Prevalence and Predictors of Depressive Symptoms in NCAA Division III Collegiate Athletes

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A B S T R A C T

Mental health disorders are important health concerns among collegiate athletes. Estimations of elevated depressive symptoms in this population range from 1.1 to 26%. However, these data are derived mostly from NCAA Division I institutions or professional athletes. Evidence from lower divisions (e.g., NCAA Division III) currently is sparse in the literature. Hence, the primary purpose of the present study was to examine the prevalence of depressive symptoms in NCAA Division III collegiate athletes. The secondary purpose was to examine which mental health indicators predict depressive symptoms. In total, 186 participants completed several mental health scales (e.g., PHQ-9, DASS-21). The results revealed a prevalence of 16.2% of elevated depressive symptoms. A multiple regression predicted 46.1% of the variance of depressive symptoms. Significant predictors were stress, anxiety, devaluation, and emotional exhaustion. While NCAA Division III collegiate athletes may face lower athletic expectations, the prevalence of mental health concerns is similar to those observed in Division I collegiate athletes.
Keywords: Anxiety, Collegiate athletes, Depression, Mental Health

Mental health disorders in collegiate athletes have been linked to decreased quality of life, higher risk-taking behaviors, drug abuse, and suicidal ideation (Etzel, 2006). Suicide remains one of the leading causes of death in collegiate-aged individuals (Rao & Hong, 2016). In addition, there is a vast amount of anecdotal evidence of how mental health disorders affect athletes at various levels of play (e.g., NBA athletes; MacMullen, 2018). Mental health struggles represent a significant crisis in collegiate athletics.

A commonly examined mental health disorder is depression, which is characterized by persistently low mood or loss of interest, hopelessness, nervous or anxious feelings, and suicidal ideation (Kessler et al., 2003; Simmons et al., 2015; Tomoda et al., 2000; Wang et al., 2017). Roughly 4.7% of the U.S. population above the age of 18 suffers from depression (Clarke et al., 2020). It has been linked to a multitude of high-risk behaviors such as alcohol and drug abuse (Kessler, Berglund et al., 2005; Kessler, Chiu et al., 2005). It is regarded as the most costly mental health disorder in the United States. Depression is the leading cause of disability for people aged 15-44, with an estimated $83.1 billion in annual health care, mortality, and indirect workplace costs (Day & Sweatt, 2012; Merikangas et al., 2007). Due to the severe consequences for patients with depression and the associated costs, it is vital to understand the prevalence and risk factors of depressive symptoms in various populations.

Depressive symptoms include loss of interest in activities, insomnia or hypersomnia, excessive weight fluctuation, a sense of worthlessness, and recurrent thoughts of death or suicide (American Psychiatric Association [APA], 2013). Estimations of the prevalence of such symptoms range up to 85% in individuals between the ages of 18 and 25 (Ibrahim et al., 2013). Unsurprisingly, depression is a great concern for post-secondary institutions (e.g., universities, colleges) as many collegiate

students regularly experience depressive symptoms. Recent meta-analyses indicated a higher prevalence of depression in college students compared to a non-student population in the same age range (Blanco et al., 2008; Ibrahim et al., 2013; Lefebvre et al., 2016; Lei et al., 2016; Mikolajczyk et al., 2008; Rotenstein et al., 2016). Estimates of depressive symptoms among college student populations are 33% (Sarokhani et al., 2013). A combination of factors unique to college campuses, such as academic stressors combined with genetic, biological, psychological, interpersonal, and environmental influences, could be associated with a higher prevalence of depressive symptoms in college students (Bulo, 2014; Byrd & McKinney, 2012; Deatherage et al., 2014; Hyde et al., 2016; Ripke et al., 2013; Xiao et al., 2018).

Among the collegiate student population are student-athletes, who face increased institutional pressures in both the classroom and the playing field (Yang et al., 2007). Generally, collegiate athletes dedicate anywhere from 35 to 40 hours per week to athletics, despite the National Collegiate Athletic Association (NCAA) rules restricting athletic practice hours to 20 per week (NCAA, 2021). The time commitment to athletics comes in addition to an average of 30 hours a week dedicated to academics (Ayers et al., 2012; Papanikolaou et al., 2003). The intense time commitment to athletics and academics negatively impact various areas of a collegiate athlete's life, such as academic performance, social and academic interactions, and non-athletic lifestyle pursuits (Ayers et al., 2012). The increased time commitment also may be associated with elevated depressive symptoms (Yang et al., 2007).

To our knowledge, there are several published studies that report baseline levels of depression in collegiate athletes (see Table I). Of the current research, the most surveyed collegiate athlete population are NCAA Division I collegiate athletes in the United States. Among the NCAA Division I population, the prevalence of elevated depressive symptoms ranged between 13.5% and 23.7% (see Table 1). Outside this population, there are estimates of prevalence up to 26% in a study with elite college swimmers from Canada (Hammond et al., 2013). Common predictors of depression in this sample included, among others, change in performance and history of depression. Overall, these collegiate athletes reported a slightly lower depression symptom prevalence compared to the general college population.

The published evidence on the prevalence of depression in collegiate athletes focuses notably on an elite context (e.g., NCAA Division I & II). To our knowledge, there is an absence of published evidence on depressive symptom prevalence in NCAA Division III collegiate athletics. It is important to note that NCAA Division III has almost 100 more institutions than other divisions (NCAA, 2021). Theoretically, it may seem plausible that NCAA Division III collegiate athletes may exhibit lower rates of depressive symptoms due to decreased environmental pressures (e.g., smaller crowds, less media attention, lack of athletic scholarships) compared to NCAA Division I or II collegiate athletes (Robinson et al., 2005). A possible explanation may be that NCAA Division III collegiate athletes report lower athletic identity (i.e., the degree to which an individual identifies with the athlete role and looks to others for acknowledgment of that role; Brewer et al., 1993) compared to other divisions (Huml, 2018). However, other evidence suggests that NCAA Division III collegiate athletes spend as much time on athletics and academics as NCAA Division I collegiate athletes (NCAA, 2017) while not receiving any scholarship support, which may further exacerbate perceptions of stress (Navarro et al., 2019). This may be particularly true for NCAA Division III programs with a focus on high achievement. As such, it is possible that NCAA Division III collegiate athletes may be equally affected by mental health struggles as collegiate athletes in other divisions.

A vital consideration to counteract the detrimental effects of mental health struggles is the funding/staff available to support collegiate athletes. Navarro and colleagues (2019) examined the need for additional mental health services among NCAA Division III collegiate athletes and coaches. The authors found that 71% of collegiate athletes and 94% of coaches desired more support for mental health services, indicating a clear lack of services at most institutions. Such support may be challenging to establish, given the considerably smaller budgets of NCAA Division III athletic

departments. The financial restriction may lead to collegiate athletes being referred to general mental health professionals who lack specific training to assist with an athletic population (LaRue, 2010).

The absence of documentation of the prevalence of mental health concerns in NCAA Division III collegiate athletes is an important gap in the literature, particularly because NCAA Division III collegiate athletes struggling with mental health concerns may have more limited access to appropriate services at some institutions compared to collegiate athletes in other divisions. Hence, the purpose of the present study is two-fold. First, we will assess the prevalence of depressive symptoms in NCAA Division III collegiate athletes, which may function as baseline information for the prevention and diagnosis of mental health disorders. Secondly, while many descriptive and psychological risk factors are associated with depression, this study will focus on some of the most commonly linked factors (i.e., anxiety, stress, and burnout symptoms) in an NCAA Division III collegiate athlete population.

Method

Participants and Procedure

The present study was approved by the Institutional Review Board at the institution where the research was conducted. Data for the present study were collected at a single, small, private post-secondary institution in the Northeastern United States. The institution has a large athletic department (more than 700 collegiate athletes) with a history of achieving excellence and national championships in multiple team and individual style sports. Coaches of all sports at the institution were contacted and asked for permission to survey their teams. Given the coach's approval, convenient locations and times were arranged with the teams (i.e., classroom setting) or arranged to be given at the beginning or end of a predetermined team meeting. Coaches and any other staff were not permitted to be present during survey administration. Paper surveys were anonymous and were administered to collegiate athletes by the research staff in the classroom meeting setting and returned in sealed envelopes. All participants were provided with an implied consent form on the front of the questionnaire package. Due to differing team seasons and schedules, the surveys were administered to teams at varying points throughout or prior to their respective sport season during the fall semester. Data were only collected one time for each participant.

In total, 218 NCAA Division III (female $n = 78$, 35.8%) collegiate athletes participated in the present study. The age of the participant ranged from 18 to 22 (Mean = 19.50, SD = 1.13). The collegiate athletes competed in football ($n = 52$, 23.9%), soccer ($n = 43$, 19.7%), lacrosse ($n = 34$, 15.6%), baseball ($n = 27$, 12.4%), volleyball ($n = 16$, 7.3%), field hockey ($n = 14$, 6.4%), softball ($n = 14$, 6.4%), basketball ($n = 11$, 5.0%), and wrestling ($n = 7$, 3.2%). The collegiate athletes had spent an average of 1.91 seasons (SD = 1.05 seasons) with their teams. The average year in college was 2.18 years (SD = 1.03).

Measurements

Depression (PHQ-9)

A paper-based version of the Patient Health Questionnaire-9 (PHQ-9) was used to assess depression symptoms. All nine items of the scale measure depressive symptoms as delineated in the Diagnostic and Statistical Manual of Mental Disorders-IV (Segal, 2010). The header for the questionnaire reads, "Over the last 2 weeks, how often have you been bothered by any of the following problems?" Each item is scored on a Likert scale ranging from 0-3 (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). The PHQ-9 showed sufficient factorial validity for the use in a collegiate student population (Keum et al., 2018). The internal

consistency of the scale in the present study was acceptable (Cronbach's α = .87). Recommendations for symptom severity by Kroenke et al. (2001) were used to evaluate reported depressive symptoms.

Stress and Anxiety (DASS-21)

Stress and anxiety were assessed via two subscales of the 21-item version of the Depression, Anxiety, and Stress Scale (DASS-21), which was derived from the original 42-item version (Lovibond & Lovibond, 1995). The two subscales measure symptoms of anxiety (e.g., autonomic arousal, physiological arousal, subjective anxiety) and stress (e.g., tension, agitation, negative affect). The items are measured on a 4-point Likert scale, ranging from 0 (did not apply to me at all) to 3 (applied to me very much/most of the time). The DASS-21 demonstrated satisfactory internal consistency as well as convergent, discriminative, and factorial validity (e.g., Clara et al., 2001; Gloster et al., 2008). In the present study, the internal consistency of both subscales was acceptable (α = .74-.80). Recommendations by Lovibond and Lovibond (1995) for symptom severity ratings were followed for both subscales.

Burnout (ABQ)

Burnout was assessed via the Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001). The 15-item scale measures burnout on three dimensions: emotional/physical exhaustion, reduced sense of accomplishment, and devaluation. Items are rated on a 5-point Likert scale, ranging from 1 (almost never) to 5 (almost always). The ABQ showed satisfactory internal consistency and factorial validity (Raedeke & Smith, 2001). In the present study, the internal consistency of the subscales was satisfactory (α =.81-.88).

Statistical Analysis

All categorical variables were summarized in counts and percentages. All continuous variables were expressed in means and standard deviations. Normality was assessed via skewness and kurtosis. As none of the variables violated indicators of normal distribution (i.e., skewness < 2, kurtosis < 4), the calculation of parametric statistics was deemed appropriate. Comparative analyses included chi-square and independent t-tests with respective effect sizes (i.e., Kramer's V, Cohen's d). For the assessment of risk factors, multiple linear regression with descriptive (i.e., gender, age, freshman status) and psychological (i.e., stress, anxiety, burnout) predictors was calculated. The outcome variable of the regression was depression. The presence of multicollinearity was assessed via the variance inflation factor (VIF). An alpha level of .05 was set for all analyses.

Results

Prevalence of Depression

Prevalence statistics are reported in Table 2. In total, 33 participants (15.1%) reported moderate to very severe symptoms of depression, indicated by a PHQ-9 score of 10 and above (Kroenke et al., 2001). Split by gender (see Table 3), the prevalence of elevated depressive symptoms was nearly 2.5 times higher in females compared to males (24.4% vs. 10%). The basketball, softball, and volleyball teams all reported more than 20% prevalence of depressive symptoms.

Table 2
Descriptives of the Sample

Variable	Mean (SD)/Count (%)
N	218
Gender	Male 140 (64.2%)
	Female 78 (35.8%)
Age	19.50 (1.13)
Year of Study	2.18 (1.03)
1st year student	77 (35.3%)
2nd year student	47 (21.6%)
3rd year student	72 (33.0%)
4th year student	22 (10.1%)
Number of Seasons with the Team	1.91 (1.05)
PHQ-9	4.65 (4.86)
None PHQ-9 score 0-4	132 (60.8%)
Mild PHQ-9 score 5-9	52 (23.9%)
Moderate PHQ-9 score 10-14	20 (9.2%)
Severe PHQ-9 score 15-19	11 (5.0%)
Very Severe PHQ-9 score 20+	2 (.9%)
Stress	7.09 (7.28)
Normal 0-7	130 (59.6%)
Mild 8-9	21 (9.6%)
Moderate 10-12	27 (12.4%)
Severe 13-16	22 (10.1%)
Extremely Severe 17+	18 (8.3%)
Anxiety	5.61 (6.02)
Normal 0-3	97 (44.5%)
Mild 4-5	32 (14.7%)
Moderate 6-7	23 (10.6%)
Severe 8-9	18 (8.3%)
Extremely Severe 10+	48 (22.0%)
Burnout – Reduced Achievement	2.34 (.79)
Burnout – Exhaustion	2.45 (.87)
Burnout – Devaluation	2.05 (.92)

Table 3
Prevalence of Depressive Symptoms by Subgroup

Group	Prevalence
By Gender	
Male	10% (n = 14)
Female	24.4% (n = 19)
By Sport	
Basketball	36.4% (n = 4)
Softball	28.6% (n = 4)
Volleyball	25% (n = 4)
Soccer	18.6% (n = 8)
Lacrosse	11.8% (n = 4)
Baseball	11.1% (n = 3)
Football	9.6% (n = 5)
Field Hockey	7.1% (n = 1)
Wrestling	0%

       Comparisons between those with elevated depressive symptoms to the rest of the sample can be found in Table 4. As expected, based on previous research (Nixdorf et al., 2013; Storch et al., 2005; Yang et al., 2007), significantly more females (i.e., more than half) in the group reported elevated depressive symptoms. Yet, no significant differences in other descriptive factors (e.g., age, years in college, number of seasons with the team) were found. The group with elevated depressive symptoms also perceived significantly higher anxiety, stress, and burnout. Large effect sizes between the groups ($d = 1.09$-1.91) were found. It should be noted that in the present sample there was a considerably higher prevalence of moderate to severe stress (30.7%) and anxiety (40.8%) compared to depressive symptoms (15.1%).

Predictors of Depression

       Correlations between all variables can be found in Table 4.

Table 4
Comparison Between Participants with Lower and Elevated Depression Symptoms

Variable	Lower Depressive Symptoms (PHQ-9 < 10)	Elevated Depressive Symptoms (PHQ-9 ≥ 10)	p, ES
N	184 (84.4%)	33 (15.1%)	
Gender	Male 125	Male 14	.005, $V = .19$
	Female 59	Female 19	
Age	19.54 (1.11)	19.27 (1.21)	.24
Year of Study	2.21 (1.01)	2.06 (1.12)	.14
Number of Seasons with Team	1.95 (1.05)	1.70 (1.05)	.24
Stress	5.37 (5.43)	16.85 (8.65)	$<.001$, $d = 1.91$
Anxiety	4.36 (4.68)	12.67 (7.71)	$<.001$, $d = 1.58$
Reduced Achievement	2.20 (.72)	3.15 (.74)	$<.001$, $d = 1.31$
Exhaustion	2.31 (.79)	3.25 (.89)	$<.001$, $d = 1.18$
Devaluation	1.91 (.82)	2.85 (1.05)	$<.001$, $d = 1.09$

The results of the multiple regression are summarized in Table 5.

Table 5
Correlations between Descriptive and Psychological Factors

Variable	1	2	3	4	5	6	7	8
1. Age								
2. Number of Seasons	.74**							
3. Year of Study	.86**	.85**						
4. Depression PHQ-9	-.12	-.10	-.08					
5. Stress DASS-21	-.13	-.07	-.06	.67**				
6. Anxiety DASS-21	-.13	-.08	-.09	.61**	.74**			
7. Reduced Achievement (ABQ)	-.07	-.08	-.07	.52**	.40**	.32**		
8. Exhaustion (ABQ)	.07	.07	.06	.49**	.42**	.40**	.52**	
9. Devaluation (ABQ)	.09	.16*	.17*	.42**	.35**	.28**	.66**	.61**

Note: * $p < .05$, ** $p < .01$

The multiple regression analysis with descriptive (i.e., age, female gender, number of seasons with the team) and psychological (i.e., stress, anxiety, burnout) variables predicted 58% of the variance of depressive symptoms. The variable 'years of study' was not entered in the regression equation because of the high correlations with the variables 'age' ($r = .86$) and 'number of seasons with the team' ($r = .85$). If entered in the regression equation, the predictor would have had an elevated VIF factor (> 4), potentially indicating issues with multicollinearity. As such, we excluded the variable. All other predictors showed acceptable VIF levels (<2.5).

From the descriptive factors, female gender ($\beta = .17$) and numbers of seasons with the team ($\beta = -.14$) were significant predictors of depressive symptoms (see Table 6). The strongest psychological predictor of depressive symptoms was perceived stress ($\beta = .32$), followed by perception of reduced achievement ($\beta = .24$), anxiety ($\beta = .23$), and emotional/physical exhaustion ($\beta = .13$). Age and devaluation both were non-significant predictors of depressive symptoms.

Table 6
Multiple Regression Predicting Depressive Symptoms

Outcome Variable	F	p	R^2	Predictor	β	p	VIF
Depression (PHQ-9)	41.58	<.001	.58	Age	.10	.14	2.44
				Gender (Female)	.17	<.001	1.14
				Number of Seasons	-.14	.04	2.50
				Stress (DASS-21)	.31	<.001	2.43
				Anxiety (DASS-21)	.23	<.001	2.45
				Reduced Achievement (ABQ)	.24	<.001	2.03
				Exhaustion (ABQ)	.13	.04	1.82
				Devaluation (ABQ)	.02	.76	2.30

Discussion

The first purpose of the present study was to assess the prevalence of depressive symptoms in an NCAA Division III collegiate athlete population. Our results indicated a prevalence of 15.1% of

elevated depressive symptoms in this population. This is slightly lower compared to most published evidence from NCAA Division I collegiate athletes and about half of the prevalence compared to a general student population. The second purpose of the present study was the examination of descriptive and psychological predictors of depressive symptoms. The strongest predictors of depressive symptoms were psychological variables (i.e., stress, anxiety, burnout). From the descriptive variables, female gender was a positive predictor, and number of seasons with the team was a negative predictor.

The prevalence of depressive symptoms in the present study was slightly lower compared to published evidence from NCAA Division I collegiate athletes (see Table 1). In addition, depressive symptom prevalence in the present study was much higher in female collegiate athletes compared to male collegiate athletes, supporting existing research (McGuire et al., 2017; Nixdorf et al., 2013; Storch et al., 2005; Yang et al., 2007). Interestingly, basketball and softball were the sports that reported the highest prevalence of depressive symptoms in the present study. Other studies (Yang et al., 2007) found lower levels of depressive symptoms in these sports. On the contrary, wrestling collegiate athletes reported depressive symptoms up to 29% in other studies (Yang et al., 2007). Yet, in the present study, none of the wrestling collegiate athletes reported elevated depressive symptoms. Prevalence of moderate to severe stress and anxiety were found to be much higher than depressive symptoms in this study, at 30.8% and 40.9%, respectively. Unsurprisingly, those with higher depressive symptoms also experienced higher stress, anxiety, and burnout. Previous research indicates it is common for collegiate athletes to display concurring mental health symptoms (Kessler, Chiu et al., 2005; Yang et al., 2007).

Lower prevalence of depressive symptoms in NCAA Division III compared to Division I teams could be explained by several factors. First, the lower prevalence could be a function of the difference in environmental influences between Division I and Division III athletics. Usually, Division I collegiate athletes compete for regional and national athletic excellence and prominence, while Division III collegiate athletes typically compete at a regional level. Often NCAA Division I games are televised and draw large audiences. NCAA Division I collegiate athletes may perceive higher environmental (e.g., media) and social (e.g., parental, coaches) expectations. All of these factors could intensify perceptions of stress and anxiety, which in turn could be linked to other mental health abnormalities (e.g., depressive symptoms; Robinson et al., 2005). Second, the sample in the present study had just over one-third female representation of the total participants. Most of the other studies on depressive symptoms in collegiate athletes had a more gender-balanced sample (see Table 1). Of the studies examined, female collegiate athletes generally tend to report a higher prevalence of depressive symptoms. A similar trend was found in the present study. Despite this, the overall low prevalence of depressive symptoms in the present sample might be due to the underrepresentation of female collegiate athletes.

Another potential reason for lower prevalence rates could be underreporting from collegiate athletes. Some social stigmas link depression and mental health to weakness, which may influence the responses in a collegiate athlete population, particularly among male collegiate athletes (Glick & Horsfall, 2005). Finally, some of the previous research suggests that the general population of collegiate athletes may be at less risk to suffer from depression (e.g., due to the benefits of regular exercise and social support from teammates; Storch et al., 2005). An example of this would be the study conducted by Proctor and Boan-Lenzo (2010). However, more recent research evidence suggests these results are not conclusive to all collegiate athlete populations today.

The second purpose of the present study was to examine predictors of depressive symptoms among collegiate athletes. All three psychological predictors measured in this study (i.e., stress, anxiety, burnout) were positively associated with depressive symptoms. This is similar to other published evidence. For example, Li et al. (2017) found a significant association between depressive symptoms and state/trait anxiety. In a general student population, stress and anxiety have been linked to depressive symptoms as well (Liu et al., 2019). Additionally, the results of the present study

confirmed gender as a significant descriptive predictor, which aligns with current evidence (Li et al., 2017; Wolanin et al., 2016; Yang et al., 2007). In this sample, one in four females indicated they had elevated depressive symptoms versus only one in ten for males.

Limitations and Future Research

The present study has limitations that should be acknowledged. First, the convenience sampling of the study might introduce some bias. For example, some sport teams were contacted but did not participate. As such, the results may be biased by the underrepresentation of certain subgroups of the population. Also, as with the general population, there is stigma and bias around reporting mental health concerns, as these may be perceived as a weakness or have consequences that could impact the ability to participate in athletics (Reardon & Factor, 2010; Schwenk, 2000; Watson, 2005). Although research indicates that collegiate athletes display moderate to severe levels of mental health concerns, collegiate athletes historically have been an underrepresented population among college counseling centers (Valentine & Taub, 1999). Thus, the prevalence of depression, anxiety, and stress may be much higher than reported. Second, mental health indicators may fluctuate over time. For example, collegiate athletes may perceive much higher stress and associated mental health symptoms during the season or pre-season than the off-season, and a limitation to the current study is that specification on the timeline of current versus off-season was not collected. McGuire et al.'s (2017) study on NCAA Division II collegiate athletes found significant differences in depression symptoms across the season, with prevalence being affected by factors such as time of season, injury, and time mediators. The cross-sectional nature of the present study cannot capture any of those changes in depression over time. There is a clear need for the longitudinal assessment of mental health indicators in NCAA Division III collegiate athletes. Additionally, we utilized a cut-off score of 10 to indicate elevated depression symptoms, but the PHQ-9 has not been validated specifically for a collegiate athlete population. Therefore, it is possible a different cut-off score would yield a more accurate representation of elevated depressive symptoms in this population. Lastly, the present study was conducted at a single institution, which may jeopardize the generalizability of the study population.

Clinical Implications

An important implication of the present study is that more than 15% of NCAA Division III collegiate athletes suffer from elevated depressive symptoms. This rate is slightly lower compared to findings from other NCAA divisions (i.e., I and II). Nonetheless, elevated depression symptoms at post-secondary institutions, regardless of NCAA rank, is an important mental health concern. Yet, only 39% of NCAA institutions have a written plan to identify collegiate athletes with mental health concerns, as mental health guides only are encouraged by the NCAA at this time. Only 32% have verbal or written screenings for depressive symptoms and even less for anxiety (Kroshus, 2016). The rate may be even lower at NCAA Division III institutions because of lower budgets, staffing, and resources within athletics and the institution as a whole.

Practitioners (e.g., trainers, coaches, administrators) should be aware that many of their NCAA Division III collegiate athletes may struggle with elevated depressive symptoms, which impair some cognitive and psychosocial functions (Gotlib et al., 1995). This is particularly important when working with collegiate athletes in circumstances that make them more susceptible to experiencing depressive symptoms (e.g., injury, transition out of sport). The similarity of baseline prevalence of depressive symptoms between NCAA Division III collegiate athletes and other divisions may be a caution to work with injured/transitioning athletes carefully. The present study also may highlight the critical need for integrative support services to support NCAA Division III collegiate athletes dealing with mental health struggles. Specialized clinical counseling services dedicated to collegiate athletes' mental health may be an appropriate first step. For example, a counselor with specialized training in

sport (e.g., certification in mental performance consulting) might be able to better respond to the mental health needs of collegiate athletes. Such services might require many NCAA Division III institutions to bolster the financial commitment to their collegiate athletes' services.

It should be noted here that not all who exhibit elevated symptoms will be clinically diagnosed with depression. For many collegiate athletes, depressive symptoms may fluctuate over a season and depend on several environmental and psychological risk factors. To ensure the clinical relevance of elevated depressive symptoms, the referral to a qualified health provider is imperative. Collegiate institutions are well advised to provide ample access to specialized clinical services that may provide behavioral interventions focusing on important predictors (e.g., stress, anxiety, burnout). Clinical practitioners may take into consideration environmental (e.g., sport), personal (e.g., history of mental health issues), and social (e.g., family support) factors before determining how to best address elevated depressive symptoms in collegiate athletes.

Conclusion

To our knowledge, the present study is the first to investigate the prevalence of depression symptoms in NCAA Division III collegiate athletes. More than 15% of Division III collegiate athletes in the present sample suffered from clinically moderate to severe depressive symptoms. This rate is similar to institutions at the NCAA Division I and II levels. The findings highlight the importance of institutional strategies to address mental health in collegiate athletes. Such strategies only can be achieved via interprofessional collaboration between coaches, athletic trainers, and clinical psychologists. We encourage further investigation into the prevalence of depression among collegiate athletes. Such evidence will provide further support for administrators, staff, and health professionals to address depressive symptoms and promote healthier living for collegiate athletes.

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Table 1

Depression Prevalence and Predictors across Previous Studies

Study	N	Country	Level	Female *n*	Measurement	Depression Prevalence	Predictors
Armstrong & Ooman-Early (2009)	104	USA	NCAA Division I	57 (55%)	CESD	13.8%	Athlete status, gender, GPA, BMI, level of weekly exercise, sleep
Hammond et al. (2013)	50	Canada	Elite	22 (44%)	Interview, BDI-II	26%	Gender, performance
Li et al. (2017)	958	USA	NCAA Division I	32 (3.1%)	CESD, STAI	21%	Gender, age, race, academic year, history of injury, BMI, anxiety, sport
McGuire et al. (2017)	93	USA	NCAA Division II	34 (36.6%)	PHQ-9	1.1%	Gender, time in season of administration
Nixdorf et al. (2013)	162	Germany	Elite, Junior Elite	58 (35.8%)	CESD	19%	Gender, injury status, relationship, sport, performance enhancement counseling, desire for performance enhancing counseling
Proctor & Boan-Lenzo (2010)	66	USA	NCAA Division I	--	CISS:SSCCISS: SSC, CESD	15.6%	Athletic affiliation
Storch et al. (2005)	105	USA	NCAA Division I	51 (49%)	PAI – Depression scale	13.5%	Gender
Weigand et al. (2013)	160	USA	NCAA Division I	98 (62%)	WDS	16.8%	Athletic affiliation, gender
Wolanin et al. (2016)	465	USA	NCAA Division I	264 (56.9%)	CESD	23.7%	Gender, sport
Yang et al. (2007)	257	USA	NCAA Division I	90 (35%)	CESD, STAI, GEE	21%	Gender, race, class, residence, sport, history of injury, history of depression, pain