development of BID, DE, or EDs in heptathlete populations. The risk factors and the potential risks BID, DE, and EDs create for athletes, combined with the underrepresentation of heptathletes in past literature, encourages an investigation of the experiences with body image and eating pathology in NCAA heptathletes.

Therefore, the purpose of this study is to explore the body image and eating behaviors of former NCAA heptathletes. The data collected from this study could provide a significant look into the experiences of heptathletes and could help in identifying their body image perceptions, eating behaviors, and potential existing pressures. Not only would these findings create awareness of the status of body image and eating pathologies in female collegiate heptathlete populations but could be the foundation for future initiatives that could proactively address these problems.

The two research questions to guide the current study are as follows:

1. What are the experiences of former collegiate heptathletes with their body image?
2. How does the body image of former collegiate heptathletes impact their eating behaviors?

CHAPTER 2. METHODS

2.1 Participants

Participants included former NCAA student-athletes who trained and competed in the pentathlon (indoor) and/or heptathlon (outdoor) in track and field at the Division I level. Participants were 18 years or older, attended an NCAA Division I institution, competed as a female in the pentathlon and/or heptathlon, completed at least one collegiate season of track and field, and were retired and no longer had the intention to compete at the NCAA level. Additional exclusion criteria included participants must not have a current eating disorder diagnosis at the time of the study, must not have been in eating disorder recovery within the past 3 years, and must not have been pregnant at the time of the study or pregnant within the last 3 years.

The participant sample size was determined by interviewing participants until reaching data saturation, the point in data collection when no new data were found (Glaser & Strauss, 1967). Eight participants were interviewed to achieve data saturation, which is consistent with similar studies (Carson et al., 2020; Greenleaf, 2002).

2.2 Procedure

Participants who met the criteria were recruited after IRB approval. Using convenience sampling, the investigator contacted potential participants and individuals who may know potential participants and informed them of the project. More specifically, the investigator contacted coaches, former heptathletes, and former track and field athletes to inquire about willingness and knowledge of prospective participants they could put the investigator in contact with. Once initial contact was made and participants

expressed their willingness to participate, an informed consent form was sent to them, along with a demographic survey and an inquiry about future interview scheduling. After receiving a completed informed consent form, a completed demographic survey, and identifying a date, the interviews were conducted and transcribed. During the interview, participants were reminded that their identity was going to be kept confidential and that their identities would remain anonymous throughout the data analysis, results, and discussion. After the interview, the investigator used snowball sampling by asking participants if they knew of any other former heptathletes that would be receptive to being interviewed.

2.3 Instruments

A demographic survey was completed by participants before interviewing to confirm they met the inclusion criteria. Questions confirmed participants' age, gender, NCAA involvement, retirement status, and that any applicable eating disorder recovery and/pregnancy, fell outside of the previously noted 3-year time frame.

Interviews were conducted via zoom. The interviews were recorded and transcribed using Otter.ai. The investigator listened to the interviews and edited the transcription to adjust and ensure the accuracy of the data collected. This point also involved removing any identifiable information from the interview content. Each interview was semi-structured and used open-ended questions as a framework to guide the investigator (see Figure 2.3). The questions included content focusing on three main categories: general background, body image, and eating behaviors. Interview questions were formulated to follow the Sociocultural Model of Disordered Eating (Fitzsimmons-

Craft et al., 2014). The general background questions were meant to provide a foundation for what the participants' experience with track and field has been and to build rapport. This section included how long the participants competed in the sport, what event(s) they did, any injuries they incurred, and how they affectively viewed their experience overall in the sport. Body image questions were adapted from past research conducted by Greenleaf (2002) and Carson and colleagues (2020). Following the Sociocultural Model of Disordered Eating, body image questions sought to uncover participants' experiences with pressure for thinness, thin-ideal internalization, and body dissatisfaction. Social comparison and body surveillance questions were incorporated to examine their role as moderators and/or risk factors. Eating behavior questions were adapted from research conducted by Lichtenstein and colleagues (2022). Eating behavior questions sought to explore the presence and/or extent of disordered eating behaviors in participants. The overall purpose of the interview was to gather a wealth of information to aid in the investigation of body image and eating behaviors of former collegiate heptathletes.

Figure 2.3 Semi-Structured Interview Questions

General Background

1. Tell me about yourself and your track and field background.
2. How was your collegiate track and field experience overall?

Body Image

1. What was your relationship with body image like throughout your life?
2. What things have impacted how you feel about your body?
3. How would you describe the "ideal" body for your sport?
4. What types of messages have you received from coaches and/or teammates about body size/weight?
    a. Specific follow-up: how did these messages impact how you felt about your body?
5. How would you compare your athletic body ideals and your social body ideals?
6. Have you kept an eye on your body by studying yourself in the mirror, measuring your body, or by checking that certain clothes fit? If so, please explain.

Eating Behaviors

1. What was your relationship with food like throughout your life?
    a. Have you ever been diagnosed with an eating disorder?
2. Have you deliberately tried to limit the amount of food that you consume or avoided certain foods that you normally like?
    a. Specific follow-up:
        i. What have you tried to do?
        ii. Was it with the intention of influencing your shape or weight?

2.4 Data Analysis

The information gathered was analyzed by the investigator through a thematic analysis (Braun & Clarke, 2012). The investigator coded each interview manually using the six-phase analytical process created by Braun and Clarke (2012). Phase one, familiarization with the data, involved listening to, reading, and re-reading of the dataset to identify important information and recognize initial patterns. Phase two involved creating initial codes using the comment feature in Microsoft Word. After each interview, codes were adjusted, revised, and deleted as the investigator analyzed each individual interview to organize codes into themes. Phase three involved grouping codes into themes. Phase four involved reviewing the established themes and revising them as needed. Phase five involved defining and naming themes. In phase six, the final themes were determined, discussed, and quotes were supplementally used to finalize the data. Following this six-phase process allowed the investigator to establish rigor within the study.

Following this six-step coding process, the investigator took each theme, grouped themes into categories, and organized them into a Microsoft Excel document. Subthemes were identified and recorded by re-reading the quotes within each theme. Quotes were organized within each theme and subtheme. The investigator then tallied the number of quotes falling within each subtheme to provide a numerical representation of the qualitative data collected. The investigator then utilized multiple trustworthiness methods to minimize potential misinterpretations of the data. After these methods were completed and feedback was provided, the investigator adjusted the themes, subthemes, and tallies accordingly.

2.5 Trustworthiness

Qualitative research prompts additional steps through trustworthiness methods to ensure the credibility and validity of data collected and the subsequent analyses conducted. Trustworthiness methods aid in minimizing potential data misinterpretation by the investigator (Creswell, 2007). This section explains the techniques used in this study to ensure trustworthiness, specifically pilot testing, reflexivity, member checking, and peer review.

Before the first interview, a pilot test of the interview and data analysis process was conducted. The investigator selected a participant, a decathlete, to complete a pilot interview. This participant was selected based off their multi-event experience, but they were not eligible to participate in the full study, due to competing as a male. This interview followed the same outlined procedure to let the investigator evaluate the procedure's quality and adjust accordingly before conducting the first official interview. Following the pilot interview, the investigator sought feedback from the participant on clarity, flow, speed, depth, and overall structure of the interview guide.

Reflexivity is considered essential in qualitative research (Watt, 2007). Further, reflexive journaling can allow an investigator to keep track of biases, feelings, and thoughts, to better understand how these components may be influencing their research (2007). The investigator of the present study engaged in journaling throughout the research process to keep track of thoughts and feelings that came up prior to, during, and after each interview, as well as throughout the data transcription and analysis process.

Member checking is noted as being a crucial technique to establish credibility and guarantee trustworthiness in qualitative research. This technique involves assessing

findings with the participants of the study that provided the data, while providing an opportunity for participants to correct any errors (Lincoln & Guba, 1985, Rubin & Rubin, 1995). Member checking within the present study involved having full interview transcriptions sent to each individual participant via e-mail. Each participant was prompted to review the transcript and given the opportunity to clarify, modify, or eliminate comments made during the interview. Five participants responded with no additional clarifications, modifications, or eliminations, and three did not respond to the email.

The final method of trustworthiness utilized by the investigator was peer review. Peer review was used to provide an additional method to ensure trustworthiness in the data analysis process. Peer review processes generally involve an unbiased party examining data analysis procedures and findings (Rubin & Rubin, 1995). The peer reviewer for the present study was a second-year graduate student in sport and exercise psychology who was familiar with the topics discussed in the present study but was not familiar with literature pertaining to this study. The peer reviewer was randomly presented with 116 of the, at that point in analysis process, 229 total quotes (50.65%) and was asked to categorize each quote with one of the nine themes that were previously created by the investigator. After determining the theme, the reviewer was asked to determine which specific subtheme each respective quote best fit into. The reviewer correctly placed 103 quotes under the appropriate subtheme, achieving a reliability rate of 88.79%. Of the 13 total discrepancies, the most common mismatches were based on quotes being too long and accurately depicting multiple subthemes.

After each of these adjustments to the theme and subtheme structure, the reviewer and investigator agreed about where each quote should be placed, and no further changes were required. Lastly, the same reviewer placed each of the nine themes into their respective four categories and achieved a 100% rate of reliability. This peer review process helped reduce researcher bias and aided in ensuring an accurate representation of former heptathletes' experiences were recorded.

2.6 Positionality

When conducting research and analyzing data, it is helpful to understand our positionality as investigators. Prior to presenting the findings, as the primary investigator, I acknowledge my positionality as a former collegiate heptathlete. While I have observed BID, DE, and EDs among past teammates and competitors and I am interested in exploring how the nature of the sport influences these constructs, I have been cautious to make assumptions based on my past observations and experiences. As a researcher, I have utilized each trustworthiness method to not only ensure the validity and credibility of this study's findings, but to also work towards separating my past observations from the current investigation. I strived to be aware of my own biases and recognize how they may have shaped my perspective throughout the duration of the present study.

CHAPTER 3. RESULTS

This section presents the findings of the qualitative analysis of this study. First, a summary of the data's nature is provided, including a general description of the findings. Next, the four main categories that emerged from the data analysis process, *sport specific pressures*, *general and social pressures*, *individual pathology*, and *support systems*, are described. Quotes from participants are used throughout this section to demonstrate their thoughts and experiences within each topic.

2.7 Nature of the Data

Interview data were organized into four main categories. Within each category, nine themes were identified. Forty-four subthemes were then created within each theme. Each meaningful quote was then placed within each subtheme. The eight interviews conducted in the present study resulted in 263 meaningful quotes. See Table 3.1 for the frequencies of meaningful quotes within each theme and category.

The number of meaningful quotes from each interview varied from 16 (P4) to 50 (P5). Given the semi-structured and open-ended nature of the interviews, it is not surprising that a wide range was found between the number of meaningful quotes by each participant. These disparities are likely due to participants having diverse experiences with body image and eating behaviors within their sport. For example, P4 did not personally identify with having negative relationship with their body image or eating behaviors. It is therefore not surprising that, due to not having as much of a connection to these experiences, P4 may have had less to share during her interview.

Table 0.1 Categories and themes with frequencies as expressed by each participant.

Categories and Themes	n	P1	P2	P3	P4	P5	P6	P7	P8
Sport Specific Pressures	**80**	**7**	**11**	**8**	**10**	**12**	**6**	**3**	**5**
Collegiate Track Pressures	24	2	2	3	1	7	4	2	3
Heptathlete Specific Pressures	30	5	3	1	3	7	5	2	4
Conflicting Identity	26	2	8	7	7	5	1	1	1
General and Social Pressures	**64**	**4**	**5**	**7**	**1**	**3**	**1**	**2**	**3**
Social Comparison	26	4	3	3	1	0	1	0	1
Feminine Thin Ideal	13	0	2	4	0	3	0	2	2
Transitional Periods	25	2	8	2	0	8	1	0	4
Individual Pathology	**61**	**3**	**8**	**11**	**1**	**13**	**3**	**11**	**11**
Eating Behaviors	46	2	5	10	0	10	1	9	9
Body Surveillance	15	1	3	1	1	3	2	2	2
Support Systems	**58**	**13**	**6**	**1**	**3**	**7**	**5**	**7**	**16**
Emotional Support	38	7	5	1	3	7	2	5	8
Informational Support	20	6	1	0	0	0	3	2	8
Total	**263**	**27**	**30**	**27**	**15**	**35**	**15**	**23**	**35**

Also noteworthy, a higher number of meaningful quotes did not necessarily reflect a higher level of importance with specific topics. It may be that some participants were able to express their thoughts and experiences more concisely than others and highlighted fewer examples.

Not all topics were discussed by each participant, which led to the frequency of each subtheme ranging from one to 16. This range may have reflected the significance of these topics to the participants. For example, the subtheme of heptathlete specific pressure of *lean and muscular expectation* was cited by all participants (n=8). This occurrence may highlight the importance of addressing the expectations placed on heptathletes, or it may have been a direct response to a question asked (i.e. how would you describe the "ideal" body for your sport?). In contrast, only two participants (P1 and P6) mentioned quotes within the subtheme of body diversity. These differences could result from different experiences and perspectives than other participants, or from the fact that they happened to choose to acknowledge this external topic.

All data were organized into one of four categories, *sport specific pressures*, *general and society pressures*, *individual pathology*, and *support systems*. Each category includes a range of one to three themes.

Within each theme, subthemes were created based on the meaningful quotes provided by participants. Table 3.2 provides the list of themes and subthemes, including the number of times each participant mentioned a meaningful quote within each section. Each category, theme, subtheme, and each meaningful quote, were created from the data obtained in the interviews amidst the thematic analysis process and were not predetermined before the data analysis process.

Table 0.2 Themes and subthemes with frequencies expressed by each participant

Themes and Subthemes	n	P1	P2	P3	P4	P5	P6	P7	P8
Collegiate Track Pressures	**24**	**2**	**2**	**3**	**1**	**7**	**4**	**2**	**3**
Collegiate Division I Sport Structure/Culture	3	1	0	0	0	0	1	0	1
Collegiate Track Sport Structure/Culture	7	1	0	0	0	3	1	1	1
Uniform	7	0	0	2	0	4	1	0	0
Injury	7	0	2	1	1	0	1	1	1
Heptathlete Specific Pressures	**30**	**5**	**3**	**1**	**3**	**7**	**5**	**2**	**4**
Not Fitting Into One Group	7	1	0	0	1	3	2	0	0
Confusion	3	0	1	0	0	1	1	0	0
Lean and Muscular Expectation	10	2	1	1	1	2	1	1	1
Correlating Thinness and Performance	8	1	1	0	1	1	0	1	3
Body Diversity	2	1	0	0	0	0	1	0	0
Conflicting Identity	**21**	**1**	**8**	**6**	**1**	**5**	**0**	**0**	**0**
Athletic vs Social Body	11	1	6	1	0	3	0	0	0
Complex Relationship with Muscularity	3	0	1	0	1	1	0	0	0
Role of Clothing	7	0	1	5	0	1	0	0	0
Cohesive Identity and Body Satisfaction	5	1	0	0	1	0	1	1	1
Social Comparison	**26**	**4**	**3**	**3**	**1**	**0**	**1**	**0**	**2**
To Other Athletes	12	3	0	1	1	3	1	2	1
Role of Social Media	8	2	1	1	1	0	1	0	2
Perception of Men	3	0	2	1	0	0	0	0	0
Specific to Women	3	2	0	1	0	0	0	0	0
Feminine Thin Ideal	**13**	**0**	**2**	**4**	**0**	**3**	**0**	**2**	**2**
Equating Femininity with Thinness	2	0	0	0	0	0	0	0	2
Desire for Thinness	7	0	1	3	0	3	0	0	0
Positive Feedback Towards Thinness	4	0	1	1	0	0	0	2	0
Transitional Periods	**25**	**2**	**8**	**2**	**0**	**8**	**1**	**0**	**4**
Difficulty Adjusting to College	7	2	1	0	0	2	0	0	2
Difficultly Approaching/Post Retirement	13	0	5	2	0	4	1	0	1
Complex Relationship with Exercise	5	0	2	0	0	2	0	0	1
Eating Behaviors	**46**	**2**	**5**	**10**	**0**	**10**	**1**	**9**	**9**
DE: Restriction	16	0	2	3	0	3	0	5	3
DE: Intent to Lose Weight	11	0	1	4	0	3	0	3	0
DE: Purging	1	0	0	0	0	0	0	0	1
Shame/Guilt	6	0	0	0	0	3	0	0	3
For Performance/Control: Negative	3	1	0	1	0	0	0	0	1

Table 3.2 (continued)

For Performance/Control: Neutral/Positive	5	1	2	1	0	0	1	0	0
Subclinical Diagnosis	4	0	0	1	0	1	0	1	1
Body Surveillance	**15**	**1**	**3**	**1**	**1**	**3**	**2**	**2**	**2**
Mirror	5	1	1	1	0	2	0	0	0
Scale	6	0	0	0	1	0	2	1	2
Pictures	2	0	2	0	0	0	0	0	0
Lifting Shirt	2	0	0	0	0	1	0	1	0
Emotional Support	**38**	**7**	**5**	**1**	**3**	**7**	**2**	**5**	**8**
Coach: Positive Impact	9	4	0	1	2	0	0	1	1
Coach: Negative Impact	13	0	2	0	0	6	1	1	3
Teammates/Friends: Positive Impact	4	3	0	0	0	0	0	0	1
Teammates/Friends: Negative Impact	8	0	2	0	0	0	1	3	2
Parents: Positive Impact	2	0	0	0	1	1	0	0	0
Parents: Negative Impact	2	0	1	0	0	0	0	0	1
Informational Support	**20**	**6**	**1**	**0**	**0**	**0**	**3**	**2**	**8**
Athletic Department: Positive Impact	3	2	0	0	0	0	1	0	0
Athletic Department: Negative Impact	8	0	0	0	0	0	1	2	5
Importance of Interventions and Conversations	9	4	1	0	0	0	1	0	3

2.8 Sport Specific Pressures

The first and largest category, *sport specific pressures,* included a total of 76 meaningful quotes across all participants and represented 28.68% of the total data analyzed. This category included three themes: *collegiate track pressures*, *heptathlete specific pressures*, and *conflicting identity*. Each theme includes subthemes that address specific pressures athletes experienced regarding body expectations, the role of components of track and field, and how these expectations and components contributed to a dissonance in how they viewed themselves. The answers provided in this category were predominantly related to the body image prompt from the interview guide.

2.8.1 Collegiate Track Pressures

This theme included 24 meaningful quotes and provided information on pressures participants experienced from the structure and culture of Division I athletics, the structure and culture of collegiate track sport, uniforms, and from injury. First, the structure and culture of collegiate Division I sport was noted as contributing to various negative outcomes. One of the negative outcomes pertained to the overall commitment and lack of time as a student-athlete, where participant 8 shared,

> A full nine to five job is almost so much easier than being a student athlete, because once you're done with your day, you're done, and you don't have to think about it anymore. But it was really hard. And I think you just never got a break. And I don't know how I did it looking back on it.

More specifically, the structure and culture of collegiate track and field was noted as further contributing to negative thought processes and outcomes, where participant 5 stated that in "college track, I feel like that was kind of one of the main pillars of performance was just body image. And how everyone's thinking about your body and how you should be thinking about your body." Additionally, participant 1 brought up questioning that occurs with "especially for an individual sport, you're like, how I can I be better?".

Added to this, participants strongly felt the pressures associated with being a student-athlete, paired with being a woman, contributed to the development of unhealthy eating behaviors. Participant 6 shared the following:

> I definitely saw [eating disorders] go through the athletic department. . .Girls sports across the board. Honestly, I never saw anything come through the guy's side. But, a lot of girls in my school came out saying that they had eating disorders.

Another component of sport-specific pressures that emerged was the role of uniforms. Two of the three participants who discussed uniforms expressed discomfort in wearing the team-issued uniforms, specifically 'buns,' the bottoms known to mirror the look of underwear. Regarding the negative impact of buns, participant 5 shared that "I would say I did really hate wearing the buns. Just because that made me feel even bigger. Additionally, participant 3 shared,

> I think our uniforms are the type of uniform where people see your whole entire body. I didn't think if I had ginormous legs or if I was wearing [buns] and had a little bit of side hanging over or anything like that, that it wouldn't look as good.

2.8.2 Heptathlete Specific Pressures

This theme contained 30 meaningful quotes and included information about participants' experiences with pressures that stemmed specifically from being a heptathlete. Participants discussed how they did not feel as though they fit into one event group within track and field, both in training and body type expectations. Participants also discussed expectations for their body as a heptathlete, specifically a struggle to be both lean and muscular. Participants shared,

> I could tell if someone was a multi just on, they're always tall, broad shoulders, muscular, but lean, the whole nine yard. And if you weren't that, you could still be great at it. But I feel like that was the expectation. (P6)

> I would say if I had to choose what my ideal body would be as a heptathlete, it would, this term's kind of funny, but slim-thick, I guess, you know what I mean? Where we think of tall, taller, slim, but muscular legs, but still on the skinnier side. With a flat stomach and toned arms, slim, but toned. (P3)

These expectations also contributed to correlations being drawn by participants between thinness and performance. More specifically, 75% of participants discussed a correlation between thinness and performance. Participant 4 shared how they "felt like being tiny or smaller would just make everything easier." Additionally, participant 5

stated shared how “I just felt like it’ll all come together once I look the part, that’s when I’ll be the part. And yeah, it was just that lighter, faster, stronger kind of mentality.”

Half of the participants discussed feeling like they did not fit into one group within the sport. One contributor stemmed from being the only multi-event athlete on the team. Participant 6 shared “I was the only multi there and so I didn’t have anyone in my small circle. . .it was very much, what group was I going to be with that day and how did I fit in with each group?”. Other contributors for participants feeling like they did not fit in included feeling an expectation to succeed in a wide range of events and from feeling that they did not fit into event-specific body stereotypes, which led to confusion for some (n=3) participants. Regarding these experiences, participants shared the following:

> In multi events especially, you kind of always feel like the odd man out, because you are trying to be a thrower, but you don’t look like a thrower. And so, you’re training with all the throwers and then you’re like, well, I don’t fit that stereotypical track event body. And then you go to sprint, and I used to feel a little bit more comfortable with the hurdlers and sprinters and jumpers. But then you go for the 800 and you’re training with the mid-distance girls and they’re tiny, and you’re like, I don’t fit that. (P5)

> Someone just walking through campus, all the athletes, you could basically tell what sport they did just by looking at them. Which obviously, isn’t right. But then with a multi, I feel like it’s a little confusing. . .you’re supposed to be tall and strong and look like a sprinter. So, lean and fast. And then also be able to throw a shotput a million feet, so you need to be strong. So it’s a fine line on what you’re supposed to look like. (P6)

With each of these expectations, the notion of body diversity was also mentioned, acknowledging how heptathletes can fall outside of these expectations. With regards to body diversity, participant 1 shared,

> Different bodies work for different people. You can have someone that's got really jacked arms and legs and is sort of bigger set, who's super fast. But you can also have someone that's leaner and skinnier, who's just as fast. And I don't think that's played on enough in competitive, whether it's college or professional level, not everyone's going to look the exact same. That's just not possible.

2.8.3 Conflicting Identity

This theme included 26 meaningful quotes and included information on the experiences of participants facing a conflict between their athletic versus social body, having complex a relationship with muscularity, and the role of clothing amongst these conflicts. In addition, this theme includes information on the impact a cohesive identity had on body satisfaction in participants.

Half of the participants mentioned experiencing a conflict between their body ideals within the context of track and field and in a social setting. Two participants shared,

> I wanted a functional body that worked for being a heptathlete. Whatever that looked like. . . .but my social body ideals, you see influencers and stuff who have the flat stomachs and the thigh gap and the tan body and the clear skin, stuff like

> that. But like, I could never compete with the body like that, I wouldn't make it out the blocks. (P1)

> I loved being shredded and powerful and strong, but at the same time, I also like girls that look really skinny and girly and whatever. And then I also like girls that are curvy, so I just struggle in that way. Like what I even want my body to look like anymore. If that makes sense. And I kind of struggled with that my whole track career. (P2)

Of the four participants who discussed experiencing a conflict between athletic and social body ideals, three expressed experiencing a complex relationship with muscularity. Highlighting their experience with this relationship, participant 5 shared the following:

> I was training so hard, and I was doing so much and I was making progress in the sport. And so, I felt really proud of my body, and I liked looking in the mirror and seeing muscles or abs. Or when my arms looked really good, I loved that feeling of having muscles and being strong and feeling strong. But then there were certain days where I would just look at myself and I'd be like, no, you're just a blob. Like, you look so bad. You look big.

These conflicting body ideals were further explored by participants through discussing the role of clothing in how they would view their bodies. This discussion went beyond the role of the team-issued uniform and touched upon feelings experienced when wearing personal clothing, oftentimes tied to desire for femininity. Participant 2 stated "I don't necessarily want biceps when I'm wearing cute clothes or something like a tank top,

or a dress." Additionally, participant 3 mentioned how "in a uniform, I was like, oh, I feel really it and I feel like this looks good, because it's targeted towards an athletic build. But then, in personal clothes, I always felt like I didn't look super feminine."

While these findings predominantly include identity conflicts resulting in body dissatisfaction, three participants noted general levels of body satisfaction, and two participants noted their athletic and social body ideals were similar. In terms of general body satisfaction, participant 4 stated how "I'd say I have a fairly normal, good relationship with my body image. Never had bad thoughts, I guess, about myself." With regards to similar body ideals, Participant 7 also shared the following:

> I feel like [my athletic and social body ideals] are very similar. I wouldn't say there was a significant difference. For me, at least, at that point of my life. I think just being very lean, not having a lot of excess body fat.

2.9 General and Social Pressures

The second category, *general and social pressures*, included 64 meaningful quotes and represented 24.33% of the total data analyzed. It is primarily concerned with experiences stemming from non-sport and social pressures. This category describes how the three themes of *social comparison, feminine thin ideal,* and *transitional periods,* impacted participants' body image, eating behaviors, and overall well-being.

2.9.1 Social Comparison

This theme discusses the role of social comparison on the experiences of athletes with their body image and eating behaviors. More specifically, participants discussed intracomparison by comparing themselves to other athletes, the role of social media, the perception of men, and specifically how social comparison impacts women. With comparing themselves to professional athletes, participant 1 shared,

> You see really skinny heptathletes, like the Olympians, like [name redacted] and [name redacted]`, who are this big [held fingers close together], but jacked. You compare yourself, like, how's that even possible to look like that? And be successful and manage everything else? It didn't seem feasible. . .I definitely thought about that a lot in college.

Seven of the eight participants discussed comparing themselves to other athletes, including teammates, competitors, and professional athletes. Of these, six noted that these comparisons left them thinking more about their bodies. Participant 6 shared that

> When I [was] with the throwers, they would jokingly get on me about being the shrimpy, tiny one that had no muscle. And then the second I would switch over and start running with the cross-country girls, I was the biggest one there. So, it was kind of a roller coaster of comparison with the different groups.

Six of the eight participants also emphasized the role of social media, specifically within their sport, on how they view their bodies and their eating behaviors. Participant 2 discussed how social media contributed to how they viewed their body, stating how they "would feel like a beast and then I would go on social media and see girls with just a

completely different body than what I had. And so, it just kind of fucks with you a little bit." Participant 8 provided a perspective on social media impacting eating behaviors, stating that "I think social media definitely doesn't help either, because people can just put 'what I eat in a day,' and then they don't show the extra 1000 calories that they're eating."

In addition to comparison to other athletes and the role of social media, two participants discussed the perception of men impacting how they viewed their bodies. Participant 2 shared that they "just got obsessed with [looking shredded], even though I knew guys probably didn't like that." In addition, participant 3 shared the following:

> We practiced at the same time as the whole football team. And we're really going to act as if they're not literally all staring at us and judging our bodies? I want them to think that I look good, or I don't want them to talk about me in a negative way based on my appearance.

Finally, two participants discussed how social comparison explicitly impacts women. Participant 1 discussed specific pressures stemming from being a woman and comparing themselves to other women, sharing the following:

> Comparison was the hardest part. I think just the pressure that goes into being a female, just in general, not even the athlete part. You want to fit in, but not too much. But you want to stand out, but not too much. And that goes back to being in the athletics world, where you want to stand out in a good way, but you don't want to set yourself apart from the group.

2.9.2 Feminine Thin Ideal

This theme described the impact of the societal feminine thin ideal of participants perceptions of their bodies. More specifically, participants discussed perceiving femininity being equated with thinness, experiencing a desire for thinness, and receiving positive feedback towards weight loss and thinness.

Participant 8 expressed the pressures from society placed on women to be thin and how this impacts women's body ideals, sharing that they “feel like society doesn’t want women to be built or muscular. And so, I feel like a lot of people try to be skinny and not put on bulk because of that.”

Half of the participants expressed having a desire for thinness at some point during their time as a collegiate heptathlete. Participants often noted feeling body dissatisfaction and wanting to lose weight, which was often expressed by stating they wanted to be thinner, wanting to see more definition, or feeling like certain parts of their body were larger than they wanted. Participant 3 shared that “especially as a tall woman, I always wanted to be skinnier, to make up for the fact that I was tall.” Additionally, participant 5 shared the following:

> I would like to be softer, and I would like to still be in shape and still look like me, but not so hard on everything. And I don’t need a six pack. I don’t need huge quads, or anything like that.

Lastly, participants not only equated femininity with thinness and experienced a desire for thinness, but they also discussed receiving positive feedback towards thinness.

Specifically, participants noted their coaches, parents, and other women praising them for losing weight and/or appearing thinner. Participant 7 shared the following:

> I do remember going back home my sophomore, or junior, or whatever year, I forget what year it was. But I specifically remember my high school coach. I saw him and he was like, 'oh, wow, you look really athletic.' And that was definitely one of the lowest bodyweight points in my life. So that was just kind of another feedback mechanism.

Participants often identified that the methods they used to lose the weight they were praised for were not healthy, sustainable methods for them (i.e. DE and unsustainable exercise) and noted the feedback they received served as motivators to maintain their current weight. For example, participant 3 specifically shared "I started to lose weight. And then that's when other girls would be like, 'oh wow, you look so good.' So then you start to want to lose more weight."

2.9.3 Transitional Periods

This theme accounted for the outcomes participants experienced during transitional periods. More specifically, participants noted difficulties they experienced while adjusting to college and while both approaching and after retirement from the sport of track and field. Further, participants discussed the complex relationship they have had with exercise after retirement from sport.

Half of the participants discussed having a difficult time with their body image and/or eating behaviors while adjusting to college from high school. In addition to

newfound independence, participants noted the more intense training loads, increased hunger levels, weight gain, and experiencing dining halls for the first time. Participants shared the following:

> I never struggled with [body image] too much in high school. And then when I got to undergrad, I was definitely more aware of it. And I think freshman year I definitely gained weight, just because of the increased training. (P8)

> I had always felt like in high school, kind of like a string bean, I just had very lean arms, noodle-y almost, and that's how I saw myself. As just thin, and athletic, and muscular. And then I went to college and everyone on the team is so thin, athletic, and muscular. And then I went to college, and everyone on the team is so thin, athletic, and muscular. And then you go in and you gain the freshman weight. And so that was kind of new for me. Feeling a bit bigger in my eyes than I ever had. (P5)

In addition to discussing difficulties when adjusting to college, participants noted experiencing difficulties when approaching and after retiring from competing in the heptathlon. Over half of the participants (p=5) discussed this transitional period. Retirement from sport created difficulties for participants specifically by leading them to question the motivation behind working out, comparing their bodies to what they looked like while they were competing, and in their eating behaviors. Regarding how retirement from sport impacted body image and eating behaviors, two participants shared the following:

> We went four hours of practicing, six days a week. To do that, and then go to nothing. I think that was not the wake up call for me, but that's kind of what threw me off a little bit, because I was so coached up and used to being in that type of routine. And I would say I looked a specific way when I was doing that. (P6)

> So, it's kind of weird. You'd think back then, in my track career, I would have been skipping meals or worried about that, but it's actually happening more now. . .I figured when I was doing track, I was burning enough calories and I had done it so long, I kind of knew what to do and what not to do. (P2)

Furthermore, of the five participants who noted the difficulties they experienced while approaching and/or post-retirement, three noted experiencing a complex relationship with exercise. One piece of this involved participants questioning how to enjoy exercise, where participant 8 shared "it has taken me until now, three or four years out, to be like, I'm just gonna work out for fun." This complex relationship specifically led participants to question the motivation behind the exercise they engage in. Participant 2 shared,

> If I'm not doing something really hard on my body, I feel like I'm not succeeding. That is a weird thing for me that I'm struggling with. It's just so unnecessary. Like, no, just because I'm not in pain every day doesn't mean I'm not doing anything with my life. So I think that's something a lot of people don't understand. I try to talk to people about it, but they're, like, well you look great and you're doing great. Like, you don't know

what I was doing before. I think that's very specific to heptathletes or anyone that did that kind of training.

2.10 Individual Pathology

The third category of *individual pathology* included 61 meaningful quotes and represented 23.19% of the total data. This category describes the behaviors participants engaged in regarding their eating behaviors and how they observed their bodies and includes two themes: *eating behaviors* and *body surveillance,* respectively.

2.10.1 Eating Behaviors

This theme addressed the eating behaviors of participants. Responses primarily focused on participants' eating behaviors as a collegiate athlete, although their discussions also referenced eating behaviors throughout childhood and post-collegiately when they felt it notable to mention. Specific topics discussed by participants included disordered eating, feelings of shame and guilt around food, eating specifically for the sake of athletic performance and/or control, and subclinical diagnoses.

Five of the eight participants mentioned DE behaviors while competing collegiately. Two participants (P3 and P7) mentioned DE behaviors occurring prior to entering college. Regardless of onset, most participants noted engaging in food restriction throughout their collegiate athletic careers. Examples included questioning the caloric worth of foods, limiting the number of meals eaten in a day, restricting the types of foods eaten, and limiting caloric intake. For instance, participant 7 shared how "I would just skip a lot of meals. And when I would eat meals, they were just mostly protein and very limited carbs." Additionally, participant 3 noted how "in college, I would definitely go

through phases where I would give myself a calories limit. I would try to eat 1500 calories or less." This participant further discussed her reasoning behind caloric restriction by stating "it was just maybe if I felt like I may have gained a couple of pounds, I'm going to limit myself and only eat this many calories a day until I get back to the weight that I wanted to be at."

Caloric restriction was identified by either tracking the number of calories eaten or by eating a large amount of low calories foods (i.e. 'volume eating'). For example, participant 5 shared that "for senior year I was just really honing in on making these huge meals that I could eat a lot of without them having lots of calories." Participant 7 also shared the following:

> And so it was just a constant feedback loop throughout my life, that if I restrict my food, and I can use vegetarianism and veganism to, kind of, hide it. Like, this is my morals. This is my whatever. Which, it was. But I think I was more so using it as a cover for how I felt about my body when I wanted to change.

In addition to restriction, another focus from participants was eating patterns with the specific intent to lose weight. For example, participant 7 shared that "I could also see I can lose weight really quickly by [fasting]." Of the five participants who discussed DE behaviors, four of them directly stated their eating behaviors were with the specific intent to lose weight for both performance related reasons and to look a specific way socially. Participant 3 shared how "if I felt that I may have gained a couple pounds, I'm going to limit myself and only eat this many calories a day until I get back to the weight that I wanted to be at."

Another component of DE behaviors mentioned by one participant was purging. Participant 8 shared the following:

> I actually made myself throw up because I have boba tea and I was like, that was kind of gross. It went in my mind. Like, it wasn't worth the calories. So I was like, let me just get rid of it. I think that was the only time I've done it, but I did kind of have a mentality of is this worth the calories?

Feelings around food were also important. Two participants discussed feelings of shame and guilt associated with the amount and types of food they were eating. Participant 8 shared how "I would still eat if I was hungry, but I would feel kind of guilty about it. I was like, this is the food I'm giving myself for the day. And it needs to be enough." Additionally, participant 5 shared that "[track] just made me think about everything more. And think about food more than I had. Yeah, feel guilt about certain things. Or like, if I ate this, or if I ate that."

Participants also mentioned their eating behaviors being motivated by control or to improve athletic performance. Within this subtheme, both negative and neutral/positive outcomes occurred for participants. As someone who identified experiencing DE behaviors, participant 8 shared how "I think just trying to be in control of what I was eating was the main thing." Additionally, participant 1 noted not experiencing DE behaviors, though mentioned an overall lack of understanding when it came to food "the relationship with food was the first one I struggled with because I wanted to be performing well. But I didn't want to overeat, but I didn't know I was not overeating."

Participants also discussed how the training load within track and field led them to eat to provide themselves with energy and used food to improve their athletic performance. As someone who did not identify as engaging in DE behaviors, participant 6 shared,

> I feel like it makes sense for the amount of running around I do, how much I eat. I'm definitely not skipping any meals. But it's pretty much always been like that. And yeah, I've had a pretty positive relationship my whole life through it. I just, recently definitely go much healthier. In college, I could literally eat whatever I want[ed].

Finally, half of the participants discussed the subclinical nature of their DE behaviors. Two of the four participants self-identified as engaging in DE, where participant 5 shared how "I would say I have disordered eating, but it's never gotten that far. And I would say when it was bad, it was just short stints." The other two participants mentioned working with professionals who labelled their behaviors as such, where participant 3 shard how "I never went to a doctor. I always saw a nutritionist, so I don't know, I guess she technically would say that she diagnosed me, but I don't know how official that was." Similarly, participant 7 shared "I've been diagnosed with disordered eating because 've never consulted an actual doctor about it."

2.10.2 Body Surveillance

This theme described the types of body surveillance that participants engaged in, primarily while competing collegiately. All eight participants mentioned engaging in

some form of body surveillance. The specific methods utilized by participants included looking in the mirror, using a scale, taking pictures of their bodies, and observing their bodies in clothing, specifically lifting up their shirts to look at their body.

Half of the participants mentioned the use of a mirror to observe their bodies. Participant 3 shared "I definitely regularly, every single day probably, look in the morning at my stomach to see if I feel like I gained weight in my midsection, on a regular basis."

Another body surveillance method used by half of the participants was a scale. For example, participant 8 shared "I would weigh myself every day almost. Or like, twice a week. And that was just horrible because it would put me in a bad mood." Additionally, three of the four participants who mentioned weighing themselves noted they used a scale more while competing collegiately than they do after retiring from track and field. For example, participant 4 shared,

> I definitely weighed myself more in college than I do now. . . .Getting on the scale and just seeing if I was maintaining or gaining weight and then trying to just go back to, go down, if I was going up sort of deal.

In addition, one participant discussed using pictures as a form of body surveillance. Participant 2 shared how they "took all kinds of pictures. I mean, millions, 1000s of pictures on my phone of the shred."

Lastly, two participants mentioned clothing and the specific action of lifting their shirts as a form of body surveillance that they either personally engaged in or occurred within their team. With reference to their personal engagement, participant 5 shared,

> I definitely do a lot of body checks. I would say even just walking by a mirror and lifting up my shirt and looking at my stomach and turning to the side, even if I'm just walking by quickly. I feel like that's one of the constant things that I've done.

2.11 Support Systems

The fourth, and final, category of *support systems* included 58 meaningful quotes and represented 22.05% of the total data analyzed. This category included two themes: *emotional support* and *informational support*. E*motional support* pertained to interactions participants had that led them to believe they were cared for, loved, or esteemed. This theme included subthemes of the role of coaches, teammates and friends, and parents. I*nformational support* included subthemes of the role of athletic departments and the importance of conversations and interventions. Each of these subthemes, with the exclusions of the importance of conversations and interventions, were further divided into positive impact and negative impact. The answers provided in this category predominantly related to body image questions 2 and 4 from the interview guide.

2.11.1 Emotional Support

This theme described the overall role of the emotional support system points to the body image, eating behaviors, and overall well-being of participants. The first subtheme within *emotional support* was the impact of a coach, both positively and negatively. Five participants talked about the positive impact of coaches, which ranged from participants expressing gratitude for their coach not commenting on their body, to discussing things coaches explicitly said and did to support them. Participant 4 expressed

how “thankfully, I did not have to go through any [receiving of messages from coaches or teammates] at my school. My coach at the time didn’t ask us to lose weight or anything in regards to body image.” Additionally, participant 1 shared,

> I talked to my coach. I was like, I don’t know if this is fat or what, but he totally normalized that. He was like, the first year of going from high school to college sport is where you notice the most change.

Five participants also discussed the negative impact of coaches. The negative experiences discussed included direct comments made by coaches about how participants’ bodies looked. For example, participant 5 shared that “[my coach] said were going to do more butt exercises in the weight room so that I would look better in [buns].” Additionally, participants discussed coaches’ suggestions to lose weight to look differently or to improve performance. Participant 2 shared how “our coach would tell some of us, like, he had no shame in being like, ‘if you lose a couple pounds, you’ll really be able to fly,’ stuff like that.” With regards to how these comments impacted body image, participant 8 also shared the following:

> And [my body image] didn’t really get too bad until junior year because our head coach was the sprints coach and he ended up taking over our jumps group for the fall strength and conditioning training. And he made us all very aware that, in his words, ‘fat doesn’t fly’. So I think he made everyone very aware and self-conscious and I ended up losing quite a bit of weight and I did get in pretty good shape.

Participants also discussed coaches mishandling athlete EDs, and coaches treating athletes differently based on their event group. Participant 6 shared,

> And then there was our throwers who were getting something like Chik-Fil-A on the way home from practice and picking up the lunches, that was on the coaches. So, they were treated very differently. Like, that would never happen on the cross country side, or the sprinter side, but with the throwers that would happen, and I got to see all of it. Because I would switch from a throws practice to a sprints practice to cross country practice. So I got to see the coaches definitely treat the athletes differently dependent on their event.

Another important component of participants' support systems were their teammates and friends. Teammates and friends were grouped together because athletes oftentimes used these words synonymously. Two participants noted the positive impact their teammates and friends had on their body image and eating behaviors. Of the four meaningful quotes within this subtheme, three came from one participant. Participant 1 shared how "the older girls were really great about talking about [body changes freshman year]."

In contrast, four participants noted the negative impact their teammates and friends had on their body image and eating behaviors. Participants discussed experiences with teammates and friends critiquing their own bodies, where participant 7 shared the following:

> It's kind of hard hearing your teammates every day and you have a similar body shape to your teammates. And they're talking about things about their body, it

> kind of forces you to feel the same way about yours. Even if you don't really think that way. It's like, oh, yeah, maybe I should feel badly about [my body].

Participants also discussed teammates and friends making negative comments towards their eating behaviors, saying backhanded compliments, and making fun of participants' bodies. For example, participant 8 shared "I feel like my team had a lot of drama too. Like a lot of petty drama. And if you were eating something unhealthy or doing something off the track, they would call you out on it."

The role of parents was also important. The positive impact parents had on participants specifically pertained to their eating behaviors. As someone who had not experienced DE, participant 4 shared "I've had a healthy diet instilled in me from a very young age with my mom, or my parents. . .So I think I carried that, the good eating habits, throughout my whole life." In contrast, the negative impact parents had on participants specifically pertained to their body image. Participant 2 shared the following:

> The reason I joined track is because my mom didn't want me to get fat back in the eighth grade. She thought I was getting a little thick. So, she put me in track. So, from a young age already, I was worried about being fat.

2.11.2 Informational Support

The role of athletic departments was also discussed. The positive impact of athletic departments involved discussing the existence and availability of resources to participants at their respective collegiate institutions. Participant 1 shared "we would

often have our nutritionist come in and have positive self-talks, making sure we were eating everything we needed to."

The negative role of athletic departments was expressed by participants through discussing athletic department members overlooking unhealthy behaviors, a lack of regulation of coaching behaviors, athletic department staff (i.e. nutritionists) treating athletes differently based on their specific event group, support staff members not being outwardly accessible, and an overall lack of support. With regards to the negative impact of the athletic department, two participants shared the following:

> They definitely didn't really emphasize us needing to go to the dietician. And even though there was one available. I don't know how good she was, but there was someone available that probably could have told us that [restricting food] wasn't a good idea. (P7)

> The school barely does anything. Because we complained and they were just like, well [the coach's] contract expires and we're just gonna wait. And I was like, it's ridiculous, but yeah, it's disappointing. (P8)

Lastly, participants mentioned the importance of interventions and conversations to increase support of the body image and eating behaviors of athletes. Participant 1 shared how "it was nice to just be able to talk about [body image] and know that other people were feeling this way and it's not some made up issue." More specifically, participants discussed how these topics are not talked about enough, how talking about these topics helps with normalization of experiences, and how resources were not always utilized. Participant 8 shared how they "feel like, especially in the NCAA, the way eating

disorders and women's bodies, and stuff. I just feel like it's so mismanaged and no one really talks about it."

CHAPTER 4. DISCUSSION

The purpose of the present study was to investigate the body image and eating behaviors of former NCAA heptathletes. Four categories emerged from the data: *sport specific pressures*, *general and social pressures*, *individual pathology*, and *support systems*. The following section will discuss these categories in relation to how they pertain to previous literature on body image and DE in the context of sport. This section will also discuss how present findings connect to the sociocultural model of disordered eating that was used as a framework to guide interview structure.

2.12 Sport Specific Pressures

This category represents the data related to the pressures experienced either in the context or as a result of competing in the sport of track and field as a heptathlete at the NCAA Division I level.

Previous research has revealed elite sport culture may play a role in the development of body type ideals and in the reinforcement of DE behaviors (Papathomas, 2018; Thompson & Sherman, 1999). Specifically, Papathomas found that the emphasis placed on supervision, the need to make sacrifices, and the constant striving for success contribute to the normalization of DE in elite sport culture. Findings from the current study support sport culture's role in creating additional risks for eating behaviors. For example, one participant mentioned how EDs were generally commonplace among women's sports in their collegiate athletic department. However, findings from the current study differ from Papathomas in that participants discussed how the culture of track and field specifically contributed to both their eating behaviors and their body

image. While findings were cohesive in confirming the role of elite sport culture in DE risk, one participant mentioned how the sport of track and field led to experiences with DE pathologies and BID, where they noted not having these negative experiences while playing soccer. This distinguishment demonstrates how within elite sport, sport type may play a significant role in the risk for both DE and BID.

It appears evident the culture of track and field created expectations for participants regarding their body image and impacted their subsequent eating behaviors. Five participants mentioned the structure and culture of track and field as having a negative impact on their well-being, including body image, perceived eating behavior expectations, and overall stress levels. For instance, participants seeing other track athletes pass out or get sick from not eating and clearly stating that eating is a serious issue within the sport. Additionally, one participant mentioned they felt one of the main performance measures of collegiate track and field is body image. These findings contribute to the existing body of literature, which has acknowledged the existence of a blurred line between appearance and performance, suggesting an environment that predisposes athletes to BID and DE behaviors (Mosewich et al., 2009). In other words, research seems to consistently suggest that track culture negatively impacts heptathletes' body image, which may lead them to engage in DE behaviors.

Previous research has also investigated the role of revealing and/or form fitting uniforms in BID and subsequent ED risk (Nemeth et al., 2020; Steinfeldt et al., 2012). Several current participants shared their uniforms had a negative impact on how they felt about their body, placing a particular emphasis on revealing uniform bottom option, which are often referred to as 'buns'. When discussing wearing buns, participants

mentioned they either did not like wearing them or felt they had to look a specific way because of how tight, short, and revealing they were. These feelings of discomfort mirror past research findings, where female NCAA athletes have expressed feeling uncomfortable and experience higher levels of BID in more revealing uniforms (Nemeth et al., 2020; Steinfeldt et al., 2013; Torres-McGehee et al., 2012). It is important to note the discussion of discomfort experienced when wearing buns led to greater levels of BID, yet did not appear to inhibit participants' performance or lead them to engage in DE. However, the comments they shared, with respect to wearing buns or other revealing clothing, were concerning in the overall context of BID. For example, one participant also expressed wanting to be their skinniest if they were wearing the buns, which leads well into the discussion of heptathlete specific pressures, and the specific subtheme of participants correlating thinness with performance.

Seventy-five percent of participants perceived a correlation between thinness, specifically being lighter, and improved performance. Much of this was speculative, as very little evidence supports the direct relationship between thinness and performance. However, current participants felt this way, due to past experiences (e.g., experiencing success while at their thinnest weight), or due to coach comments/sport culture, which reinforced this perception. These participants generally felt that being smaller would make training easier and improve their competition outcomes, with two participants specifically referencing an expectation of greater ease with high jumping if they were lighter. This rhetoric may stem from the traditional belief that "thinner is faster" that is pervasive within running communities and lean promoting sports. This myth is suggested to contribute to BID and DE pathologies (Arthur-Cameselle & Quatromoni, 2011;

Sundgot-Borgen, 1993). The current study's findings suggest that pressure to be thin to improve performance extends beyond distance running populations into other events within the sport of track and field. Additionally, five of the six participants who perceived performance to be correlated with thinness also experienced BID, and four engaged in DE. These findings further highlight how athletes who perceive thinness as a means to improving performance are at a higher risk of BID and DE.

Beyond correlating thinness with improved performance, which, again, is common among track and field athletes, participants discussed the added expectations they felt were placed on them as heptathletes. Specifically, heptathletes are expected to compete in events with a wide range of physiological expectations (e.g., mid-distance running, throwing, jumping, hurdles). It is, therefore, not surprising the majority of participants mentioned their lack of fit within any event group, or confusion about their body type expectations. Oftentimes, participants described their ideal body as a heptathlete as being different specific types of body stereotypes from the seven events. For example, one participant discussed ideally having 'javelin arms,' 'a sprinters stomach,' 'a jumper's butt,' and 'a high jumpers' legs'. These body type expectations are consistent with past research (e.g., Petrie & Greenleaf, 2012), that different sports have traditionally held respective sport body stereotypes. The current study presents a unique perspective in that athletes are recognizing there are specific body stereotypes within the sport of track and field, which impact how heptathletes view their bodies. Additionally, every participant mentioned the expectation and body stereotype of heptathletes being both lean and muscular, which often stemmed from the desire to be both as strong and as light as possible. Since four of the seven events within the heptathlon are considered lean

promoting in nature and the event overall is considered a weight sensitive sport, it is not surprising participants feel that the expectation for their bodies is to be as light as possible (Heazlewood et al., 2014). However, while this thought process may be comprehensible, this expectation and pressure to be as light as possible has the potential to negatively impact the body image and eating behaviors of heptathletes.

Strength and leanness appeared to extend beyond performance desires into the identity of participants. Fifty percent of participants discussed a conflict between their athletic body ideals compared to their social body ideals. More specifically, these participants discussed how the sport culture generally supports a body that includes maintaining a specific level of muscularity for performance. However, outside of their sport, participants desired a body that often conflicted with the sport culture ideal (i.e., one that is thinner and more feminine). This female-athlete paradox, which is the disparity that exists between feminine and athletic ideal bodies, is not a new concept. Specifically, Krane and colleagues (2004) discussed how female collegiate athletes described a contrast between being feminine and being athletic, often feeling different than 'normal' women. Additional research highlights how athletes face constant expectations to maintain a body that is optimal for performance, a body that fits societal ideals, and a body that matches their personal ideal standards (Reel & Voelker, 2012). Not surprisingly, these, along with current participants, often express feeling frustrated or lost as to what their body should look and feel like. Finally, female NCAA athletes have also noted feeling torn between peak performance levels and body fat levels that fit the ideal feminine standard of beauty, which is consistent with what participants in the current study have expressed (Larabee, 2011). These conflicting ideals were emphasized

through different types of clothing, where three participants reported feeling more confident in their muscularity when wearing athletic clothing or their uniforms, and less confident when wearing more everyday clothing, such as tank tops or dresses. Thus, the role of clothing appeared to exacerbate the experiences of participants with the female athlete paradox. At the same time, 50% of participants expressed that their athletic and social body ideals were similar. Of these participants, two expressed having a positive relationship with their body image. It is important to recognize while there is a clear conflict that further emphasized BID in participants, for others this conflict did not play a role.

Overall, heptathletes appear to face similar conflicts and pressures found in previous research in female athlete populations regarding body type expectations. The present study adds to past research in identifying that, in some ways, heptathletes face additional pressures and risk factors, not only given their position as female athletes within a lean promoting sport with revealing uniforms, but because of the unique structure of their event within track and field. This positionality of heptathletes seems to contribute to conflicting identities and increased levels of BID. The experiences discussed by participants highlight that heptathletes appear to be at a heightened risk for BID, and potentially DE behaviors, when compared to other female NCAA athletes, and potentially when compared to other NCAA track and field athletes.

2.13 General and Social Pressures

The category of *general and social pressures* pertained to pressures participants experienced to look a specific way that generally fell outside of a sport-specific context.

This category explored the role of social comparison, illustrated the impact of the feminine thin ideal, and identified the difficulties that may stem from transitional periods.

The most frequent theme across this category was the role of social comparison in impacting participants' eating behaviors, and more particularly, their body image. Seven of the eight participants discussed comparing their bodies to other athletes. Of these, six mentioned that this comparison negatively impacted how they viewed themselves, with a lot of this comparison leaving participants questioning if their performance would be improved if their bodies were more similar to either their teammates, competitors, or professional heptathletes. Participants comparing themselves to other athletes is not a surprising occurrence. Specifically, Social Comparison Theory suggests that individuals have an innate drive to compare themselves to others (Festinger, 1954). This is perhaps further exacerbated in a setting where success is determined through social comparison (i.e., performing better than a competitor). Thus, the specific components and impact of the social comparison that participants engaged in is important to discuss. Hardie and colleagues (2022) state that comparison can negatively impact athletes, since athletes have certain expectations for competition, superiority, and winning. Findings support and add to this notion, where participants appeared to associate their body image with expectations for success within their sport. More specifically, participants often engaged in upward social comparisons. This process involved participants comparing themselves to athletes who they believed were better, such as their competitors, professional heptathletes or athletes who specialized in individual events, which is consistent with findings from a past study investigating former female athletes (Greenleaf, 2002). Upward social comparisons are often made to improve ability and performance and are

found to either lead to skill improvement or to producing a lack of motivation and feelings of discouragement (Festinger, 1954). Upward social comparisons produce greater levels of BID (O'Brien, 2009). More specifically, upward social comparisons made by women regarding weight and appearance lead to greater levels of BID (Strahan et al., 2006). The present study confirmed past research in finding that upward social comparisons led to BID in heptathletes. Thus, body comparisons made by Division I heptathletes to their teammates, competitors, and to professional athletes led to greater levels of BID.

Social media was another prominent means of social comparison. Six participants discussed social media as a contributor to how they viewed their body and what their body ideals were. More specifically, participants discussed viewing pictures of other women's bodies on social media resulted in increased thoughts towards their personal bodies, often leading to increased levels of BID. According to previous literature, an increased accessibility to social media posts has contributed to greater pressures for individuals to achieve an ideal standard of beauty and negative body image (Kilbourne & Jhally, 2010; Marks et al., 2020). These pressures had a clear impact on current participants, where half directly noted feeling higher levels of BID following comparisons made between their bodies to images viewed via social media. One participant discussed the role of social media, specifically 'what I eat in a day' videos, in impacting how she viewed her eating behaviors. It is important that while participants mainly discussed the negative impact of social media on body image, social media also can promote socially idealized and unrealistic foods and diets, which may include weight-management strategies rooted in incorrect assumptions that could leave

individuals chasing an unhealthy and unsustainable standard (Marks et al., 2020). While having a lesser impact on the present study's sample, it appears social media has the potential to negatively impact the eating behaviors of individuals. Overall, findings from the present study indicated social media provided a platform for social comparison, which led to greater levels of BID in participants.

Other contributors to BID experienced by participants resulted from thoughts, attitudes, and positive feedback received towards thinness. Previous literature references the feminine thin ideal, which is the western societal expectation to achieve a body that is as thin as possible (Thompson & Stice, 2001). This ideal is often internalized, predicting BID and ED risk (Stice, 1994, 2001). Thin ideal internalization appeared in half of the current participants, in which these participants recorded having a desire to be thinner while competing as a heptathlete. Three participants specifically noted this desire stemmed from wanting to appear more feminine, which illustrates the negative impact of feminine thin ideal internalization. Participants also discussed receiving positive feedback after losing weight and appearing thinner. This feedback further supports the notion that the feminine thin ideal goes beyond an individual level and is pervasive at a societal level, which is supported by past research (e.g., Stice,1994). Additionally, Fitzsimmons-Craft and colleagues (2014) found that pressure for thinness may lead to body dissatisfaction. More specifically, they found that pressure for thinness may lead individuals to internalize the thin-ideal, which may increase risk of body dissatisfaction. The present study supports these past findings by identifying the process of thin ideal internalization in half of participants, which often led to BID. Further, the present study

expands to suggest that pressure for thinness, specifically via positive feedback, contributed to BID in participants.

The final piece of pressures within this category pertained to career transitions. Half of the participants noted experiencing difficulties adjusting to college, placing emphasis on difficulties related to increased training and environmental changes leading to weight gain and uncertainty in how they should be eating. Despite this, the empirical literature has not yet investigated the experiences of individuals with their body image when transitioning from high school to collegiate athletics. The present findings noted the transition into freshman year as presenting unique challenges for participants in terms of their body image and eating behaviors. Specifically, participants discussed experiencing weight gain during their freshman year, as is a common occurrence even in non-athlete populations, that resulted in greater body image struggles. Freshmen face complex pressures that often include meeting new people, living in new environments, taking new classes, and overall having greater responsibilities and independence in all realms of their lives. All these changes may produce complicated feelings towards personal appearance. For example, women in their freshman year of college are vulnerable to experiencing pressures for thinness and BID (Snapp et al., 2012). For these former heptathletes, they had to experience each of the aforementioned changes and pressures associated with transitioning into college, while also experiencing all the pressures that come with being a student-athlete. It is not surprising that participants of the present study note this period as being a difficult time for their body image, as this is a high-risk period for heptathletes in terms of their body image, eating behaviors, and overall well-being. With eating behaviors, participants discussed difficulties with not knowing how to approach eating in

dining hall settings and increased hunger levels because of higher volume training cycles. This transitional period, while underrepresented in past research, may create implications for heptathletes and female athletes transitioning into collegiate competition.

While the transition into college life was significant, five participants also discussed difficulties when approaching or following retirement from their sport. It is well established that retirement can be psychologically difficult for athletes when one considers the uncertainty and major life changes involved (Cosh et al., 2013; Ogilvie & Taylor, 1993; Voorheis et al., 2023). Given this, it is not surprising current participants discussed experiencing difficulties with their body image following retirement. Papathomas and colleagues' (2018) findings support these experiences. In their study investigating female athletes in weight sensitive sports, they found that over half of participants reported dissatisfaction with their weight. This dissatisfaction was suggested as stemming from participants' perceived changes in weight and body composition, potentially creating a sense of discrepancy from their former bodies, and a continued conflict between feminine and athletic body ideals. The present study had similar findings, where half of participants noted experiencing remaining effects of BID after retiring from the sport of track and field. One participant noted their BID stemmed from comparing themselves to their past self, which is consistent with past research that found BID resulted from retired athletes comparing their current bodies to their previous athletic bodies (Greenleaf, 2002; Papathomas, 2018). Additionally, three participants in the present study discussed a lasting complex relationship with exercise due to an abrupt ending to their competitive athletic career. The complexity of this relationship involved experiencing a lack of motivation to exercise and an unclear purpose or goal behind

exercising. Thus, it appears retirement from sport was a vulnerable period for participants with regards to their body image and relationship with exercise.

Heptathletes perceive similar societal pressures found in previous research regarding body type expectations. The present study adds to previous literature in identifying the role of social comparison, specifically upward social comparisons, in the development of BID. The present study's findings also provide a unique discussion on the role of positive feedback in contributing to thin ideal internalization. Further, this study included valuable insights on the experiences of heptathletes transitioning both into and out of collegiate athletics. Overall, the experiences discussed by participants identify that the unique training demands of heptathletes, paired with their position in society as collegiate women, may leave heptathletes at a high risk of experiencing BID and a vulnerability for engaging in DE behaviors, both while actively competing as well as after retirement from their sport.

2.14 Individual Pathology

The category of *individual pathology* pertained to DE behaviors and body surveillance participants engaged in. Further, this category explored the nature and intent behind participants' DE behaviors and the specific surveillance actions participants' engaged in.

Greater BID is found to be associated with greater ED risk (Monsama et al., 2016). In collegiate athletes specifically, an association has been found between BID and DE pathologies (Sundgot-Borgen, 1994). While most participants (n=6) experienced BID, none had been diagnosed with an ED. However, half of the participants (n=4) directly acknowledged engaging in DE at various time points during their career, and a

fifth participant described behaviors that meet DE criteria. What's more, all five participants discussed the connection of their DE with either track and field or the heptathlon. Previous research (e.g., Greenleaf et al., 2009; Pallotto et al., 2022) identified female athletes often display subclinical symptoms of EDs while the total number of diagnosed EDs is ultimately unknown. Additionally, lean promoting sport athletes, such as heptathletes, are at the highest risk of developing DE pathologies due to various pressures mentioned previously (Baum, 2006; Borgen & Torstveit, 2010; Parlove et al., 2020). Taken together, these, along with previous findings, emphasize the importance of investigating eating behaviors at the subclinical level as well as those who meet the criteria of EDs. This importance is even greater in athlete populations, given two subclinical DE behaviors, orthorexia nervosa (ON) and anorexia athletica (AA) are known to occur most commonly in athletic populations (Surala et al, 2020). ON refers to a fixation with healthy nutrition, which may be masked by athletes focusing heavily on 'eating clean'. Of the current sample, two participants discussed feeling either shame and/or guilt when eating foods that fall outside of this 'clean' category, which is consistent with orthorexic attitudes. AA involves anorexic behaviors that are masked by an athletic environment. More specifically, AA involves restrictive eating behaviors while competing as an athlete, high levels of exercise, and reduced body mass to improve performance (2004). All five participants who noted experiencing DE behaviors recorded a pattern of restriction, with four of these five participants specifically restricting food to try to lose weight. Overall, the five participants who discussed DE behaviors appeared to fit into either one or both subclinical categories.

The second subtheme within the *individual pathology* main theme is body surveillance. Body surveillance, the act of habitually checking one's body, is found to be a significant moderator between thin ideal internalization and body dissatisfaction (Fitzsimmons-Craft et al., 2014). More specifically, when applied to collegiate women, engaging in body surveillance led to thin internalization, which ultimately led to greater body dissatisfaction (2014). Every participant of the present study noted engaging in body surveillance, with half mentioning the use of a mirror and half mentioning the use of a scale. Two participants noted body surveillance served more of a neutral role to observe how their body was responding during different periods of their training cycles, whereas the six other participants suggested body surveillance led to BID while competing. The present study provides insight into the prevalence of body surveillance in collegiate heptathlete populations. Further, results suggest body surveillance may lead to greater levels of BID in heptathletes.

The behaviors discussed by participants demonstrate that heptathletes experience DE and engage in body surveillance, which were often tied to pressures to succeed athletically and achieve performance goals. This category further suggests that heptathletes are a high-risk group for DE and BID.

2.15 Support Systems

The final category of *support systems* pertained to how the support systems of participants impacted their body image and eating behaviors. Two themes emerged in this category: emotional support and informational support. Coaches, teammates, friends, and parents contributed to the existence, or lack thereof, of emotional support or the interaction leading an individual to believe that she is cared for, loved, or esteemed.

Informational support refers to support that is more tangible in terms of resources for participants, where athletic departments were the primary point of discussion, along with participants' identifying and discussing the importance of conversations and interventions. Participants reported support systems had a positive and/or negative impact on their views of their bodies and their eating behaviors.

Given coach communication with female athletes is found to be influential in body image and health choices, it is not surprising all participants discussed the role a coach played in how they viewed their body (Beckner & Record, 2016; Sabiston et al., 2020). Five participants discussed how coaches had a positive or negative impact on how they viewed themselves, where two participants identified coaches having both a positive and negative impact. Positive experiences either came from coaches' lack of commentary around body image (n=4) or from intentional conversations coaches engaged in regarding body acceptance or eating behaviors (n=2). More specifically, these participants noted coaches approaching eating from a functional perspective, encouraging athletes to eat to perform at their best. In terms of positive impact, coaches of female athletes have identified normalizing body image concerns, being role models, and building self-acceptance as ways they could help the body image of their athletes (Sabiston, 2020). Of the three participants who discussed their coaching experiences solely from a positive perspective, two did not experience BID or DE behaviors while competing. This trend may further support past research on the significant relationship that exists between coaching behaviors, attitudes, and comments, and the development of BID, DE behaviors and EDs in athletes (Moran, 2019; Scott et al., 2022; Sundgot-Borgen, 1994).

The primary method by which coaches had a negative impact on participants' body image and subsequent eating behaviors was through judgmental comments (n=3). More specifically, coaches' comments suggested athletes lose weight either to perform better (n=2) or to look better in their uniforms (n=2). Similarly, Carson and colleagues' (2020) research on NCAA female distance runners revealed athletes often received comments about their body shape and weight, which were determined to be connected to their eating and exercise behaviors (Carson et al., 2020). Carson and colleagues further noted how coaches used their power over food and body image to try to prioritize team performance over individual health of athletes. Notably, all three of these participants discussed experiencing BID and engaging in DE behaviors during their time as an athlete and after retirement. These pathologies are not surprising, given the previously identified relationship between coaching comments and the development of BID and DE behaviors (Scott et al., 2022; Sundgot-Borgen, 1994). Sundgot-Borgen specifically found a significant number of elite female athletes began engaging in dieting behaviors in an attempt to improve performance after being told by their coach to lose weight. Further, athletes who recall more critical comments about their body shape and weight have been found to report greater levels of DE (Muscat & Long, 2008).

Additionally, two participants discussed the negative impact coaches had on team culture and the normalization of unhealthy behaviors and attitudes on their teams. Past research supports these findings, where coaches' comments on body weight and food have been found to not only have an individual impact on athletes' relationship with food, exercise, and their body, but that these comments can create a harmful team culture (Sundgot-Borgen, 1994). Additionally, coaches of female athletes have been found to

view body image in a way that mirrors internalized body ideals and weight bias, suggesting their impact may also occur in a more implicit way (Sabiston, 2020). Overall, it is clear in the present study coaches played an influential role in participants' body image and eating behaviors.

Another contributor to team culture and component of emotional support for participants was the role of teammates and friends. Generally, 'teammate' and 'friend' were often interchangeable terms within the context of the conducted interviews. Two participants noted their teams and friends as having a positive impact on their body image and eating behaviors. Positive experiences with friends and teammates came from feeling a sense of community and relatedness, having the ability to engage in discussions around body image, and generally feeling supported. These findings present a unique perspective on the potentially positive impact teammates and friends can have on athlete body image, where past research primarily focuses on the role of teammates and friends on individual eating attitudes and behaviors, and often does not address body image directly (Scott et al., 2019). Thus, from an eating behaviors perspective, these findings support and add to previous literature, which identifies teammate support through supportive teammate friendships, the promotion of healthy eating practices, and vigilance against DE as having a positive impact on athlete eating attitudes and behaviors.

In contrast, teammate pressure via maladaptive team norms, competitive comparisons, critical comments, and appearance conversations is noted as contributing to DE pathologies in athlete populations (Scott et al., 2019). Further, past research notes almost one third of female athletes report their eating behaviors are influenced by their teammates (Hausenblas & Carron, 2000). Findings from the present study are consistent

with past research, finding participants' teammates and friends as contributing to DE pathologies. More specifically, participants (n=4) discussed teammates and friends making critical comments directed either towards themselves or participants. These comments included appearance discussions, expressions of desire to lose weight, or comments towards eating behaviors. Three of the four participants who noted hearing or directly receiving comments from friends and teammates discussed experiencing BID and DE pathologies. Regardless of experiences with BID or DE, all four participants noted comments from teammates and friends contributing to an increased frequency of thoughts directed towards their body. Overall, friends and teammates played a crucial role in the experiences of participants with their bodies and eating behaviors.

The last component of emotional support for participants came from parents. Half of the participants mentioned their parents. Parents specifically had a positive impact on participants' eating behaviors (n=2), whereas they had a negative impact on participants' body image (n=2). Parents' positive impact on participants' eating behaviors stemmed from the provision of heathy foods growing up and a lack of food restriction. These two components contributed to participants having an appreciation for food and continuing to have healthy eating habits later in their lives. In contrast, two participants noted their parents negatively impacted their body image by commenting on their weight. It is not surprising both participants experienced BID and DE while competing as a heptathlete, given past research has suggested the importance of parental comments towards athletic children about their body weight and shape are likely associated with BID and DE (Scott et al., 2022). Additionally, general weight pressures from parents have been found to be directly associated with BID in female NCAA athletes (Pallotto et al., 2022). General

weight pressures referred to pressures to adhere to cultural standards of attractiveness, such as the feminine thin ideal. These findings indicate that even outside of an athletic context, body expectations can influence athletes body image satisfaction. The present study identified a similar pattern in participants, finding that pressures from parents to lose weight led to BID.

The first subtheme of informational/tangible support that emerged was the role of athletic departments in the body image and eating behaviors of participants. Past research has indicated sport specific expectations, such as expectations around body type, can be communicated through athletic institutions (Hardie et al., 2022). Given the potential impact of athletic institutions, such as an athletic department, on body image and subsequent eating behaviors, it is important to best understand how athletic departments can best support their athletes. Two participants noted having positive experiences within their athletic departments resulting from proactive talks received from sport psychologists and nutritionists on topics pertaining to body image and eating behaviors. In contrast, three participants discussed the negative impact athletic departments had on their body image and eating behaviors through a lack of support and supervision (n=2), differential treatment based on event group (n=1), and an overall unhealthy environment (n=2). These findings have implications that will be discussed regarding the importance of proactive, accessible support from healthcare professionals in the body image and eating behaviors of athletes.

The importance of conversations and interventions was the second, and final, subtheme to emerge within the theme of informational support. Half of participants (n=4) discussed topics relating to this subtheme. Participants discussed perceiving benefits of

discussing topics pertaining to body image and eating behaviors (n=3), desires for increases in coaching training on these topics (n=2), witnessing athletes who were struggling not utilizing the available resources (n=1), and the overall belief that the NCAA mismanages eating disorders and woman's bodies (n=1). Each of these topics identified by participants closely relates to implications that will be discussed further.

It is clear participants were impacted by their surrounding support systems in an emotional and informational way. Emotionally, coaches, teammates, friends, and parents can positively or negatively impact the body image and eating behaviors of participants. Informationally, athletic departments held a significant role in their impact on participants. Also, participants noted conversations and interventions as significant in the well-being of athletes. Overall, support is a major factor in the body image and eating behaviors of heptathletes, which provides clear implications for how heptathletes, and collegiate athletes, can be best supported.

2.16 Sociocultural Model of Disordered Eating

It is important to discuss how findings connect to the sociocultural model of disordered eating (Fitzsimmons-Craft et al., 2014). This model was utilized as a framework in developing the current study's research questions. A portion of the present study's results fit closely into the model, where the general sequence of the pressure for thinness leading to body dissatisfaction and disordered eating did result for most participants. Additionally, topics around the feminine thin ideal and thin-ideal internalization did appear for participants within the category of general and social pressures. Further, social comparison and body surveillance were also key moderators within this sample.

At the same time, findings highlight the need to add an element of context to the model. While results generally fell into one of the established components of the model, there were certain findings that fell outside of the model's framework that need to be considered. Given this model was originally created for collegiate women (2014), it appears additional considerations are warranted when applying this model to collegiate female athletes.

2.17 Practical Implications

Results from the present study have implications for future research and clinical applications. First, the present study can enhance our understanding of the myriad of pressures impacting the body image and eating behaviors of female athletes. As mentioned previously, no empirical research on body image or eating behaviors has included multi-event athletes. The present study included this underrepresented population and identified that heptathletes are a high-risk group for developing BID and DE. More specifically, current findings offer insight to how heptathletes not only experience general pressures stemming from the feminine thin ideal, but also face sport-specific expectations to be lean and muscular, which have major implications for potential conflicts between their athletic and social body ideals and subsequent BID. Research in this literature area has mainly focused on distance runner populations. Findings suggest that the sport of track of field creates unique pressures for athletes in different event groups, which encourages future research to examine the risk and protective factors for BID and DE in collegiate track and field athletes. Future research on BID and DE in track and field athletes can aid in the creation of clinical interventions to proactively address body image and eating behavior concerns.

Additionally, this study provides important insight into the nature of heptathletes' eating behaviors. Participants recorded engaging in DE behaviors occurring at the subclinical level. While not every participant who discussed experiencing BID engaged in DE, every participant who discussed engaging in DE experienced BID. Thus, it is essential clinicians inquire about body satisfaction and extend beyond standard ED screenings to inquire about attitudes and behaviors that occur at the subclinical level. Finally, this study demonstrates how elements of heptathletes' support systems have major implications for their body image and eating behaviors. Specifically, coaches, teammates, and parents were major contributors to emotional support for heptathletes. Coaches can use the findings to increase their awareness of BID and DE within heptathlete populations and better understand the importance of how their athletes speak towards themselves and their teammates. Additionally, athletic departments, as well as relevant conversations and interventions, served as a major sources of informational support. Given these findings, this study encourages further investigation of how athletic departments can create more proactive and reactive programming for athletes regarding their body image and eating behaviors.

2.18 Limitations

There were three main limitations of the present study that warrant discussion. First, this study utilized convenience sampling, which may have led to sampling bias. Furthermore, given this study was qualitative in nature, recall bias may have occurred within the interviews conducted. Lastly, while objective processes were followed and several trustworthiness measures were utilized in the coding process, it is possible codes could be perceived as fitting well into multiple subthemes. For example, if a participant

discussed difficulties with training as the only heptathlete on their team, they may make statements that fit well into both the 'lack of fit' subtheme and the 'intracomparison' subtheme, which are under two different themes and categories. While some of these limitations were anticipated and measures were taken accordingly, it is possible these factors may have impacted the results of the present study.

CHAPTER 5. CONCLUSION

The present study added to the existing literature in demonstrating the body dissatisfaction that occurs in collegiate female athletes and specifically track and field athletes. Findings also are consistent with past research that identifies higher levels of DE pathologies in elite athlete populations.

The findings of this study indicate that collegiate track and field may have sport-specific components that leave athletes, and specifically heptathletes, at a higher risk for BID and DE. Findings suggest that Division I sport culture, the structure of track and field, and revealing uniforms negatively impact the body image and subsequent eating behaviors of athletes. For heptathletes, these factors are paired with a lack of fit within one event group, which increases their risk. Specifically, findings highlight a high prevalence of BID and subclinical DE consistent with orthorexia nervosa and anorexia athletica both while competing and after retirement. These findings highlight the importance of the promotion of healthy body image and eating behaviors for athletes both during their athletic careers and into retirement.

Lastly, the findings indicate the impactful role that coaches and athletic departments have on the BID of heptathletes. Institutions should consider this impact to create healthy environments to help athletes navigate the compounding pressures placed on them regarding body type expectations. Further research is needed to better understand how athletes' experiences with body image and eating behaviors occur within the sport of track and field.

APPENDIX

CHAPTER 6. REVIEW OF LITERATURE

2.19 Background

2.19.1 Culture of Elite Level Athletics

Athletes face many pressures to perform at a high level. The various pressures that come with this elite level of competition can play a role in the development of BID, DE pathologies, and clinically diagnosed eating disorders (EDs). Elite sport culture places an emphasis on being supervised, needing to make sacrifices, and constantly striving for success, which have been suggested to reinforce disordered eating (DE) pathologies (Papathomas, 2018).

An important population within elite athletics to consider is collegiate athletes, given that the NCAA houses over 500,000 college athletes across its three division levels (NCAA, 2021). Collegiate athletes, especially those at the Division I level, are impacted by elite sport culture, which places an emphasis on being supervised, needing to make sacrifices, and constantly striving for success. Research has supported the association between BID and DE pathologies in collegiate athletes (e.g., Reel & Voelker, 2012; Sundgot-Borgen, 1994; Thompson et al., 1999). Therefore, it appears that, regardless of gender, athletes who compete at an elite level, particularly those who compete in lean-promoting sports, are at higher risk of developing an ED (Chapa et al., 2022; Joy, Kussman & Nattiv, 2016; Kong & Harris, 2015; Lichtenstein et al., 2022).

2.19.2 Culture of Track and Field

Track and field athletes face similar risks that general female athlete populations face. Most event groups within the sport of track and field have historically held a lean-

promoting aspect. Running, and distance running in particular, has been known to have a culture that can be predispositional to BID, DE, and/or EDs. The belief that "thinner is faster" is pervasive within running communities and other lean promoting sports and may serve as a contributor for many of the body image issues seen in this population (Sundgot-Borgen, 1993). The potential for this myth to contribute to DE pathologies is demonstrated by Arthur-Cameselle and Quatromoni, who found a pattern of restrictive food intake by female collegiate runners in hopes of losing weight to improve performance (2011). More broadly, past research has revealed common themes in the sport of track and field including the existence of a blurred line between appearance and performance and a culture of comparison, which may create an environment that predisposes athletes to BID and DE (Mosewich et al., 2009). Each of these themes may be not only experienced by distance runners, but track and field athletes as a whole, and could add to the many pressures these athletes face when competing at an elite level.

The sport of track and field includes a variety of specific event groups, including distance and mid-distance runners, sprinters, jumpers, throwers, and multi-event athletes. Track meets often see the most support in the running events, with field events often appealing to a smaller frequency of fans, which could be looked at from a structural, hierarchical perspective. Based on various practices in the sport of track and field, track events hold a more dominant position, while field events often hold a more inferior position historically (Ashbolt et al., 2018). These hierarchical positions are identified by the amount of support and interest that fans invest in these different event forms. It is suggested that one of the reasons for the historical and cultural hierarchical nature of track and field events is due to the provision of privilege to bodies that conform to

traditional norms of femininity, such as the 'thin ideal,' which will be discussed further in a later section (Ashbolt et al., 2018). This perspective suggests that there are potential body image ideals institutionally embedded into the sport of track and field that have historically impacted the amount of support different event groups receive.

Given this historical element of privilege and the pressures modern athletes face, each event group within the sport of track and field may have different experiences and pressures related to their body image and eating behaviors. Regardless of the event group, track athletes face complex pressures in relation to their body image, due to perceived expectations, perceptions of others, uniform type, and team culture (Nameth et al., 2020; Pallatto et al., 2022, Steinfeldt et al., 2012; Sundgot-Borgen, 1993; Sundgot-Borgen, 1994). Perceived expectations and perceptions of others could result from comments from coaches, parents, peers, teammates, and from society (Beckner & Record, 2016; Francisco et al., 2013; Hausenblas & Carron, 2000; Pallatto et al., 2022; Petrie & Greenleaf, 2007, 2012). In addition to these perceptions, track athletes compete in uniforms that are often relatively revealing and form fitting, which could play a role in BID and subsequent ED risk (Nemeth et al., 2020; Steinfeldt et al., 2012).

2.19.3 Sport Terminology

Previous literature does not have a consistent use of terminology when referring to sport type. 'Lean focused' and 'lean promoting' sports previously have referred to endurance sports, sports with a specific weight emphasis, or as an interchangeable option to aesthetic sports (Varnes et al., 2013). Endurance sports involve an emphasis in anaerobic training. The most recognized endurance sports include running, cycling,

swimming, cross country skiing, and rowing. Sports with a specific weight emphasis include the use of scales and physical weight to determine competition categories, which include wrestling, show-jumping equestrian, rowing, and combat sports. Traditionally, aesthetic sports emphasize appearance and physique, including cheerleading, gymnastics, figure skating, and diving (Petrie & Greenleaf, 2012). Equestrian has also been considered an appearance-based (aesthetic) sport (Torres-McGehee et al., 2011). Aesthetic sports include a subjective evaluation of appearance to score athletes, meaning that judges can deduct points off of an athlete's performance on that basis of aesthetics. Lean-promoting sports do not necessarily include this subjective evaluation of performance within scoring parameters, but still include a traditional expectation that athletes maintain a certain lean body physique. This review will be using sports that are generally lean-promoting in nature and will utilize the term 'lean-promoting' to describe said sports.

2.20 Body Image

2.20.1 Terminology

Body image plays a role in an athlete's confidence and comfortability within their sport. Body image is a construct that can be viewed both based on bodily appearance and bodily function (Sabiston, Pila, Vani, Thogersen-Ntoumani, 2019). Three dimensions of body image include perceptual, cognitive, and attitudinal aspects. Perceptual body image refers to how an individual sees and describes their body appearance and function, cognitive body image concerns an individual's thoughts about body appearance and

function, and attitudinal body image involves specific attitudes and feelings an individual has towards their body image (Sabiston et al., 2019; Slade, 1993).

Body image can range from a positive association with one's body, to a negative association with one's body (Grogan, 2021). The positive association with one's body is referred to as positive body image. Positive body image is both a definitional term and a theoretical perspective. Definitionally, a positive body image is a positive association with one's body. The overall perspective of positive body image involves the elements of viewing your body favorably, accepting it, and respecting it, regardless of its physical appearance. Another aspect of positive body image involves engaging in healthy behaviors, responding to the body's needs, and rejecting media to protect it (2021).

The two major manifestations of a negative association with one's body can be seen through body dysmorphic disorder (BDD) and body image dissatisfaction (BID). BDD in individuals presents as an excessive preoccupation with perceived defects or flaws in appearance that are not visible or minor to others (APA, 2013). These perceived defects are distressing and may involve any body part(s) at one time (Elliot & Wilhelm, 2016). Individuals who experience BDD are known to avoid social situations due to the belief that others will dislike or reject them due to their perceived bodily defects (2016). BID occurs when dissonance exists between an individual's actual body image (i.e., perceptions, thoughts, and feelings towards one's actual appearance) and their ideal body image (i.e., internalized ideals) and is prevalent during adolescent years (Heider, Spruyt & De Houwer, 2018; Kong and Harris, 2015; Davies, 2021). BID has been found to predict poor self-esteem, quality of life, and depression (Lo Coco, Salerno, Bruno,

Caltabiano, Ricciardelli, 2014). BID is used synonymously with body dissatisfaction in past literature. BID will be used in this study for the sake of consistency.

2.20.2 Theoretical Models

A review of research on physical activity, sport, and body image discussed that while theoretical frameworks can help provide a foundation to test body image factors, studies oftentimes do not utilize theoretical frameworks (Sabiston et al., 2019). At the same time, it is important to highlight several theoretical models that have been established in body image, and more specifically body image and sport literature. The models chosen for investigation in this review were based on historical significance, applicability to athlete populations, and relevance to the given study, respectively.

One of the first theoretical models to specifically incorporate body image is Slade's schematic model (1994). Slade suggested that body image is influenced by seven main sets of factors: history of sensory input to body experience, history of weight change/fluctuation, cultural and social norms, individual attitudes to weight and shape, cognitive and affective variables, individual psychopathology, and biological variables. History of sensory input to body experience acknowledges the varied nature of input individuals receive throughout their life, which is suggested to form an individual's mental representation of their body. History of weight change/fluctuation as a construct acknowledges how individuals with the greatest variation in body image are those who experience anorexia and obesity, which are two populations who are at the greatest risk of BID. Cultural and social norms include gender difference, media exposure, and the Western thin ideal. Individual attitudes to weight and shape primarily include the

predisposition of females to experience body image disturbances. Cognitive and affective variables include expectations and distorted perceptions of those with complex body image. Individual psychopathology refers to all mental disorders such as clinically diagnosed EDs, and how these impact body image. Biological variables involve menstrual cycle stages and basal metabolic rates (1994). Overall, this model considers the factors that may influence an individual's body image, regardless of if they experience a positive or negative body image.

A more modern model was created for athlete populations and directly incorporates BID and DE pathologies (Petrie & Greenleaf, 2007, 2012). Petrie and Greenleaf's model suggests that there are both general societal and sport-specific factors that could lead an individual to develop DE pathologies and/or an ED. The model specifically suggests that societal and sport pressures create an internalization of external body image expectations, which lead to BID, which then predisposes individuals to restrict their eating, which could ultimately lead to the specific EDs of binge eating and bulimia. Moderators are also incorporated throughout the models' progression towards DE and ED development. Self-esteem, self-concept/Id, locus on control, and gender non-disclosure are moderators between societal and sport pressures and body image internalization. Weight and body size/shape are moderators between body image internalization and BID. Perfectionism, neuroticism, physical self-concept, and self-esteem are moderators between BID and restricted eating. Social support, coping skills, stress and hassles, and impulse control are moderators between negative affect, restricted eating, and binge eating and bulimia. Self-esteem, self-concept, and impulse control are moderators between modeled behaviors of peers and family and binge eating and bulimia

(Petrie & Greenleaf, 2007, 2012). The main moderators explored in past literature include self-esteem and perfectionism. These moderators will be further explored in a later section. This model provides a foundation for pressures and moderators that exist for athletes and their risk of developing BID, DE pathologies, or an ED. Sport and societal pressures are further discussed, and the specific moderator of self-esteem is further investigated in later sections.

For the current study, the sociocultural model of disordered eating is used as a framework, which explores internalization, body dissatisfaction, and DE (Fitzsimmons-Craft et al., 2014). This sociocultural model of disordered eating is specifically catered towards female college students and suggests that pressure for thinness may lead to body dissatisfaction, and ultimately disordered eating. The model highlights that pressure for thinness leads to thin-ideal internalization and identifies social comparison and body surveillance as potential mediators for this process. It is argued that through social comparison and body surveillance, individuals may discover they have not reached their ideal appearance state, through observation of others or themself respectively.

2.20.3 Male Populations

A female research bias has been identified both in past and in current body image research, which has led to male populations being underrepresented in body image literature (Burgon, Beard & Waller, 2023). This bias aside, male populations still face body image pressures, particularly in terms of their muscularity. Media platforms have been shown to display body ideals that promote muscularity and leanness, which in turn could lead to internalizing these body ideals (De Jesus et al., 2015). From media

platforms and other societal factors, two evenly split patterns emerge. Research suggests that males want either a smaller or larger body (Standford & McCabe, 2016, McCabe & Ricciardelli, 2004). These contradictory patterns may contribute to the desire for males to maintain both a lean yet muscular body physique, which could lead males to experience BID (Schaefer et al., 2018).

2.20.4 Female Populations

This thin ideal is pervasive throughout entire life spans, where it's been found that preschool aged girls as young as 3 years old are already emotionally influenced by the thin-ideal (Harriger et al., 2010). Given that girls and women often grow up with the societal expectation that the ideal body type to achieve is one that is as thin as possible, it is no surprising that females experience higher levels of BID than males (Davies, 2021). The more a woman desires to be thin, the higher BID they are likely to have (Steinfeldt et al., 2011). This internalization may be the origin of higher rates of BID in female populations.

Another explanation for the origin of higher rates of BID in female populations stems from Objectification Theory (Fredrickson & Roberts, 1997). This theory is built off the foundational premise that women exist in a society that objectifies their bodies. Existing in this society is theorized to lead women to experience objectification either by nature of state or trait self-objectification. State self-objectification refers to instances in which attention is drawn to a woman/s body in a specific context, such as in a picture. Trait self-objectification refers to experiences in which women chronically view their

bodies as objects, which is linked to patterns of body monitoring, shame, anxiety, and BID (Grogan, 2021).

2.20.5 Athlete Populations

Athletes are faced with numerous stereotypes and expectations that can add to the complexity to their body image and eating behaviors. Reel & Voelker highlighted how athletes are required to both consistently perform at their best, but also are expected to 'look the part' while they do it, with expectations to maintain a body that is ideal for performance, a body that fits societal ideals, and a body that matches their personal ideal standards (2012). The problem with this is that oftentimes, these three perspectives do not match the same outward body physique.

Different sports have traditionally held respective sport body stereotypes (Petrie & Greenleaf, 2012). Specific examples of stereotypical bodily expectations include football players being big and strong, runners being lean, and basketball players being tall. These stereotypes play a role major role in aesthetic sports (e.g., cheer, gymnastics, figure skating, and diving), since these sports are where one's appearance is a major factor in judging. While scores do not directly reflect an athlete's body type, it is feasible to assume that athletes would be conscious of what their bodies look like, given they are being directly observed and judged accordingly. These stereotypes create an unrealistic expectation for what is deemed acceptable for different athletes in their sport. These expectations conceivably place added pressure on athletes to alter their bodies to fit a pre-existing standard that may not be possible or healthy.

Collegiate athletes are a large population important to discuss in body image literature. The various pressures that come with being a collegiate athlete can play a role in the development of BID, regardless of gender or sport type. At the same time, studies have produced varying results when comparing genders and sport types. For male athletes, a common expectation is that they gain weight or muscle to improve their performance (Reel et al., 2012). While gaining muscle may appear to be congruent with male societal ideals, one study of current and former football athletes recorded inconsistencies between current athletic and societal ideal male body (Hogans & Seock, 2022). Another study of adult male athletes recorded a 25% rate of BID in the sample, which while not the majority, still illustrates that male athletes experience body image disturbances due to their position within athletics (Goltz et al., 2013).

When looking at males in different sport types, research is mixed. Male athletes in lean-promoting sports have been found to report greater BID than males in non-lean promoting sports (Perelman, 2017). At the same time, research has also discussed no differences in body image and eating behaviors between male athletes of different sport types (Goltz et al., 2013). Overall, male athlete populations are underrepresented in past literature and the relationship between sport type and BID is not as cohesive as past literature on female athlete populations.

Female athletes face complex dilemmas in terms of their body image (Beckner & Record, 2016; Buckley, Hall, Lassemillante, 2021; Carson, Tournat, Sonneville, Zernicke, Karvonen-Gutierrez, 2020; Green, 2015). Female athletes face a unique dilemma of grappling with this feminine thin ideal while maintaining a body that allows them to perform at their highest abilities. A study of NCAA athletes revealed that female

athletes feel torn between peak performance levels and body fat levels that fit the ideal feminine standard of beauty, regardless of sport type (Larabee, 2011).

In addition to the individual level, this cultural idea of thinness is also institutionally pervasive. A study of NCAA women's golf coaches revealed that overweight golfers were less likely to be offered a scholarship when compared to leaner golfers (Melton & Cunningham, 2016). While resumes including high skills levels moderated this effect, leaner athletes still received more substantial benefits than overweight athletes. These findings illustrate how even sports that do not fall into 'aesthetic' or 'lean-promoting' categories still hold a positive bias for leaner athletes. The feminine thin ideal is a major component of both western cultures and the culture of athletics, especially at the collegiate level, and has major implications for the body image of female athletes.

2.21 Body Image and Eating Disorder Risk

Body image is complex and can play a role in DE pathologies and ED risk. If an individual is dissatisfied with how they physically look, they may use food as their method to control and change their external physique. It has been found that greater BID can be associated with greater ED risk (Monsama et al., 2016). A strong relationship was found in a sample of student athletes between body image satisfaction and susceptibility to developing anorexia and bulimia (Dawkins, 2009). Greenleaf and Petrie's theoretical model describes the relationship of BID and ED risk through the progression of BID leading to initial restrictive eating, which could ultimately lead to EDs, specifically binge eating and bulimia (2007, 2012). In addition to BID, BDD may also be associated with altered eating patterns. It has been found that a distorted body image, a component of

BDD, may predispose individuals to developing an ED (Chaouch, 2013). While it is possible that an individual can be dissatisfied with their body without developing disordered eating pathologies, they are likely at a heightened risk in developing these pathologies when compared to individuals who have a positive body image. BID and ED risk are two important components to consider in athletic populations, especially in lean-promoting sport athletes.

2.22 Disordered Eating and Eating Disorders

2.22.1 Clinical Terminology

It is important to describe the relationship and differences between clinically diagnosable EDs and DE pathologies. EDs are psychiatric illnesses that often involve disordered eating (DE) pathologies that include DE attitudes (e.g., negative feelings towards food, negative biases towards gaining weight), and the use of intentional methods to control one's weight (Pereira & Alvarenga, 2007). These pathologies include both distinct behaviors and attitudinal elements. Distinct behaviors include binge eating, purging, unhealthy dieting practices, and other unhealthy weight control behaviors. Attitudinal elements involve elements of attitudes, beliefs, and feelings towards food, which are measured using instruments, such as the Eating Attitudes Test (EAT-26) (Ciao et al., 2015, Garner et al., 1982).

The DSM-V currently recognizes seven types of EDs. These include anorexia nervosa, bulimia nervosa, binge eating disorder, other specified feeding or eating disorders (OSFED), avoidant restrictive food intake disorder (AFRID), PICA, and rumination disorder (5th ed.; DSM–5; American Psychiatric Association, 2013). Past

literature commonly investigates components of anorexia nervosa, bulimia nervosa, and binge eating disorder. Anorexia nervosa involves the restriction of energy intake leading to a significantly low body weight, an intense fear of gaining weight, and a disturbance in the way body weight/shape is experienced. Diagnostic criteria for bulimia nervosa include recurrent episodes of binge eating paired with inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting, laxative medication use, fasting, or excessive exercise. Lastly, a binge eating disorder diagnosis requires that an individual partakes in recurrent episodes of binge eating, which is characterized by eating an amount of food that is significantly larger than what most people would eat in a similar period, while feeling a lack of control overeating during the episode. (APA, 2013).

2.22.2 Subclinical Terminology

EDs include aspects of disordered eating (DE). DE is a subclinical condition that involves a range of irregular eating behaviors and negative body image experiences that do not fit into the diagnostic criteria of EDs (Lichtenstein et al., 2022). DE refers to the continuum that includes dieting and restrictive eating, abnormal eating behaviors, and clinical EDs (Borgen & Torstveit, 2010). DE does not include all the diagnostic criteria that clinical diagnosed EDs hold, meaning that it is possible, and likely, for an individual to have DE pathologies without a clinically diagnosed ED (Oliverira Coelho et al., 2022). What this illustrates is that it is possible for an individual to have DE pathologies without having a clinically diagnosable ED, but individuals who have clinically diagnosed EDs do partake in DE pathologies.

An important consideration to make is that subclinical DE pathologies and EDs may, and do, occur. Given the subclinical nature of these pathologies, it is possible that past professionals and researchers do not recognize or record the cases of individuals experiencing subclinical symptoms. Athletes may have these DE pathologies go unrecognized due to the nature of athletics. The characteristics that go into being an elite athlete may mirror traits that characterize DE pathologies. Athletes are often rewarded for being determined, committed, and for following and meeting expectations from authority figures. Individuals who have disordered eating pathologies may frame their thoughts and behaviors in a way that aligns with the qualities of being a focused, elite athlete. If an athlete has a coach on top of this who encourages a commitment to 'clean' eating, or following a specific diet plan, it is difficult for both researchers and athletes themselves to identify DE pathologies or an ED at the clinical level.

There are two main forms of subclinical DE that occur in athlete populations in particular, orthorexia nervosa (ON) and anorexia athletica (AA). Both of these subclinical behavioral patterns could fall under the clinical umbrella term of OSFED but labeling them as their own defined terms allows us to better understand eating pathologies that could impact individuals and athlete populations.

Orthorexia nervosa (ON) refers to an obsession and fixation with healthy nutrition (Surala et al., 2020). The nutritional fixation aspect of ON involves a concern over the quality of the food being consumed (2020). This fixation may be hidden by the societal pressure to 'eat clean'. It has been suggested that a significant percentage of athletes, independent of level of competition, gender, or age, may present symptoms of ON (2020).

Anorexia athletica (AA) is another subclinical term that involves anorexic behaviors in athletes that are masked by their lifestyle and environment. The key components of AA are restrictive eating behaviors while competing as an athlete, high levels of exercise, and a reduction in body mass in an attempt to improve performance (Sudi et al., 2004). The facets of AA leave athletes susceptible to low energy levels and injury (2004). AA is important to acknowledge, since it specifically recognizes the masking role that sport can play in DE pathologies.

Discussing subclinical EDs and ED risk levels in athlete populations is important given the level of uncertainty in the ability to recognize and diagnose instances of DE pathologies in these populations.

2.22.3 Athlete Populations

A specific association has been found between BID and DE pathologies in collegiate athletes (Sundgot-Borgen, 1994). Regardless of gender, athletes who compete at an elite level and those who compete in lean-promoting sports may have a higher DE and ED risk (Kong & Harris, 2015; Milligan & Pritchard, 2006). Similar patterns exist between male and female populations in terms of eating disorder risk; however, studies have found specific statistics and differences between the two gender populations. While literature primarily focuses on female populations and females are widely assumed to hold a higher risk of developing an ED, a comprehensive review of literature found that ED prevalence rates of up to 32.5% have been found in adult male elite athlete populations. This review also found that the most associative factor for DE and ED risk in male athletes is weight-sensitive sports (Karrer et al., 2020).

While male athletes are at risk of developing an ED, ED risk, symptoms, and prevalence are more common in female athletes (Di Cagno et. al., 2018; Godoy-Izquierdo & Diaz, 2021; Green et al., 2011; Martinsen & Sundgot-Borgen, 2013).

Female athletes have been found to display symptoms of ED at the subclinical level (Greenleaf et al., 2009; Pallatto et al., 2022). One study found that the prevalence of DE in female athlete populations ranges from 0-27%, compared to 0-21% in the general population (Oliveira Coelho et al., 2022). However, past research has revealed that female athletes are still at a higher risk of developing a clinical ED. Specifically, it has been found that up to 45% of female athletes struggle with an ED (Conviser et al., 2018). Another study found that female soccer players with higher levels of BID were 12 times more likely to develop an ED when compared to soccer players with more positive body image (Godoy-Izquierdo and Diaz, 2021). Additionally, some findings suggest that as many as 45% of female athletes struggle with an ED (Conviser et al., 2018). More specifically, a study of NCAA Division I female athletes revealed that over a third of female athletes report attitudes and symptoms that classify them as at-risk for anorexia nervosa (Mond et al., 2014). Taken together, it is apparent that athletes, and female athletes in particular, are a high-risk population for DE and EDs.

2.22.4 Aesthetic and Lean-Promoting Sports

It is apparent that there is a risk of BID and a subsequent ED risk in both male and female athletic populations and aesthetic sport populations in particular. It has been found that athletes who participate in lean promoting and aesthetic sports are at the highest risk of DE pathologies (Baum, 2006; Borgen & Torstveit, 2010; Parlove et al., 2020). In

addition to risk, there is a higher prevalence of EDs in aesthetic sports (Krenz & Warschburger, 2011). Male lean promoting sports have produced the highest level of DE behavior when compared to non-lean promoting sports (Milligan & Pritchard, 2006). A similar pattern exists in female aesthetic and lean-promoting athletes, where females competing in aesthetic sports have been identified as being at an increased risk for EDs (De Bruin, 2011). Two studies of NCAA aesthetic and lean-promoting sport athletes, cheerleaders and equestrian athletes, found an ED risk and prevalence of 33.1% and 42%, respectively (Torres-McGehee et al., 2011; Torres-McGehee et al., 2012). A rate of 41.5% of female aesthetic sport athletes reported De pathologies (Johnson et al., 1999). These rates may be due to the subjective evaluation of performance that occurs within aesthetic sports, since this form of evaluation serves as a risk factor for EDs (Greenleaf et al., 2009). These sports have environments in which judges can score athletes differently based solely on aesthetics, which may promote unhealthy eating behaviors in athletes.

2.23 Risk Factors

Environmental and psychological variables have been identified as having an influence on individual athletes' body image and subsequent eating disorder risk. These variables, also known as risk factors, include coaches, uniform type, parents, peers, and media, social media, the COVID-19 pandemic, and self-esteem.

2.23.1 Coaches

Given the risk that both female and male athletes face regarding individual body image and ED risk, coaching influence and subsequent team culture must be considered.

A significant relationship has been found between coaching behaviors, BID, and DE pathologies (Moran, 2019). In addition to behaviors, coaching attitudes and comments are suggested as being influential in the development of BID, DE, EDs in athletes (Scott et al., 2022; Sundgot-Boren, 1994). Athletes who recall more severe critical comments about their body shape and weight were found to report greater levels of DE (Muscat & Long, 2008). The impact of attitudes and comments is significant, given that more than 60% of elite athletes in a sample reported pressure from coaches concerning body shape (Kong & Harris, 2015).

Beyond having an impact on individual athletes' relationship with food, exercise, and their body, coaches' comments on body weight and food contribute to a damaging team culture (Sundgot-Borgen, 1994). In terms of team culture and coaching impact, past studies have found significant results within track and field programs specifically. Interviews with NCAA runners revealed that athletes' often received comments about body weight and shape from their coaches and drew connections between these comments and their eating and exercise behaviors (Carson et al., 2020). Another sample of 11 national and international track and field coaches, high levels of importance were placed on weight and an 'ideal' feminine body with regards to performance levels (Plateau et al., 2014). Each of these experiences is extremely significant, given that coach communication with female athletes is found to be influential in athlete body image and health choices (Beckner & Record, 2016; Sabiston et al., 2020).

2.23.2 Uniforms

Another point of consideration in terms of the influence of external factors on athlete body image is uniform type. The impact of uniform exposure on BID and eating behaviors has been evaluated across age, gender, and sport type, with similar results produced in these different conditions. The influence of uniforms has primarily been evaluated in adult, female, and lean-sport populations, given that these sports tend to have more revealing uniforms, particularly as athletes approach adulthood. One study did examine a younger sample of adolescent competitive cheerleaders, where the smallest desired body image was reported in the most revealing uniform type (Smith et al., 2022). Another study found that football uniforms may affect individual athlete body images (Hogans & Seock, 2022). The most conclusive finding is that overall, female NCAA athletes have expressed feeling uncomfortable in more revealing uniforms (Nemeth et al., 2020). One example of this is that larger levels of BID have been reported by NCAA cheerleaders in their most revealing uniforms (Torres-McGehee et al., 2012). Another example of NCAA athletes feeling uncomfortable in more revealing uniforms involves a study with female collegiate volleyball players, where it was suggested that revealing uniforms contributed to higher levels of BID and served as a distraction during on-court performance (Steinfeldt et al., 2013). It appears that uniform type does impact body image satisfaction and potentially comfortability while competing in both male and female athlete populations, regardless of competition level or sport type, although findings most clearly support the impact of uniform coverage on female NCAA athletes.

2.23.3 Parents, Peers, and Media

Parents, peers, and media have also been found to play a role in athletes' body image perceptions. Parents, peers, and media have been grouped together due to a commonly used theoretical perspective, the Tripartite Influence Model (Schaefer et al., 2021). The Tripartite Influence Model looks at the influence of sociocultural aspects of an individual's body image. Influences have been extended in past literature to include other external sources, including coaches. These influences play an especially critical role in adolescent and aesthetic sport athlete populations. Smith and colleagues found that adolescent competitive cheerleaders reported a smaller desired body image when asked about the perceptions of peers, parents, and coaches (2022). In a similar population, adolescent dancers, environment, parents, coaches, and peers have been recorded as having the greatest influence in body image satisfaction (Doria & Numer, 2022). At the collegiate level, weight pressure from parents, peers, and media have been found to be directly associated with BID in female NCAA athletes (Pallatto et al., 2022). Each of these three main components of the Tripartite Influence Model have been expanded upon in previous literature and can be further broken down individually to fully understand the extent of the influence that parents, peers, and media have on athlete BID and potential subsequent ED risk.

Specific parental influences have been recorded in past literature. Parental comments towards athletic children about body weight or shape have been found to be associated with BID and DE (Scott et al., 2022). In elite aesthetic sport athletes, parental influences alone have been found to reinforce the pressure to be thin (Francisco et al., 2013). Specifically for female adolescent athletes, parental nutrition habits have been

found to be related specifically to body image (Pritchard & Wilson, 2005). Given these findings, it is clear that parents have a significant role in influencing their children's eating attitudes and behaviors.

Weight pressures in the form of comments from peers seem to impact athletes, regardless of gender or sport type. This impact can be seen through similar findings being produced from a sample of male football players and a sample of female athletes. It has been found that sociocultural images and comments from peers strongly influence individual body perceptions in current and former football players (Hogans & Seock, 2022). Another study of collegiate female athletes revealed that direct negative comments about body shape and weight were a significant predictor in the development of ED symptoms (Arthur-Cameselle & Quatromoni, 2011). It appears that the second portion of the tripartite model, peer influence, also has the potential to impact athlete body image and eating behaviors.

The third pillar of the tripartite model, media, also appears to have the clear ability to impact the body image and eating pathologies of athletes. Media refers to all potential media that an athlete could consume, including television, magazines, news channels, and internet or social media posts. Harrison and Cantor found that exposure to media that depicts and promotes thinness appears to have an association with an increase in ED symptoms (1997). This study found that for female populations in particular, the use of media predicted DE pathologies, desire to be thin, and BID (Harrison & Cantor, 1997). Overall, parents, peers, and media could significantly impact the BID and ED risk in all individuals, and especially athlete populations.

2.23.4 Social Media

Social media is a specific component of media that is important to address. The rise of social media use has created a way for individuals to be exposed to standards of beauty more frequently. In Western cultures, social media use, body image, and EDs have been found to have a connection, where social media use has been found to contribute to negative body image and mental distress (Marks et al., 2020). Social networking sites overall tend to promote societally idealized, and unrealistic, bodies, healthy foods, diets, and exercise. While potentially not harmful at the surface, these topics often promote weight-management strategies that are rooted in incorrect assumptions that could leave individuals unhealthy and chasing an unsustainable standard (2020). The increased frequency and accessibility to social media platforms and posts has contributed to greater pressures for men and women to achieve an 'ideal' standard of beauty (Kilbourne & Jhally, 2010). Social media platforms allow individuals to post anything, which could lead to individuals being exposed to posts with inaccurate nutritional information, dangerous exercise recommendations, and manually edited bodies. Given these factors, this ideal standard is not only unsustainable, but also unrealistic and physically unattainable.

The increased use of social media, paired with the newly established NCAA Name, Image, and Likeness (NIL) rules, may create new pressures for athletes that are yet to be fully understood. Social media and NIL partnerships are important components to consider, given that these platforms and opportunities create added responsibilities for athletes. Due to these platforms and deals, athletes now may be adding the role of 'influencer,' or 'public figure' to their plate. The complexities of social media and NIL

deals are likely to play a role in reflection on physical appearance and potentially on the perceived body image of NCAA athletes.

2.23.5 Social Comparison

The discussion of the impact of general media and social media ties into the foundational theory laid by psychologist Leon Festinger. Festinger established what is known as Social Comparison Theory, which suggests that individuals have an innate drive to compare themselves to others, which could apply to those physically around them or to ideal images that they see in media (Festinger, 1954). This comparison is said to create a benchmark for individuals to make personal evaluations of themselves. While comparisons can create a sense of motivation at times, they also can have significantly negative impacts on individuals, and athletes. Athletes learn certain expectations regarding competition, superiority, and winning, and comparisons can be difficult for these populations (Hardie et al., 2022).

Social Comparison Theory describes two forms of social comparison: upward and downward. Upward social comparisons involve individuals comparing themselves to those who are better, while downward social comparisons involve comparison to those who are perceived to be worse. Upward social comparisons involve a focus on improving ability and performance, which in the case of an athlete, could either lead them to ultimately improving their skills or could leave them feeling unmotivated and discouraged. Downward social comparisons may help athletes build their self-confidence and self-esteem but could also serve as a hindrance to improvement (Festinger, 1954).

To further apply Social Comparison Theory to media and body image and eating behavior, athletes, and particularly female athletes, are in a vulnerable position. Athletes of all genders have access to unrealistic standards pertaining to their bodies. In the past when social media was still on the rise, it was found that perceptions of personal attractiveness were inversely associated with the frequency of universalistic social comparison in a sample of adolescent athletes (Morrison, 1998). This finding is significant in that social media enables individuals to partake in this universalistic social comparison at a much higher frequency. The ability to compare a wide array of people, paired with the desire for individuals to engage in social comparison, leaves athletes in a difficult position and vulnerable to evaluating their body image. This body image evaluation could lead athletes to increased levels of BID and desire to change their body, leading to an increased risk of DE pathologies and the development of an ED.

2.23.6 Modeled Eating Behaviors

In addition to external pressures and comments from peers, coaches, parents, and teammates, peer and teammate eating behaviors are also important to consider. As early as infancy, individuals are impacted by modeling when determining levels of food acceptance (Blissett, 2018). This early impact that modeling has not only impacts eating attitudes and behaviors, but this modeling can carry over into adolescence and adulthood. While modeling early in life often involves the role of a caregiver, modeling can be done by other individuals throughout a person's lifespan. For athletes, one mode of modeling behavior could come from teammates. Hausenblas and Carron found that almost one third of female athlete's report that their eating behaviors are influenced by their

teammates (2000). This could be notably significant in adolescents, where peer pressure is found to be a strong predictor of eating behaviors in adolescent girls (Lieberman et al., 2001). If an athlete is at an age where they are more susceptible to peer pressures and their teammates model DE pathologies, they would likely be at a higher risk of engaging in similar behaviors in these transformative years and as they continue in their sport. Given these findings, it may be suggested that the influence of modeled behaviors in teammates is significant in determining the risk of athletes developing DE pathologies.

2.23.7 COVID-19 Pandemic

It is important to take the onset and aftermath of the initial surge of the COVID-19 pandemic into account when looking at BID, DE, and ED in athletes. Collegiate athletic seasons were canceled for institutions in the Spring of 2020 and some seasons continued to remain canceled until the Spring of 2021. Given this structural change, combined with the stressors that the pandemic created outside of the sport realm, athletes were significantly impacted in many ways. A sample of current and past athletes aged 18-27 were found to have experienced a significant increase in fat phobia and social physique anxiety because of the COVID-19 pandemic (Acar & Yilmaz, 2021). In addition to attitude and anxiety changes, it was found that current and former athletes experienced a growth in BID and DE at the onset of the COVID-19 pandemic (Buckley et al., 2021). More specifically, 34.8% of this population of current and former athletes reported greater levels of BID, 32.8% reported a worsened relationship with food as a direct result of the COVID-19 pandemic, and 21.1% of participants reported experiencing an eating disorder during this time (2021). It may be suggested that athletes

are still grappling with the impact of the COVID-19 pandemic on their lives, sport, and their relationship with their body and food.

2.24 Moderators

2.24.1 Self-Esteem

Self-esteem has been identified as a common moderator of both BID and ED risk in male and female populations. For men, self-esteem has been found to be related to how good they feel about their body shape and weight (Grogan, 2021). For women, a clearer association has been established between BID and low self-esteem (Grossbard et al., 2009). While research is more coherent in female populations, Silverstone hypothesized that EDs can be viewed in part because of chronic low self-esteem (1992). This hypothesis is supported by additional past research (Arthur-Cameselle & Quatromoni, 2011; Dawkins, 2009). One study found that in a population of female collegiate athletes diagnosed with an ED, 76% experienced low levels of self-worth and self-esteem (2011). Another study of student athletes found that there was a strong relationship between self-esteem and risk of developing anorexia and bulimia (2009). Given the moderating role that self-esteem serves in BID and ED risk, self-esteem is important to recognize. Approaches have utilized this role of self-esteem in the prevention of ED development (O'Dea, 2004).

2.24.2 Perfectionism

Perfectionism plays a moderating role in the development of BID and DE pathologies and involves both positive and negative aspects. Positive aspects of perfectionism include

the desire to set high goals and maintain personal standards, whereas negative aspects of perfectionism include having a fear of failure and having an over-concern with making mistakes. A past literature review suggested that individuals with perfectionistic personalities may have a higher risk of ED development, which may be explained by perfectionism contributing to personal high standards, which could lead to adopting maladaptive behaviors to achieve a goal (Forsberg & Lock, 2006). In athlete populations, this pattern could manifest as partaking in DE to increase performance, no matter the costs to an athletes' health. A study on females with anorexia and male obligatory runners, runners who continue to run despite clear evidence of an injury, found that both groups of individuals set exceptionally high expectations for themselves (Yates et al.,1983; Yates et al., 1992). The findings in these two populations are significant, since they suggest that there is an element of perfectionism in both those experiencing an ED and in a population of athletes. This finding is supported by past research that found that perfectionism was the main factor used to predict DE in Division I collegiate athletes and recreational athletes (2006). Additionally, perfectionism's role has been utilized in interventions for individuals with EDs, where interventions that incorporate perfectionism work have shown to have a positive impact (Robinson & Wade, 2021). While past literature has focused on the moderating role that perfectionism plays in DE and ED risk, perfectionism also likely has a role in the development of BID, given the relationship between BID and DE pathologies.

2.24.3 Body Surveillance

Body surveillance, the act of habitually checking one's body, is found to be a significant moderator between thin ideal internalization and body dissatisfaction (Fitzsimmons-Craft et al., 2014). Engaging in body surveillance is identified as an indication that an individual is engaging in self-objectification. When applied to a sample of collegiate females, body surveillance served as the act that led thin ideal internalization to transform into body dissatisfaction (2014). This is significant in athletic populations, where athletes may be predisposed to environments that allow them to engage in acts of body surveillance more easily, such as being photographed frequently and watching film. It is possible that negative psychological factors may induce increased levels of body surveillance, but it is also possible that objective body surveillance may induce increased negative psychological factors, especially in athlete populations.

2.25 Health Outcomes

2.25.1 Female Athlete Triad and RED-S

The attitudes and behaviors that contribute to greater ED risk have major negative implications for athletes, one of which being the female athlete triad. The female athlete triad refers to the interrelated facets of energy availability, menstrual function, and bone mineral density (Nattiv et al., 2007). More specifically, the disorders resulting from the female athlete triad include DE and EDs, amenorrhea, and osteoporosis (Birch, 2005). The three interrelated facets of the female athlete triad and subsequent disorders are related both psychologically and physiologically. The pressure for an athlete to perform at their highest level can lead to efforts to achieve a low weight through high training

volumes and a potential decrease in food (energy) intake. This high training volume, paired with the low energy intake and the psychological distress that occurs from these processes, may lead to a disruption in the menstrual cycle, known as amenorrhea. Amenorrhea may then create a disruption in the function of the brain areas that control the production of estrogen, which serves a large role in maintaining sufficient bone mineral density. This disruption could then leave athletes to an increased risk of osteoporosis (2005).

More recently, scientific professionals have described the Female Athlete Triad as having a narrow focus, which led to Triad now being recognized as Relative Energy Deficiency in Sport (RED-S) (Mountjoy et al., 2014). RED-S is inclusive of all genders and is caused by relative energy deficiency due to an imbalance between dietary energy consumption and physical energy expenditure. The primary difference between the past term and the current term is that RED-S does not consider health outcomes on a triad basis of energy availability, menstrual function, and bone health, but considers a wider range of physiological, health, and athletic components that impact individuals (2014).

2.25.2 Medical Complications

Additional medical complications could result from DE and EDs. While the triad does not involve the inherent presence of clinically diagnosed EDs, it is important to acknowledge the medical complications that can result from diagnosed EDs. Anorexia nervosa, bulimia nervosa, and binge eating disorder present a variety of potential medical complications that could occur from an individual having the disorder during periods of development and/or for extended periods of time. Potential complications of anorexia and

bulimia nervosa include abnormalities in the function of the following systems: cardiovascular, central nervous, dermatologic, endocrine, gastrointestinal, genitourinary, hematologic, metabolic, musculoskeletal, and reproductive. While binge eating disorder may also impact these systems, the main complication of binge eating disorder is obesity and its associated comorbidities (Cloak & Powers, 2005). Overall, EDs have the second highest mortality rate of all mental health disorders (Tagay et al., 2014). This risk helps to emphasize the significance of the previously outlined medical complications.

2.25.3 Injury

Athletes participate in difficult training schedules and consistently push their bodies to their limits. If this level of intense training is combined with insufficient nutritional intake, an increased risk of injury is likely to exist. Past research primarily focuses on female athlete populations. Given that Female Athlete Triad, now known as RED-S, leads to an increased risk for lower bone mineral density, those who experience the triad are also likely at a greater risk for developing a bone stress injury. At the high school level, female athletes who report DE have been found to be twice as likely to sustain a musculoskeletal injury, where aesthetic sport female athletes have been found to be eight times more likely to sustain an injury (Jankowski, 2012; Johnson et al., 1999).

When making comparisons between genders, a past comprehensive review of literature has identified parallels between athletes in terms of RED-S complications (Tenforde et al., 2016). Researchers found that male athletes may experience low energy availability, hypogonadotropic hypogonadism, and low bone mineral density. These three

components of male athletes parallel the female triad facets of energy availability, menstrual function, and bone mineral density. Given this comparison, it appears that male athletes are also at risk of lower bone mineral density and subsequent bone stress injuries (2016). Overall, it appears that DE behaviors may lead athletes to be more susceptible to incurring a physical bone injury.

2.25.4 Mental Health

In addition to physical health outcomes, BID and EDs have serious mental health implications. In terms of BID, greater levels of individual BID are associated with higher reported levels of depression, where BID has specifically been used as a predictor for depression onset (Gilen & Markey, 2016; Johnson & Wardle, 2005). BID alone can create debilitating experiences for individuals. The coexistence of BID and depression has the potential to diminish an individuals' quality of life. For EDs, De la Rie and colleagues found that individuals with EDs report significantly poorer qualities of life when compared to both populations who experience mood disorders and populations who don't experience any mental health disturbances (2005).

Mental health within collegiate athlete populations has become a greater topic of discussion recently. In general, young adult populations face high rates of depression. As of 2021, the prevalence of depression was highest in individuals aged 18-25 at 18.76% (US Department of Health and Human Services, 2022). While current estimates of depression and suicide rates in young adult populations are similar among athletes and non-athletes, it is important to consider the underreporting that could occur especially within athlete populations (Rao & Hong, 2016). Athletes, especially those within the

NCAA, may refrain from sharing what they are going through in fear of being removed from practice or competition. Mental health in adolescents, young adults, and athletes has increasingly become more talked about, but it remains a lasting issue that BID, DE, and EDs can negatively contribute to.

2.25.5 Performance

Each of the outlined health outcomes has the potential to impact the performance of athletes. Performance could not only be impacted by an injury resulting from a complication of DE or an ED, but other negative health outcomes could decrease the competition level that an athlete can reach. Chronic body image concerns and DE pathologies are suggested to create numerous challenges for an athlete, where BID and DE pathologies can impact performance both psychologically and physiologically (Reel et al., 2012). Psychologically, the factors associated with body image concerns and DE pathologies may create lower levels of performance, primarily due to athletes having the inability to focus to the extent needed to perform at their highest abilities. Physiologically, DE tends to create energy deficiencies and dehydration within the body, which is assumed to have a negative impact on athlete performance. Overall, the mental and physical consequences of BID, DE, and EDs can have a significantly negative impact on athlete performance.

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