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Cover Page Footnote

(page 7 after RQ1) Consistent with the NCAA and conference terminology, women or men sport labels are used and are based on sex. Therefore, we have chosen to write as such to be consistent with the NCAA and conference terminology. Specific nouns will reference men's and women's sport while adjectives will be used as appropriate (i.e., male athlete).

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A B S T R A C T

Stressors related to academic requisites, sport participation, and pressure to perform may increase college athlete risk for mental health symptoms (Cox et al., 2017; Sudano & Miles, 2017; Yang et al., 2007). The purpose of this study was to identify the level of clinically relevant self-reported mental health symptoms in National Collegiate Athletic Association (NCAA) Division III athletes and variations based on sport participation (i.e., men's or women's athletics; team or individual sports) over a two-year period. A nonexperimental trend study design was used. Data analysis included descriptive statistics, chi square test, and multivariate analysis of variance (MANOVA) that used one-way analysis of variance (ANOVA) for follow-up procedures. A MANOVA revealed a significant interaction of gender and sport type for general symptoms [$F(1, 564) = 9.583$, $p = .002$] and depression [$F(1, 564) = 6.945$, $p = .009$] but not anxiety [$F(1, 564) = 3.332$, $p = .068$, $\eta^2 = .006$]. The project was able to describe mental health symptoms in a population that often is not included in the literature. Knowledge of collegiate athlete mental health prevalence is important because prevention and early intervention is a key component of community-based health programming.

Keywords: anxiety, collegiate athlete mental health, depression, mental health screening, NCAA

College students are at a vulnerable age for the onset of mental health issues. For those who participate in sport, the additional stress of balancing academics and athletics can exacerbate conditions (Beauchemin, 2014; Davoren & Hwang, 2014; Sudano & Miles, 2017). Additional demands for collegiate athletes include the time management of commitments to both academic and athletic expectations (e.g., Barnard, 2016; Beauchemin, 2014; Douce & Kelling, 2014), pressure to perform in sport (Barnard, 2016; Beauchemin, 2014; Gill, 2014), and coping with injury (Cox et al., 2017). Such distinctive factors and stresses for collegiate athletes can contribute to amplified mental health symptoms and reluctance to pursue help resources. Not only are symptoms more likely to present during traditional college-aged years, but the athletic culture may stigmatize against reporting mental health symptoms and seeking help for mental health-related issues (Carr & Davidson, 2014; Kroshus, 2016; Sudano & Miles, 2017). What is more, collegiate athletes are less likely to recognize symptoms as consequences of sport demands (Kim et al., 2015; Moore, 2017; Moreland et al., 2018). This has significant relevance not only to collegiate athletes' sport performance, but also their overall function and well-being. The unique presentation of mental health issues in collegiate athletes calls for specific research in the population to understand the matter (Hong et al., 2018). Mental health has emerged as a primary issue for collegiate athletes (Moore, 2017; NCAA Sports Science Institute [SSI], 2017).

Attention on data collection, prevention, and treatment options for mental health primarily has been focused on the general population. In 2019, 7.8% of adults in the United States had a diagnosed major depressive episode and 19.1% had an anxiety disorder diagnosis (National Institute on Mental Illness [NAMI], 2021). A clear difference in mental health prevalence reported from the general population and that of sub-population, like collegiate athletes, is the use of diagnosable data compared to estimated rates through surveys. Rice et al. (2016) described most (75%) studies concerning athlete mental illness had methodological limitations such as participant self-selection into the study and use of self-reported symptom identification. Nevertheless, current evidence suggests a comparable risk of mental health disorders in elite athletes, including collegiate athletes, to that of the general population (Rice et al., 2016; Wolanin et al., 2015).

Research regarding mental health prevalence in collegiate athletes remains contradictory (Cox et al., 2017; Hong et al., 2018). Of the information available, most research has been collected from NCAA Division I collegiate athletes (Yang et al., 2007). Some evidence indicates the competitive, high-stakes sport environment adds to psychological distress (Cox et al., 2017; Wolanin et al., 2016). Other literature suggests collegiate athletes are protected from mental health concerns due to the benefits of fitness and exercise, as well as the supportive team environments within sport systems (Anchuri et al., 2019; Armstrong & Oomen-Early, 2009). Ultimately, reported depression and anxiety prevalence rates among collegiate athletes have varied. Sarac et al. (2018) found 14% of Division I collegiate athletes had confirmed a history of clinically relevant depression symptoms, whereas Wolanin et al. (2016) and Cox et al. (2017) reported 23.7% and 33.2% of Division I collegiate athletes with self-described depression symptoms, respectively. The literature involving collegiate athletes presents the prevalence of depression more often than anxiety. However, high levels of anxiety have been self-reported in both male and female collegiate athletes (Schinke et al., 2017; Storch et al., 2005); these rates have been described as even higher than all college-aged students (American College Health Association [ACHA], 2016; Storch et al., 2005). What is more, Yang et al. (2007) found a significant moderate to high correlation between self-reported depression and anxiety symptoms in Division I male and female athletes. The risk is apparent and additional research is necessary to investigate mental health trends in this sub-population.

Further examination can help distinguish and confirm patterns in collegiate athletes relative to gender or sport type. Mostly, female participants self-report higher levels of depression and anxiety when compared to men (e.g., Cox et al., 2017; NCAA SSI, 2016; Wolanin et al., 2016). Wolanin et al. (2016) purports Division I female collegiate athletes have near twice the risk of depression symptoms compared to males. However, in a retrospective study of NCAA athletes, male athletes accounted for 82.9% of deaths by suicide; this also was conveyed as 3.67 times more likely than a female athlete to die by suicide (Rao et al., 2015). According to Rao et al. (2015) this sex difference also has been seen in the general population and nonathlete college students. Yang et al. (2007) reported Division I female college athletes responded with higher clinically relevant trait anxiety scores when compared to male athletes, though the difference was not significant ($p = .7464$). While it is suggested a disparity exists between men and women, continued data collection is needed in both genders. In the same way, studies comparing sport types are limited (Hong et al., 2018; Wolanin et al., 2016). Division I collegiate athletes who competed in individual sports (e.g., wrestling, track and field) had a history of higher rates of mental health issues than those in team sports (e.g., baseball, softball; Sarac et al., 2018). In a longitudinal study of a Division I athletic department, track and field athletes showed twice the risk of reported depression symptoms on a pre-participation exam compared to other sports athletes (Wolanin et al., 2016). Initial evidence indicates individual sport athletes are at a higher risk for mental health issues. If certain patterns are present, targeted information and intervention strategies can be provided to athletic departments.

The role of a collegiate athlete is equivalent to having two full-time jobs (Egan, 2019), and collegiate athletes feel very high expectations for both school and sport (Eisenberg, 2014). Time devoted to athletics and academics has increased at all NCAA levels since 2010 (Paskus & Bell,

2016). Yet, there is a limited amount of robust research related to mental health prevalence in NCAA collegiate athletes (Hong et al., 2018; Moreland et al., 2018; Yang et al., 2007). Moreover, NCAA Division III representation in the literature is scarce despite having the largest number of participants within the organization. Yang et al. (2007) indicated important features between NCAA competition levels may not generalize well to other sub-groups. Total self-reported athletic and academic weekly time commitments revealed four more hours in Division I and II participants compared to Division III (Paskus & Bell, 2016). The recognized pressure of NCAA Division I and II collegiate athletes also is tied to the ability to earn scholarship money based on sport performance (Ayers et al., 2012; Egan, 2019). Their motivation to succeed in sport can augment vulnerability in a different way than Division III participants. Still, Division III collegiate athletes reported at least 66 hours per week for athletic and academic requirements (Paskus & Bell, 2016). In one of the few studies that involved NCAA Division III athletes, 4% of collegiate athletes described at least mild depression or anxiety symptoms at the beginning of the academic year (Bullard, 2018). These rates are lower than other collegiate athlete studies but involved fewer subjects (n = 29). Ultimately more needs to be understood. Bullard (2018) noted the need for a group of Division III collegiate athletes to find a positive balance of time demands while still engaging in career preparedness beyond life in sport. Division III collegiate athletes also may have to balance demands with a part-time job to offset tuition costs. The apparent stressors may not be less, just different. With the information available, indications of mental health stressors appear to be present in Division III college athletes, perhaps at a rate at least similar to other divisions (Paskus & Bell, 2016). Previous studies simply have not fully addressed how Division III participation and time management concerns influence potential impact on psychological distress.

The Social Cognitive Theory (SCT) has been applied to personal and socio-structural factors related to health (Bandura, 1998). SCT is an interpersonal level theory that assumes individual attitude and behaviors are shaped by social and environmental influences (Benight & Cieslak, 2010; Conner, 2010; McKenzie et al., 2017). The theory includes a bidirectional influence between internal personal factors, environmental influences, and behavioral patterns. SCT diverged from earlier change theories by incorporating both personal and social determinants to effect motivation and action to change, rather than simply predicting health behaviors (Bandura, 2004). The choice in behavior, rather than a response to some stimuli, was significant in the theory development. Learning and action is context specific and depends on the individual and interactions with others and the environment (Torre & Durning, 2015). This is applicable to athlete mental health because individuals are unique, but athletic identity and team culture are highly influential. Therefore, the use of pre-participation screenings by the medical care team to help understand mental health prevalence in collegiate athletes contributes to normalizing the conversation and process through sport and offers connections to resources in a trusted, confidential way.

Given the known typical age of onset, risk factors involved, and the NCAA premise to protect collegiate athlete well-being, it is of value to determine the extent of mental health prevalence in NCAA Division III collegiate athletes. Collegiate athletes, the athletic medical care team, NCAA Division III athletic administration, and campus communities all can benefit from insight into mental health prevalence among collegiate athletes. In addition, baseline information allows appropriate professionals to understand deviations from normal feelings, assist in managing symptoms, and refer to treatment as needed (Born, 2017; Gulliver et al., 2012; Kroshus, 2016). The knowledge of the extent and severity of mental health symptoms is important to inform effective interventions to a large group of NCAA participants. Therefore, the purpose of this study was to implement a pre-participation screening process to assess depression and anxiety symptoms among NCAA Division III collegiate athletes at a private university in the rural U.S. Plains. We sought to identify the severity of psychological distress over time, including a comparison of distress among gender and sport types.

The research questions that guided this study are:

RQ1: Do collegiate athletes exhibit significantly different mental health symptoms over time?

RQ2: Do collegiate athletes exhibit significantly different mental health symptoms between men's and women's sport?

RQ3: Do collegiate athletes exhibit significantly different mental health symptoms based on sport type participation?

Based on previous findings (e.g., Cox et al., 2017; Sarac et al., 2018; Wolanin et al., 2016), the authors hypothesized that mental health symptoms would not be significantly different over time (RQ1), symptoms would be significantly higher in those who participated in women's college athletics compared to those who participated in men's (RQ2), and symptoms would be significantly higher in individual sport athletes compared to team sport athletes (RQ3).

Method

Study Design

This study was a nonexperimental trend study design utilizing an in-person screening to understand the prevalence of mental health symptoms in NCAA Division III collegiate athletes. Trend studies examine changes in cohorts over time (Linnhoff et al., 2018). As such, different groups of people from the same cohort are sampled and compared to examine how the population experiences historical events (Linnhoff et al., 2018). Three valid and reliable mental health surveys were used to determine the prevalence of mental health symptoms in collegiate athletes over two academic years during the COVID-19 pandemic and if symptoms were different between genders and by sport type participation.

Sample

The research setting was a private, residential, and liberal arts institution located in the rural Plains. The university enrolled 1,163 students in 2019-2020 with 556 (48%) students rostered on an athletics team, and 1,120 students in 2020-2021 with 573 (51%) rostered on an athletics team. The data collected from collegiate athletes occurred between August 2019 and December 2020 at an NCAA Division III institution. The study sample included eligible NCAA collegiate athletes enrolled in undergraduate studies and over the age of 18. Of the eligible sample, 196 were classified as seniors, 219 juniors, 286 sophomores, and 428 first-year students. Specific racial or ethnic group identities were not collected from the sample. Given representation within the school demographics, most of the subjects were White.

Purposive sampling was used to recruit a convenience sample of NCAA Division III athletes at the institution. The intention was for all eligible collegiate athletes over the age of 18 to complete the mental health pre-participation screening. Over the course of two years, a total of 1,129 NCAA Division III collegiate athletes were recruited to participate in the study and 1,068 consented to participate (a 94.6% response rate of eligible student-athletes). Of the 1,068 participants, 289 (27%) participated both years. The subject sample size for each year by demographic and survey type is available in Table 1. Due to privacy constraints, the added classification of year in school was not used to protect the identity of the athlete from the research team. Some rosters were quite small, and it would have been easier to presume the identify if this characteristic was not removed from further sample descriptions. Using calculations provided by Wilson VanVoorhis and Morgan (2007) and a 95% confidence interval, the estimated sample size needed to be at least 270 individuals. Participants did not identify their sex or gender in the procedures. Therefore, female athletes refer to those who participated in women's sport programs in the university athletic department and male athletes are those who participated in men's sport programs. Sport type was classified based on descriptions by

Miller and Hoffman (2009). Individual sport programs offered at the university included cross country, golf, tennis, track and field, and wrestling while team sport programs included baseball, basketball, football, soccer, softball, and volleyball.

Table 1
Sample Sizes

Demographic	Year 1		Year 2		Returning athletes		
	GI, HANDS (n)	BAI (n)	GI, HANDS (n)	BAI (n)	GI (n)	HANDS (n)	BAI (n)
Male athletes	351	346	344	309	186	185	165
Female athletes	182	181	191	181	103	103	98
Team sport	347	344	353	319	189	189	170
Individual sport	186	183	182	171	100	99	93
Total	533	527	535	490	289	288	263

Note. GI = General Index; HANDS = Harvard Department of Psychiatry/National Depression Screening Day Scale; BAI = Beck Anxiety Inventory; Returning athletes refers to athletes who participated in Years 1 and 2.

Data Collection Procedures

Procedures were approved by the institution IRB committee (#H-31-S2019-KV). Collegiate athletes were informed of the research project during the first team meeting and had to opt into the study by signing an informed consent document. In the same meeting, collegiate athletes completed NCAA paperwork (e.g., drug testing, concussion symptom awareness) and medical pre-participation forms, which also included the voluntary mental health screening. The initial pre-season meeting was led by the athletic training staff as part of normal assessment procedures. Consent to participate allowed confidential data to be available to the researcher via the certified athletic training staff, whereas collegiate athletes who did not consent had their screening results remain solely with the certified athletic training staff. All screening instruments were distributed as a paper document, but instead of using names as identifiers a code was used at the top of the document to encourage honest responses. Only the four members of the certified athletic training staff had the key to the coding process, therefore the researchers were blind to any identifiable information linked to survey responses.

Completed screenings were scored by the athletic training staff. Those that consented to participate in the study were given to the primary investigator to record on a locked data file. Screenings were then returned to the head athletic trainer to be stored in a secured file cabinet within the head athletic trainer's office. Each screening had a threshold score that, if reached, recommended further evaluation. Participants whose screenings reached this threshold, hereby termed a positive screening, resulted in conversations between the medical care team and the individual. As a result of the conversation, recommendations for either additional education or referral to campus counseling were given to the collegiate athlete.

Survey Design

The recommended NCAA SSI screening tools were utilized to measure mental health symptoms. For the present study, three were chosen: The 9-question General Index (GI; Carroll & McGinley, 2001), the 10-question Harvard Department of Psychiatry/National Depression Screening Day Scale (HANDS; Baer et al., 2000) and the 21-question Beck Anxiety Inventory (BAI; Beck & Steer, 1993). Each has a numerical score range indicating the severity of symptoms followed by recommendations for intervention, including referral to a licensed mental health professional. The tools were formatted to fit on one double-sided page for ease in dissemination and completion. The tool title (e.g., BAI) was not included on the screening form to deter responses based on presumptions about each mental health condition.

General Index

Conley et al. (2014) recommend the GI to be included with medical clearance prior to participation in sport. The GI is a tool to evaluate general mental health distress, including anxiety, depression, and suicidality. The version recommended by the NCAA and the National Athletic Trainers Association (NATA) contains nine *yes* or *no* questions (Conley et al., 2014). Affirmative responses to questions 7, 8, or 9 are considered a positive screening and result in an immediate conversation with the athletic training staff. For context, statements address feelings of a hopeful future (question 7), ability to manage emotions (question 8), and feelings of hurting themselves (question 9). Test-retest reliability has been reported with $\kappa = .625$ ($p < .001$; Sacks et al., 2007). Additionally, Carroll and McGinley (2001) report a Pearson correlation of .74 and adequate construct validity (87% of responses corresponded to diagnosis).

Harvard Department of Psychiatry/National Depression Screening Day Scale

The HANDS scale is a self-report symptom instrument to measure depression symptoms with a quick administration time (Baer et al., 2000). Ten responses are recorded on a 4-point scale (0 = *none or a little of the time* to 3 = *all the time*). A total score of 30 is calculated, with higher scores indicating more depression symptoms. A score above 9 is considered a positive screening, meaning symptoms are consistent with a major depressive episode at a mild or moderate level and further evaluation is recommended (Baer et al., 2000). The reliability as measured by internal consistency provided an α value of .87 (Baer et al., 2000). Additionally, Baer and associates (2000) provided information about the questionnaire's validity. Sensitivity was reported at least 95%; specificity was less but performed similarly to comparable scales (Baer et al., 2000). Moreover, Williams et al. (2002) reported 95% sensitivity and 94% specificity for HANDS in primary care situations.

Beck Anxiety Inventory

The recommended 21-item BAI (Beck & Steer, 1993) asks subjects to recall feelings about 21 anxiety-related symptoms on a 4-point scale (0 = *not at all* to 3 = *severe*). A total score of 63 can be amassed. According to the documents from the NCAA SSI Best Practice Manual (2017), scores ranging from 0-21 require no further action, and any score over 21 indicates moderate anxiety and should include a conversation with a primary care provider to determine if a referral to a mental health care provider is necessary (NCAA SSI, 2017). We chose to stay consistent with this scoring process but note the threshold for moderate anxiety (16-25) is different than the scoring used in the original publication (Beck et al., 1988) and in the present study. The tool has high internal consistency ($\alpha = .92$) and test-retest reliability ($r = .75$; Beck et al., 1988). This particularly is true in younger, healthy

populations (Julian, 2011). Osman et al. (1997) found high internal consistency (α = .90) among undergraduate students at a Midwestern university.

Data Analysis

Measures of central tendency and measures of variability were evaluated before further data analysis. The Pearson *r* correlation helped examine all research questions among returning athletes who participated in both Years 1 and 2 to determine if there was a relationship between survey scores over time as well as between distress and gender or sport type.

One-sample chi-square tests were used to identify if the distribution of frequencies were the expected values of mental health symptoms (dependent variable [DV_1]), separated as either general, depression, and anxiety scores between gender (independent variable [IV_2]) and sport type (IV_3) in the sample population. This analysis helped evaluate RQ2 and RQ3. To evaluate RQ1, an independent *t*-test compared symptoms between years one and two (IV_1) in participants who remained in the study both years. To analyze all research questions, a 2X2X2 multi-variate analysis of variance (MANOVA) was conducted to compare the main effects of gender and sport type and the interaction effect between gender and sport type on mental health symptoms over time. Symptoms were measured at two times (Years 1 and 2), gender included two levels (men's and women's sport), and sport type consisted of two levels (team and individual sport types). Follow-up one-way ANOVA procedures were used since categorical data excluded post-hoc tests for additional analysis. An *a priori* level of α = .05 was used to establish statistical significance. Previously accepted and established effect sizes for ANOVA were used in the present study; large effect size (η^2) at .14, moderate at .06, and small at .01 (Geert van den Berg, 2021). Cronbach's alpha was used to determine internal consistency for the two surveys with Likert scale questions, the HANDS and BAI. A threshold of .70 or above was determined to indicate a high level of reliability. All data analysis procedures were run through IBM SPSS Statistics 27.

Results

General Mental Health Symptoms

There were 12% of collegiate athletes who screened positive on the GI screening in Year 1 compared to 8.2% in Year 2. Positive screenings from the GI all resulted from affirmative answers to questions 7, 8, or 9. Answering *yes* to question 8 led to most positive screenings: in Year 1, 51 of 64 (79.7%) and in Year 2, 40 of 44 (90.9%) reflected a response to this question. Table 2 provides summary information regarding the GI screening results split among different demographic categories.

Table 2
Two-year General Index Screening Results

	Year 1			Year 2		
Demographic	Sample (n)	Positive Screening (n)	Rate (%)	Sample (n)	Positive Screening (n)	Rate (%)
Male athletes	351	40	11.3	344	24	7.0
Female athletes	182	24	13.2	191	20	10.5
Team sport	347	35	10.1	353	25	7.1
Individual sport	186	29	15.6	182	19	10.4
Total	533	64	12	535	44	8.2$^{\pm}$

$^{\pm}p < .01$ between Year 1 and 2

For participants who responded in Years 1 and 2, the mean score in Year 1 of the GI screening was slightly higher (M = 1.45 $\pm$ 1.527) compared to Year 2 (M = 1.21 $\pm$ 1.663). Scores were significantly different for returning athletes, too: $t(288) = -2.617$, $p = .009$, $d = 1.551$, 95% CI [-.270, -.038]. There was a positive, moderately strong and significant correlation between GI screenings each year, $r = .530$, $p < .001$. Moreover, both years were weakly but significantly correlated with gender (Year 1: $r = .167$, $p = .004$; Year 2: $r = .198$, $p < .001$) but not with sport type (Year 1: $p = .460$; Year 2: $p = .922$).

Depression Symptoms

Positivity rate was similar for the HANDS screening between the two years, with 9.2% and 9.5% of collegiate athletes screening positive in Year 1 and 2, respectively. Internal consistency was high for the scale each year (Year 1: $\alpha = .816$; Year 2: $\alpha = .842$). Table 3 provides summary information regarding the HANDS screening results split among different demographic categories.

Table 3
Two-year Harvard Department of Psychiatry/National Depression Screening Day Scale Screening Results

	Year 1			Year 2		
Demographic	Sample (n)	Positive Screening (n)	Rate (%)	Sample (n)	Positive Screening (n)	Rate (%)
Male athletes	351	25	7.1	344	23	6.7
Female athletes	182	24	13.2	191	28	14.7
Team sport	347	26	7.5	353	32	9.1
Individual sport	186	23	12.4	182	19	10.4
Total	533	49	9.2	535	51	9.5

A chi-square analysis showed a gender-dependent significant difference in expected and observed values in both Year 1 ($\chi^2 = 4.990$, $p = .025$, $\eta^2 = .097$) and Year 2 ($\chi^2 = 9.054$, $p = .003$, $\eta^2 = .130$) for the HANDS screening but not by sport (Year 1: $p = .068$; Year 2: $p = .608$).

For those who participated both years, the mean score between Year 1 and 2 was not significantly different, $t(287) = -.824$, $p = .411$, $d = 3.075$, 95% CI [-.164, -.067]. There was a positive, moderately strong, and significant correlation between screenings in returning collegiate athletes from Year 1 to 2, $r = .571$, $p < .001$. Moreover, both years were significantly correlated with gender (Year 1: $r = .148$, $p = .012$; Year 2: $r = .285$, $p < .001$) but not sport type (Year 1: $p = .724$; Year 2: $p = .624$).

Anxiety symptoms

Rates remained similar for BAI positive screens between the two years for all collegiate athletes. Summary information is available in Table 4. Internal consistency was high for the scale each year (Year 1: $\alpha = .871$; Year 2: $\alpha = .890$).

Table 4
Two-year Beck Anxiety Inventory Screening Results

	Year 1			Year 2		
Demographic	Sample (n)	Positive Screening (n)	Rate (%)	Sample (n)	Positive Screening (n)	Rate (%)
Male athletes	346	2	.006	309	2	.006
Female athletes	181	8	4.4	181	8	4.4
Team sport	344	6	1.7	319	7	2.2
Individual sport	183	4	2.2	171	3	1.8
Total	527	10	1.9	490	10	2.0$^{\pm}$

$^{\pm}p < .01$

A chi-square analysis of the BAI screening showed a gender-dependent significant difference in expected and observed values in both Year 1 ($\chi^2 = 9.422$, $p = .002$, $\eta^2 = .134$) and Year 2 ($\chi^2 = 8.126$, $p = .004$, $\eta^2 = .129$). A non-significant difference in sport type was found for the BAI screening (Year 1: $p = .827$; Year 2: $p = .237$).

The mean score in Year 1 of the BAI was slightly higher ($M = 1.45 \pm 1.527$) compared to Year two ($M = 1.21 \pm 1.663$) for returning participants between Years 1 and 2 and was significantly different, $t(288) = -2.617$, $p = .009$, $d = 1.551$, 95% CI [-.418, -.059]. There was a positive, moderately strong, and significant correlation between screening sums in returning collegiate athletes from Year 1 to 2, $r = .530$, $p < .001$. Moreover, both years were significantly correlated with gender (Year 1: $r = .300$, $p < .001$; Year 2: $r = .372$, $p < .001$) but not sport type (Year 1: $p = .554$; Year 2: $p = .550$).

Multivariate Analysis

A MANOVA was conducted to determine differences in mental health symptoms between times data was collected (IV_1), gender (IV_2), and sport types (IV_3). Results revealed significant differences among the time category on dependent variables [Wilks' $\lambda = .967$, $F(3, 562) = 6.342$, $p < .001$, $\eta^2 = .033$], gender category on dependent variables [Wilks' $\lambda = .930$, $F(3, 562) = 14.202$, $p < .001$, $\eta^2 = .070$], and gender X sport type [Wilks' $\lambda = .982$, $F(3, 562) = 3.351$, $p = .019$, $\eta^2 = .018$]. These results by year are available in Table 5.

Table 5
MANOVA Results: Between-Subject Effects

		Year 1			Year 2		
		F	*p*	η^2	F	*p*	η^2
Gender	HANDS	2.12	.138	.008	6.390	.012±	.013
	BAI	20.310	< .001±	.073	25.425	< .001±	.051
	GI	4.040	.045±	.015	9.152	.003±	.019
Sport	HANDS	.130	.719	.001	.050	.822	.000
	BAI	.340	.560	.001	.305	.581	.001
	GI	.003	.954	< .001	.183	.669	.000
Gender*Sport	HANDS	2.927	.088	.011	12.423	< .001±	.026
	BAI	1.047	.307	.004	7.088	.008±	.015
	GI	2.898	.090	.011	13.897	< .001±	.029

±$p < .05$

Note. GI = General Index; HANDS = Harvard Department of Psychiatry/National Depression Screening Day Scale; BAI = Beck Anxiety Inventory

One-way analysis of variance (ANOVA) was conducted on each dependent variable as a follow-up test to MANOVA. Post hoc analyses were not run, as each variable only had two categories. Time category differences were significant for the BAI screening [$F(1, 564) = 4.157$, $p = .042$, $\eta^2 = .007$] but not HANDS [$F(1, 564) = 1.457$, $p = .228$, $\eta^2 = .003$] or GI [$F(1, 564) = 1.043$, $p = .308$, $\eta^2 = .002$]. Gender category differences were significant for the BAI screening [$F(1, 564) = 33.933$, $p < .001$, $\eta^2 = .057$] and GI [$F(1, 564) = 5.234$, $p = .023$, $\eta^2 = .009$] but not HANDS [$F(1, 564) = 2.741$, $p = .098$, $\eta^2 = .005$]. Investigation of the gender by sport interaction revealed significant differences for the HANDS screening [$F(1, 564) = 6.945$, $p = .009$, $\eta^2 = .012$] and GI screening [$F(1, 564) = 9.583$, $p = .002$, $\eta^2 = .017$] but not BAI [$F(1, 564) = 3.332$, $p = .068$, $\eta^2 = .006$].

Discussion

The study found a significant difference in self-reported mental health distress in general and anxiety symptoms over time but not for depression symptoms. Gender-specific differences were again significant for general and anxiety symptoms but not depression. Moreover, no significant difference in mental health symptoms between sport types was found. The interaction of gender and sport was significant regarding general and depression symptoms, but not anxiety symptoms. Therefore, the present study's hypothesis regarding symptom difference over time (RQ1) was maintained for HANDS scores but rejected for GI and BAI screenings. The present study's second hypothesis regarding symptom difference between gendered sport membership (RQ2) was partially maintained. And the present study's hypothesis regarding symptom difference between sport types (RQ3) was rejected for all screening types.

Mental Health Distress

A positive screening for general symptoms was identified in 10.1% of the subjects recruited, while 9.4% described significant depression symptoms. The prevalence level of clinical depression was higher than what has been reported in Division I samples by Wolanin et al. (2016) and Cox et al. (2017) who noted 6.3% and 8.7%, respectively. Compared to Sarac et al. (2018) the lifetime emotional disturbance rate in their Division I population was reported at 14% for a history with depression or anxiety. Clinical anxiety prevalence from the self-report survey was quite low in the

present sample (2.0%) compared to published data in Division I collegiate athletes (e.g., Storch et al., 2005). The observed general and depression symptoms are similar if not higher in Division III athletes than what has been self-reported in other NCAA athletes and suggests regular screening procedures are necessary at all levels of NCAA athletics. Beyond an overall paucity of NCAA collegiate athlete mental health prevalence research, it is clear symptom comparisons among different NCAA levels of competition also are missing (Hong et al., 2018; Yang et al., 2007). Related to SCT, this is relevant to athlete mental health because individuals are unique, but athletic identity and team culture are highly influential, as may be any notable difference between competition levels. Additionally, athletic identity is both personal and social given the historical nature of athletic programs. An athlete joins a program as an individual who adapts who they are, their identity, based on the team's culture and the program's place within the college or university. There are distinct priorities, expectations, and pressures at each level, therefore an understanding of each is important to develop prevention and intervention options.

Ranges of clinically relevant, or sub-clinical, mental distress have been reported as low as 10% (Watson, 2005) and as high as 33.2% (Cox et al., 2017) in Division I collegiate athletes. The surveys utilized in the present study did not offer sub-clinical cut-offs. Yet less than half indicated no symptoms, or a zero score, on all three scales: 39.7% on the GI scale, 20.8% on the HANDS scale, and 28.9% on the BAI scale. Notably, most collegiate athletes reported some level of distress at the start of the academic year. The involvement of different personnel (i.e., athletic trainers) in the screening process who can generate and normalize the conversation surrounding mental health distress and help-seeking may have influenced athlete disclosure of symptoms. As we continue to understand mental health distress in sub-groups of NCAA athletes, we must include surveillance of various demographics and include trusted personnel.

It is possible different trends exist. Between the two years of data collection in the present study the COVID-19 pandemic occurred. Initial data collected from collegiate athletes by NCAA Research (2021) showed increases in mental health concerns by 1.5 to two times pre-pandemic levels. However, from the onset of the pandemic (March 2020) when most collegiate athletes shifted to remote learning and moved away from campus, to the fall (August 2020) when various return-to-campus and learning models were implemented around the country, national data showed a slight decline from the spring (NCAA Research, 2021). What is more, those who were able to return to in-person learning and resume some form of training and competition experienced fewer symptoms than those in hybrid or distance learning formats with continued barriers to sport training (NCAA Research, 2021). As follows, the present study described similar (i.e., depression and anxiety) or fewer (i.e., general) self-reported symptoms during the pandemic (Year 2) compared to before (Year 1), which may be explained by an appreciation for campus life and competition seasons after many restrictions the previous five months.

Distinctions by Gender

In all surveys and both years, those who participated in women's collegiate sports had a higher self-reported prevalence of mental health distress compared to those who participated in men's, though significant differences only were apparent for general and anxiety symptoms. These results follow previous reports of trends when subclinical distress was considered (e.g., Cox et al., 2017; Storch et al., 2005; Yang et al., 2007). However, at the clinical level, Wolanin et al. (2016) found no significant differences for depression symptoms between male and female Division I collegiate athletes and Yang et al. (2007) found no significant difference in clinical anxiety levels between male and female Division I collegiate athletes. Both studies also used self-report tools. Therefore, the results of the present study conflict with some of the previous literature and direct further screening, research, and understanding on the topic.

The difference between gender prevalence reported in the literature has been explained by the increased likelihood women will report symptoms or seek help (Barnard, 2016; Hammond et al., 2013). Attitudes toward mental health vary between male and female athletes. That is, female college athletes have a more positive attitude and less stigma compared to male athlete peers (Moreland et al., 2018). Cox et al. (2017) emphasized this difference in personal factors is important to interpretations of prevalence data. According to SCT, personal factors are shaped by social and environmental influences. Plus, Gross et al. (2017) identified the tendency of Division I and III men's college athletes to present themselves favorably compared to women on a depression symptom survey. This work indicates the limitations of self-report surveys and the important methodological choices that ensure accurate data is being collected. Fundamentally, psychopathology is likely multifactorial. Identifying one factor that attributes gender risk to mental health overlooks the many facets of symptom presentation. This information exhibits the personal and behavioral interaction of SCT to impart appropriate prevention or early intervention strategies in an athlete population. However, these ideas add weight to the notion more still can be understood about mental health prevalence between genders. What is more, gender and sex are not binary in sport, and should further be considered when describing trends. With larger representation in the research and trend study design we can better understand trends in college athletes (Wolanin et al., 2016). While women more frequently endorse general mental distress and anxiety symptoms, it also must be recognized men are susceptible as well.

Distinctions by Sport Type

In all surveys there was no significant difference between sport type and mental health distress. However, rates were higher each year for individual sport athletes who screened positive for general distress or depression symptoms compared to team sport athletes. Because so few studies have analyzed the mental health symptom difference between sport types (e.g., Sarac et al., 2018; Storch et al., 2005; Wolanin et al., 2016) there is little comparison available to understand trends.

Traditional research, including elite athletes, indicates sport risk is higher in those who compete in individual sport types, such as track and field, gymnastics, or swimming (e.g., Moreland et al., 2018; Sarac et al., 2018). Yet, like the present study, Yang et al. (2007) observed no difference in depression symptoms between 13 Division I sport programs. Wolanin et al. (2016) stated caution in the overt classification of risk and sport type, as different sports have distinct environmental factors acknowledged through SCT such as team culture, injury risk factors, team performance standards, or university variables that can confound interpretation. A comparison of prevalence rates across athletic departments over time would provide better insight into the potential different protective and risk factors among participants in various sport types (Storch et al., 2005; Wolanin et al., 2016).

Upon multivariate analysis, those who participated in women's team sport and those who participated in men's individual sport exhibited the highest mean scores on all three scales. This demographic distinction in symptom expression could be important to understand. Wolanin et al. (2016) found all female athletes, even in the same sport type as male athlete peers, had a higher probable risk for depression than their counterparts. Therefore, gender may be more indicative of the frequency of symptoms rather than sport type, but a combination of gender and sport types may be uniquely precarious for collegiate athletes. Continued analysis of mental health screening in various demographics can offer improved insight on any tendencies within a sport population.

Self-report surveys are common in psychological research (Gross et al., 2017), however they can lead to concealment of a collegiate athlete's symptoms (Egan, 2019). Collegiate athletes may be prone to respond in a way that provides a favorable impression as compared to other groups (Gross et al., 2017; Proctor & Boan-Lenzo, 2010). Gross et al. (2017) determined this socially desirable response did not differ among different NCAA competition levels. Yet, it could have accounted for the reported prevalence of depression or anxiety between sub-groups in the present study population.

NCAA Division I and III team sport athletes (e.g., lacrosse, softball, and soccer) showed higher social desirability responses than individual sport athletes (Gross et al., 2017). As follows, perhaps those who participated in men's team sport reported lower scores than individual sport types in the present study to censure any perceived negative consequences of symptom disclosure. Though the present study's procedures utilized athletic personnel familiar to the athletes in a confidential process, there still may be a need to improve expectancies surrounding an annual mental health screening. Expectancies and behavior are influenced by the medical professionals, administrators, coaches, and other essential staff who have created the present culture within the department. The model assumed college athletes have a positive interpretation of how the athletic department views mental health, thus support of a healthy emotional environment in the SCT framework.

Limitations

While the best considerations for a feasible and effective research design were considered, there are limitations within the project. These include the use of convenience sampling procedures and self-report surveys. Each aspect of the research design is in line with previously published research on similar topics (Moreland et al., 2018; Rice et al., 2016) and not expected to influence results in an exceptionally negative way.

The sample population was large but one of convenience. This sampling method is most common in college athlete mental health literature (e.g., Cox et al., 2017; Wolanin et al., 2016). Based on the institution's demographics, this offered little representation of ethnic or racial diversity. Moreover, gender identity was not asked of the sample, thus gender was grouped by sport program participation. Participants all were from the same NCAA Division III institution, which limits generalizability. Continued data collection across Division III populations should attempt to identify if psychological distress is similar or different to peers at other competition levels.

Self-reported symptoms are not a clinical diagnosis; therefore, risk analyses are limited by the tool itself. Symptom scales used in the literature are valid and reliable but not clinical diagnoses. Rancourt et al. (2020) does distinguish that some of the self-report tools seen in the literature have been used in athlete populations, but not necessarily tested specifically in athletes for their psychometric properties. The choice to use instruments recommended by the NCAA SSI Best Practice Manual (2017) was intentional. However, these tools are less seen in current literature regarding college athlete mental health. The reported psychometric properties for the tools suggest this did not negatively affect results or reported outcomes. There are many types of screenings used in the literature, which complicates comparisons between studies. Future research among collegiate athlete samples could implement the recommended NCAA SSI (2017) screening tools to improve consistency in measurement and allow for better comparisons across groups.

Medical care professionals, especially athletic trainers, are situated within the athletic department to offer recommendations for screening and referral options (Kroshus, 2016; Neal et al., 2013). Yet, athletes may be less inclined to endorse symptoms if they feel there will be a consequence that affects participation in a sport (Gross et al., 2017). Few studies have involved medical professionals (i.e., athletic trainers) through a confidential reporting procedure. The use of confidentiality procedures, rather than anonymity, had the potential to affect social desirability responding. The procedures attempted to facilitate an open environment for honest responding, but identification through coding procedures remained should further medical care be needed.

Practical Implications

The present study used the medical care team to enhance trust in the process. Positive expectancies can improve if the medical care team includes mental health screening in the broader conversation about athlete health (Thomas & Potter, 2019; Tomalski et al., 2019). Mental health screening has been affirmed by the National Athletic Trainers Association (NATA) as an important, standardized procedure professionals should consider for sport participation (Neal et al., 2013). Athletic trainers have the capacity to screen athletes with the tools described and connect those in need to licensed professionals in their network to continue appropriate care. If athletic department health service delivery is centered around the athletic training staff, their perceptions of psychology clinicians can be important to collaboration. Zakrajsek et al. (2015) noted 67.4% of Division I athletic trainers reported positive experiences with sport psychology consultants, while 32.6% reported negative experiences. Most positive ratings were associated with partnership for managing student-athlete anxiety, pressure, and emotions in student-athletes. This highlighted the possible shared opportunities within sports medicine. Yet the authors (Zakrajsek et al., 2015) also found personal variables informed the athletic trainers' perceptions of sport psychology services; specifically, younger athletic trainers and women reported more positive views of the topic than older individuals and men (Zakrajsek et al., 2015). These findings have important consequences for the broader application of mental health promotion within an athletic department, which may include education in mental health literacy for the sports medicine staff itself. NATA has devoted a web page for professionals to access additional resources and current, relevant literature on the topic and has regular continuing education offerings to increase mental health literacy and treatment options when working with symptomatic athletes (NATA, 2021).

Athletic trainers are situated to be helpful with identification and referral because of their daily interactions with athletes (Kroshus, 2016; Neal et al., 2013). In fact, NCAA Division I athletes who had a mental health diagnosis deemed the facilitation by athletic trainers in the process to be critical (Bird et al., 2020). Specifically, the athletic trainer was able to help the college athlete recognize the issue, provide positive prompts toward appropriate resources, and help schedule the referral appointment (Bird et al., 2020). Moreover, a screening process that can frame counseling services as a developmental approach rather than pathology-based may improve attitudes and honesty toward mental health promotion (Watson, 2006). Most athletic trainers have indicated they have worked with symptomatic athletes; indeed, at all competition levels 98.4% had worked with someone experiencing depression symptoms and 97.6% with anxiety (Sudano & Miles, 2017). This is not an uncommon occurrence for the medical team professional to work with an athlete who experiences mental health distress. Yet, Division III institutions screen less frequently than Division I ($p = .001$; Kroshus, 2016). Despite the inherent limitations of self-report surveys, they do provide a scale of symptom severity with a quick administration time that can then inform intervention (Cox et al., 2017; Herring et al., 2017). Identification of specific patterns or trends within the Division III athlete population can lead to a more targeted and effective approach to mental health promotion at universities and help better understand levels of collegiate athletes' mental health distress.

Conclusion

The purpose of this study was to identify the level of clinically relevant self-reported general distress, depression, and anxiety symptoms in NCAA Division III collegiate athletes and examine the variations of depression and anxiety based on gender or sport type. The present study provides additional insight into NCAA Division III collegiate athlete mental health prevalence. Findings suggest mental health prevalence for clinically relevant levels of distress is equal to or higher than previous reports in Division I athletes. In the available collegiate athlete prevalence studies, it is apparent most experience subclinical levels of psychopathology (Wolanin et al., 2016; Yang et al.,

2007). In general, the unique pressures faced by college athletes reflect the potential for an increased risk for mental health illness. The present study suggests those who participated in women's collegiate athletics endorse more general distress and anxiety symptoms, though those who participated in men's sport still exhibit symptoms that warrant surveillance. The degrees of psychological wellness and distress that occur with the nuances of sport are well-matched to the continuum definition of mental health (Schinke et al., 2017). Stressors are experienced daily, and even subclinical concerns can manifest and impede function or quickly progress to full clinical disruption (Cox et al., 2017). Routine mental health screening added to the pre-participation procedures for athletes offers awareness to symptomatic individuals and puts the clinicians in direct contact with them. Identification of specific patterns or trends within the Division III collegiate athlete population can lead to a more targeted and effective approach to promotion across the mental health continuum.

References

American College Health Association. (2020, May 7). *Considerations for reopening institutions of higher education in the COVID-19 era.* https://acha-test.app.box.com/s/k202537ahi3w27b0w6cdhqxynr3vljif

Anchuri, K, Davoren, A. K., Shanahan, A., Torres, M., & Wilcox, H. C. (2019). Nonsuicidal self-injury, suicidal ideation, and suicide attempt among collegiate athletes: Findings from the National College Health Assessment. *Journal of American College Health*, *68*(8), 815-823. https://doi.org/10.1080/07448481.2019.1616743

Armstrong, S., & Oomen-Early, J. (2009). Social connectedness, self-esteem, and depression symptomatology among collegiate athletes versus nonathletes. *Journal of American College Health, 57*(5), 521-536.

Ayers, K., Pazmino-Cevallos, M., & Dobose, C. (2012). The 20-hour rule: Student-athletes time commitment to athletics and academics. *Virginia Association for Health, Physical Education, and Dance, 33*(1), 22-26. https://link.gale.com/apps/doc/A289621149/AONE?u=anon~a94e36a9&sid=googleScholar&xid=94fb4cfda

Baer, L., Jacobs, D. G., Meszler-Reizes, J., Blais, M., Fava, M., Kessler, R., Magruder, K., Murphy, J., Kopans, B., Cukor, P., Leahy, L., & O'Laughlen, J. (2000). Development of a brief screening instrument: The HANDS. *Psychotherapy and Psychosomatics, 69*, 35-41. https://doi.org/10.1159/000012364

Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology & Health, 13*(4), 623-649. https://doi.org/10.1080/08870449808407422

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior, 31*(2), 143-164. https://doi.org/10.1177/1090198104263660

Barnard, J. D. (2016). Student-athletes' perceptions of mental illness and attitudes toward help-seeking. *Journal of College Student Psychotherapy, 30*(3), 161-175. https://doi.org/10.1080/87568225.2016.1177421

Beauchemin, J. (2014). College student-athlete wellness: An integrative outreach model. *College Student Journal, 48*(2), 268-280.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*(6), 893-897. https://psycnet.apa.org/doi/10.1037/0022-006X.56.6.893

Beck, A. T., & Steer, R. A. (1993). *Beck Anxiety Inventory manual*. Harcourt Brace and Company.

Benight, C. C., & Cieslak, R. (2010). Cognitive factors and resilience: How self-efficacy contributes to coping with adversities. In S. M. Southwick, B. T. Litz, D. Charney, & M. J. Friedman (Eds.), *Resilience and mental health challenges across the lifespan* (pp. 45-55). Cambridge University Press.

Bird, M. D., Chow, G. M., & Cooper, B. T. (2020). Student-athletes' mental health help-seeking experiences: A mixed methodological approach. *Journal of College Student Psychotherapy, 34*(1), 59-77. https://doi.org/10.1080/87568225.2018.1523699

Born, J. (2017). National protection of student-athlete mental health: The case for federal regulation over the National Collegiate Athletic Association. *Indiana Law Journal, 92*, 1221-1245.

Bullard, J. (2018). *PROF Academy: A model to enhance overall well-being, mental health practices and professional development among Division III student athletes as they transition from PROF to professional* [Grant report]. National Collegiate Athletic Association Innovation in Research and Practice. https://www.ncaa.org/about/resources/research/prof-academy-model-enhance-overall-well-being-mental-health-practices-and-professional-development

Carr, C., & Davidson, J. (2014). The psychologist perspective. In G. T. Brown, B. Hainline, E. Kroshus, & M. Wilfert (Eds.), *Mind, body, and sport: Understanding and supporting student-athlete mental wellness* (pp. 17-20). National Collegiate Athletic Association. http://www.ncaa.org/health-and-safety/sport-science-institute/mind-body-and-sport-psychologist-perspective

Carroll, J. F. X., & McGinley, J. J. (2001). A screening form for identifying mental health problems in alcohol/other drug dependent persons. *Alcoholism Treatment Quarterly, 19*(4), 33-47. https://doi.org/10.1300/J020v19n04_02

Conley, K. M., Bolin, D. J., Carek, P. J., Konin, J. G., Neal, T. L., & Violette, D. (2014). National Athletic Trainers' Association position statement: Preparticipation physical examination and disqualifying conditions. *Journal of Athletic Training, 49*(1), 102-120. https://doi.org/10.4085/1062-6050-48.6.05

Conner, M. (2010). Cognitive determinants of health behavior. In A. Steptoe (Ed.), *Handbook of Behavioral Medicine* (pp.19-30). Springer.

Cox, C. E., Ross-Stewart, L., & Foltz, B. D. (2017). Investigating the prevalence and risk factors of depression symptoms among NCAA Division I collegiate athletes. *Journal of Sports Sciences, 5*, 14-28. https://doi.org/10.17265/2332-7839/2017.01.002

Davoren, A. K., & Hwang, S. (2014). Depression and anxiety prevalence in student-athletes. In G. T. Brown, B. Hainline, E. Kroshus, & M. Wilfert (Eds.), *Mind, body, and sport: Understanding and supporting student-athlete mental wellness* (pp. 38-39). National Collegiate Athletic Association. http://www.ncaa.org/health-and-safety/sport-science-institute/mind-body-and-sport-depression-and-anxiety-prevalence-student-athletes

Douce, L. A., & Kelling, R. P. (2014). *A strategic primer on college student mental health*. American Council on Education. https://www.acenet.edu/Documents/A-Student-Primer-on-College-Mental-Health.pdf

Egan, K. P. (2019). Supporting mental health and well-being among student-athletes. *Clinical Sports Medicine, 38*, 537-544. https://doi.org/10.1016/j.csm.2019.05.003

Eisenberg, D. (2014). *Developing and evaluating a model program for supporting the mental health of student athletes.* University of Michigan. https://athletesconnected.umich.edu/wp-content/uploads/2017/02/2014-NCAA-Final-Report-main-narrative.pdf

Geert van den Berg, R. (2021). *Effect size.* SPSS Tutorials. https://www.spss-tutorials.com/effect-size/

Gill, E. L., Jr. (2014). Integrating collegiate sports into social work education. *Journal of Social Work Education, 50,* 305-321. https://doi.org/10.1080/10437797.2014.856245

Gross, M. B., Wolanin, A. T., Press, R. A., & Hong, E. S. (2017). Socially desirable responding by student-athletes in the context of depressive symptom evaluation. *Journal of Clinical Sport Psychology, 11*(2), 148-157. https://doi.org/10.1123/jcsp.2017-0020

Gulliver, A., Griffiths, K. M., & Christensen, H. (2012). Barriers and facilitators to mental health help-seeking for young elite athletes: a qualitative study. *BMC Psychiatry, 12*(157), 1-14. https://link.springer.com/article/10.1186/1471-244X-12-157

Hammond, T., Gialloreto, C., Kubas, H., & Davis, H, IV. (2013). The prevalence of failure-based depression among elite athletes. *Clinical Journal of Sports Medicine, 23*(4), 273-277. http://dx.doi.org/10.1097/JSM.0b013e318287b870

Herring, S. A., Kibler, W. B., Putukian, M. (2017). Psychological issues related to illness and injury in athletes and the team physician: A consensus statement—2016 update. *Current Sports Medicine Reports, 16*(3), 189-201.

Hong, E., Keenan, L., & Putukian, M. (2018, February 12). Addressing mental health issues in the collegiate student-athlete. *Athletic Training & Sports Health Care, 10*(2), 55-58. https://doi.org/10.3928/19425864-20180219-01

Kim, J. E., Saw, A., & Zane, N. (2015). The influence of psychological symptoms on mental health literacy of college students. *American Journal of Orthopsychiatry, 85*(6), 620-630. https://psycnet.apa.org/doi/10.1037/ort0000074

Kroshus, E. (2016). Variability in institutional screening practices related to collegiate student-athlete mental health. *Journal of Athletic Training, 51*(5), 389-397. https://doi.org/10.4085/1062-6050-51.5.07

Linnhoff, S., Smith, K. T., & Smith, L. M. (2018). An examination of longitudinal study typologies for business research. *International Journal of Business and Globalisation*, *24*(2), 212-239. https://www.inderscienceonline.com/doi/pdf/10.1504/IJBG.2020.105169

McKenzie, J. F., Neiger, B. L., & Thackery, R. (2017). *Planning Implementing and Evaluating Health Promotion Programs.* (7th ed.). Pearson Ed.

Miller, K. E., & Hoffman, J. H. (2009). Mental well-being and sport-related identities in college students. *Sociology of Sport Journal, 26*(2), 335-356. https://doi.org/10.1123/ssj.26.2.335

Moore, M. (2017). Stepping outside of their comfort zone: Perceptions of seeking behavioral health services amongst college athletes [2017 Special Issue]. *Journal of Issues in Intercollegiate Athletics,* 130-144. http://csri-jiia.org/wp-content/uploads/2017/07/JIIA_2017_SI_08.pdf

Moreland, J. J., Coxe, K. A., & Yang, J. (2018). Collegiate athletes' mental health services utilization: A systematic review of conceptualizations, operationalizations, facilitators, and barriers. *Journal of Sport and Health Science, 7*(1), 58-69. https://doi.org/10.1016/j.jshs.2017.04.009

National Alliance on Mental Illness. (2021). *Mental health by the numbers.* https://www.nami.org/mhstats

National Athletic Trainer's Association. (2021). *Mental health*. https://www.nata.org/practice-patient-care/health-issues/mental-health

National Collegiate Athletics Association. (2021, February). *NCAA student-athlete well-being study (Fall 2020)* [PowerPoint slides]. https://ncaaorg.s3.amazonaws.com/research/other/2020/2021RES_NCAA-SA-Well-BeingSurveyPPT.pdf

National Collegiate Athletic Association Sport Science Institute. (2017). *Interassociation consensus document: Mental health best practices.* https://ncaaorg.s3.amazonaws.com/ssi/mental/SSI_MentalHealthBestPractices.pdf

National Institute of Mental Health. (2018, July). *Anxiety disorders.* https://nimh.nih.gov/health/topics/anxiety-disorders/index.shtml

Neal, T. L., Diamond, A. B., Goldman, S., Klossner, D., Morse, E. D., Pajak, D. E., Putukian, M., Quandt, J. D., Sullivan, J. P., Wallack, C., & Welzant, V. (2013). Inter-association recommendations for developing a plan to recognize and refer student-athletes with psychological concerns at the collegiate level: An executive summary of a consensus statement. *Journal of Athletic Training, 48*(5), 716-720. https://www.doi.org/10.4085/1062-6050-48.4.13

Paskus, T., & Bell, L. (2016, January 11-14). *Results from the 2015 GOALS Study of the Student-Athlete Experience* [Conference session]. NCAA 2016 Convention, San Antonio, TX, United States.

Proctor, S. L., & Boan-Lenzo, C. (2010). Prevalence of depressive symptoms in male intercollegiate student-athletes and nonathletes. *Journal of Clinical Sport Psychology, 4*, 204-220. https://doi.org/10.1123/jcsp.4.3.204

Rancourt, D., Brauer, A., Palermo, M., Choquette, E. M., & Stanley, C. (2020). Response to Tomalski et al. (2019): Recommendations for adapting a comprehensive athlete mental health screening program for broad dissemination. *Journal of Sport Psychology in Action, 11*(1), 57-67. https://www.doi.org/10.1080/21520704.2020.1722770

Rao, A. L., Asif, I M., Drezner, J. A., Toresdahl, B. G., & Harmon, K. G. (2015). Suicide in National Collegiate Athletic Association (NCAA) Athletes: A 9-year analysis of the NCAA resolutions database. *Sports Health, 7*(5), 452-457. https://doi.org/10.1177/1941738115587675

Rice, S. M., Purcell, R., DeSilva, S., Mawren, D., McGorry, P. D., & Parker, A. G. (2016). The mental health of elite athletes: A narrative systematic review. *Sports Medicine, 46*, 1333-1353. https://doi.org/10.1007/s40279-016-0492-2

Sarac, N., Sarac, B., Pedroza, A., & Borchers, J. (2018). Epidemiology of mental health conditions in incoming division I collegiate athletes. *The Physician and Sportsmedicine, 46*(2), 242-248. https://doi.org/10.1080/00913847.2018.1427412

Schinke, R. J., Stambulova, N. B., Si, G., & Moore, Z. (2017). International society of sport psychology position stand: Athletes' mental health, performance, and development. *International Journal of Sport and Exercise Psychology, 2017*, 1-18. https://doi.org/10.1080/1612197X.2017.1295557

Sudano, L. E., & Miles, C. M. (2017). Mental health services in NCAA Division I athletics: A survey of head ATCs. *Sports Health, 9*(3), 262-267. https://doi.org/10.1177/1941738116679127

Storch, E. A., Storch, J. B., Killiany, E. M., & Roberti, J. W. (2005). Self-reported psychopathology in athletes: A comparison of intercollegiate student-athletes and non-athletes. *Journal of Sport Behavior, 28*(1), 86-97.

Thomas, K., & Potter, J. (2019, May 31). *Building connections between student-athletes and mental health* [Conference session]. ACHA Conference, Denver, CO, United States. https://www.acha.org/app_themes/AM19/documents/handouts/152.0-90568-Kevin-Thomas_5-31.pdf

Tomalski, J., Clevinger, K., Albert, E., Jackson, R., Wartalowicz, K., & Petrie, T. A. (2019). Mental health screening for athletes: Program development, implementation, and evaluation. *Journal of Sport Psychology in Action, 10*(2), 121-135. https://www.doi.org/10.1080/21520704.2019.1604589

Torre, D. & Durning, S. J. (2015). Social cognitive theory: Thinking and learning in social settings. In J. Cleland & S. J. Durning (Eds.), *Researching Medical Education* (pp. 105-115). https://books.google.com/books?id=LEb3CQAAQBAJ&dq=social+cognitive+theory

Watson, J. C. (2005). College student-athletes' attitudes toward help-seeking behavior and expectations of counseling services. *Journal of College Student Development, 46*(4), 442-449. https://doi.org/10.1353/csd.2005.0044

Watson, J. C. (2006). Student-athletes and counseling: Factors influencing the decision to seek counseling services. *College Student Journal, 40*(1), 35-42.

Wilson VanVoorhis, C. R., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample sizes. *Tutorials in Quantitative Methods for Psychology, 3*(2), 43-50.

Wolanin, A., Gross, M., & Hong, E. (2015). Depression in athletes: Prevalence and risk factors. *Current Sports Medicine Reports, 14*(1), 56-60. https://doi.org/10.1249/jsr.0000000000000123

Wolanin, A., Hong, E., Marks, D., Panchoo, K. & Gross, M. (2016). Prevalence of clinically elevated depressive symptoms in college athletes and differences by gender and sport. *British Journal of Sports Medicine, 50*(3), 167-171. https://bjsm.bmj.com/content/50/3/167

Yang, J., Peek-Asa, C., Corlette, J. D., Cheng, G., Foster, D. T., & Albright, J. (2007). Prevalence of and risk factors associated with symptoms of depression in competitive collegiate student athletes. *Clinical Journal of Sports Medicine, 17*(6), 481-487. https://doi.org/10.1097/jsm.0b013e31815aed6b

Zakrajsek, R. A., Martin, S. B., & Wrisberg, C. A. (2015). Sport psychology services in performance settings: NCAA D-I certified athletic trainers' perceptions. *Sport, Exercise, and Performance Psychology, 4*(4), 280-292. https://www.doi.org/10.1037/spy0000042