

# Athlete Mindfulness:

*The Development and Evaluation of a Mindfulness Based Training Program for Promoting Mental Health and Wellbeing in Student Athletes*

2017 NCAA Innovations in Research and Practice Grant

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## Problem:

- 2015 NCAA GOALS study found mental health issues, anxiety, and depression are on the rise, and 30% of NCAA student-athletes reported overwhelming distress, more than a 5% increase since 2010.
- Time demands complicate mental health delivery as student athletes have nearly every minute of the day programmed with academic and team events.

## Mindfulness Training Program:

- Mindfulness helps teach awareness and understanding of emotions in the present moment with a non-judgmental approach to one's experiences.
- We created a 5-session program aimed at teaching relaxation, present-focused awareness, and acceptance of thoughts and emotions.
- Goals: Reducing anxiety, increasing well-being and improving mindfulness ability among student-athletes.
- Five main topics covered: Introduction to Mindfulness, Mindfulness of the Body, Emotions, Thoughts, and Building a Mindfulness Practice.

## Key Findings:

- 12 women and 24 men (N = 36) from five Div. I teams completed the program.
- Found significant declines in anxiety, increased overall well-being, and improved mindfulness ability by 5<sup>th</sup> session.
- Mindfulness Use Before Program: 64% of participants did not practice mindfulness.
- Mindfulness Use After program:
  - 89% practiced related to Sport
    - 40% practiced 5-10+ times
  - 71% practiced related to life outside Sport
    - 23% practiced 5-10+ times

## Campus-Based Application & Recommendations:

- After initial training, mindfulness can continue in as little as five minutes a day, making it easily integrated without adding to the already overloaded student-athlete schedule.
- Strength of this program is the adaptability and ease of implementation that exists. Mindfulness as a practice does not require specialized equipment, customized facilities, or uniform procedures.
- We have used our findings to create a handbook for building similar mindfulness training programs with guidelines and recommendations.
- The resources needed are minimal; only a space large enough for a group of participants to meet, copies of selected articles and readings, and a general knowledge of mindfulness practice are required.



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Final Report

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# **Development and Evaluation of a Mindfulness Based Training Program for Promoting Mental Health and Wellbeing in Student Athletes**

## **Problem Statement**

The 2016 National College Health Assessment (ACHA, 2016) found that in the last 12 months, 58.4% of students experienced overwhelming anxiety, 36.7% felt so depressed it was difficult to function, 39.6% felt overwhelming anger, and 9.8% seriously considered suicide. The same questions asked to domestic USC students (2014) found nearly identical results for anxiety (56.1%), depression (32.8%), anger (35.9%), and suicide (6.4%). Among student athletes in particular, the 2015 NCAA GOALS study (Paskus & Bell, 2016) noted that college campuses have seen an increase in mental health issues, anxiety, and depression, and 30% of NCAA student-athletes reported having overwhelming distress in the last month, an increase of more than 5% since 2010. Researchers have routinely found that student-athletes experience unique sources of stress compared to their non-athlete counterparts, making this group “at risk” for psychological and academic difficulties (Cosh & Tully, 2015; Ferrante & Etzel, 2009; Wilson & Pritchard, 2005). Thus the primary issue this study sought to address was reducing the rates of mental health distress in college student-athletes both locally and nationally. Through mindfulness-based training this study aimed to increase overall well-being by equipping student-athletes with necessary tools to manage the inherent stressors of the athlete lifestyle.

Time demands not only contribute to student-athlete stress, they create the additional complication of how to deliver mental health services in an already overcrowded schedule (Finch, 2011). Compared to the typical college student, student-athletes have nearly every minute of the day programmed for them with practices, academics, team meetings, and mandatory events. Moreover, time allotted for rest is often minimal or non-existent. Providing mental health treatment without significantly adding to time pressures thus becomes even more challenging. For this reason, time-limited, evidenced-based interventions for anxiety and distress tolerance among student-athlete populations are greatly needed. Previous authors have noted that traditional sport psychology techniques focus on overcoming negative thoughts through control and suppression, but can also cause anxiety to increase (Goodman, Kashdan, Mallard, & Schumann, 2014; Sappington & Longshore, 2015). Alternatively, Mindfulness is an acceptance-based approach that emphasizes awareness and tolerance of emotion, from a non-judgmental perspective (Goodman et al., 2014). Currently, treatment modalities such as Acceptance Commitment Therapy (ACT), Dialectical Behavioral Therapy (DBT), and Mindfulness-Based Stress Reduction (MBSR) have integrated mindfulness principles in treating many clinical presentations (Baer, 2003). While promising results have been found, a need for applied research among student-athletes still exists (Sappington & Longshore, 2015).

**The purpose of this study was to develop, implement, and evaluate a mindfulness-based training program aimed at improving mental health and wellbeing among college student-athletes.** Specifically this program aimed to increase mindfulness training focused on three program goals; improve mindfulness skills, increase overall wellbeing, and reduce perceived anxiety within the student-athlete population at the University of Southern California.

Furthermore, as described below, this program was constructed to promote generalizability and implementation within all NCAA institutions, regardless of size, facilities, or resources available. In evaluating the effectiveness of this program, the following research questions (RQs) were asked pertaining to each of the aforementioned program goals.

**RQ1:** Does a mindfulness-based training program improve overall wellbeing and mindfulness ability among student-athlete participants?

**RQ2:** Does a mindfulness-based training program reduce anxiety among student-athlete participants?

### **Literature Review**

Mindfulness helps teach awareness and understanding of emotions in the present moment, and perhaps most importantly, from a non-judgmental approach to one's experiences (Kabat-Zinn, 2003). It has been associated with reductions in perceived stress and improvement in positive affect, quality of life and overall mindfulness ability (Nyklicek & Kuijpers, 2008). Through practice of deep breathing and meditation, individuals enter a relaxed, contemplative state in which thoughts and emotions are examined and observed (Baer, 2003). Compared to cognitive-behavioral interventions, the goal is not to reframe, control, or revise negative/self-critical cognitions, but rather to identify thoughts and emotions only as temporary states that pass through the body and mind. Insight into one's own anxiety and distress is developed (Kabat-Zinn, 2003), as well as the understanding of one's choice in how to manage this distress.

As applied to college student populations, first-year students completing a mindfulness-based program had better adjustment to college, improved psychological wellbeing, and reduced physiological stress compared to a control group (Ramler, Tennison, Lynch, & Murphy, 2016). These students also showed improvements in observing, describing, and reducing reactivity to negative emotions. As applied to college-student athletes, brief mindfulness training combined with yoga contributed to reduced anxiety, increased energy, and improved overall mindfulness ability (Goodman et al., 2014). Researchers have also found these effects to be long-standing. After a 4-week program, archers, golfers, and distance runners reported increases in overall cognitive awareness and mindfulness, and decreased worry at one-year follow-up (Thompson, Kaufman, De Petrillo, Glass, & Arnkoff, 2011). Furthermore, programs similar to the one described in this study have been found to be effective. A five-week program with two-hour meetings promoted psychological health and self-compassion (Bergen-Cico, Possemato, & Cheon, 2013) and a three-session model with 45-minute body scans, was associated with decreased anxiety and stress compared to controls (Call, Miron, & Orcutt, 2014). Despite these results; however, a need still exists for more applied research to inform guidelines for practical implications and programming (Sappington & Longshore, 2015, Thompson et al., 2011).

### **Conceptual Framework**

Due to the over-programming student-athletes generally experience, we conceptualized a program model that was brief-focused yet effective. A reality of the college athletics landscape is that athlete resources vary significantly based on athletic department structure and financial support. This program model was designed to be accessible and easily implemented within

campus departments and across NCAA-affiliated institutions. While the current study focused on training players and coaches, this program has the potential to be broadened and implemented beyond athletes, to include administrators, support staff, and the university as a whole.

This study functioned as an interdisciplinary collaboration between USC Student Counseling Services, USC athletics department, and a campus mindfulness initiative called Mindful USC. First launched in fall, 2014 to integrate mindfulness principles into the college campus environment, Mindful USC offers trainings, workshops, and resources to the USC community. Collaboration with a Mindful USC instructor allowed for expert consultation and guidance in planning and constructing each program session. Our program was comprised of five, one-hour sessions, containing both didactic training on specific mindfulness skills and experiential training in learning meditation and accessing emotions. Table 1 outlines each training session.

*Table 1*  
*Session Training Structure*

Session	Didactic Training/Learning Goals	Experiential Training	After-Session Assignment
<b>1</b>	<b>Introduction to Mindfulness</b> <ul style="list-style-type: none"> <li>• Definition of Mindfulness</li> <li>• Definition of Flow</li> <li>• Responding Vs. Reacting to Stimuli</li> <li>• “The stories we tell”</li> </ul>	<ul style="list-style-type: none"> <li>• Hand Sensation</li> <li>• Walking Meditation</li> </ul>	<ul style="list-style-type: none"> <li>• Breath Meditation</li> <li>• Walking Meditation</li> <li>• STOP technique</li> <li>• Check in to smart phone app</li> <li>• Selected Readings</li> </ul>
<b>2</b>	<b>Mindfulness of the Body</b> <ul style="list-style-type: none"> <li>• Body as basis/conduit for experience</li> <li>• Pleasant &amp; Unpleasant Vs. Good &amp; Bad experiences</li> <li>• Automaticity and Mechanics</li> </ul>	<ul style="list-style-type: none"> <li>• Body Scan</li> <li>• Raisin exercise</li> </ul>	<ul style="list-style-type: none"> <li>• Body Scan</li> <li>• Meditation on smart phone app</li> <li>• Selected Readings</li> </ul>
<b>3</b>	<b>Emotions</b> <ul style="list-style-type: none"> <li>• What are emotions and physical sensations</li> <li>• No Bad or shameful emotions</li> <li>• Identifying/ labeling to mitigate impact</li> <li>• Emotion lifespan</li> </ul>	<ul style="list-style-type: none"> <li>• Mindfulness of emotions</li> <li>• Loving Kindness Exercise</li> </ul>	<ul style="list-style-type: none"> <li>• Kindness Meditation</li> <li>• Meditation on Smart Phone App</li> <li>• Selected Readings</li> </ul>
<b>4</b>	<b>Thoughts</b> <ul style="list-style-type: none"> <li>• Content and physically experienced processes</li> <li>• Removing judgment and self-criticism</li> <li>• Methods of experiencing thought (timing, counting, listening, thought process visualizations)</li> </ul>	<ul style="list-style-type: none"> <li>• Mindfulness of thoughts</li> </ul>	<ul style="list-style-type: none"> <li>• Noting Meditation</li> <li>• Relax, Ground, and Clear Meditation</li> <li>• Mediation on thoughts, Smart Phone App</li> <li>• Selected Readings</li> </ul>
<b>5</b>	<b>Building a Mindfulness Practice</b> <ul style="list-style-type: none"> <li>• Formal vs. informal practice</li> <li>• Integrating practice and competition</li> <li>• Finding a home in the body</li> <li>• Helpful practice for athletes</li> </ul>	<ul style="list-style-type: none"> <li>• Finding a home in the body</li> </ul>	<ul style="list-style-type: none"> <li>• Finding a home in the body</li> <li>• Creating a practice</li> <li>• Ongoing practice</li> </ul>

The five main topics covered in each session of the program were *Introduction to Mindfulness*, *Mindfulness of the Body*, *Emotions, Thoughts*, and *Building a Mindfulness Practice*. Several specific interventions were used. For example, *Mindful Walking* and *Mindful Breathing* are meditations that involve focusing on a specific action or experience of the body in the present moment. The *STOP* exercises connect emotions and thoughts to the body when experiencing stress; *Body Scan* involves concentration on specific areas of the body; and *Loving Kindness* is a meditation on positive wishes and intention for one's self. Each session also contained a meditation to complete throughout the week and self-guided readings. Additionally, smart phone applications were introduced so participants could track their mood and complete corresponding meditations between each session.

## **Methodology and Data Collection**

### **Participants**

Participation in the study was open to the nine men's and twelve women's athletics teams that comprise the USC student-athlete population. In an effort to establish a broad participant pool in regards to age, race, ethnicity, and gender, the following inclusion criteria were used. Participants were currently enrolled in university coursework, were current members of a USC varsity athletics team, and were at least 18 years of age in order to provide consent.

An initial sample of 61 student-athletes consented to participate in the five-session mindfulness program. Of this sample, 25 participants did not complete data collection or terminated participation prematurely and were subsequently excluded from the analysis. A final sample of 36 NCAA division one student athletes was compiled from five teams; women's volleyball ( $n = 10$ ) women's soccer ( $n = 2$ ), men's tennis ( $n = 10$ ), men's football ( $n = 7$ ), and men's basketball ( $n = 7$ ). See Table 2 for full descriptive statistics. Ages ranged from 18-22 ( $M = 19.67$ ,  $SD = 1.23$ ), 67% identified as male ( $n = 24$ ) and 33% identified as female ( $n = 12$ ), 61% identified as Caucasian, 22% as African American, 5.6% as Pacific Islander, 2.8% as Asian, and 8.4% identified a multi-ethnic background. A relatively even distribution of grade levels was obtained; 30.6% freshman, 25% sophomores, 27.8% juniors, and 16.7% seniors. Participants were asked about previous experiences with mindfulness practice. The majority were familiar with mindfulness techniques ( $n = 25$ , 69.4%), however, most had never previously utilized mindfulness ( $n = 21$ , 58.3%) nor did they currently practice mindfulness at the start of the study ( $n = 23$ , 63.9%).

*Table 2*  
*Means and Descriptive Statistics*

Variable	<i>N</i>	%	Variable	<i>N</i>	%
Total Sample	36	-	Ethnicity		
Age Range (years)	18-22	-	Caucasian	22	61.1
Mean	19.72	-	African American	8	22.2
S.D.	1.19	-	Asian	1	2.8
Identified Gender		-	Pacific Islander	2	5.6
Female	12	33.3	Mixed Ethnicity	3	8.4
Male	24	66.7	Team		
College Class			Women's Soccer	2	5.6
Freshman	11	30.6	Women's Volleyball	10	27.8
Sophomore	9	25.0	Men's Tennis	10	27.8
Junior	10	27.8	Men's Basketball	7	19.4
Senior	6	16.7	Football	7	19.4

  

Measure	Session 1		Session 3		Session 5	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
BAI	8.48	6.36	8.73	8.88	5.12	5.58
BHM-20	85.56	8.34	85.28	9.07	87.78	6.80
CAMS-R	31.90	4.76	33.30	5.60	34.07	5.51

*Note.* Beck Anxiety Inventory (BAI; Beck & Steer, 1993); Behavioral Health Measure-20 (BHM-20; Kopta, Owen, & Budge, 2015); Cognitive and Affective Mindfulness Scale-Revised (CAMS-R; Feldman et al., 2007).

## Materials

Several measures were used to evaluate program outcomes. A demographics questionnaire assessed for age, sex, ethnicity, athletic team, college classification, and previous mindfulness experience at session one. At approximately one month follow-up to session five, an outcome questionnaire was also administered assessing applicability of material, content organization, usefulness, facilitator knowledge, session objectives, overall helpfulness, likeliness and frequency of continued use of mindfulness principles, and areas of learning. The three outcome variables of mindfulness ability, wellbeing, and anxiety were assessed using the following measures.

**Mindfulness.** Mindfulness was defined as one's attention regulation, ability to remain present-focused, awareness of experience, and acceptance of emotion, as measured by the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007). The CAMS-R consists of 12 self-report items measuring mindfulness ability. Each item presents a statement with which participants rate their responses on a 4-point Likert-type scale from 1 (*rarely/not at all*) to 4 (*almost always*). Three items are reverse scored and all items are aggregated with higher scores indicating better overall

mindfulness ability. The CAMS-R has been found to have internal consistency scores of  $\alpha = .74-.85$  among diverse samples of college students (Feldman et al., 2007) and strong correlations with other measures of mindfulness such as the Mindful Attention Awareness Scale (MAAS; Brown and Ryan, 2003) at  $r = .51$  and the Freiburg Mindfulness Inventory (FMI; Buchheld et al., 2002) at  $r = .66$ , demonstrating strong convergent validity. Across the three administrations of the CAMS-R in the present study, the following Cronbach alpha coefficients were found,  $\alpha = .64, .75, .80$ .

**Wellbeing.** Psychological Wellbeing was measured using the Behavioral Health Measure (BHM-20; Kopta, Owen, & Budge, 2015), a 20-item measure of wellbeing, psychological symptoms, and life functioning. Participants rate items regarding how they feel on a 5-point Likert-type scale ranging from 1 (*extreme distress/poor functioning*) to 5 (*no distress/excellent functioning*). All items are aggregated with higher scores indicating better overall functioning. As a measure of global mental health, the BHM-20 has been found to have strong internal consistency scores ( $\alpha = .89-.90$ ; Kopta & Lowry, 2002) and strong correlations with other mental health measures such as the Behavioral and Symptoms Identification Scale-32 ( $r = -.83$ ; BASIS-32; Eisen, Grob, & Klein, 1986), the Outcome Questionnaire-45 ( $r = -.81$ ; OQ-45; Lambert, Hansen, et al., 1996), and the Symptoms Checklist-90-Revised ( $r = -.85$ ; SCL-90-R; Derogatis, 1977), demonstrating strong convergent validity. Across the three administrations of the BHM-20 in the present study, the following Cronbach alpha coefficients were found,  $\alpha = .86, .88, .79$ .

**Anxiety.** Perceived anxiety was measured using the Beck Anxiety Inventory (BAI; Beck & Steer, 1993) a widely used, 21-item self-report measure of overall anxiety levels in adolescents and adults. Participants are asked to rate severity of symptoms on a 4-point, Likert-type scale, from 0 (*Not at all*) to 3 (*Severely- It bothered me a lot*). The BAI has been found to have strong internal consistency ( $\alpha = .94$ ) and strong correlations with other measures of anxiety such as the State-Trait Anxiety Inventory ( $r = .58$  for trait anxiety,  $r = .47$  for state anxiety; STAI, Form-Y; Spielberger, 1983) and the Weekly Record of Anxiety and Depression ( $r = .54$ ; Barlow & Cerny, 1988) demonstrating strong convergent validity. Across the three administrations of the BAI in the present study, the following Cronbach alpha coefficients were found,  $\alpha = .79, .90, .87$ .

## Procedures

Prior to data collection approval for the project was secured through the university internal review board (IRB). Student-athletes were made aware of the study through verbal invitation to participate directly from research team members. Coaches were also contacted and made aware of the study through a similar verbal invitation to participate, and asked for opportunities to announce the study to their respective teams. All recruitment was conducted by members of the research team in order to prevent any perception of coercion or undue influence from coaches to players regarding the study. While participation in all five mindfulness sessions was encouraged, participants were made aware from the start that participation was voluntary.

Administration of the five program sessions was conducted separately for each participating team over the course of approximately six months. Prior to beginning, participants

were presented with study information and informed consent was obtained. Unique pseudonyms were created for data collection to ensure anonymity. Baseline measures were collected in-person prior to beginning the program at session one and follow-up measures were completed at session three and session five. Sessions were conducted at roughly one-week intervals; however, due to athlete time constraints and team demands this time line was occasionally shortened or lengthened by team. At approximately one-month, follow-up measures were administered via online survey to examine longitudinal effects and to obtain qualitative data on participant experience.

## Results

**Quantitative Findings.** In order to answer the proposed research questions, a 2 x 3 repeated measures multiple analysis of variance (MANOVA) was conducted (Huck, 2012; Tabachnick & Fidell, 2007). The within-subjects variable was time, specifically the three data collection points (ie. session one, three, and five). The between-subjects variable was gender and three outcome measures analyzed at each time point were anxiety score, well-being score, and mindfulness ability score. Missing data were examined and cases with incomplete data sets due to premature termination were removed resulting in a final sample of  $N = 36$ . Subsequently, five cases were found to be missing a single data point, one case missing two data points, and one case missing three. Upon further analysis, data were determined to be missing at random, with no more than a single data point missing from any one outcome measure case. Because of the few instances of missing data, mean substitution was utilized in these instances. No univariate or multivariate outliers were detected and assumptions of homogeneity of variance-covariance matrices (Box's  $M = 89.49$ ,  $p = .102$ ), linearity, and multicollinearity were met. Sampling distributions failed to meet assumptions of normality, however, given the sample size and error degrees of freedom ( $df > 20$ ), MANOVA can be considered robust to nonnormality (Tabachnick & Fidell, 2007). Levene's test of homogeneity of variance was met for the three outcome variables at each of the three time points with the exception of the BAI at session one ( $F(1, 34) = 4.20$ ,  $p = .048$ ). Given the non-significant Box's  $M$  score and overall robustness of MANOVA, results of Levene's test were considered acceptable.

Multivariate analysis (Table 3) found the within-subjects variable of time to have a significant main effect (Wilks'  $\Lambda = .56$ ,  $F(6, 29) = 3.79$ ,  $p < .01$ ,  $\eta_p^2 = .44$ ), while the between-subjects variable of gender (Wilks'  $\Lambda = .82$ ,  $F(3, 32) = 2.41$ ,  $p = .09$ ,  $\eta_p^2 = .18$ ) and the interaction effect (Wilks'  $\Lambda = .79$ ,  $F(6, 29) = 1.29$ ,  $p = .292$ ,  $\eta_p^2 = .21$ ) were not found to be significant. Univariate analyses (Table 4) were further examined to investigate the effect of time on each of the three outcome measures. Mauchly's test indicated the assumption of sphericity was violated for the BAI outcome data and thus Greenhouse-Geisser corrections were used to evaluate univariate results. Time was found to have large significant effects on anxiety ( $F(1.62, 55.21) = 4.21$ ,  $p < .05$ ,  $\eta_p^2 = .11$ ) and well-being ( $F(1.81, 61.45) = 4.43$ ,  $p < .05$ ,  $\eta_p^2 = .12$ ) and a significant medium effect on mindfulness ability ( $F(1.89, 64.17) = 3.27$ ,  $p < .05$ ,  $\eta_p^2 = .09$ ). Within-subjects contrasts showed mindfulness ability demonstrated a significant linear effect ( $F(1, 34) = 7.16$ ,  $p < .05$ ,  $\eta_p^2 = .17$ ), increasing from session one to five while anxiety ( $F(1, 34) =$

7.75,  $p < .01$ ,  $\eta_p^2 = .19$ ) showed a significant linear decrease over the same amount of time. Well-being demonstrated a significant quadratic effect ( $F(1, 34) = 5.49$ ,  $p < .05$ ,  $\eta_p^2 = .14$ ) due to BHM scores decreasing from sessions one to three but increasing from sessions three to five. Post hoc pairwise comparisons between each session were subsequently examined for the significant effect of time on each outcome variable. Bonferroni adjustments were used to correct for multiple comparisons using estimated marginal means. Mean anxiety scores were found to increase slightly from session one ( $M = 8.89$ ,  $SE = 1.12$ ) to three ( $M = 9.26$ ,  $SE = 1.57$ ) then decrease by session five ( $M = 5.85$ ,  $SE = .929$ ) for a significant decline in BAI scores from the first to fifth sessions ( $\Delta M = -3.04$ ,  $SE = 1.09$ ,  $p < .05$ ). Mean well-being scores decreased slightly from session one ( $M = 84.63$ ,  $SE = 1.42$ ) to three ( $M = 83.94$ ,  $SE = 1.47$ ) then increased by session five ( $M = 86.85$ ,  $SE = 1.12$ ). Although well-being improved significantly from session three to session five ( $\Delta M = 2.92$ ,  $SE = 1.05$ ,  $p < .05$ ), the overall increase in BHM score from session one to session five was not significant ( $\Delta M = 2.29$ ,  $SE = 1.15$ ,  $p = .18$ ). Finally, mean mindfulness scores increased steadily across sessions one ( $M = 31.53$ ,  $SE = .83$ ), three ( $M = 32.29$ ,  $SE = .92$ ), and five ( $M = 33.64$ ,  $SE = .96$ ), demonstrating a significant increase in CAMS score between the first and fifth session ( $\Delta M = 2.10$ ,  $p < .05$ ,  $SE = .79$ ).

*Table 3*  
*Multivariate Tests of Main Effects and Interaction Effect*

	Wilks' $\Lambda$	$F$	$df$	$df$ error	$p$	$\eta_p^2$
Between Subjects						
Intercept	.005	2270.01	3	32	-	-
Gender	.816	2.408	3	32	.085	.184
Within Subjects						
Time	.561	3.186	6	29	.007**	.439
Time x Gender	.789	1.293	6	29	.292	.211

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

*Table 4*  
*Univariate Test of Within Subject Effects Across Outcome Measures*

Effect	Measure	Mean Square	$df$	$F$	$p$	$\eta_p^2$
Time	BAI	224.283	1.624	4.209	.027*	.110
	BHM-20	148.787	1.807	4.430	.019**	.115
	CAMS-R	71.020	1.887	3.274	.047*	.088
Error	BAI	1811.934	55.217	-	-	-
	BHM-20	1142.028	61.449	-	-	-
	CAMS-R	737.608	64.165	-	-	-

Note: Greenhouse-Geisser correction used; \*  $p < .05$ , \*\* $p < .01$

**Qualitative Findings.** At approximately one-month follow up, participants were sent a link to an online survey assessing qualitative aspects of their experience in the program. Fourteen questions were administered assessing applicability of material, content organization, usefulness, facilitator knowledge, session objectives, overall helpfulness, likeliness and frequency of continued use of mindfulness principles, and areas of learning. Key findings are summarized in Table 5. While the quantitative data analysis of this study utilized the subset of participants who completed all five sessions (N =36), the qualitative survey was sent to all participants who initially consented and completed at least one session of the program (N = 61). Of This larger sample, a total of N =35 participants responded to the experience survey. Several noteworthy findings were observed. While the majority of participants had never previously utilized mindfulness (58.3%) and did not currently practice (63.9%) at the start of the program, the vast majority had practiced mindfulness techniques related to sport performance at least once at one month follow up (88.6%), and 40% of total respondents had practiced frequently, 5-10 or more than 10 times. Similar results were found for applying mindfulness techniques to life issues outside of sport, as 71.4% had practiced at least once and 22.9% of total respondents had practiced frequently, at 5-10 or more than 10 times. Overall, 85.7% of respondents were utilizing mindfulness in some capacity since the start of the training program. When asked to describe current mindfulness practice, 84.9% of participants were utilizing mindfulness techniques the same amount or more frequently than prior to starting the program. Participants generally felt they learned and could apply the information presented (80%), found the material useful (80%), and found the sessions organized and easy to follow (85.7%). The three most common areas participants believed mindfulness application would be beneficial were “Improved focus” (28.6%), “Managing anxiety” (20%), and “Increasing overall wellbeing” (17.1%).

Participants were also provided with opportunities to submit open-ended feedback about their experience. The following are examples of participant responses when prompted to describe the concepts, techniques, or meditations they found to be most helpful:

*“Breathing, counting your breaths, and picturing myself doing what I need to do”*

*“Home in the body, not judging my thoughts, and identifying my emotions before I act”*

*“The [online mindfulness] app, the book in general, and the idea that you can meditate literally anywhere or anytime.”*

*“Be in the moment, take a breath, how to get game ready”*

*“Focusing on the little things like your feet on the ground when walking, listening to a guided mindfulness session to relax and breathing techniques”*

*“The most helpful idea for me was focusing on something small and meaningless like the feeling in your feet or hands when you are nervous. Before a game, it helps me stop overthinking and being anxious.”*

Participants were also asked to provide thoughts and feedback about aspects of the program that could be improved, added, or modified. The most frequent response was further increasing the experiential mindfulness/meditation practice opportunities as part of the session curriculum. Example responses are as follows:

*“I think doing more meditations would be better”*

*“More mindfulness practices”*

*“Making sure people do it outside of the training so they can see it's effectiveness”*

One participant provided particularly insightful feedback regarding the integration of managing difficult emotions and anxiety beyond sport as related to the athlete’s life outside of athletic performance and how mindfulness training may be more directly applied in this way.

*“Though I thought the mindfulness training was good I think it is just a lot of stuff we have heard before. I think we get a lot of guidance on how to cope with emotions/anxiety within athletic performance. However, sometimes I think my performance anxiety/lack of attention does not span from my sport but from my life outside my sport and being able to manage all aspects of my life when I am constantly being pulled in every direction.”*

*Table 5  
Program Experience Survey Key Findings*

Item	Response Frequency (%)				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Able to apply knowledge I learned.	11 (31.4)	17 (48.6)	6 (17.1)	0 (0)	1 (2.9)
Sessions were easy to follow.	16 (45.7)	14 (40.0)	4 (11.4)	0 (0)	1 (2.9)
Materials were useful.	9 (25.7)	19 (54.3)	6 (17.1)	0 (0)	1 (2.9)
	None	Once	2-5 times	5-10 times	> 10 times
Mindfulness use related to sport?	4 (11.4)	6 (17.1)	11 (31.4)	7 (20.0)	7 (20.0)
Mindfulness use outside of sport?	10 (28.6)	5 (14.3)	12 (34.3)	1 (2.9)	7 (20.0)
Mindfulness use since starting program to present?	5 (14.3)	9 (25.7)	9 (25.7)	4 (11.4)	8 (22.9)

  

Item	Response	n (%)
How would you describe your current mindfulness practice?	More than before the program	22 (62.9)
	Same as before the program	8 (22.9)
	Less than before the program	0 (0)
	Did not practice and still do not	5 (14.3)
Areas you believe will most benefit from mindfulness practice?	Managing anxiety	7 (20.0)
	Coping with difficult emotions	4 (11.4)
	Increased relaxation	1 (2.9)
	Improved focus	10 (28.6)
	Better awareness of thoughts	3 (8.6)
	Improving athletic performance	4 (11.4)
	Increasing overall wellbeing	6 (17.1)

*Note. N = 35*

### **Implications for Campus Level Programming**

In reviewing the research questions proposed for the present study, results in support of RQ1 and RQ2 were found. In response to RQ1, participants who completed the mindfulness training program were found to have statistically significant increases in mindfulness ability score by the fifth session. While overall wellbeing scores also demonstrated linear improvements over the course of the program, this effect failed to reach statistical significance. In response to RQ2, participants who completed mindfulness training were also found to have significant decreases in perceived anxiety score by the fifth session. Participants generally reported enjoying the program, learning helpful techniques to identify and manage difficult thoughts and emotions, and found the experience applicable to both life outside athletics and sport performance. Taken together, these results imply that student-athletes benefitted from mindfulness training, value mindfulness practice, and generally would like more opportunities integrating mindfulness into daily life. Thus, several implications for campus level programming can be made.

First, with regard to other member institutions, we believe mindfulness training is a highly adaptable and easily implemented form of emotional regulation skill building. A goal of this study was to identify empirically supported, time-sensitive interventions to improve student-athlete mental health and wellbeing. A primary concern of both the NCAA and collegiate athletic departments is student-athlete mental health, including overscheduling concerns. Student-athlete support services increasingly struggle to determine how to help support student-athletes without adding to their load. Even the smallest helpful suggestions are often discarded as yet another thing on the to-do list. After an initial training program such as this one, mindfulness practice can continue with as little as few minutes a day to be effective, making it easy to integrate without adding to the already overloaded non-practice obligations in the student-athlete's schedule. Consequently, the biggest upside is that mindfulness can be integrated within team practice time because it is short enough (can be 2 or 3 minutes before or after practice) that it does not take much from the very carefully guarded NCAA *Countable Athletic Related Activities* (CARA) training time. Because its application is relevant to managing difficult emotions in a student-athlete's personal life *and* while competing, coaches are increasingly appreciating the benefits mindfulness offers and, therefore, are more willing to incorporate it into their practice time. Additionally, mindfulness is hardly limited by location as individuals and teams may use it prior to practice and competitions, during practice and competition, while traveling on the road, sitting in airports, prior to giving a class presentation, studying for finals, or when managing challenging relationships.

Secondly, mindfulness training does not require specialized equipment, customized facilities, or uniform procedures. The resources needed are minimal; only a space large enough for a group of participants to meet, copies of selected articles and readings, and a general knowledge of mindfulness practice are required. Similarly, mindfulness practice is very flexible in that it requires no special equipment, and only a phone if the student athlete prefers to use a mindfulness phone app as a guide. A principle idea in developing the program for student-athletes was to highlight and integrated both personal and sport performance applications of mindfulness practice to capture the attention of as many student athletes as possible during the

training. Once learned, these skills can be applied as emotional challenges arise in their lives. While we collaborated with a campus mindfulness organization to design the program, it is not required for implementation on other campuses. To promote generalizability at member universities, we have created a handbook for building similar mindfulness training programs, setting forth guidelines and recommendations. Several excellent texts exist for facilitators to increase their knowledge and understanding of mindfulness practice such as Mumford's (2016) *The Mindful Athlete: Secrets to Pure Performance*. Additionally, several free, guided meditation and mindfulness internet-based phone applications exist for mindfulness practice. We utilized the *Stop, Breath, & Think* web application (Stop, Breath, & Think, PBC).

Finally, mindfulness practice can benefit more than just student-athletes and is generalizable to all aspects of university functioning from administrators, to faculty, coaches, and athletics department staff. Given the potential for improving stress management and overall mental health, we designed each session to be applicable to the student-athlete experience, but also generalizable to the myriad of campus populations. Mindfulness itself is a non-threatening introduction to stress management and meditative practices. It is likely that for individuals apprehensive about traditional counseling practices, mindfulness may present an opportunity to receive more practical mental health skills to help regulate emotion. By completing this training with coaches and athletes, the development of mindfulness skills individually and as a team can occur. Coaches can implement mindfulness practice collectively, before and after training sessions/competitions, and athletes can practice individually, outside of team events.

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