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Mental Health Among D1 Female College Athletes: Prevalance and Links to Athletic and Academic Performance

Mary Goebel

MENTAL HEALTH AMONG D1 FEMALE COLLEGE ATHLETES: PREVALANCE AND LINKS TO ATHLETIC AND ACADEMIC PERFORMANCE

By

Mary Elizabeth Goebel

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Approved By

Advisor: Dr. Hannah Allen

Reader: Dr. Ruaa Al-Juboori

Reader: Dr. Melinda Valliant

DEDICATION

This thesis is dedicated to Dr. John R. Montgomery, renowned pediatric immunologist, respected medical professor and advisor, and my 'DaddyJack.' His love of learning and drive for success influenced me to become who I am today, always making sure to "sit on the front row and listen" and "grab a root and growl" when things get tough. I am inspired by his life and forever grateful for his influence.

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ABSTRACT

MARY ELIZABETH GOEBEL: Mental health among D1 female college athletes: Prevalence and links to athletic and academic performance
(Under the direction of Dr. Hannah Allen)

Background. NCAA Division I female student-athletes are underrepresented in mental health research; existing research among female athletes tends to focus only on disordered eating and body appearance. This study aims to 1) describe the prevalence of mental health issues (i.e., anxiety, depression, and stress) among female Division I college athletes, and 2) assess the association between mental health issues and the student-athlete experience (i.e., athletic and academic performance).

Methods. This was a quantitative, cross-sectional study that used a self-administered online survey. The participants were NCAA Division I female student-athletes, mainly from the University of Mississippi. Demographics and sample characteristics were assessed. The GAD-7, PHQ-9, and PSS-10 were used to assess levels of anxiety, depression, and stress, respectively. Academic performance was measured using cumulative GPA, and athletic performance was measured using a 1-100% self-determined scale of whether athletes were performing to their full athletic potential. Six linear regression models were run to assess the associations between mental health issues and the student athlete experience.

Results. A final sample of n=55 female NCAA Division I student-athletes (73% white) was analyzed, with a mean age of 20.6 years old. The sample had mean scores of 7.29, 7.42, and 21.8 on the GAD-7, PHQ-9, and PSS-10, respectively. The mean GPA for participants was 3.62. Participants felt they were performing at about 72% of their full athletic potential, on average. No significant associations were found between mental health (i.e., anxiety, depression, and stress) and both GPA and athletic performance.

Conclusion. Current research suggests that females experience more symptoms of anxiety, depression, and stress when compared to their male peers, and results from this study support this conclusion. Analyses showed no relationship between mental health issues and athletic and academic performance, but several limitations to the study may have influenced this result. Further research is suggested in larger, more diverse samples.

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LIST OF ABBREVIATIONS

D1	Division 1
GAD-7	7-item Generalized Anxiety Disorder Scale
GPA	Grade Point Average
NCAA	National Collegiate Athletic Association
PHQ-9	9-item Patient Health Questionnaire
PSS-10	10-item Perceived Stress Scale
SEC	Southeastern Conference

INTRODUCTION

Mental health is an important and highly discussed area of research focus. A specific group of interest is college student-athletes, a subgroup of the higher education population with unique experiences and needs. Student-athletes are expected to perform at their best while simultaneously balancing academic requirements, especially within NCAA Division I institutions, the highest level of college athletics. Because of this, understanding mental health among college student-athletes at the Division I level is especially important. Within the last few years, a mental health crisis has developed among student athletes, specifically NCAA Division I females. In 2022 alone, four female athletes have committed suicide, including "runner Sarah Shulze, 21, softball player Lauren Bernett, 20, cheerleader Arlana Miller, 19, and soccer player Katie Meyer, 22," (Holohan, 2022). These are startling numbers, especially when considering that female student-athletes are an under-researched group. Limited research exists that solely focuses on female Division I athletes and their mental health. Studies that focus on both males and females show a common trend of female athletes experiencing more mental health issues. To our knowledge, there are no existing quantitative studies examining the links between mental health issues and female college student-athlete performance in both the academic and athletic domains.

CHAPTER I: LITERATURE REVIEW

Mental Health among Division I Female Athletes

A recent scoping review conducted by Perry et al. (2021) analyzed literature specifically focusing on mental health and mental health disorders in elite female athletes. 'Elite' female athletes included in the review were defined as "a population comprising high-performance, elite, or professional athletes, and/or National Collegiate Athletic Association (NCAA) Division One (D1) standard student-athletes" (p. 3). To conduct their search and narrow the field, the authors used four categories: gender, mental health, competition level, and sport. After exclusion criteria was applied, 24 articles were selected for the review, and of these 24, 11 articles focused solely on female NCAA Division I student-athletes. All eleven of these articles were found to be centered around disordered eating, body appearance and satisfaction, diet culture, or weight loss/gain. Moreover, 20 of the 24 selected articles were found to have quantitative methods and cross-sectional research designs. The authors of this review acknowledged the "overreliance on quantitative methods and heavy focus on [eating disorders/disordered eating]...demonstrat[ing] an ongoing need for sport scholars to expand their research samples, methods, and aims" (p. 16).

As identified by Perry et al. (2021), there is an extensive and almost exclusive research focus on disordered eating and body appearance in female athletes. The gap in mental health research focused on female Division I student-athletes is immense, yet some researchers are beginning to recognize this and add developments to the field. As suggested by Perry et al. (2021), a very recent study conducted by Alexandra D. Tomchek of Southeastern Louisiana University (2022) expanded on research in the field of female athletes' mental health by conducting a qualitative phenomenological study interviewing fifteen Division I women's

basketball players. To our knowledge, this is the only study solely focused on NCAA Division I female student-athletes and their mental health outside of disordered eating and body issues.

Semi-structured interviews branched from three different research questions: how student-athletes define their concept of health, how they use their definition of health to guide daily living, and how they describe the impact that being a collegiate athlete has on their health (Tomcheck et al., 2022). Several themes emerged from the main questions, including the notion that athletes see health as having multiple dimensions, including "physical health, mental health, [and] spiritual health" (p. 25). Interview analysis also showed that a majority mentioned "mental health as their greatest struggle when maintaining their health but also as one of their most important components of health," emphasizing that athletes are aware of the significant influence mental health has on their day-to-day life (p. 32). While Tomchek's research has important implications for this niche area of study and provides insight into future mental health research exclusively for NCAA Division I female student-athletes, the population was limited to basketball players. Other research in this field does contain important findings regarding student-athlete mental health but includes both males and females in data collection.

Mental Health Studies Among Both Male and Female Student-Athletes

Several studies exist analyzing mental health among student-athletes of both genders across the different NCAA divisions. In one study performed by Brown et al. (2021), student-athlete mental health and wellness factors were examined through a biopsychosocial lens, including sex, race, and NCAA division. An online survey was used to assess participants' overall wellness and mental health characteristics using established tests to measure depression (PHQ-9), anxiety (GAD-7), and stress (PSS-10). Results showed that anxiety, depression, and stress were seen to be higher in females than males, and student-athletes of color were also found

to experience higher levels of stress as compared to their peers. Moreover, anxiety and depression were found to be significantly greater in Division I athletes than Division III athletes. Important limitations must be acknowledged in Brown et al.'s (2021) study, including the lack of diversity found within the sample (the majority of athletes were white males from Division I institutions).

A common theme and occurrence in studies focusing on mental health disorders in student-athletes shows females struggling more with mental health, with several studies reporting greater levels of mental health issues among females (Allen, 2022; Brown et al., 2021; Sullivan et al., 2020). In a study performed by Allen (2022), *n*=236 male and female student-athletes from NCAA institutions across the country completed a survey reflecting levels of psychological distress and psychological well-being. Results showed that "cisgender females reported significantly higher mental distress compared to their cisgender male counterparts" (pp. v-vi). A study by Sullivan et al. (2020) analyzed *n*=238 male and female Division I student-athletes from a midsize Midwest university on demographics, depressive symptoms, and the degree of emotional and tangible social support athletes receive. Data again showed that females reported higher levels of depression as compared to males. While these studies provide information on the levels of mental health issues in female athletes, the authors acknowledge that data was self-reported, introducing social desirability bias, and that it may be beneficial for future studies to assess mental health issues through clinical diagnoses (Allen, 2022; Sullivan et al., 2020).

Following the trend of female athletes experiencing higher levels of mental health issues, other research in the field shows females receiving more negative scores on common mental health analysis tests, further emphasizing the need for an exclusive focus on female athletes. A research study performed by Stamatis et al. in (2020) recruited *n*=542 student-athletes across all

three NCAA Divisions, including both males and females, and administered a survey collecting data from the Mental Toughness Index, Self-Compassion Scale, and Mental Health Continuum–Short Form. Correlational results showed that males scored higher than females on all three scales, and there were no differences between divisions (Stamatis et al., 2020). After further analysis, the researchers found standardized mean differences between each scale, with Mental Toughness and Self-Compassion being moderately large differences between males and females. Males not only scored higher, but it was significantly higher than the female average scores (Stamatis et al., 2020). Limitations for this study include a lack of generalizability due to the sample including only five different NCAA divisions, as well as measures requiring self-report.

Morris et al. (2020) performed a survey analysis on n=109 male and female student-athletes from a medium-sized NCAA Division I university. Scores were measured using a subjective happiness scale categorized by gender, in-season versus out-of-season, and team versus individual sport. Findings showed males reporting a slightly higher level of subjective happiness than females, meaning gender seems to play a role in subjective happiness and mental health (Morris et al., 2020). Subjective happiness was also higher for in-season sports than participants of out-of-season sports, and team sports reported a higher level of subjective happiness than those of individual sports. Limitations included a 7-point Likert scale, as well as self-reported data that may have introduced bias in responses.

Other research in the field has analyzed important mental health qualities in relation to participation in athletics. In a study by Harris (2019), a sample of n=225 NCAA athletes across the three divisions completed a questionnaire that included the GAD-7, PHQ-9, Test of Performance Strategy (TOPS), and Sport Interference Checklist (SIC). After performing a correlational analysis, “a significant relationship between SIC Dysfunctional Thinking (in

training and competition) and anxiety (GAD-7) and depressive (PHQ-9) symptoms was found" (p. iii). Harris explains that dysfunctional thinking is "overconcern/worry, being self-critical, or having task-unrelated thoughts," (p. 13). These results suggest that emotions and thoughts related to sports are linked to depression and anxiety among student-athletes, and dysfunctional thinking is specifically important in this association. This study included both men and women but did not assess gender differences, an important limitation to note.

Another study analyzed coping skills and pain within sports (Polenske et al., 2022). *N*=151 NCAA Division I collegiate track and field athletes were recruited to complete a survey that included the Athletic Coping Skills Inventory and the Sports Inventory for Pain; researchers analyzed these scales by skill level, gender, event, and injury history. Results showed that males responded significantly higher in athletic coping skills as well as lower in catastrophizing when compared to females. Female athletes scored lower in multiple categories, including "peaking under pressure, coping with adversity, confidence/achievement motivation, and personal coping measures" (p. 66). While the included inventories are unique and important to acknowledge in mental health research, generalizability is low for this study seeing as how track and field was the only sport surveyed.

Results from quantitative analyses of mental health among both male and female athletes indicate that female athletes are more like to struggle with mental health issues (Allen, 2022; Brown et al., 2021; Sullivan et al., 2020) and score lower on analyses of mental toughness, self-compassion, subjective happiness, athletic coping skills, and pain inventory (Morris at al., 2020; Polenske et al., 2022; Stamatis et al., 2020). Females are also prone to dysfunctional thinking that impacts depression and anxiety in student-athletes (Harris 2020). Common limitations in the field include self-reported data and a lack of generalizability due to limited sample sizes and a

lack of diversity in demographics. The research does conclude that female athletes struggle with mental health more than their male peers but that research exclusively dedicated to the female athletes is lacking. Furthermore, limited research exists analyzing how mental health correlates with academic and athletic performance, let alone specifically in the female athlete population.

Mental Health and Academic and Athletic Performance

Limited research exists focusing on the relationship between mental health issues and athletic and academic performance. Because athletic performance can be difficult to quantify for different types of sports, most research in this area yields qualitative data, which can limit generalizability due to smaller sample sizes, subjective analysis, and inherent bias (O'Leary, 2017). Studies that did mention athletic performance utilized ethnographical and phenomenological methodologies to gather data (Sasso et al., 2022; Whitehead & Senecal, 2020; Young et al., 2021). By contrast, academic performance is more easily quantified with measurements like semester or overall GPA and average letter grades; however, almost no research exists determining correlation between mental health and academics among the student-athlete population.

A study by Whitehead and Senecal (2020) conducted an ethnographical examination of Division I NCAA sports through an existential humanistic view, concluding that "performance and health are in conflict with one another" (p. 150). This is especially true in Division I athletics, where "excellence is expectation" puts "health, development, and balance" directly at risk in the Division I athlete (p. 151). Division I institutions embody a performance at all costs approach, meaning priority is placed on winning and success ahead of growth through loss and challenge. Although this examination is not experimental in nature, these insights and

perspectives on student-athlete performance are relevant to the topic of mental health and its effect on student-athletes, especially at the Division I level.

Other research includes phenomenological methodologies, including a study performed by Young et al. (2021), which utilized qualitative semi-structured interviews to investigate student-athlete mental health. They recruited *n*=23 NCAA Division I student athletes (18 females and 5 males) and conducted one-on-one interviews. During data coding, two domains surfaced, each with four subcategories: increased expectations (including balancing sport and life, academic stressors, performance, and sports-first mindset) and resources and management (including network, perception, accessibility, and self-regulation strategies). The authors noted that a common struggle for student-athletes is time management, which affects "sleep, nutrition, and academic pursuits" (p. 14). Student-athletes' schedules often leave them tired and overwhelmed, which affects both academic and athletic performance and takes a significant toll on mental health and well-being.

A similar qualitative study performed by Sasso et al. (2022) also utilized interviews to gain insight into male and female Division I student-athletes at Midwestern universities, including experiences with mental health and mental health support. A common sentiment among participants was that they "often felt pressured to hide their mental health to not appear as 'weak'" (p. 54). This tendency to hide mental health struggles is common in the world of Division I athletics and contributes to the "larger culture of silence…which may influence their learning" in a negative way (p. 54). Although this research provides relevant insight into how mental health may affect athletic and academic performance among student-athletes, a lack of quantitative analysis does not allow a correlation between these topics to be determined.

Multiple qualitative studies have been completed gathering interview data about student athlete mental health and academic and athletic performance, but very little quantitative data exists. Researcher Morgan Rae Allen from Indiana University designed a survey to analyze the prevalence of mental health challenges in college student-athletes as well as the association between demographic and behavioral factors with student-athlete mental health (Allen, 2022). One of the demographic predictor variables asked of n=236 male and female student-athletes across the country was approximate GPA. Analysis showed that "a higher cumulative GPA was associated with lower mental distress" (p. 31); furthermore, athletes reporting a higher cumulative GPA were also more likely to have a higher resiliency, which can contribute to avoiding adverse mental health outcomes. However, this analysis did not distinguish gender, a limitation future studies may need to address. This is also the only study to our knowledge analyzing compounding variables of mental health and GPA among student athletes, another avenue for future research.

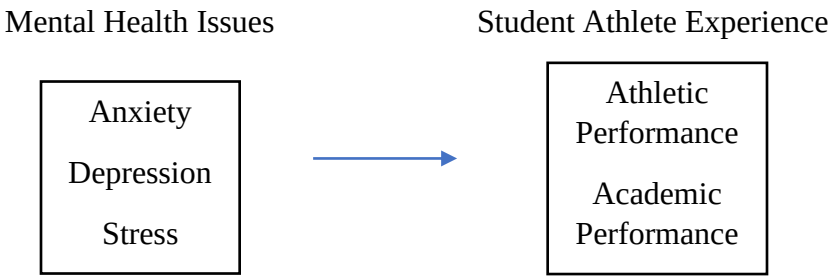
Conclusion

Emphasis on mental health has continued to grow in recent years, especially regarding the effect mental health has on the student-athlete population. NCAA Division I athletics are the highest level of competition in college athletics, and research shows that female student-athletes in this group are experiencing higher levels of mental health issues and patterns of dysfunctional thinking (Allen, 2022; Brown et al., 2021; Harris, 2020; Sullivan et al., 2020) as well as lower scores on mental health analyses tests than their peers (Morris at al., 2020; Polenske et al., 2022; Stamatis et al., 2020). These statistics are concerning for the Division I female athlete population, especially considering that the majority of female-focused literature on mental health is aimed at body appearance, disordered eating, and diet culture (Perry et al., 2021). Furthermore,

research exploring the links between mental health and student-athlete performance is very limited and could be a worthy point to explore in further research. Specifically, research should focus on the Division I female athlete population and how mental health may affect their athletic as well as academic performance.

Study Objectives

FIGURE 1. Conceptual model



The objectives of this study are to:

1. Describe the prevalence of mental health issues (i.e., anxiety, depression, and stress) among female Division I college athletes.
2. Assess the associations between mental health issues (i.e., anxiety, depression, and stress) and the student athlete experience (i.e., athletic performance and academic performance) among female Division I college athletes.

We hypothesize that mental health issues will be negatively associated with both athletic and academic performance.

CHAPTER II: METHODS

Study Design

This study used an online, self-administered, anonymous survey of female student-athletes who played sports at the NCAA Division I level. It was determined to be exempt by the University of Mississippi's Institutional Review Board on August 5, 2022 prior to the study being conducted. This was a quantitative study and was correlational by design.

Data Collection Procedures

The data was collected using the Qualtrics survey software. Direct emails to female athletes at the home university was the main recruitment strategy. Additionally, social media platforms were used to contact and encourage other current female NCAA athletes within the Southeastern Conference to complete the survey. Furthermore, emails were distributed giving a brief description of the study objectives and an anonymous link to the survey to athletic representatives across the Southeastern Conference. Data collection was open from September 14th to November 6th, 2022. Initial recruitment emails were sent September 14th, followed by distribution at the home university on September 26th, and a final wave of recruitment messages via social media on October 9th. Participants could choose to enter themselves into a raffle in which 10 participants were randomly selected to receive a $15 Amazon gift card.

Sample and Eligibility

The study sample included female student-athletes at the NCAA Division I level, primarily recruited from the home university and other SEC institutions. Athletes were eligible for participation in the study if they were (1) 18 years of age or older; (2) female; (3) playing a Division I NCAA sport for the upcoming/current season during the 2022-2023 academic year;

and (4) played/participated in at least 1 prior season. The final analytic sample consisted of *n*=55 female NCAA D1 student-athletes.

Measures

Demographic characteristics. Participants indicated their age and gender as part of the eligibility screener. Participants were asked about their race/ethnicity: African American/Black; American Indian or Alaskan Native; Asian American/Asian; Hispanic/Latin(x); Native Hawaiian or Pacific Islander; Middle Eastern, Arab, or Arab American; White; or Self-identify/Other. Participants were also asked about their current class standing: undergraduate sophomore; undergraduate junior; undergraduate senior; undergraduate 5th year or higher; or graduate student (undergraduate freshmen were automatically dismissed from continuing the survey as it was presumed they had not completed at least one full season on their athletic team).

Athletic participation. Participants were asked to indicate their sport. Participants who were members of more than one athletic team were encouraged to choose the sport that is their main athletic focus: basketball; volleyball; soccer; softball; lacrosse; field hockey; ice hockey; water polo; track & field; cross country; swimming & diving; tennis; golf; equestrian; gymnastics; rifle; rowing; and other. Participants also indicated the number of seasons they had completed as a D1 NCAA athlete.

Anxiety. The 7-item Generalized Anxiety Disorder Scale (GAD-7) was used to measure anxiety symptoms among participants (Spitzer et al., 2006). Participants were instructed to indicate how often they have experienced different symptoms of anxiety (i.e., "Feeling nervous, anxious, or on edge" and "Trouble relaxing") over the last two weeks. Response options for the 7 items included 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day). A new variable was computed for a sum score ranging from 0 to 21. Higher scores indicate

greater levels of anxiety symptoms. While GAD-7 score was analyzed as a continuous variable, for descriptive purposes the scores were also categorized into minimal anxiety symptoms (0-4); mild anxiety symptoms (5-9); moderate anxiety symptoms (10-14); and severe anxiety symptoms (15-21) (Spitzer et al., 2006).

Depression. The 9-item Patient Health Questionnaire (PHQ-9) was used to measure depressive symptoms among participants (Kroenke et al., 2001). Participants were instructed to indicate how often they have been bothered by various depressive symptoms (i.e., "Feeling down, depressed, or hopeless" and "Little interest or pleasure in doing things") over the last two weeks. Response options for the nine items included 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day). A new variable was computed for a sum score ranging from 0 to 27. Higher scores indicate greater levels of depressive symptoms. While PHQ-9 score was analyzed as a continuous variable, for descriptive purposes the scores were also categorized into minimal depressive symptoms (0-4); mild depressive symptoms (5-9); moderate depressive symptoms (10-14); moderately severe depressive symptoms (15-19); and severe depressive symptoms (20-27) (Kroenke et al., 2001).

Stress. The 10-item Perceived Stress Scale (PSS-10) was used to measure perceived stress among participants (Cohen et al., 1983). Participants were instructed to indicate how often they have experienced each item (i.e., "Been upset because of something that happened unexpectedly" and "Found that you could not cope with all the things that you had to do") within the past month. Response options were on a 5-point Likert-type scale: 0 (never); 1 (almost never); 2 (sometimes); 3 (fairly often); and 4 (very often). A sum score was computed ranging from 0 to 40. Sum scores were divided into approximate quartiles, with scores of 24 and higher

(the upper quartile) classified as high levels of stress, and anything below 24 classified as low levels of stress (Allen et al., 2020).

Academic performance. Participants were asked to indicate their best estimate of their current cumulative (or overall) GPA on a scale from 0.00 to 4.00.

Athletic performance. Participants were asked to rate the percentage (1-100%) they feel they are performing to their full athletic potential when considering their entire collegiate athletic career.

Statistical Analyses

Descriptive statistics were run for all variables of interest. Multivariate linear regression models were used to assess the relationships between mental health (anxiety, depression, and stress) and the student athlete experience (academic and athletic performance). All models controlled for age, race, class, and number of seasons. In reviewing variables for missing data, all variables were missing data on less than 6% of cases (due to small sample size, some leeway was allowed to analyze valuable data). Statistical analyses were performed using SPSS Version 27.0, and the alpha level was set at 0.05.

CHAPTER III: RESULTS

In total, *n*=88 participants responded to the survey. *N*=26 did not meet eligibility criteria (*n*=7 were not female, *n*=3 were not current Division I athletes, and *n*=16 had not completed a full season on their athletic team) and were therefore removed from the sample. *N*=7 participants were removed for excessive missing data (i.e., did not provide information on main variables of interest). The final analytic sample consisted of *n*=55 female NCAA student-athletes.

Sample Characteristics

The mean age of participants was 20.6 years old (see Table 1) and the sample was majority white (73%) or African American/Black (22%). Class standing included *n*=13 undergraduate sophomores, *n*=19 undergraduate juniors, *n*=13 undergraduate seniors, *n*=2 undergraduate 5th year or higher, and *n*=8 graduate students.

Most participants competed in track and field (46%) or volleyball (18%), but there were athletes in the sample who were part of the soccer, field hockey, cross country, tennis, golf, and rifle teams. Participants had played for a range of seasons, with the most common being one completed season (33%) or two completed seasons (27%).

The mean GPA for participants was 3.62 (see Table 2). On average, participants felt like they were performing at about 72% of their full academic potential.

TABLE 1. Sample characteristics (*n*=55)

	***n* (%) or Mean ± SD**
Age (18-23)	20.6 ± 1.2
Race/Ethnicity*	
African American/Black	12 (21.8)
Asian American/Asian	1 (1.8)
Native Hawaiian or Pacific Islander	1 (1.8)
White	40 (72.7)
Self-identify/Other	1 (1.8)
Class	
Undergraduate sophomore	13 (23.6)
Undergraduate junior	19 (34.5)
Undergraduate senior	13 (23.6)
Undergraduate 5th year or higher	2 (3.6)
Graduate student	8 (14.5)
Sport**	
Volleyball	10 (18.2)
Soccer	2 (3.6)
Field hockey	5 (9.1)
Track & field	25 (45.5)
Cross country	3 (5.5)
Tennis	2 (3.6)
Golf	4 (7.3)
Rifle	4 (7.3)
Seasons	
1	18 (32.7)
2	15 (27.3)
3	11 (20.0)
4	8 (14.5)
5+ seasons	3 (5.5)

Note. SD=standard deviation

*Participants could select from a list of 8 race/ethnicity options (including "Self-identify/Other"), and only selected options are displayed.

**Participants could select from a list of 17 sports (including "Other"), and only selected options are displayed.

TABLE 2. Mental health and athletic and academic performance (*n*=55)

	***n* (%)**
Anxiety (based on GAD-7 score)	
Minimal (0-4)	20 (36.4%)
Mild (5-9)	15 (27.3%)
Moderate (10-14)	17 (30.9%)
Severe (15-21)	3 (5.5%)
Depression (based on PHQ-9 score)	
Minimal (0-4)	23 (43.4%)
Mild (5-9)	15 (28.3%)
Moderate (10-14)	6 (11.3%)
Moderately severe (15-19)	7 (13.2%)
Severe (20-27)	2 (3.8%)
Stress (based on PSS-10 score)	
Low (0-23)	32 (61.5%)
High (24-40)	20 (38.5%)
	Mean ± SD
GAD-7 score (0-21)	7.29 ± 5.14
PHQ-9 score (0-27)	7.42 ± 6.04
PSS-10 score (0-40)	21.8 ± 4.76
GPA (0-4)	3.62 ± 0.36
Athletic potential (0-100)	71.5 ± 17.04

Note. SD=standard deviation; GAD-7=7-item Generalized Anxiety Disorder Scale; PHQ-9=9-item Patient Health Questionnaire; PSS-10=10-item Perceived Stress Scale

Objective 1. Describe the prevalence of mental health issues (i.e., anxiety, depression, and stress) among female Division I college athletes.

The mean GAD-7 score for anxiety symptoms was 7.29, with 36%, 27%, 31%, and 6% falling in the minimal, mild, moderate, and severe anxiety symptom categories, respectively (see Table 2). The mean PHQ-9 score for depression symptoms was 7.42, with 43%, 28%, 11%, 13%, and 4% falling in the minimal, mild, moderate, moderately severe, and severe depression

symptom categories, respectively. The average PSS-10 sum score for stress levels was 21.8, with 62% of participants with low stress levels and 39% with high stress levels.

Objective 2. Assess the associations between mental health (i.e., anxiety, depression, and stress) and the student athlete experience (i.e., athletic performance and academic performance) among female Division I college athletes.

Six linear regression models tested the associations between mental health (i.e., anxiety, depression, and stress) and the student athlete experience (i.e., athletic performance and academic performance) after controlling for age, race, class standing, and number of seasons played. The results of these linear regression models are displayed below in Table 3. No significant associations were found.

TABLE 3. Associations between mental health and athletic and academic performance

	GPA		**Athletic Performance**	
	β	***p*-value**	***β***	***p*-value**
Anxiety	.005	.696	.255	.653
Depression	-.011	.331	.714	.120
Stress	-.004	.768	-.883	.130

Note. All regression models controlled for age, race, class standing, and number of seasons. GPA=grade point average.

CHAPTER 4: DISCUSSION

Mental Health

This study aimed to describe the prevalence of mental health issues among female Division I athletes and assess the associations between mental health and academic and athletic performance. Results showed that about 40% of the sample had moderate or severe anxiety, about 30% had moderate, moderately severe, or severe depression, and about 40% had high stress levels. This study found no significant associations between mental health, academic performance, and athletic performance.

In a study of student-athletes, Brown et al. (2021) used the GAD-7, PHQ-9, and PSS-10 to assess anxiety, depression, and stress levels. Mean scores on all three measures in the current study were higher than the results from Brown et al. (2021). The mean GAD-7 score was 7.29 compared to a 7.05 mean score from Brown et al.; the mean PHQ-9 score was 7.42 compared to a 6.03 mean score from Brown et al.; and finally, the mean PSS-10 score was 21.8 compared to a 17.65 mean score from Brown et al.'s study. Because our study had only female athletes and Brown et al. (2021) used a sample of male and female athletes, this comparison suggests that female athletes are potentially experiencing worse mental health than their male peers, as confirmed by Brown and colleagues.

Females experiencing higher levels of anxiety, depression, and stress as defined by the GAD-7, PHQ-9, and PSS-10 has not only been found among student-athletes, but also seen in the general college population. A study by Lee et al. (2021) found that "the odds of experiencing a higher level of stress, anxiety, and depression…were significantly greater for female students by a factor of 1.489, 1.723, and 1.246 [respectively] than the odds for male students" (p. 528). Other studies specific to the student-athlete population have focused on different aspects of

mental health, including mental toughness, self-compassion, subjective happiness, athletic coping skills, and pain inventory, and show females scoring less than their male counterparts (i.e., female athletes are struggling more with mental health issues) in each category (Morris at al., 2020; Polenske et al., 2022; Stamatis et al., 2020). While these scales are not the same as the GAD-7, PHQ-9, and PSS-10, they reiterate the fact that females in this population are struggling more with mental health and may be a high-risk population for mental health problems.

Coupled with prior research, the descriptive results from the current study further emphasize the need for more research on female mental health, especially among the student-athlete population. The life of a student-athlete is demanding mentally, physically, emotionally, and academically. Conducting more research on mental health issues among female student-athletes is even more vital when you consider that the majority of female-focused literature on mental health among student-athletes tends to focus on body appearance, disordered eating, and diet culture as opposed to other mental health factors (Perry et al., 2021) Future research should aim to investigate why females are experiencing higher levels of mental health struggles, and possibly explore the differences between female student-athletes and regular female college students.

Links to Academic and Athletic Performance

Our hypothesis was that mental health issues will be negatively associated with both athletic performance and academic performance for female student-athletes. Our hypothesis was not supported, as the results from our analysis were not significant and showed no relationship between mental health issues and athletic and academic performance in this sample. These findings should be viewed in the context of study limitations. Difficulties with survey participation in this population are important to consider, as student-athletes are very busy and

may not be able to make time to complete a survey. With a final sample of *n*=55, the size of our sample was small, and the study may have not been adequately powered to detect any significant associations. When considering missing data, there were some variables that were missing values for more than 5% of cases, which may have influenced data analysis and results. Due to the scope of this research project, no missing data strategies were employed.

Limited quantitative research exists analyzing the relationship between mental health issues and academic and athletic performance, as most research utilizes qualitative methodology. Although it is difficult to compare the quantitative nature of our study with these samples, the inconclusive nature of our analysis is interesting when considering results from other relevant studies. A study of student athletes by Allen (2022) found that mental distress was negatively associated with GPA, which was not found in the current study. Interestingly, our sample had anxiety, depression, and stress scores that were higher than other samples of student athletes (Brown et al., 2021), yet the GPA of our population was about 0.6 points higher than the departmental average for athletics at the University of Mississippi (*Student-Athlete Academic Success*, n.d.).

We also hypothesized that mental health would be associated with athletic performance, especially considering how existing phenomenological research talks about the “performance at all costs” approach within Division I athletics, where "excellence is expectation," and health, development, and balance are directly at risk (Whitehead & Senecal, 2020). Our participants reported their performances to be an average of 71.5% of their total athletic potential, which is difficult to assess due to the lack of existing quantitative research for comparison. This reinforces the need for further research on the relationship between mental health and athletic performance,

especially among larger samples and using assessments that measure different facets of athletic performance.

Limitations

Other imitations of the study should be considered, including low generalizability. The sample mainly contained students from a single university, and the sample was majority white and from particular athletic teams. Another limitation of this study is its cross-sectional design. This study only assessed students at one point in their academic career, which does not allow for analysis of change over time and trend development. Survey bias is also important to consider, including response bias inherent to the nature of online surveys, and the sensitivity that comes with questions about mental health (i.e., some respondents may have felt uncomfortable answering certain questions, which could have affected their responses).

Implications for Future Research

This study is one of the first to use a sample of only female athletes to examine links between mental health with academic and athletic performance, and it opens the door for several avenues to consider in future research. The Division I female athlete population is a potentially high-risk group, and research and programming should focus on better understanding the unique mental health and academic challenges of this subgroup within higher education. Considering the level that Division I athletes are required to function, it is important to recognize the effects mental health could have both athletic and academic performance. Future studies could implore the similar assessment methods but collect data in a nationally representative sample. Further efforts should also look into potential programs and services that are tailored to female student athletes, including how we can support female athletes, what may already be helping, and what may need to be changed.

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APPENDICES

APPENDIX A: IRB Application (continued next page)

The University of Mississippi
Office of Research and Sponsored Programs
Division of Research Integrity and Compliance – Institutional Review Board
100 Barr Hall – University, MS 38677
irb@olemiss.edu 662-915-7482

APPLICATION FOR EXEMPTION

Purpose: Many studies qualify for an abbreviated review, according to the federal regulations and university policy.

- **Part I of this form screens for a brief review.**
- **Part II of this form completes the abbreviated IRB application.**
- **Part III of this form gives instructions for obtaining the required assurances.**
- **The IRB makes the final determination on whether you must fill out a full application.**

Always download the most recent version of this form: http://www.research.olemiss.edu/irb/protocol/forms.

Prepare and send application form as a **Word** document. **E-mail the completed form and attachments (and forwarded email assurance if PI is a student)** to irb@olemiss.edu.
Note: Some class project studies may qualify for a classroom waiver of IRB Application. Instructors: see form here.

PART I — Screening

1. Do any of the following apply to your study?

Research Methods:

Clinical Treatment study ..... ☐ Yes.....☒ No
Exercise ..... ☐ Yes.....☒ No
X-rays..... ☐ Yes.....☒ No
Collection of blood, urine, other bodily fluids, or tissues ..... ☐ Yes.....☒ No
Use of blood, urine, other bodily fluids, or tissues with identifiers ..... ☐ Yes.....☒ No
Use of drugs, biological products, or medical devices ..... ☐ Yes ....☒ No
Use of drugs, biological products, or medical devices ..... ☐ Yes .....☒ No
Use of data collected in the European Economic Area (EEA)* ..... ☐ Yes .....☒ No

Targeted Subjects:

Prisoners..... ☐ Yes.....☒ No

Elements of Deception:

The study uses surreptitious videotaping..... ☐ Yes.....☒ No
The study gives subjects deceptive feedback, whether positive or negative..... ☐ Yes.....☒ No
The study uses a research confederate (i.e., an actor playing the part of subject). ☐ Yes.....☒ No

If you checked Yes to any of the above, STOP HERE and fill out the FULL IRB APPLICATION FORM.

***Anonymous or Confidential?** Anonymous means (1) the recorded data cannot associate a subject with his/her data, and (2) the data cannot identify a subject. *Examples:* surveys with no names but with demographic data that can identify a subject (e.g., the only African-American in a class) are not anonymous.

***Sensitive Information?** Sensitive information includes but is not limited to (1) information that risks damage to a subject's reputation; (2) information that involves criminal or civil liability; (3) information that can affect a subject's employability; and (4) information involving a person's financial standing. *Examples:* Surveys that ask about porn use, illegal drug or alcohol use, religion, use of alcohol while driving, AIDS, cancer, etc. contain sensitive information.

***European Economic Area** - Collection of data in the European Economic Area (the 28 states of the European Union and Iceland, Liechtenstein, Norway, and Switzerland). Special considerations apply -if data are not 100% anonymous. See GDRP Guidance for more information

If using Qualtrics for anonymous surveys, see guidance here.

2. The ONLY involvement of human subjects will be in the following categories (check all that apply)
PLEASE READ CAREFULLY: MUCH CHANGED WITH NEW REGULATIONS, JANUARY 2019

☐ 1) **Educational Research:** Research conducted in established or commonly accepted educational settings, involving normal educational practices. Research is not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

☒ 2) **Surveys, Interviews, Educational Tests (cognitive, diagnostic, aptitude, achievement), Observation of Public Behavior (including video or auditory recording).** ***AT LEAST ONE OF THE FOLLOWING MUST BE CHECKED***

☒ (i) Information recorded by the investigator cannot readily identify the subject (either directly or indirectly)

☐ (ii) Disclosure of subjects' responses outside the research could **NOT** reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, educational advancement, employability, or reputation

☐ (iii) Information recorded by the investigator includes identifiers and the investigator specifies strong security measures to protect the data (e.g., encryption for electronic data; multiple locks for paper data). Minors are **NOT** permitted under this sub-category

☐ 3) **Benign Behavioral Interventions (BBI):** Research involving interventions in conjunction with collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording, if the subject prospectively agrees to the intervention and information collection.

- BBI is limited to communication or interpersonal contact; cognitive, intellectual, educational, or behavioral tasks; manipulation of the physical, sensory, social or emotional environment
- Intervention Requirements:
  - brief duration (maximum intervention = 3 hours within one day; data collection may extend more hours & over days)
  - painless/harmless (transient performance task-related stress, anxiety, or boredom are acceptable)
  - not physically invasive (no activity tracker, blood pressure, pulse, etc.)
  - unlikely to have a significant adverse lasting impact on subjects
  - unlikely that subjects will find interventions offensive or embarrassing
  - no deception / omission of information, such as study purpose, unless subject prospectively agrees

AT LEAST ONE OF THE FOLLOWING MUST BE CHECKED

☐ (A) Recorded information cannot readily identify the subject (either directly or indirectly)

☐ (B) Any disclosure of subjects' responses outside the research could **NOT** reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation

☐ (C) Information is recorded with identifiers and the investigator specifies strong security measures to protect the data (e.g., encryption for electronic data; multiple locks for paper data)

☐ 4) **Biospecimen Secondary Research**: Secondary Research for which consent is not required: use of identifiable information or identifiable biospecimens that have been or will be collected for some other

'primary' or 'initial' activity, if **ONE** of the following is met: (i) biospecimens or information is publicly available; (ii) information recorded by the investigator cannot readily, directly or indirectly identify the subject, and the investigator does not contact the subject or re-identify the subject; (iii) collection and analysis involving investigator's use of identifiable health information when use is regulated by HIPAA; or (iv) research information collected by or on behalf of the federal government using government-generated or -collected information obtained for non-research activities.

☐ 5) **Research and Demonstration Projects on Federal Programs**: The study is conducted pursuant to specific federal statutory authority and examines certain federal programs that deliver a public benefit [call IRB for details if you think your study may fit].

☐ 6) **Food Tasting/Evaluation**: Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

PART II — Abbreviated Application

3. Project Title: Female Athlete Experiences Study

4. Principal Investigator: ☐ **Dr.** ☒ **Ms.** ☐ **Mr.** Enter PI Name

Department: Health, Exercise Science, & Recreation Management

Department Chair's email (for cc of approval): ford@olemiss.edu

Work Phone: 662-915-1630

Home or Mobile Phone: 256-683-6011

E-Mail Address: megoebel@go.olemiss.edu

If Principal Investigator is a student:

Graduate student:

☐ Dissertation ☐ Master's thesis

☐ Other graduate project

Undergraduate student:

☐ Senior thesis: ☒ SMBHC

☐ Croft Institute ☐ Other undergraduate project

Research Advisor: Advisor Name **(required for student researchers)**

Department: HEALTH, EXERCISE SCIENCE, & RECREATION MANAGEMENT

E-Mail Address: HKALLEN1@OLEMISS.EDU

Work Phone: 662-915-1630

Home or Cell Phone: 484-753-1612

5. Funding Source:

Is this project funded? ☒ Yes ⇨ ☐ No

If Yes, is the funding:

Internal: ☒ **Source: Dr. Allen (Research Advisor) Research Start Up Funding (Account #250222598A)**

External: ☐ **Pending/Agency:** Click to enter

☐ **Awarded/Agency:** Click to enter

PI(s) on external funding: Click to enter

6. List ALL personnel involved with this research who will have contact with human subjects or with their identifiable data. All personnel listed here must complete CITI training OR the Alternative to CITI (ATC) training before this application will be processed*.

NAME	POSITION/TITLE	ROLE ON PROJECT	Training completed: CITI	or	ATC
PI Enter PI Name	Undergraduate Student	Principal Investigator	☒		☐
Advisor Advisor Name	Faculty/Staff	Co-Investigator	☒		☐
Click to enter	Select	Click to enter	☐		☐
Click to enter	Select	Click to enter	☐		☐

If space is needed to list additional project personnel, submit Appendix A.
***See Exempt Human Research Policy for training exceptions**

Research Methodology/Procedures

7. Check all procedures below that apply to your study:

☐ Pre-existing data or biological samples ⇨	- **Source of data:** Click to enter - **Do data/samples have identifiers?** ☐ Yes* ☐ No - **Describe how data will be secured** (e.g., encryption for electronic data; multiple locks for paper data). Click to enter *Minors are **NOT** permitted under this sub-category
☐ Observation	
☐ Oral history	
☐ Interview ⇨ ⇨ ⇨	Attach interview questions.
☐ Focus group ⇨ ⇨ ⇨	Attach topic and questions.
☒ Questionnaire or survey ⇨ ⇨ ⇨	Attach questionnaire or survey. **If online, describe platform (e.g., Qualtrics):** **Qualtrics**
☐ Audio recording or videotaping ⇨ ⇨	Use and attach a release form if you plan to disseminate **quoted** comments or taped content. (This covers you and UM legally – Not for IRB purposes)
☐ The study has misleading or deceptive: ⇨ (1) study descriptions; (2) procedure explanations; and/or (3) survey instructions/rationales.	In the abstract, provide complete details and a rationale for employing misleading/deception information. Include **Appendix D** in your attachments.

8. Consent Procedures:	Attach script.
☐ Oral ⇨ ⇨ ⇨	Attach. (**No subject signatures required**, see example here: Go to Examples and Templates, then 'Sample Information Sheet')
☒ Information Sheet/Cover Letter ⇨ ⇨	
☐ **Not applicable, Explain:** Click to enter	

9. Project Summary

Briefly summarize your project using non-technical, jargon-free language that can be understood by non-scientists.

See http://www.research.olemiss.edu/irb-forms for abstract examples.

Give a brief statement of the research question supporting the reasons for, and importance of, the research: The aim of this study is to assess the mental health of current Division I National Collegiate Athletic Association (NCAA) female athletes and how it is associated with their athletic and academic performance. Limited research has been done in the area of mental health outside disordered eating that solely focuses on female athletes.

Describe the ages and characteristics of your proposed subjects and how you will *recruit* them (attach recruitment script or materials to the application): Participants must be 18 years old or older, female, and currently enrolled as a student athlete on a Division I NCAA athletic team at a college or university in the United States. Both graduate and undergraduate students playing in the 2022-2023 season and who have played at least one prior season are eligible to participate. A recruitment email (included with the attached application materials) will be sent to athletic representatives and coaches at the University of Mississippi and other Division I universities to send to student-athletes. We will also submit an announcement to UM Today, which will include an anonymous link to the survey and a brief description of the project.

For studies using only adult subjects, state how you will ensure they are 18+:	☒ First question on survey/interview ☐ **Other:** Click to enter ☐ Not applicable

***Briefly* describe the research design AND carefully explain how your study will meet each of the requirements of the category criteria you checked on Page 2:** We are conducting an online survey using Qualtrics of Division I NCAA female athletes in the U.S. To recruit participants, we will email athletic representatives and coaches at the University of Mississippi and other Division I universities. The email will include a brief description of the project, the link to the anonymous Qualtrics survey, and contact information for the research team. This email will also ask the coaches to distribute the survey link to their female student athletes. This recruitment email will be sent in August 2022. An additional recruitment strategy includes providing an anonymous survey link through a UM Today announcement. The survey will remain open until an adequate number of participants have been recruited. Information regarding consent will be provided online prior to the beginning of the survey. Participants will have the opportunity to review the informed consent information and then indicate that they voluntarily consent to participate. They will be informed that they may print the consent form or contact the Principal Investigator for a copy. All data will be stored using password-protected files and computers. No one but the research team will have access to collected data, and once all survey responses have been downloaded to a computer, all online responses will be deleted. The initial survey will be anonymous, but participants will have the option to complete a second survey to provide contact information (name and email address) to be entered into a raffle to win one of 10 $15 Amazon gift cards. Contact information for incentive purposes will be permanently deleted after incentives are distributed.

Give a *detailed* description of the procedure(s) subjects will undergo (from their perspective): As a participant in this study, you will be asked to complete a brief, anonymous online survey on the following domains of interest: demographic information, mental health, athletic performance, and academic performance. The survey should take about 10-15 minutes to complete. You will receive information about the study and a link to participate via an email sent to your email account by a member of the athletics staff at your college/university or a UM Today announcement. Contact information for the primary researchers will be provided, and the first page of the survey will be an informed consent form. All survey responses will be anonymous. At the end of the survey, you will have the option to take an additional survey where you will enter your full name and email address to enter into a raffle to win one of 10 $15 Amazon gift cards.

10. Appendix Checklist:

A. Additional Personnel not listed on first page of application?

☒ **No** ☐ **Yes – complete Appendix A**

B. Will the research be conducted in schools or child care facilities?

☒ **No** ☐ **Yes – complete Appendix B**

C. Does your research involve deception or omission of elements of consent?

☒ **No** ☐ **Yes – complete Appendix D**

D. Will your research be conducted outside of the United States?

☒ **No** ☐ **Yes – complete Appendix E**

E. Will your research involve protected health information (PHI)?

☒ **No** ☐ **Yes – complete Appendix F if applicable**

11. Attachments Checklist:

Did you submit:

a. survey or questionnaires?

☒ **Yes** ☐ **Not Applicable**

b. interview questions?

☐ **Yes** ☒ **Not Applicable**

c. focus group topics?

☐ **Yes** ☒ **Not Applicable**

d. recruitment email, announcement, or script?

☒ **Yes** ☐ **Not Applicable: No subject contact**

e. informed consent information letter or script?

☒ **Yes** ☐ **Not Applicable: No subject contact**

f. permissions for locations outside the University?*

☐ **Yes** ☒ **Not Applicable**

***if giving a survey, whether on or off campus, please ensure the person giving permission (e.g., the teacher of a class) has an explicit opportunity to see the survey before they give their permission for its distribution**

12. If using class points as incentives, are there alternative assignments available for earning points that involve comparable time and effort?

☐ **Yes** ☒ **Not Applicable**

13. If using an anonymous survey through Qualtrics and giving incentives in a separate survey, have you read and conducted the testing of the surveys according to the procedures here?

☒ **Yes** ☐ **Not Applicable**

PART III: ASSURANCES

Conflict Of Interest And Fiscal Responsibility

Do you or any person responsible for the design, conduct, or reporting of this study have an economic interest in, or act as an officer or a director of any outside entity whose financial interests may reasonably appear to be affected by this research?

☐ YES ⇨ ⇨ If Yes, please describe any potential conflict of interest. Click to enter

☒ NO

Do you or any person responsible for this study have existing financial holdings or relationships with the sponsor of this study?

☐ YES ⇨ ⇨ If Yes, please describe any potential conflict of interest. Click to enter

☒ NO

☐ N/A

Principal Investigator Assurance

PRINCIPAL INVESTIGATOR'S ASSURANCE

I certify that the information provided in the application is complete and correct. As Principal Investigator, I have the ultimate responsibility for the protection of the rights and welfare of the human participants, conduct of the research, and the ethical performance of the project. I will comply with all UM policies and procedures, as well as with all applicable federal, state, and local laws regarding the protection of participants in human research, including, but not limited to the following:

- Informed consent will be obtained from the participants, if applicable and appropriate;
- Any proposed modifications to the research protocol that may affect its designation as an exempt (brief) protocol application will be reported to the IRB for approval prior to being implemented.
- Adverse events and/or unanticipated problems will be reported to the IRB as required.

I certify that I, and all key personnel, have completed the required initial and/or refresher CITI or CITI Alternative courses in the ethical principles and regulatory requirements for the protection of human research participants.

Meg Goebel **7/20/22**

Typed signature/name of Principal Investigator **Date**

RESEARCH ADVISOR'S* ASSURANCE (REQUIRED FOR STUDENT PROJECTS)

Email your Advisor with the following:

1. Email subject line: "IRB Advisor Approval Request from (your name)"
2. Your IRB submission materials as attachments
3. Copy and paste the statements below into the body of the email
4. Forward the reply email from your Advisor to irb@olemiss.edu along with your IRB submission materials attached.

***The research advisor must be a UM faculty member. The faculty member is considered the responsible party for the ethical performance and regulatory compliance of the research project.**

Please review my attached protocol submission. Your reply email to me will constitute your acknowledgement of the assurances below.

Thank you,
[type your name here]

As the Research Advisor, I certify that the student investigator is knowledgeable about the regulations and policies governing research with human participants and has sufficient training and experience to conduct this particular research in accordance with the approved protocol.

I agree to meet with the investigator on a regular basis to monitor research progress.

Should problems arise during the course of research, I agree to be available, personally, to supervise the investigator in solving them.

I will ensure that the investigator will promptly report incidents (including adverse events and unanticipated problems) to the IRB.

If I will be unavailable, for example, on sabbatical leave or vacation, I will arrange for an alternate faculty member to assume responsibility during my absence, and I will advise the IRB by email of such arrangements.

I have completed the required CITI course(s) in the ethical principles and regulatory requirements for the protection of human research participants.

APPENDIX B: IRB Approval Email

IRB Exempt Determination of 23x-016 -NEW LANGUAGE!

irb@olemiss.edu <irb@olemiss.edu>
Fri 8/5/2022 5:02 PM

To: megoebel@go.olemiss.edu <megoebel@go.olemiss.edu>
Cc: Hannah Allen <hkallen1@olemiss.edu>

PI:

This is to inform you that your application to conduct research with human participants, "Female Athlete Experiences Study" (Protocol #23x-016), has been determined as Exempt under 45 CFR 46.101(b)(#2). You may proceed with your research.

Please remember that all of The University of Mississippi's human participant research activities, regardless of whether the research is subject to federal regulations, must be guided by the ethical principles in The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research.

It is especially important for you to keep these points in mind:

- You must protect the rights and welfare of human research participants.
- Certain changes to your approved protocol must be reviewed and approved before initiating those changes. These changes include the addition of a vulnerable subject group (children, persons with disabilities, and prisoners), as well as the addition of research materials, such as the addition of surveys or interview questions and test articles, the addition of the use of deception, or any changes to subject confidentiality. Personnel amendments for exempt protocols are no longer required. Instead, PIs are responsible for keeping an up to date record of all active personnel and for ensuring that personnel have completed the necessary training to be on their protocol.
- You must report promptly to the IRB any injuries or other unanticipated problems involving risks to participants or others.
- If research is to be conducted during class, the PI must email the instructor and ask if they wish to see the protocol materials (surveys, interview questions, etc) prior to research beginning.

If you have any questions, please feel free to contact the IRB at irb@olemiss.edu.

Miranda L. Core
Senior Research Compliance Specialist, Research Integrity and Compliance
Office of Research and Sponsored Programs
The University of Mississippi
212 Barr Hall
University, MS 38677-1848
irb@olemiss.edu | www.olemiss.edu

Please Note:

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- Please be aware that new materials (protocols, amendments, progress reports) need to be submitted via our new online portal : Submit an IRB Protocol | Research, Scholarship, Innovation, and Creativity (olemiss.edu)

REMINDER: YOU CANNOT HAVE CONTACT WITH RESEARCH SUBJECTS UNTIL YOU RECEIVE THE FORMAL IRB PROTOCOL APPROVAL LETTER OR EMAIL

IRB Administrative Office
Research Integrity and Compliance
Office of Research and Sponsored Programs
The University of Mississippi
100 Barr Hall
University, MS 38677-1848
irb@olemiss.edu | www.olemiss.edu

Please Note:

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APPENDIX C: Consent Form

CONSENT TO PARTICIPATE IN RESEARCH

Title: Female Athlete Experiences Study

Principal Investigator
Meg Goebel
Department of Health, Exercise Science, &
Recreation Management
215 Turner Center
University of Mississippi
megoebel@go.olemiss.edu

Co-Investigator
Hannah K. Allen, PhD
Department of Health, Exercise Science, &
Recreation Management
236 Turner Center
University of Mississippi
hkallen1@olemiss.edu

Description
We are inviting you to participate in this research project because you are currently a Division I National Collegiate Athletic Association (NCAA) female athlete. The purpose of this research is to understand the health and experiences of female athletes. You will be asked to complete an anonymous online survey that asks about your mental health, academic experiences, and athletic experiences.

Cost and Payments
The survey should take about 10-15 minutes to complete. You may choose to provide your name and email address to be entered into a raffle to win a $15 gift card for participating in this study. Ten students will be selected to receive an incentive. You will be responsible for any taxes assessed on this compensation.

Risks and Benefits
We do not anticipate any major risks or discomforts involved in participating in this research study, however there may be some discomfort when answering questions about your mental health. It is important to know that all responses will not be linked to any identifying information, and you may choose to skip any question you are not comfortable answering. There are no direct benefits to participating in this study. However, we hope that this research will inform future programming and allocation of resources for female athletes.

Confidentiality
Your responses will be anonymous. You will be assigned a unique ID number, and all data will be stored using password-protected files on a password-protected computer. No one but the research team will have access to collected data, and once all survey responses have been collected and downloaded to a computer, all online responses will be deleted. If we write reports or articles about the findings from this project, your identity will be protected to the maximum extent possible. Your contact information will be collected from you if you choose to enter a raffle to receive an incentive. This information will not be linked in any way to the responses you provide on the survey.

Right to Withdraw
Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the principal investigator:

Meg Goebel
Department of Health, Exercise Science, & Recreation Management
215 Turner Center
University of Mississippi
megoebel@go.olemiss.edu

IRB Approval
This study has been reviewed by The University of Mississippi's Institutional Review Board (IRB). If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the IRB at (662) 915-7482 or irb@olemiss.edu.

Statement of Consent
Your consent indicates that you are at least 18 years of age, you have read this consent form or have had it read to you, your questions have been answered to your satisfaction, and you voluntarily agree to participate in this research study. You may print a copy of this consent information for your records.

If you agree to participate, please indicate so by answering the question below.

I have reviewed the informed consent information and consent to participate in this study.

- Yes, I agree/consent to participate
- No, I do NOT agree/consent to participate

APPENDIX D: Survey

Thank you for taking the time to participate in the study on the health of Division I National Collegiate Athletic Association (NCAA) female athletes. Please take a moment to review the informed consent information below. If you would like to keep a copy of this information, please print the informed consent form directly from this webpage or request a copy from the Principal Investigator.

[INSERT INFORMED CONSENT INFORMATION]

Your consent indicates that you are at least 18 years of age, you have read this consent form or have had it read to you, your questions have been answered to your satisfaction, and you voluntarily agree to participate in this research study. If you agree to participate, please indicate so by answering the question below.

1. I have reviewed the informed consent information and consent to participate in this study.
    - Yes, I agree/consent to participate
    - No, I do NOT agree/consent to participate (if selected, end survey)

Eligibility Screener

2. What is your current age (in years)? _____ (if less than 18, end survey)

3. What sex were you assigned at birth, such as on an original birth certificate?
    - Male (if selected, end survey)
    - Female

4. Are you playing a Division I NCAA sport for the upcoming/current season during the 2022-2023 academic year?
    - Yes
    - No (if selected, end survey)

5. Prior to the 2022-2023 season, how many seasons have you **actively** competed as a Division I NCAA athlete?
    - 0 (This is my first season or I am red-shirting) (if selected, end survey)
    - 1
    - 2
    - 3
    - 4
    - 5+ seasons

Demographic Information

The following section will ask you to provide basic information about yourself. Remember that your responses are anonymous.

6. What is your race/ethnicity? Select all that apply.
    - African American/Black
    - American Indian or Alaskan Native
    - Asian American/Asian
    - Hispanic/Latin(x)
    - Native Hawaiian or Pacific Islander
    - Middle Eastern, Arab, or Arab American
    - White
    - Self-identify (please specify): _____

7. What is your current class standing?
    - Undergraduate Freshman
    - Undergraduate Sophomore
    - Undergraduate Junior
    - Undergraduate Senior
    - Undergraduate Fifth Year or higher
    - Graduate Student

8. What sport are you participating in for the 2022-2023 academic year? If you are currently a member of more than one sports team, please select the sport that is your main athletic focus and that you have competed in for at least one full season.
    - Basketball
    - Volleyball
    - Soccer
    - Softball
    - Lacrosse
    - Field Hockey
    - Ice Hockey
    - Water Polo
    - Track & Field
    - Cross Country
    - Swimming & Diving
    - Tennis
    - Golf

- Equestrian
- Gymnastics
- Rifle
- Rowing
- Other (please specify): _____

Mental Health

The following section will ask questions about your mental health. Remember that your responses are anonymous.

9. Over the last two weeks, how often have you been bothered by the following problems?

	Not at all	**Several days**	**More than half the days**	**Nearly every day**
Feeling nervous, anxious, or on edge				
Not being able to stop or control worrying				
Worrying too much about different things				
Trouble relaxing				
Being so restless that it is hard to sit still				
Becoming easily annoyed or irritable				
Feeling afraid as if something awful might happen				

10. If you checked off *any* problems above, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?
    - Not difficult at all
    - Somewhat difficult
    - Very difficult
    - Extremely difficult

11. Over the last two weeks, how often have you been bothered by any of the following problems?

	Not at all	**Several days**	**More than half the days**	**Nearly every day**
Little interest or pleasure in doing things				
Feeling down, depressed, or hopeless				
Trouble falling asleep or staying asleep, or sleeping too much				
Feeling tired or having little energy				
Poor appetite or overeating				
Feeling bad about yourself- or that you are a failure or have let yourself or your family down				
Trouble concentrating on things, such as reading the newspaper or watching TV				
Moving or speaking so slowly that other people could have noticed, or the opposite- being so fidgety or restless that you have been moving around a lot more than usual				
Thoughts that you would be better off dead or of hurting yourself in some way				

12. If you checked off *any* problems above, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?
    - Not difficult at all
    - Somewhat difficult
    - Very difficult
    - Extremely difficult

13. In the last month, how often have you…

	Never	Almost never	Sometimes	Fairly often	Very often
Been upset because of something that happened unexpectedly?					
Felt that you were unable to control the important things in your life?					
Felt nervous and stressed?					
Felt confident about your ability to handle your personal problems?					
Felt that things were going your way?					
Found that you could not cope with all the things that you had to do?					
Been able to control the irritations in your life?					
Felt that you were on top of things?					
Been angered because of things that happened that were outside of your control?					
Felt difficulties were piling up so high that you could not overcome them?					

Academic and Athletic Performance

The following section will ask questions about your academic and athletic performance. Remember that your responses are anonymous.

14. What is your current cumulative (or overall) GPA? Please make your best estimate on a scale from 0.00 to 4.00. _____

15. What grades do you typically get in your courses?
    - Mostly A's
    - Mostly B's
    - Mostly C's
    - Mostly D's
    - Mostly F's

16. Considering your entire collegiate athletic career for [INSERT SPORT], rate the percentage (1-100%) you feel you are performing to your full athletic potential. _____

Thank you for taking the time to participate in this survey! Please click the link below to enter yourself into a raffle to win one of 10 $15 Amazon gift cards.

[LINK TO SECOND SURVEY]

Incentive Survey

1. As a thank you for participation, 10 participants will be randomly selected to receive a $15 Amazon gift card. Would you like to enter yourself into this raffle?
    - Yes (if yes, go to #2)
    - No

2. Please enter your full name and email address. This information will be kept confidential.
    First Name: _____

    Last Name: _____

    Email Address: _____

APPENDIX E: Recruitment Email

Female Athlete Experiences Study
Recruitment Email

Subject Line: Invitation for D1 NCAA Female Athletes to Participate in a Brief Survey

Dear [Coach/Athletic Representative],

My name is Meg Goebel, and I am an undergraduate student at the University of Mississippi. I am currently conducting a research study as part of my senior honors thesis on the health and performance of Division 1 NCAA female athletes. I am reaching out to invite the current female athletes on your team to participate in this important research.

Your help in distributing the project information and survey link is greatly appreciated. If you would like to review the survey questions prior to reaching out to your athletes, I am happy to provide a copy of the survey to you. Please reach out to me at megoebel@go.olemiss.edu or to my research supervisor Dr. Hannah Allen at hkallen1@olemiss.edu with this request or with any other questions. Thank you!

Below is sample text to be used when emailing student athletes:

Dear Student Athlete,

As part of a research project on better understanding the health and performance of Division 1 NCAA female athletes, you are invited to participate in a brief, one-time online survey that should take about 10-15 minutes to complete.

Participation is voluntary, and all of your responses will be kept completely anonymous. As a thank you for participating, you will have the chance to enter into a raffle to win ***one of 10 $15 Amazon gift cards*.** Data collection will close on [INSERT DATE] so be sure to click this link now to start the survey!

[INSERT SURVEY LINK]

This research has been reviewed by the University of Mississippi Institutional Review Board. If you have any questions about participation in this study, please contact the principal investigator:

Meg Goebel
Department of Health, Exercise Science, & Recreation Management
215 Turner Center
University of Mississippi
megoebel@go.olemiss.edu

Thank you for taking the time to participate!
Best, Meg Goebel and Hannah Allen

APPENDIX F: UM Today Announcement

Title: Survey on Health of Female Athletes

Summary: Female student-athletes are invited to take a brief survey on their health and performance. Ten students will each win a $15 gift card!

Full Details: As part of a research project on better understanding mental health among female student-athletes, you are invited to participate in a brief, one-time online survey that should take about 10-15 minutes to complete.

Participation is voluntary, and all of your responses will be kept completely anonymous. As a thank you for participating, you will have the chance to enter into a raffle to win ***one of 10 $15 Amazon gift cards.*** Data collection will close on [INSERT DATE] so be sure to click this link now to start the survey!

This research has been reviewed by the University of Mississippi Institutional Review Board.

Survey Link: [INSERT SURVEY LINK]