Drivers of Change in Mindfulness- and Acceptance-Based Interventions with Athletes: Investigating the Influence of Dosage, Readiness, and Attitudes

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Drivers of Change in Mindfulness- and Acceptance-Based Interventions with Athletes: Investigating the Influence of Dosage, Readiness, and Attitudes

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A Dissertation submitted to the College of Applied Human Sciences at West Virginia University in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Sport, Exercise, and Performance Psychology

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Abstract

Drivers of Change in Mindfulness- and Acceptance-Based Interventions with Athletes: Investigating the Influence of Dosage, Readiness, and Attitudes

Tommy Minkler, MA

Mindfulness- and Acceptance-based interventions (MABIs) are being used with increasing frequency with sport participants. Research suggests that such interventions may promote sport performance and impact performance-relevant factors, although the current quality and quantity of research is low. Specifically, questions about intervention engagement (i.e., dosage), potentially impacted by stage of change and attitudes toward sport psychology, need clarification. The present study utilized a multi-method, quasi-experimental longitudinal design with female- and male-identified NCAA collegiate athletes to investigate the effects of an MABI. Specifically, one NCAA Division II team \((n = 16)\) and three NCAA Division III teams \((n = 43)\) from two universities in the Appalachian region engaged in 6-week Mindful Sport Performance Enhancement (MSPE) interventions during their offseason or pre-season training period. Two teams served as the primary treatment group while two others served as the non-randomized waitlist control group; they were all assessed on measures of flow, psychological distress, mindfulness, emotion regulation difficulties, satisfaction with life, readiness to engage in mindfulness practice, attitudes toward sport psychology, and subjective ratings of performance and enjoyment. Mindfulness dosage was also measured throughout and following the intervention. Compared to controls, initial MSPE participants reported reductions in depressive symptoms and emotion regulation difficulties, and improvements in self-rated sport performance; at 6-week follow-up, initial MSPE participants reported significant increases in mindfulness and sport enjoyment, in addition to sustained reductions in emotion regulation difficulties. Though pre-intervention readiness did not predict changes across the intervention, higher post-intervention readiness classification was associated with improvements in mindfulness, life satisfaction, and sport enjoyment. Higher post-intervention readiness was also associated with significantly more engagement (i.e., dosage), though neither dosage nor attitudes toward sport psychology demonstrated evidence of moderation on the relationship between readiness and outcomes. These data suggest that readiness may impact engagement in MABIs, though it is still unclear whether there are indirect effects of dosage and attitudes toward sport psychology on outcomes in MABIs with athletes.
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“This is a fine chance to let go, to ‘win my life by losing it,’ which means not recklessness but acceptance, not passivity but nonattachment” – Peter Matthiessen
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Drivers of Change in Mindfulness- and Acceptance-Based Interventions with Athletes: Investigating the Influence of Dosage, Readiness, and Attitudes

Mindfulness, which “has to do with particular qualities of attention and awareness that can be cultivated and developed through meditation” (Kabat-Zinn, 2003, p. 145), is associated with a range of psychological benefits (Keng et al., 2011). Due to the positive outcomes connected to the cultivation of mindfulness, interest in the construct and practice among sport, exercise, and performance psychology (SEPP) researchers and practitioners has grown tremendously in the past two decades. Systematic reviews in SEPP suggest that mindfulness may confer benefits for sport participants, including heightened levels of mindfulness and flow, and reductions in sport anxiety (Noetel et al., 2019; Sappington & Longshore, 2015), with less robust evidence suggesting that mindfulness- and acceptance-based interventions (MABIs) can directly benefit sport performance (Bühlmayer et al., 2017). Although many professionals in SEPP and other related fields have raised concerns about quality and standards of reporting in MABI research (McAlarnen & Longshore, 2017; Noetel et al., 2019; Van Dam et al., 2017), extant literature with athletes evaluating the effectiveness of MABIs is promising. Due to their rising popularity, it is important for both researchers and practitioners to understand with a more nuanced perspective how and under what circumstances such interventions may benefit sport participants. While there is evidence that MABIs lead to change on outcomes related to performance-relevant factors and well-being, much less is known about who changes, and why.

In Bühlmayer and colleagues’ (2017) meta-analysis, consisting of nine studies with 290 adolescent and adult sport participants, MABI length ranged from just four weeks to almost two years using a variety of protocols and comparison groups. While it may be reasonable to assume that longer interventions lead to more robust change, that statement is yet to be empirically
validated in SEPP. Investigating a seven-week mindfulness-acceptance-commitment (MAC) intervention (see Gardner & Moore, 2007) compared to an active control group with 18 NCAA Division III female-identified basketball players, Gross and colleagues (2018) suggested that more time to practice mindfulness could have contributed to their findings—which included little change from pre- to post-intervention but significant improvements with large effects ($\eta^2 > .19$) from post-intervention to 1-month follow-up on measures of emotion regulation, hostility, and substance use (but not mindfulness) for the MAC group. Also notable is that both the MAC group and the active control (a traditional psychological skills training intervention) reported improvements over time in symptoms of anxiety, eating concerns, psychological distress, psychological flexibility, and self-rated sport performance, with large effect sizes ($\eta^2 > .17$), suggesting that MABIs may be similarly affective as more-commonly integrated interventions (e.g., positive self-talk, goal-setting).

Goodman and colleagues (2014) used a similar eight-week MAC intervention with 13 NCAA Division I male-identified basketball players but added an extra 60 extra minutes per week of hatha yoga. MABI participants reported significant improvements on measures of perceived stress and mindfulness with small to moderate effect sizes ($d = .26$ and .48, respectively) immediately after the intervention. While both Gross et al. (2018) and Goodman et al. (2014) clearly described the amount of in-session mindfulness practice in which participants engaged, the amount of between-session practice was not evident. Josefsson and colleagues (2019) also evaluated the effectiveness of a seven-week MAC intervention compared to an active control group consisting of traditional psychological skills training (PST) with 69 elite athletes in Sweden. MAC participants reported significantly greater improvements compared to controls on measures of mindfulness and emotion regulation, with moderate to large effect sizes ($d = .96$ and
Moreover, mindfulness and emotion regulation were found to independently mediate the association between intervention condition and self-rated performance, such that greater increases in mindfulness and decreases in emotion regulation difficulties were associated with higher subjective performance ratings for MAC participants compared to controls. MAC sessions were 50-minutes in length resulting in just under six total hours of intervention dosage, although the degree of home practice was not reported.

More condensed MABI have also been evaluated, including a study by Rooks and colleagues (2017). With 100 male-identified NCAA Division I football players, researchers assigned participants to either a 4-week MABI or a time-matched relaxation training control group during the high intensity pre-season period; both interventions included 5.4 hours of instruction and proctored training, and 3.6 hours of assigned home practice over the intervention period. Within-groups analyses indicated that attention decreased, and depressive symptoms, anxiety, and positive affect increased during the intervention—which was described as a high intensity physical training period. Although they failed to reject the null hypothesis in aggregate (i.e., the MABI would promote positive outcomes related to attention and wellbeing), the researchers observed that greater adherence to home mindfulness practice was inversely related to anxiety; moreover, adherence was associated with smaller decreases—and in some cases increases—in attention. Scott-Hamilton and Schutte (2016) similarly observed that competitive adult athletes (M_{age} = 33.57) who engaged in more home practice between sessions of an MABI improved more on measures of mindfulness, flow, and anxiety with large effects ($\eta^2 > .38$), though results were not statistically significant—potentially due to a small size ($n = 12$). Glass and colleagues (2019) also reported that college athletes who engaged in more frequent mindfulness practice reported significant improvements in flow and self-rated sport performance.
Regardless of dosage, the 43 athletes who completed the intervention—a six-week Mindful Sport Performance Enhancement (MSPE) training—reported improvements in flow, mindfulness, life satisfaction, and aspects of sport anxiety, with moderate to large effects ($|0.47| < d < |0.81|$; Glass et al., 2019). These studies support the idea that dosage could influence MABI outcomes with athletes, though more investigations studying dosage more specifically and as a moderator are needed.

The potential dose-response relationship in MABIs has been explored more explicitly outside of sport with varied populations. A review by Parsons and colleagues (2017) found that 28 studies (out of 43) reported positive associations between amount of home mindfulness practice (i.e., dosage) and outcomes, indicating significant pooled results. Reported effects, though significant, were small ($r = .26$). Although these data indicate that dosage may be related to outcomes, Parsons et al. (2017) reported evidence for publication bias as well as broad variability in the amount of practice across studies. In a sample of 174 adults (M age = 47.05) who had been referred to an eight-week Mindfulness-Based Stress Reduction (MBSR) group based on their clinical diagnoses, Carmody & Baer (2008) observed that between-session mindfulness practice was associated with reductions in unhelpful psychological symptoms and stress and improvements in wellbeing, which were mediated by increases in mindfulness. They also found that specific practices were correlated with different reported outcomes (e.g., positive association between minutes practicing body scans and psychological wellbeing). In a cross-section of 1,668 meditators (M age = 45) across various traditions of practice, Bowles et al. (2022) observed a non-linear effect of lifetime meditation practice on outcomes related to psychological wellbeing; specifically, the largest effects of meditation were observed in the first 500 hours practice before plateauing. Though causal claims are impossible, these data further suggest that dosage is a
useful avenue to explore particularly early in one’s practice. Little attention has been placed on this issue in the SEPP literature, and it is unknown if these effects will translate to non-clinical samples.

Related to, yet distinct from, research with sport performers is the growing body of MABI and dosage research with tactical populations (e.g., EMS, military). Stanley and colleagues (2011) conducted an MABI with pre-deployment marines—following a structured protocol that resembled a shortened MBSR protocol—and observed that more mindfulness practice between intervention sessions contributed to significant increases in mindfulness; mindfulness was also inversely associated with perceived stress among the group of marines that engaged in more mindfulness practice. Jha et al. (2017) observed that mindfulness training emphasizing practice of specific exercises (as opposed to didactic instruction) contributed to a protective effect against working memory degradation in a military cohort including 80 soldiers. The body of work produced by Amishi Jha and her colleagues suggests that ~12 minutes per day of mindfulness practice between four and eight weeks is a threshold at which mindfulness practice begins to produce salutary effects related to cognitive functioning and stress (Jha et al., 2017, Stanley et al., 2011, Stanley, 2014). This number has not been confirmed in SEPP studies of MABIs, but was partially replicated by Basso et al. (2019) in a sample of healthy adults between the ages of 18 and 45 who had no previous meditation experience. Compared to control group participants who listened to a daily 13-minute podcast, participants engaging in 13 minutes per day of meditation (i.e., breathing meditation and body scan) reported significant reductions in mood disturbances and emotion regulation difficulties, and improvements on a range of cognitive functioning tasks. (e.g., Stroop task, Mnemonic Similarity Task). Future research would benefit from replication studies with more targeted samples—like sport participants. It is
also important to note that Dr. Jha’s work has primarily been conducted with tactical populations using an MABI that is slightly different than MABIs typically integrated with athlete populations (e.g., MSPE, MAC). Up to this point, MABIs have been discussed more generally, but it is important to note that the structure, content, and delivery of MABIs differs depending on the program; further study is needed to compare opposing MABI training programs to determine potential differential effects.

In addition to the possible influence of dosage, readiness to engage in MABIs is another possible driver of change—which also may be related to dosage such that readiness may impact the degree of engagement, which ultimately could influence outcomes. In the context of PST, readiness has been assessed via The Transtheoretical Model (TTM) of behavior change which proposes that individuals progress through different stages of change as they work toward adopting or extinguishing a specific behavior (Prochaska & DiClemente, 1984). From early to later readiness, the stages of change include precontemplation, contemplation, preparation, action, maintenance, and termination (Prochaska & DiClemente, 1984). TTM, which includes the aforementioned stages of change as well as specific processes of change associated with movement between the different stages, has been used as a theoretical model with various populations and presenting concerns that people wish to change; some of these presenting concerns include dependence on alcohol, tobacco, or other substances, unhealthy exercise and health behaviors, and engagement in psychotherapy (Krebs et al., 2018; Prochaska et al., 2008). Some research in SEPP has used TTM to understand engagement in sport psychology consulting and use of psychological skills, though the evidence base is small. For example, Leffingwell and colleagues (2001) found circumstantial evidence suggesting that stage of change as measured by
TTM predicted future mental skills consultation—participants in the action stage were more likely than contemplators and pre-contemplators to seek consultation at follow-up.

Keeler and Watson (2009) also found that no pre-contemplators sought individual sport psychology consultation after a five-day intervention period (consisting of team-based sport psychology workshops) with their team of 31 elite, female-identified rugby players in the U.S. Though readiness has been used sparingly to understand how participants may engage in interventions in the context of PST, it has not been used as a moderator to predict if and how participants engage with and change following PST interventions—and has not been used at all to understand change following MABIs in sport. Outside of sport, Krebs and colleagues (2018) observed in the clinical literature that pre-psychotherapy stage of change might predict outcomes; specifically, later pre-treatment stage of change was associated with better post-treatment outcomes. Therefore, it is reasonable to predict that later stage of change may predict more engagement in, and better outcomes following, an MABI with athletes.

While quantitative studies provide details about possible MABI effects or mechanisms through which they may influence athletes, qualitative investigations provide another perspective on athlete experiences with and attitudes toward MABIs. Baltzel et al. (2014) interviewed seven female-identified NCAA Division I soccer players who participated in a 12-session Mindfulness Meditation Training for Sport (MMTS) intervention consisting of 30-minute modules. Many participants reported benefits related to the training, while also noting that they were hesitant to participate in the training at first and found meditation more difficult to engage in at the start of the intervention. Interviewees experienced a positive shift in their attitudes as they practiced more and were able to connect the practice to sport participation. This finding could suggest that pre-intervention attitudes or readiness influenced engagement or outcomes to some degree, and
that attitudes and readiness may change through an MABI. Cote and Colleagues (2019) similarly interviewed nine collegiate tennis players following an MMTS 2.0 intervention, and while they observed many benefits in practicing mindfulness, they also observed some associated difficulties and discomfort. This important perspective is less often reported in the MABI literature in sport, which tends to focus more on the benefits of mindfulness practice than drawbacks or negative experiences. Research investigating attitudes toward sport psychology services suggests that some sport participants are still hesitant to engage in sport psychology consultation (Martin et al., 2012), though athletes with previous experience to sport psychology services generally have more positive attitudes toward sport psychology (Martin et al., 2005). It is thus reasonable to expect that not all athletes would be open to engaging in an MABI.

Understanding how readiness and attitudes potentially interact to influence outcomes following MABIs with athletes could clarify questions about for whom MABIs are more effective. It would also be useful to understand how athlete readiness and attitudes related to mindfulness changes over the course of an intervention. These issues are of particular salience in SEPP research because randomization often occurs at the team level, and interventions are delivered to groups.

Though some studies have explored the role that dosage and attitudes could play in influencing outcomes, no specific study in the MABI and sport literature has investigated the explanatory power of these variables either as predictors or moderators. Therefore, the present study has three primary aims. The first aim is to replicate previous findings associated with change following an MABI—specifically related to flow, psychological distress, mindfulness, emotion regulation, performance, and other constructs empirically linked to MABIs (Glass et al., 2019; Josefsson et al., 2017; Kostrna & D’Addario, 2022)—using a comparison group and a manualized protocol (Mindful Sport Performance Enhancement; Kaufman et al., 2018). The
second aim is to understand if stage of change regarding engagement in mindfulness training (i.e., readiness) and attitudes toward sport psychology impact change during an MABI. The third and final aim of the present study is to explore the potential associations between readiness, dosage, and outcomes, and specifically whether dosage (i.e., between-session practice of mindfulness exercises) and attitudes toward sport psychology moderate any associations between readiness and outcomes.

Method

Research Design

To address the aims of the study, a longitudinal, non-randomized control group design was utilized to evaluate the immediate and short-term follow-up effects (i.e., six weeks) of an MABI. Quantitative outcomes of interest in the present study included flow, psychological distress (i.e., depression, anxiety, and stress), mindfulness, emotion regulation, attitudes toward sport psychology, self-rated sport performance and enjoyment, stage of change as it relates to engagement in mindfulness practice (referred to as “readiness” from this point forward), and life satisfaction. Another relevant outcome was the amount of between-session mindfulness practice (referred to as “dosage” of mindfulness) in which participants engaged—measured by weekly self-report.

Sampling and Recruitment

Convenience sampling was utilized to recruit study participants. Specifically, 28 head coaches at two NCAA Division II and III universities in the Appalachian region were contacted in the fall of 2021 via email and offered mindfulness training for their teams in their spring 2022 preseason or offseason periods (i.e., January-May of 2022) in one of two six-week timeframes: either mid-January to late-February, or late-February to early April. Additionally, the first author
and one research associate attended athletics department staff meetings at both universities to share details about the intervention and research opportunity. Research participation was introduced as a voluntary component, and athletes would be able to opt out of the research and still participate in the MABI. Five coaches from two universities demonstrated interest, and ultimately four coaches (one men’s team and three women’s teams) agreed to have their teams participate. Though randomization to condition (i.e., intervention or waiting-list (WL) control) was initially communicated as a requirement to their participation in recruitment messages, all four coaches said that only one of the two timeframes was feasible, so randomization was not possible. Thus, all teams were assigned to the intervention or WL groups based on availability.

**Participants**

Sixty-five student-athletes (SAs) from Acrobatics and Tumbling (Acro; $N = 22$), Women’s Volleyball (Volleyball; $N = 13$), Men’s Soccer (MSOC; $N = 13$), and Women’s Soccer (WSOC; $N = 17$) initially consented to research participation, though there was a 12.31% attrition rate during the intervention period and a 26.15% attrition rate between pre-intervention and follow-up; 57 SAs across all four teams completed MSPE and pre- and post-intervention assessments, and 48 SAs completed MSPE as well as pre-, post-, and follow-up assessments. The sub-sample that completed both pre- and post-intervention assessments (i.e., $n = 57$) consisted of 13 male-identified SAs and 45 female-identified SAs, with a mean age 19.36 ($SD = 1.10$). The sub-sample that completed pre-, post-, and follow-up data (i.e., $n = 48$) consisted of eight male-identified athletes and 40 female-identified athletes, with a mean age of 19.44 ($SD = 1.15$). Most of the participants who completed the intervention identified as Caucasian ($n = 49$). A fraction of participants practiced mindfulness or meditation at the start of the MABI (9.23%), though a larger number had been exposed to sport psychology in some capacity (23.08%). Volleyball,
MSOC, and WSOC competed for an NCAA Division III institution, and Acro competed for an NCAA Division II institution.

Assessments

*Background Questionnaire (Appendix A)*

A ten-item background questionnaire assessing demographic data was included before the first round of data collection. Participants were asked to provide information related to age, gender identity, ethnicity, grade level, sport history, and experience with mental skills training and mindfulness. Because engagement in meditation has been linked with trauma re-experiencing (Britton et al. 2021; Farias et al., 2020), two trauma screening measures were included on the background questionnaire to flag participants who were at-risk for adverse experiences: participants were asked to respond to a close-ended (i.e., yes or no) question inquiring if they had a history of trauma. An abbreviated, two-item PTSD Checklist-Civilian (PCL-C; Lang & Stein, 2005) was used as a PTSD screening tool. Though normed when the DSM-IV was still in use, Lang and Stein (2005) observed that the two-item measure was strongly correlated with the original 17-item PCL-C measure ($r = .89$) in use at the time. The two items also included in the trauma re-experiencing sub-scale of the current 20-item PTSD Checklist for DSM-V assessment (Blevins et al., 2015). Lang et al. (2012) commented that the two-item PCL-C can serve as an effective screening tool, though they recommend using the six-item PCL or the full version for symptom monitoring (which was not done in the present study). The Cronbach’s alpha value for PCL-C items used in the present study was .86.

*Cognitive and Affective Mindfulness Scale – Revised (CAMS-R; Appendix B)*

Feldman and colleagues (2007) created the 12-item CAMS-R as a multi-dimensional assessment of mindfulness, including four first-order factors: attention, present focus, awareness,
and acceptance. Participants respond to each item on a four-point Likert scale ranging from one (“rarely/not at all”) to four (“almost always”), yielding one total score; higher scores indicate higher levels of mindfulness. A CFA, conducted by Feldman et al. (2007), indicated that the data fit the hypothesized model, $\chi^2(50) = 110.58, p < .0001$, RMSEA = .064, SRMR = .052, CFI = .92. Evidence of convergent validity was observed through strong correlations with existing mindfulness measures (i.e., Freiburg Mindfulness Inventory, Mindful Attention and Awareness Scale), with correlation coefficients greater than .50 (Feldman et al., 2007). With college students, Baer and colleagues (2006) reported acceptable internal consistency of the CAMS-R ($\alpha = .81$) and found that the CAMS-R was moderately and positively associated with three other commonly used mindfulness measures ($.51 < p > .67$; Mindful Attention Awareness Scale, Freiburg Mindfulness Inventory, and Kentucky Inventory of Mindfulness Skills, respectively). Internal consistency reliability from CAMS-R data the present study was acceptable at all three time points. See Table 1 for a list of Cronbach’s alpha values for all measures included in the present study.

**Depression, Anxiety, and Stress Scales (DASS-21; Appendix C)**

The 21-item DASS-21, used to assess three dimensions of psychological distress, was adapted by Lovibond and Lovibond (1995) from the original 42-item measure (Lovibond & Lovibond, 1993). Three seven-item subscales assess participant levels of depression, anxiety, and stress on a four-point Likert scale ranging from zero (“did not apply to me”) to three (“applied to me very much, or most of the time”). Higher scores on each subscale indicate higher levels of psychological distress, and a total score is taken and multiplied by two to correspond with scores on the original DASS measure. A CFA conducted by Henry and Crawford (2005) indicated that this 21-item measure of psychological distress had adequate factor loadings, with a
mean loading of .60 on the general factor and a mean loading of .34 on specific factors. Though some individual factor loadings were low (i.e., below the .40 convention), DASS-21 subscale scores demonstrated evidence of convergent validity with other commonly used inventories (e.g., Beck Depression Inventory, Beck Anxiety Inventory; Henry and Crawford, 2005). Henry and Crawford (2005) also reported acceptable Cronbach’s alpha estimates in their study of a non-clinical sample of adults in the UK, with values ranging from .82 to .93. Like Henry and Crawford, Osman and colleagues (2012) observed that some individual items loaded onto individual factors below the .40 guideline (Kline, 2016). Because second order factor loadings were all above .60, and because the total DASS-21 score was moderately to strongly associated with other measures of psychological distress (e.g., Beck Anxiety Inventory, Beck Depression Inventory-II, respectively), Osman et al. (2012) recommend utilizing a total score. Both subscale scores and a total score were calculated and utilized in analyses in the present study.

**Difficulties in Emotion Regulation Scale – Short Form (DERS-SF; Appendix D)**

The 18-item DERS-SF was adapted by E. A. Kaufman et al. (2015) from the original, well-validated 36-item DERS (Gratz & Roemer, 2004) assessing emotion regulation difficulties. The measure yields one total score and scores on six, three-item subscales of emotion regulation strategies, non-acceptance, impulse control, goals, awareness, and clarity where higher scores indicate more emotion regulation difficulties. Participants respond to each item on a one (“almost never”) to four (“almost always”) Likert scale. A CFA with a sample of 797 American college students indicated acceptable data fit to the hypothesized model, RMSEA = .05, TLI = .96, SRMR = .04; Cronbach’s alpha estimates for each subscale and total score in the study by E. A. Kaufman et al. (2015) all exceeded .70, demonstrating acceptable reliability, and correlations
coefficients between the DERS-SF and DERS ranged from .90 to .97—indicating strong associations.

**Mindfulness Dosage and Between-Session Practice Assessment (Appendix E)**

Mindfulness dosage (i.e., amount of mindfulness practice between intervention sessions) was assessed at seven different time points: before sessions two through six, one week after the final session, and 6 weeks after the conclusion of the intervention. Prior to MABI sessions two through six, participants were asked to complete either a paper/pencil or Qualtrics questionnaire assessing how many times they completed the home practice exercises as described by Kaufman et al. (2018; see appendix L), as well as the type and duration (e.g., YouTube meditation for five minutes) of any other mindfulness practice in which they engaged above and beyond the recommended home practice. Three markers of dosage were thus derived: total dosage (minutes per day) between pre- and post-intervention, total dosage between pre-intervention and six-week follow-up, and percentage of prescribed home practice completed by participants between pre- and post-intervention.

Because adverse effects can occur during or after mindfulness practice, particularly when interventions are not tailored to meet the needs of specific populations (Farias et al., 2020; van Dam et al., 2018), researchers have suggested that it may be best practice to actively monitor for negative experiences as to mitigate harm (Britton et al., 2021). For monitoring purposes, participants were asked after the dosage assessment on a yes/no question whether they had experienced an adverse effect during mindfulness practice between sessions. If they had, they were invited to describe the negative experience and posed with a yes/no question assessing whether they would like to be referred to support services. Open-ended questions also assessed barriers and/or benefits associated with home practice.
**Program Evaluation Questionnaire (PEQ; Appendix F)**

The seven-item post-intervention PEQ—derived from previous investigations of the intervention under study (i.e., Mindful Sport Performance Enhancement; Glass et al., 2019)—was used to understand participant experiences with the program. On the assessment, participants were first asked to indicate the number of intervention sessions they attended. They were then invited to rate their perceived success of the program in helping them make improvements in flow, anxiety, focus, nonjudgement, awareness, and emotion regulation on a one (“not helpful at all”) to seven (“extremely helpful”) Likert scale. These questions were followed by an assessment of how confident participants were that they would continue utilizing mindfulness in sport and everyday life. Finally, open-ended responses assessed what they found most challenging about the intervention, what benefits they felt they received from engaging in the training, and whether they consented to being contacted for a follow-up interview.

**Readiness**

_University of Rhode Island Change Assessment (URICA; Appendix G)_.

Readiness to engage in mindfulness practice was assessed by adapting a version of the URICA used by Massey et al. (2015), who evaluated the utility of their adapted version to understand readiness in the context of traditional psychological skills training with college athletes. The original URICA (McConnaughy et al., 1983) was developed as a 32-item measure to assess behavior change using the Transtheoretical Model (TTM). Massey et al. (2015) used a variation of Leffingwell et al.’s (2001) version of the URICA as a 12-item measure, and found that a four factor (pre-contemplation, contemplation, action, maintenance) structure demonstrated acceptable model fit, RMSEA = .078, CFI = .92. Participants are asked to respond to comments on a five-point Likert scale ranging from one (“strongly disagree”) to five (“strongly agree”), with three questions
corresponding to one of four separate factors. The highest sub-scale score indicates the stage of readiness (e.g., if participants score highest on the pre-contemplation sub-scale, the participant is labelled as such). Though the URICA provides continuous data, it was treated as categorical for analyses (i.e., participants fell into one of four possible stages depending on the highest subscale score). The language of the URICA was modified to assess readiness to practice mindfulness as opposed to readiness to use of mental skills (e.g., “I have used mindfulness for at least six months and plan to continue working on being mindful” was modified from the original “I have used the mental skills I have learned for at least 6 months and plan to continue working on them”). Cronbach’s alpha values for time one subscales in the present study were .68, .70, .88, and .90 for precontemplation, contemplation, action, and maintenance, respectively.

**Single-Item Readiness Assessment.** A second, single-item assessment of readiness used by Minkler et al. (2022) was also included. The item includes a brief description of mindfulness, after which participants are invited to indicate one of five responses that best categorizes their relationship to mindfulness. The five responses are based on one of five stages of change as described by TTM. This item was included on the Background Questionnaire (Appendix A), and it was primarily used to help with categorization if participants had reported equal scores on multiple sub-scales of the URICA. For example, if a participant reported equal scores on the contemplation and action sub-scales and indicated that they were in contemplation on the single item readiness measure, then they were categorized as contemplators given that there was more evidence for that stage classification.

**Satisfaction with Life Scale (SWLS; Appendix H)**

The five-item SWLS (Diener et al., 1985) assesses global life satisfaction on a seven-point Likert scale ranging from one (“strongly disagree”) to seven (“strongly agree”); higher
scores indicate greater life satisfaction. In the original validation study, Diener et al. (1985) found that the SWLS demonstrated moderate to strong correlations with other assessments of well-being ($r > .30$). In summarizing the updated psychometric information from over two decades of research, Pavot and Diener (2008) reported a high degree of internal consistency reliability across several studies (Cronbach’s alpha levels greater than .80). Divergent validity has been demonstrated via strong, significant inverse correlations between the SWLS and clinical measures of distress (e.g., BDI, Symptom Checklist-90; Pavot & Diener, 2008).

**Short Dispositional Flow Scale-2 (SDFS-2; Appendix I)**

The SDFS-2, adapted by Jackson and colleagues (2008) from the original 36-item DFS, includes nine items assessing each of the nine elements of flow as described by Csikszentmihalyi’s (1990) conceptualization. Participants are asked to rate how often they experience each component of flow during their sport on a five-point Likert scale from one (“never”) to five (“always”). One total score is reported, with higher scores indicating more frequent flow experiences. There is good evidence for reliability and validity of this measure: through confirmatory factor analysis (CFA), Jackson et al. (2008) provided evidence of validity and internal consistency reliability, demonstrating that the nine-item measure had acceptable model fit, RMSEA = .08, CFI = .95, SRMR = .04. Moreover, Martin et al. (2006) reported an acceptable Cronbach’s alpha estimate of .82.

**Sport Performance, Enjoyment, and Expectancy Effects (Appendix I)**

Self-rated sport performance was assessed with one-item on a 1 (very poor) to 9 (very good) Likert Scale. Josefsson and colleagues (2019) assessed sport performance in a similar fashion, although they utilized a 10-point Likert scale. On the same nine-point Likert Scale, participants are also asked to rate their sport enjoyment. Moreover, to assess pre-
intervention expectancy effects, participants were also asked to assess how they expected to rate their performance and enjoyment after the MABI.

*Sport Psychology Attitudes – Revised Form (SPA-R; Appendix K)*

The 25-item SPA-R, developed by Martin and colleagues (2002), assesses athlete attitudes toward sport psychology services on a seven-point Likert scale from one (“strongly disagree”) to seven (“strongly agree”) with four sub-scales: stigma tolerance, confidence, personal openness, and cultural preference. Higher scores indicate more positive attitudes toward sport psychology and the utilization of services on all sub-scales except stigma tolerance—where lower scores indicate higher tolerance of stigma (and therefore better attitudes toward sport psychology). A CFA with over 1,000 athletes from the United States, Germany, and British athletes was conducted by Martin et al. (2002), testing a four-factor solution, which indicated acceptable fit indices, RMSEA = .06, CFI = .96, SRMR = .05.

With a similar population of athletes from the United States, Germany, and Great Britain, Martin et al. (2005) reported Cronbach alpha values of .82 and .84 for confidence in sport psychology consulting and stigma tolerance, respectively; for personal openness and cultural preference, alpha values were below the .70 guideline at .61 and .66, respectively. A recent study by Ballesteros and colleagues (2019) using the SPA-R with high school athletes also reported low Cronbach alpha values on the personal openness (.56) and cultural preference (.60); due to the repeatedly low Cronbach alpha values, those subscales were not included; only the confidence in sport psychology consulting and stigma tolerance subscales were used (15 items in total). Compared to previously studied samples of college student athletes (i.e., Martin et al., 2005), athletes at baseline in the current study reported higher confidence in sport psychology
and less stigma (5.5 compared to 4.9, and 2.00 compared to 2.46 on confidence and stigma tolerance, respectively).

**Intervention**

Participants engaged in a 6-week Mindful Sport Performance Enhancement (MSPE) training, using the protocol created by Kaufman and colleagues (2018). Each session was 60-minutes in duration. In this structured yet adaptable MABI that includes elements from Jon Kabat-Zinn’s Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy (MBCT), sport participants are taught mindfulness both didactically and experientially in weekly, hour-long sessions. Exercises are initially sedentary in nature (e.g., diaphragmatic breathing, sitting meditations) and evolve to include practices during which mindfulness is practiced in motion (i.e., mindful walking, mindful hatha yoga). The culminating practice is a sport-specific mindfulness exercise. The sport-specific meditation is typically practiced in the final two sessions, but the protocol had to be adapted for MSOC and WSOC because of weather and availability of space—therefore the sport meditation for those teams was only practiced in session five and discussed (but not practiced) in session six. In addition to various mindfulness practices, a discussion component is also included in each session. Prescribed home practice includes roughly 377 minutes between weeks one through five (~11 minutes per day), with no practice assigned after the final session. See Appendix L for an outline of each session, with prescribed home practice included.

**Procedure**

Coaches were contacted about receiving a free sport psychology workshop before Institutional Review Board (IRB) approval was obtained. After teams agreed to participate and schedules were finalized, final IRB materials were submitted, which included documents signed
by each coach agreeing to have their teams participate and recognizing the optional nature of research participation. Once IRB approval was received, the first author held informational meetings with each team, where participants were informed about the conditions of research participation and that they could engage in the MABI without participating in the research component. The initial MSPE teams (Acro and Volleyball) were given details about MSPE and information about mindfulness at the informational meeting, including the range of experiences they might have while engaging in mindfulness practices. In consultation with the counseling centers at each institution, referral plans were also established based on institutional policies. Participants were given information about how to seek help if they had a negative or adverse experience; weekly dosage assessments served as regular monitoring for adverse experiences needing clinical intervention.

To protect against expectancy effects and limit the degree to which they could learn about and potentially begin practicing mindfulness before the intervention, WL control participants were given less information about the MABI at time one. Instead, at the initial informational meeting, control participants were told they would be engaging in a sport psychology mental skills training program during their off-season training period (which was set to begin six weeks later), and that we would be collecting pre-intervention data at two time points and comparing that data to teams who would be engaging in the same intervention before them. One week before they were to engage in the MABI, WL control participants were given details about the nature of the intervention (as described in the previous paragraph) and provided with another opportunity to opt out.

After describing the voluntary research component and the fact that the intervention leader would be blind to those who agreed to participate and those who did not agree, the first
author left the room for participants to review and choose to sign (or not sign) the informed consent document. After reviewing the consent document, participants were invited to complete the battery of pre-intervention assessments described previously. The informed consent document served as the cover page of the questionnaire booklets, which were placed in individual envelopes and sealed by each athlete upon completion. Each participant created a six-digit identification number based on the last four digits of their cell-phone numbers and the first two digits of their home ZIP code for anonymization. All identifying information was removed from questionnaire booklets by the senior author, who recorded names and identification numbers in a Microsoft Excel File to which the first author did not have access (to keep the intervention leader blind to research participation). De-identified questionnaires were kept in a locked file cabinet.

The questionnaires were completed by initial MSPE participants at three time points (pre-intervention, post-intervention, six-week follow-up) and four times by WL control participants (pre-intervention 1, pre-intervention 2, post-intervention, six-week follow-up). Questionnaires were completed via pencil and paper at times one through three, and via Qualtrics at time four (as WL control participants had gone home for the semester). The questionnaires were counterbalanced using a Latin Square design at each time point. Following the intervention, participants were asked to complete the same battery of assessments minus the background questionnaire but including the PEQ. Immediately preceding sessions two through six, participants were asked to complete the dosage and between-session practice assessment via paper and pencil or Qualtrics; the intervention leader left the room during that time.

Because the initial MSPE group concluded their training in the middle of the semester, one of the conditions recommended by initial MSPE group coaches was that follow-up meetings
be scheduled after the conclusion of the formal MSPE program. Kaufman et al. (2018, p. 14) recommend that practitioners avoid “parachuting in”—in other words, dropping in for the duration of the intervention and then ceasing contact upon program completion. For meaningful integration of mindfulness into the culture of the team, according to Kaufman et al. (2018), the MSPE protocol is meant to set the foundation for continued future contact and engagement.

Considering the recommendations of Kaufman et al. (2018) and meeting the needs of the coaches in the study, initial MSPE teams had weekly follow-up meetings ranging in duration from 30-60 minutes where sedentary MSPE exercises were practiced, and discussions of home practice and application took place. These follow-up meetings took place between post-intervention and follow-up data collection, and they were voluntary. Because WL control teams concluded the training at the end of their semesters, follow-up meetings were not feasible. See Appendix L for a description of MSPE and follow-up sessions.

Consulting Orientation, Experience, Education, and Positionality

The first author, who also served as the intervention leader, has been engaged in supervised mental performance consulting for nearly five years, having worked as a collegiate coach prior to pursuing formal education in SEPP. He also currently works as a mental health counseling intern, providing individual and group psychotherapy to emerging adults in a college counseling center and a private practice. His consulting theoretical orientation is largely humanistic and person-centered, though he draws heavily on mindfulness- and acceptance-based interventions and principles (e.g., Acceptance and Commitment Therapy, Dialectical Behavior Therapy, Mindfulness-Based Cognitive Therapy) and Polyvagal Theory (Porges, 2001) in his applied work and conceptualizes cases through the lens of the Adaptive Information Processing (AIP; Shapiro, 2018) model. Crane and colleagues (2012) have commented on the need to
develop a certain level of competence with regards to training and education for mindfulness teachers; to that end, the first author has taken formal mindfulness courses, pursued and completed MSPE teacher training, consulted with and continues to seek supervision in both his delivery and personal practice of mindfulness, and has maintained a consistent personal mindfulness practice for over five years. Moreover, the first author and the senior author have been engaged in mindfulness research, applied work, and practice for nearly three decades combined.

The intervention leader’s experiences all contribute to an important perception and expectation about what might be expected to occur during and after mindfulness training with athletes. His position as a mindfulness researcher, applied practitioner, teacher, and student of mindfulness and Buddhist philosophy in general colors the lens through which he and the research team have approached this study and the data that has been produced. To balance the degree to which these experiences might influence data analysis and interpretation, the project includes authors with expertise in SEPP applied practice and clinical psychotherapy as well as an external author from another field (i.e., Educational Psychology). Including these differing perspectives was intentional in an attempt to view the data and results from a less biased perspective and compartmentalize personal values as much as possible. A postpositivist stance was adopted in the data analysis and interpretation, which posits that an objective reality exists but can only be imperfectly understood (Ponterotto, 2005), and attempts at triangulation were sought by including multiple perspectives and bracketing of personal expectations and biases (first becoming aware of and documenting such biases through reflexive journaling).
Data Analysis

In addition to computing descriptive statistics regarding baseline characteristics, data were analyzed in four separate approaches. First, to assess between-group change over time (i.e., MSPE vs. WL control), a series of 2x2 and 2x3 mixed repeated-measures analyses of covariance (RM ANCOVAs) were conducted using SPSS (IBM, 2020). Time and condition (MSPE or WL control) served as independent variables (IVs), and both attitudes SPA-R sub-scales served as covariates (unless the independence of the covariate assumption was violated, indicated in Tables 3 and 4). Dependent variables (DVs) included flow, psychological distress (i.e., depression, anxiety, and stress), mindfulness, emotion regulation difficulties (and associated sub-scales), life satisfaction, sport performance, and sport enjoyment. Sport psychology attitudes were also examined as DVs in RM analyses of variance (ANOVAs) For sport performance and enjoyment RM ANCOVAs, post-intervention expectations were also included as covariates.

Second, to investigate the potential effects that readiness had on DVs, a series of within-groups RM ANCOVAs were conducted in which readiness served as the IV. Pre-intervention, post-intervention, and 6-week follow-up data from all participants regardless of condition was combined across three time points. Due to low numbers in most of the readiness conditions, readiness was condensed from four stages to two; therefore, participants fell into either high (action or maintenance) or low (contemplation or pre-contemplation) readiness to preserve power. RM ANCOVAs explored differential effects of both time one and time two readiness on outcomes over time, with sport psychology attitudes modelled as covariates.

Third, to explore moderation effects of attitudes toward sport psychology and dosage on the potential relationship between readiness and outcomes, a series of bivariate Pearson correlations, independent samples t-tests, and regressions using the PROCESS macro (Hayes,
2022) were conducted in SPSS (IBM, 2020). Descriptive statistics regarding dosage during the intervention were calculated, as well as percent of home prescribed home practice completed by participants. Bivariate Pearson correlations explored associations between sport psychology attitudes and dosage, and between dosage and change scores on outcomes. Independent samples $t$–tests were used to examine potential differences in dosage depending on readiness and group (i.e., initial MSPE or WL control). Finally, the PROCESS macro was used to explore moderation effects of dosage and attitudes.

Finally, PEQ ratings of program success were explored with descriptive statistics; moreover, potential differences in ratings of program success depending on readiness and attitudes toward sport psychology were probed using independent samples $t$–tests and bivariate Pearson correlations, respectively. Qualitative data assessing benefits, barriers, and challenges faced throughout the intervention was coded using inductive thematic analysis (Braun et al., 2016) and influenced by the coding used by Minkler and colleagues (2022).

**Results**

**Descriptive Statistics and Baseline Characteristics**

Independent samples $t$-tests were conducted at baseline ($N = 65$) to determine if any differences existed between conditions on DVs. The initial MSPE group, compared to the WL control group, reported significantly higher confidence in sport psychology services, $t(63) = 2.28, p < .05$, and less stigma associated with sport psychology service provision (though not statistically significant) at time one, with small effects. There was also a significant difference between the initial MSPE group and WL control group on the DASS-21 sub-scale of depression, $t(63) = 2.04, p < .05$, such that MSPE participants reported significantly higher depression scores than control participants. There were no other statistically significant between-groups differences
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at baseline on outcomes (see Table 1). For readiness frequencies at times one through three, see Table 2. Regarding dosage, initial MSPE participants practiced MSPE exercises for an average of 6.54 minutes per day \( (SD = 4.84) \) between time one and time two and 5.17 minutes per day \( (SD = 4.00) \) between time one and time three; WL control participants—once they had completed the intervention—practiced MSPE exercises for an average of 6.67 minutes per day \( (SD = 5.70) \) between time two and time three and 5.10 minutes per day \( (SD = 5.67) \) between time two and time four. There were no significant differences in amount of practice between groups.

With the overall sample \( (N = 65) \), a series of within-groups Pearson correlations also probed the degree to which expectancy effects and attitudes toward sport psychology were associated. There were significant inverse correlations between stigma tolerance and expected improvements in both performance and enjoyment \( (r = -.59 \text{ and } -.50) \), respectively, such that higher ratings of expected post-intervention performance and enjoyment were associated with less stigma. Moreover, there was a significant, positive association between expected improvements in sport enjoyment and confidence in sport psychology \( (r = .32) \). See tables 8, 9, and 10 for means, standard deviations, and correlations among primary outcomes at each time point.

**Between-Groups Differences: Time 1 and Time 2**

A series of 2 x 2 repeated measures analyses of covariance (RM ANCOVAs) were conducted to compare change between time 1 and time 2 on DVs between conditions. The subsample supporting these analyses was 57. Due to statistically significant differences between groups at baseline on attitudes toward sport psychology (i.e., confidence in sport psychology services and stigma), they were included as covariates in these analyses. See Table 3 for RM ANCOVA results and estimated marginal means, including notations indicating when certain
assumptions were violated (the independence of the covariate assumption was violated on analyses of anxiety, depression, DERS-SF impulse control, DERS-SF awareness, and sport enjoyment; covariates that violated the assumption were thus removed). There were no significant condition-by-time effects on flow, anxiety, stress, and life satisfaction, and effect sizes were negligible. There were also no significant condition by time effects on sport enjoyment and mindfulness, though effect sizes were small to moderate, respectively; the MSPE group reported non-significant improvements in both sport enjoyment and mindfulness, whereas WL control participants reported non-significant reductions in reported mindfulness.

Regarding overall psychological distress (i.e., total DASS-21 score), there was a significant condition by time interaction, $F(1,54) = 4.54, p < .05, \eta^2_p = .08$. Initial MSPE participants reported reductions in psychological distress between pre- and post-intervention, whereas WL control participants reported increases. On the depressive sub-scale of the DASS-21, a significant condition by time effect was observed $F(1,54) = 4.23, p < .05, \eta^2_p = .07$. Initial MSPE participants reported reductions in depression, whereas small increases were observed among WL control participants. There was also a significant condition by time effect on overall emotion regulation difficulties, $F(1,52) = 4.44, p < .05, \eta^2_p = .08$. Follow-up Bonferroni $t$-tests revealed significant reductions in emotion regulation difficulties in the MSPE group, and no change in the WL control group. There was also a significant condition by time effect on the non-acceptance of emotional states subscale of the emotion regulation difficulties measure, $F(1,53) = 4.87, p < .05, \eta^2_p = .08$, with Bonferroni $t$-tests indicating significant reductions among MSPE participants only. The final significant interaction between condition and time was observed on self-rated sport performance, $F(1,53) = 4.72, p < .05, \eta^2_p = .09$. Expected sport performance was also included as a covariate, and Bonferroni $t$-tests found that MSPE
participants reported significant improvements compared to WL control participants, who reported non-significant reductions. With moderate effects ($\eta^2_p = .07$), MSPE participants reported reductions in difficulties related to emotion regulation strategy use whereas WL control participants reported increases, though the interaction was not significant.

**Between-Groups Differences: Time 1, Time 2, and Time 3**

To explore the potential longer-term effects of the intervention and follow-up practice, a series of 2 x 3 RM ANCOVAs were also conducted, which included the third data collection time point. The sub-sample supporting these analyses was 56, as one female-identified participant dropped out. At time three, the WL control group had completed the intervention and their post-intervention assessments, and the initial MSPE group completed their 6-week follow-up assessments. See Table 4 for RM ANCOVA results and estimated marginal means, including notations indicating when certain assumptions were violated (the independence of the covariate assumption was violated on analyses of anxiety, depression, stress, DERS-SF clarity, and sport enjoyment; covariates that violated the assumption were thus removed). There were no statistically significant interactions between condition and time on flow, anxiety, depression, stress, life satisfaction, or sport performance—though small effect sizes and expected directions of change were observed on anxiety, life satisfaction, and sport performance measures (i.e., anxiety went down and life satisfaction and sport performance went up for MSPE participants with little or no change observed in WL control participants, even after engaging in the intervention, on each of the measures besides sport performance).

There was a significant interaction between condition and time on mindfulness, $F(2, 102) = 3.76, p < .05, \eta^2_p = .07$, such that initial MSPE participants reported significant increases in mindfulness between times one and three. WL control participants reported non-significant
decreases in mindfulness. There was also a significant interaction between condition and time on emotion regulation difficulties, $F(1, 102) = 3.77, p < .05, \eta^2_p = .07$, on the nonacceptance of emotional states subscale, $F(1, 102) = 3.40, p < .05, \eta^2_p = .06$, and on the awareness of emotional states subscale, $F(1, 102) = 3.46, p < .05, \eta^2_p = .06$. In each case, initial MSPE participants reported significant reductions, whereas WL control participants reported non-significant increases. None of the remaining emotion regulation difficulties subscales yielded significant results. Finally, there was a significant interaction between condition and time on sport enjoyment, $F(1, 102) = 4.14, p < .05, \eta^2_p = .08$, where initial MSPE participants reported significant increases compared to WL control participants.

**Within-Groups Differences: Readiness and Change in Outcomes**

Due to low numbers in the four possible stages of readiness of the URICA, participants were categorized into either high (i.e., action or maintenance) or low (i.e., contemplation or precontemplation) readiness. At time one, 14 participants were categorized into the high readiness group, and 44 were categorized into the low readiness group based on their URICA score. After the intervention, 21 participants indicated on the URICA that they were higher in readiness, and 37 indicated they were lower in readiness. RM ANCOVAs explored potential differences in outcomes (i.e., flow, depression, anxiety, stress, mindfulness, life satisfaction, emotion regulation difficulties, and attitudes toward sport psychology) between pre-, post, and follow-up data collection depending on readiness, with a sub-sample of 48 SAs. Initially, time one (i.e., pre-intervention) readiness was modeled as the IV in RM ANCOVAs. There were no significant effects of time one readiness on change in outcomes between time one and times two or three.
Because there was noticeable movement between readiness conditions from time one to time two, post-intervention readiness was modeled as the IV in a second series of RM ANCOVAs investigating change between times one and three, controlling for attitudes toward sport psychology. There were significant interactions between readiness and time on mindfulness, $F(2, 90) = 4.04, p < .05, \eta^2_p = .08$, life satisfaction, $F(2, 86) = 3.70, p < .05, \eta^2_p = .08$, and sport enjoyment, $F(2, 86) = 4.36, p < .05, \eta^2_p = .09$, with higher readiness participants reporting significant increases between time one and time three on each DV. A main effect for time was observed on the total DASS-21 measure, $F(2,92) = 3.37, p < .05, \eta^2_p = .07$, indicating that participants, regardless of readiness, reported significant reductions in psychological distress between pre-intervention ($M = 26.54, SD = 4.5$) and follow-up ($M = 23.48, SD = 3.18$). The Greenhouse-Geisser statistic was interpreted due to a violation of sphericity, and no covariates were included due to violations in the independence of the covariate assumption when SPA-R subscales were included. See Table 5 for a complete list of RM ANCOVA results and estimated marginal means, including notations indicating when certain assumptions were violated.

**Within-Groups Differences: Readiness, Attitudes, and Dosage**

Bivariate Pearson correlations probed potential associations between attitudes toward sport psychology, readiness, and dosage among the 57 participants who completed pre- and post-intervention questionnaires, and the 48 participants who completed pre-, post, and follow-up questionnaires. Moderate, positive associations were observed between confidence in sport psychology at time two and dosage between times one and two ($r = .30$) and times one and three ($r = .35$). No other significant associations were observed. A second set of Pearson correlations examined associations between change scores on outcomes and dosage. Time one scores on all measures were subtracted from time two and time three scores; change scores were thus included.
with both dosage assessments (i.e., between pre- and post-intervention \((n = 57)\), and between pre-intervention and follow-up \((n = 48)\)) in analyses. Total practice mindfulness between pre-intervention and follow-up was associated with significant improvements in emotional clarity \((r = .45; \text{DERS-SF sub-scale})\). Between-session mindfulness practice during the intervention period (i.e., between times one and two) was also associated with significant improvements in emotional clarity \((r = .47)\), in addition to reductions in stress \((r = .30)\) and anxiety \((r = .29)\). There were no other significant associations.

Based on a series of independent samples \(t\)-tests with the overall sample \((N = 65)\), there was a significant time one difference between high and low readiness participants on stigma, \(t(44) = -2.05, p < .05\), with higher readiness participants reporting significantly less stigma \((M = 1.73, SD = 1.07)\) than lower readiness participants \((M = 2.55, SD = 1.36)\). The effect size was small \((d = .40)\). No other significant differences were observed between time one readiness and attitudes or dosage across the intervention period. At time two, there was a significant difference between high and low readiness on dosage during the intervention period (i.e., pre- to post-intervention) among the 57 SAs who completed the training, \(t(56) = 2.12, p < .05\), such that higher readiness participants practiced intervention exercises significantly more per day \((M_{\text{minutes}} = 8.48, SD = 6.12)\) compared to lower readiness participants \((M_{\text{minutes}} = 5.54, SD = 4.42)\). The effect size was moderate \((d = .55)\). Initially, independent \(t\)-tests were conducted to explore differences in total dosage (i.e., between pre-intervention and follow-up) by readiness, though the homogeneity of variance assumption was violated, and a significant positive skew (2.10) was observed. Thus, a Mann Whitney U test was conducted due to account for the lack of equivalency by group. Higher readiness participants engaged in significantly more mindfulness practice \((M = 6.74 \text{ minutes}, SD = 5.59, Mdn = 5.59)\) compared to lower readiness participants \((M = 5.54 \text{ minutes}, SD = 4.42, Mdn = 5.59)\)
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= 4.12 minutes, $SD = 3.93$, $Mdn = 3.93$) between pre-intervention and follow-up ($U = 152$, $p < .05$). Descriptive statistics also revealed that higher readiness participants reported completing just over 53% of assigned home practice whereas lower readiness participants practiced just over 40% of assigned home practice exercises.

Differences in dosage were also examined between groups, via independent samples $t$-tests, and between teams, via univariate ANOVAs, to determine whether differences in engagement with MSPE exercises between sessions during the intervention period existed. Between groups (i.e., initial MSPE group or WL control), there were no significant differences in dosage during the intervention, $t(56) = -0.09$, $p > .05$. Initial MSPE participants practiced for an average of 6.54 minutes per day ($SD = 4.84$) between sessions and WL control participants practiced for 6.67 minutes per day ($SD = 5.70$) between sessions. Results from the univariate ANOVA revealed a significant effect of team on dosage, $F(1,54) = 3.01$, $p < .05$. Post-hoc Bonferroni $t$-tests revealed that men’s soccer athletes engaged with MSPE exercises significantly more than women’s soccer, but not more than Acro or Volleyball. See Table 7 for dosage by team during the intervention.

To explore the potential effects of sport psychology attitudes and dosage on the relationship between readiness (i.e., high or low) and outcomes (i.e., flow, depression, anxiety, stress, mindfulness, emotion regulation difficulties, and life satisfaction), simple moderation analyses were conducted, respectively, using the PROCESS Macro (Hayes, 2022). These analyses were supported by a sub-sample of 48 participants (i.e., those who completed pre-, post, and follow-up questionnaires). With time two readiness modeled as the IV, significant time three outcomes from the previous section (i.e., mindfulness, life satisfaction, and sport enjoyment) were included as the DV in each analysis while controlling for time one DV scores. Time two
Drivers of change in MABIS readiness was used as the independent variable due to the movement between stages of change observed between pre- and post-intervention and because of the previously discussed relationship between time two readiness and outcomes. Independent moderators included time two confidence in sport psychology and stigma tolerance, as well as both dosage estimates (i.e., time one to time two dosage and time one to time three dosage, respectively). Given the small sample size and evidence of positive skew in dosage estimates, robust standard errors were modeled using the Davidson-MacKinnon correction. None of these regression analyses indicated significant interactions, therefore suggesting no evidence of moderation.

**PEQ Feedback and Open-Ended Responses**

On average, participants who completed pre- and post-intervention questionnaires attended just over five sessions. Rating of program success as it related to flow, anxiety reduction, focus and attention, non-judgement and non-reactance, and emotional awareness and regulation ranged from 5.09 to 5.55 out of seven. There were notable differences in ratings of program success based on both post-intervention readiness and pre-intervention attitudes toward sport psychology. Specifically, athletes who had shifted into higher readiness athletes gave significantly higher ratings of program success in promoting flow, anxiety reduction and relaxation, and emotional awareness and regulation. Moreover, higher readiness athletes were significantly more confident that they would continue practicing mindfulness in the context of their sport and their everyday life. See Table 6 for t-test results. Differences in ratings of program success based on pre-intervention readiness were also explored, with no significant differences observed between high and low readiness.

There were 55 responses to the PEQ question related to benefits observed from engaging in the MABI and/or practicing mindfulness during the intervention period, though only 54 were
used as one comment was unrelated to the intervention. Eight categories emerged from the data after going through the six phases of thematic analysis as described by Braun and colleagues (2016), with a prior codebook based on similar questions serving as the basis for the codebook in the present study (see Minkler et al., 2022). Categories were audited by two committee members and adjustments were made based on their feedback. The most commonly reported benefit reported by participants who completed the intervention was related to “self-regulation of arousal or emotions,” with 55% of responses classified in this category. Many responses mentioned benefits related to reduced anxiety and stress or increased calmness and/or relaxation as a result of engaging in the program or meditative practices. By readiness, 74% of high readiness participants (n = 15) offered a response that was included in this category whereas 41% (n = 15) of lower readiness participants reported benefits related to “self-regulation of arousal or emotions.”

Over 35% of total participants offered a response that was categorized as “focus on the present moment, concentration, and/or grounding.” Athletes often mentioned that they had become more focused or had learned new ways to focus, refocus, and concentrate in the present moment. Nineteen percent (n = 4) of higher readiness participants and 41% (n = 15) of lower readiness participants offered a response that was included in this category. Nearly 30% of participants commented that they experienced benefits related to “awareness/self-awareness, non-judgment, and/or acceptance.” Many responses addressed an enhanced capacity not to judge thoughts as they entered consciousness and approach them with curiosity. Nearly 20% (n = 4) of higher readiness participants responded in a manner that reflected this category, and over 40% (n = 15) of lower readiness participants had a response included in this category. Other patterns that emerged included “improved sport performance or enjoyment,” “confidence and positivity,”
“compassion for self and others,” “mindset or perspective shift contributing to well-being,” “intervention exercises or environment,” in addition to general benefits or those that could not be otherwise categorized.

Participants also commented on aspects of the intervention they found challenging, producing 53 responses. The largest percentage of responses fell into the category dealing with “difficulty with intervention concepts or skills;” nearly 70% of participants responded with a difficulty related to a concept or skill introduced in the intervention. Five subcategories emerged from this category, with most responses categorized as describing difficulties related to “awareness and/or acceptance” (i.e., 15 participants; 3 high readiness participants and 12 low readiness participants), and challenges associated with “single-pointed attention or focus” (i.e., 15 participants; 7 high readiness participants and 8 low readiness participants). Other difficulties related to concepts or skills included “dealing with distractions” (5 participants; 2 high readiness participants and 3 low readiness participants), “non-striving and expectations” (2 participants; 1 high readiness participant and 1 low readiness participant), and “breathing” (1 participant; low readiness). Almost 17% (9 participants; 4 high readiness participants and 5 low readiness participants) commented on difficulties with specific intervention exercises (e.g., yoga, body scans), while just over 15% (8 participants; 2 high readiness participants and 6 low readiness participants) reported that busy schedules, lack of time to practice, or not prioritizing practice was a challenge. Roughly 7% (i.e., 4 participants; 2 high readiness participants and 2 low readiness participants) commented on aspects of the environment or timing of the intervention as challenges (e.g., “difficult that some people didn’t ‘buy in’ to the mindfulness training,” “I also found it hard to concentrate during the sessions at first because my teammates would be laughing or shuffling around”). One high readiness participant reported an adverse/uncomfortable
experience as a challenge (e.g., “feeling like I couldn't [breathe]”), while another single low readiness participant struggled with an unclear understanding about how to practice mindfulness. See appendix M for copy of the codebook and qualitative responses.

**Discussion**

The primary purpose of the present study was to examine the effects of an MSPE intervention on outcomes related to well-being and sport performance with college SAs, with a particular emphasis on exploring when and for whom the intervention may have been beneficial. To that end, the initial objective was to investigate the effects of the intervention in comparison to a WL control group. The second objective was to examine whether stage of change (i.e., readiness) and attitudes toward sport psychology were associated with differential outcomes, once initial MSPE and WL control groups had each completed the intervention. The third and final objective was to explore the potential moderating effect of dosage on the relationship between readiness and outcomes. Mindfulness dosage has been explored sparingly in the SEPP literature, and the present study sought not only to replicate previous empirical findings related to change in outcomes following MABIs, but also to explore these explanatory threads as to when and for whom certain changes may occur.

Regarding the first aim of the study, initial MSPE participants reported improvements in depressive symptoms and overall psychological distress, emotion regulations difficulties, and self-rated performance compared to WL controls from pre- to post intervention. Evidence in the SEPP literature suggests that mindfulness may protect against or reduce symptoms of depression and anxiety (Glass et al., 2019; Norouzi et al., 2020), though it is important to note that the improvements in psychological distress among MABI participants were not significant and post hoc analyses indicated that the significant difference between groups was a result of significantly
higher pre-intervention psychological distress among initial MABI participants. Additionally, empirical findings with non-sport populations also indicate that MABIs can have beneficial outcomes related to depression and anxiety reduction (Ma et al., 2022), suggesting that findings in the present study are consistent with reports from similar studies with different populations. Moreover, moderate, though non-significant, effects were observed in changes in mindfulness among initial MSPE participants. While not significant in the immediate aftermath of the intervention, an examination of longer-term effects revealed significant improvements in mindfulness over time in the initial MSPE intervention group in addition to continued improvements in emotion regulation difficulties and sport enjoyment compared to WL controls. Gross and colleagues (2018) similarly observed more noticeable changes in outcomes related to wellbeing following a mindfulness-related intervention after a follow-up data collection period, possibly suggesting that more time engaged with intervention exercises may lead to more change. There is a robust base of evidence indicating that MBSR and MBCT—the two interventions from which MSPE is derived—may contribute to mental health and well-being through improvements in mindfulness, mediated by reductions in rumination and worry (Gu et al., 2015). These improvements in mindfulness, depressive symptoms, and emotion regulation difficulties may be markers of enhanced well-being as a potential result of the intervention; more advanced analyses using structural equation modeling and cross-lagged path models—which were not feasible in the present study due to the limited sample size—would be a useful avenue for future researchers to explore.

The dosage element might be related to the observation that significant increases in mindfulness were only observed in the initial MSPE group at follow-up data collection, but not in the WL control group. Because the initial MSPE group ended their formal training in the
middle of the semester, 45 to 60-minute follow-up meetings with the intervention leader occurred weekly or bi-weekly at the request of the coaches involved. The WL control group completed their MSPE training and then went home for the semester, so formal, guided follow-up exposure to mindfulness with the intervention leader between post-intervention and follow-up data collection was not feasible (though WL control participants reported practicing on their own). Taylor and colleagues (2021) found that unguided or self-guided mindfulness practice had small but significant effects on outcomes related to well-being (e.g., depression, anxiety, mindfulness), but future research comparing the effects of guided vs. unguided/self-guided mindfulness practice would be useful.

Also connected to well-being, initial MSPE participants reported significant reductions in emotion regulation difficulties in the immediate aftermath of the intervention and at follow-up. This finding replicates previous investigations of the impact of mindfulness on emotion regulation among athletes (e.g., Josefsson et al., 2019), and is consistent with neurobiological underpinnings of mindfulness practice and its potential to lead to structural and functional changes in emotional and attentional processing in the brain (Tang et al., 2015; Wheeler et al., 2017). Via path analysis, Josefsson et al. (2017) observed direct and indirect effects between mindfulness and sport-specific coping between rumination and emotion regulation, further suggesting that engagement in interventions aimed at cultivating mindfulness may have valuable benefits for sport performers. Similar to Josefsson et al. (2019), initial MSPE participants also reported improvements in self-rated sport performance compared to control participants, though analyses exploring the potential mediating effect of emotion regulation on performance was not the aim of the study and thus not evaluated. Qualitative results also provide some indication of how mindfulness practices in the present study contributed to emotion regulation, with more than
half of participants reporting that engagement in mindfulness practices aided in self-regulation of arousal and emotions. These results also mirror those from similar studies of MABIs with college athletes in which participants reported benefits related to enhanced capacity to recognize and regulate their emotional responses during sport and in everyday life following mindfulness training (Baltzell et al., 2014; Cote et al., 2019; Hut et al., 2023).

Related to the second objective, readiness had mixed effects on intervention outcomes. Pre-intervention readiness (i.e., either high or low readiness) was not related to changes in any of the dependent variables, which is dissimilar to findings in the clinical domain suggesting that participants higher in readiness before engaging in therapy generally report better outcomes (Krebs et al., 2018). During the present intervention, several participants moved from low to high readiness; thus, the research team decided to utilize these changing stages of readiness as independent variables. This movement was not unexpected, as Zizzi and Perna (2001) also observed shifts in readiness following a single, brief sport psychology intervention with high school and college athletes. Given that the MABI in the present study consisted of six, hour-long sessions—and Zizzi and Perna (2001) observed shifts in stage of change after a single hour-long session—it is possible that movement into different states of readiness occurred earlier in the intervention (e.g., after the first session), though exactly when or why those shifts occurred is unclear. Present analyses revealed that athletes who were categorized as higher in readiness after the intervention, but before follow-up data collection, reported significant improvements in mindfulness, life satisfaction, and sport enjoyment, providing partial support for the claim that engagement and readiness can impact outcomes. This claim also partly replicates previous findings: athletes in prior MABIs who adhered more to intervention protocols or (i.e., were more engaged) reported benefits related to mindfulness and flow (Scott-Hamilton & Schutte 2016) as
well as attention and anxiety reduction (Rooks et al., 2017) compared to participants who engaged less with intervention exercises. Present analyses also reveal, though, that pre-intervention readiness may have little to no impact on engagement and outcomes, suggesting other factors not observed in the present study may be more salient for predicting how participants experience an MABI.

One possible avenue to consider is the impact of the group on individual experiences in an MABI. One participant noted how it was difficult when teammates were not “bought in” to the training—indicating that group dynamics and other members’ readiness may impact an individual’s experience during an intervention. In elite sport, McDougall and colleagues (2015) observed that sport psychology practitioners who were working within teams where subcultures existed that disrupted SEPP work presented great challenges to both the team and the consultant—potentially limiting the degree to which sport psychology work can be effective. Martin and colleagues (2012) also commented that situational characteristics (e.g., sport type, competition level) and certain sport subcultures can impact receptivity of SEPP services, further suggesting that an exploration of culture in the context of MABI effectiveness could be useful.

While readiness is one indicator of engagement, another is dosage (i.e., the amount of between-session mindfulness practice). Related to the third objective of the present study, participants higher in readiness at post-intervention engaged significantly more with intervention exercises between sessions compared to participants lower in readiness by nearly three minutes per day—though only about 15% of athletes in this sample met the ~12-minute per day threshold necessary for beneficial effects, prescribed by Jha et al. (2017). Those same higher readiness athletes also reported notably higher ratings of program success and intentions related to continued practice. Moreover, athletes with more post-MSPE confidence in sport psychology
tended to engage more with intervention exercises between sessions; these patterns of readiness and attitudes toward sport psychology support previous work demonstrating that stage of change and perceptions of service utilization can impact engagement (Keeler & Watson, 2009; Leffingwell et al., 2001). While dosage did not appear to moderate the relationship between readiness and significant outcomes, these data suggest that readiness may be correlated with intervention engagement and perceptions of utility. Specifically, heightened engagement in mindfulness practices among higher readiness participants was associated with higher perceived effectiveness of MSPE and confidence in continued mindfulness practice – which is associated with findings by Lam et al. (2022), who observed that those who persist in meditation perceive it to be more effective. Readiness may thus be better predictors of post-MABI practice, as opposed to pre-intervention engagement. Unclear from the present findings is what specifically about MSPE or the participants contributed to different perceptions, which researchers moving forward could consider exploring. In general, future research with larger samples and more robust dosage measures is needed to explore dosage and other potential moderating or mediating relationships further.

Another consideration in the assessment of dosage is the degree to which most MABIs in sport have distilled exercises down from their original formats. Bowles and colleagues (2022) retrospectively observed that the largest effects of mindfulness practice occurred in the first 500 hours of practice for long-term meditators, and the athletes in the present sample—and likely in most samples of athletes who engage in MABIs—barely scratch the surface in terms of lifetime hours of engagement. Longer-term investigations with consistent measurement of dosage exploring when (i.e., hours of engagement and length of consistent practice) salutary effects begin to materialize would be useful.
Limitations and Future Directions

Though there were some noteworthy findings, the overarching question as to whether dosage or attitudes toward sport psychology moderates the association between readiness and outcomes was not conclusively answered. In addition to a small sample size, lack of randomization, and technically inequivalent interventions (as initial MSPE participants had more frequent contact with the intervention leader post-intervention), other important limitations must be addressed—the first related to measurement. Dosage was one of the foci of this study, and the retrospective nature of the assessment of dosage is a major concern. Because participants were asked to reflect on how many times they practiced intervention exercises over the past week or for how long they engaged in mindfulness practices beyond those prescribed in the intervention, the potential for recency bias or social desirability became factors which can confound results and produce less accurate dosage estimates. Future research investigating dosage may utilize more formal tracking of dosage via virtual journal prompts or ecological momentary assessment (e.g., Enkema et al., 2020).

Also related to assessment, language on the stage of change measure (i.e., URICA) was modified from its original version (see Massey et al., 2015) to evaluate readiness to engage in mindfulness specifically. The small sample size prohibited an evaluation of the psychometric properties via confirmatory factor analysis. The measure also does not capture the stage of change of those who are in preparation, according to TTM, as it only includes four subscales; future research using TTM framework as it relates to mindfulness research in SEPP could consider further adjusting the URICA and evaluating its’ psychometric properties for further use. Moreover, the present investigation provides little insight in how or why participants may have moved from lower to higher readiness. Tifft and colleagues (2022) observed different outcomes
of mindfulness practice were observed depending on participant perceptions of mindfulness. It is thus possible that athletes entering the MABI had different views as to what mindfulness is and how it is practiced, thus impacting their perceived readiness before and after the intervention. Future investigations exploring readiness as a predictor or change may consider including assessments of processes associated with change within TTM framework (e.g., consciousness-raising, self-reevaluation; Prochaska & DiClemente, 1984). The final point related to assessment is the inclusion of the brief, two-item PCL-C on the background questionnaire screening for PTSD. Lang and Stein (2005) evaluated these items in relation to a six-item, as well as the original 20-item PCL-C; while the two-item measure was strongly correlated with the original 20-item measure, it also was normed when the DSM-IV was still in use. It is possible that this measure inaccurately captures PTSD symptomology as it is currently defined, though both items are identical to ones found on the PCL-5 (Blevins et al., 2015), which is commonly used today. PTSD was not the focus of the present study, though future research could explore the effect that trauma and clinical symptomology might have on engagement and outcomes of MABIs with athletes.

A major focus of the present study was to explore factors influencing change in MABIs with athletes—specifically dosage and attitudes toward sport psychology. While the present study indicates that readiness and sport psychology attitudes may contribute to engagement and some changes, there are many other potential mediating and/or moderating factors that could be explored in future investigations (including trauma, as previously discussed). The lack of significant change on many of the outcomes typically associated with MABIs in sport (e.g., anxiety, flow) suggests that other factors may influence outcomes, or that not all MABIs are created equal. Creswell (2017) uses intentional language in his differentiation between
mindfulness-based interventions (e.g., MBSR, MBCT) and mindfulness-related interventions (Dialectical Behavior Therapy, Acceptance and Commitment Therapy). “MBI” (i.e., mindfulness-based intervention) is often used as an umbrella term for interventions integrating mindfulness in any capacity, yet they typically have different applications and varied theoretical underpinnings. Also important to consider is the training and theoretical orientation of those providing interventions, as guiding orientations (e.g., cognitive-behavioral, humanistic, etc.) may impact how exercises are discussed and integrated. Mindfulness research in sport and beyond would benefit from more nuanced examinations comparing different MABIs, and considering factors related to how they are introduced.

People who begin MABIs all start at different points and are influenced by different factors which may thus impact their experiences: factors such as personality (e.g., Goisbault et al., 2022), pre-intervention trait mindfulness (e.g., Shapiro et al., 2011), and now readiness and attitudes have all been explored as potential predictors of outcomes, and the evidence base will continue to benefit from targeted investigations answering questions related to when, for whom, and why MABIs are effective. To continue exploring mechanisms underpinning and contributing to change, it would be helpful for the field to develop and/or adopt theoretical models to test. Kaufman et al. (2018) created one such model that proposes the mechanisms through which MSPE is hypothesized to impact psychological factors related to sport performance. Tang et al. (2015) also propose a theoretical model through which engagement in mindfulness practices is theorized to impact self-regulation (while also acknowledging that different practices may have different effects—also an avenue for future research). Also, the theory proposed by Shapiro and colleagues (2006) posits that observed variance in outcomes of MABIs might be explained by intention, attention, and attitude, which could contribute to positive outcomes as they facilitate
changes in one’s perspective. Adopting one or more of these models and testing mechanisms of action would be useful to gain a clearer picture of intervention effects, in addition to exploring participant characteristics and experiences that may contribute to intervention engagement and uptake.

**Conclusion**

Results from the present study suggest that a brief MABI may be effective in comparison to a WL control in promoting outcomes relevant athlete well-being and performance (e.g., emotion regulation difficulties, depression, self-rated sport performance). Longer-term effects also suggest that more consistent engagement over time with guided sport psychology consultation integrating an MABI (i.e., 12 weeks compared to six weeks) may have larger effects regarding mindfulness, emotion regulation, and sport enjoyment. Moreover, readiness, as measured after an intervention, may provide an indication as to who was more engaged with an MABI, and who might potentially continue practicing intervention exercises after the conclusion of a formal MABI. Future research should continue exploring the effect of between-session practice on outcomes and what might contribute to engagement between intervention meetings; even higher readiness participants, who reported higher engagement, completed just over half of the assigned home practice as described by Kaufman et al. (2018). This indicates that neither group practiced MABI exercises nearly as much as prescribed, which may have contributed to the lack of change observed in outcomes typically associated with mindfulness training for athletes (e.g., flow, anxiety). Though no direct conclusions can be made from the results of the present study about the effect of dosage of mindfulness or attitudes toward sport psychology on outcomes, future investigations with more accurate reporting of home practice might provide clarity.
References

https://doi.org/10.1177/1073191105283504


https://doi.org/10.1123/jcsp.2014-0030

https://doi.org/10.1016/j.bbr.2018.08.023

https://doi.org/10.1002/jts.22059

https://doi.org/10.31231/osf.io/w9dcx


Ma, L., Wang, Y., Pan, L., Cui, Z., & Schluter, P. J. (2022). Mindfulness-informed (ACT) and mindfulness-based programs (MBSR/MBCT) applied for college students to reduce


association with outcomes. *Behaviour Research and Therapy*, 95, 29-41.
https://doi.org/10.1016/j.brat.2017.05.004

https://doi.org/10.1080/17439760701756946

https://doi.org/10.1037/0022-0167.52.2.126


Table 1

*Cronbach’s Alpha Values and Independent Samples T-Tests on Baseline DV Scores*

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<th>T4 α</th>
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<td>.94</td>
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*Note.* Indicates statistical significance (*p* < .05)
### Table 2

*W-Ss Baseline Readiness Frequencies by Condition*

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<td>WL Control (n = 28)</td>
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<td>Low Readiness</td>
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### Table 3

**Between-groups RM ANCOVA Interactions and Estimated Marginal Means (Times 1-2)**

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*Note.* *Indicates statistical significance (p < .05);* "SPA-R Stigma left out as a covariate after violating the independence of the covariate assumption;" "SPA-R Confidence left out as a covariate after violating the independence of the covariate assumption;" "Also included pre-intervention expectations regarding post-intervention performance as a covariate;" "Pre-intervention expectations regarding post-intervention enjoyment left out as a covariate after violating the independence of the covariate assumption."
Table 4

*Between-groups RM ANCOVA Interactions and Estimated Marginal Means (Times 1-3)*

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*Note.* *Indicates statistical significance (p < .05); SPA-R Stigma left out as a covariate after violating the independence of the covariate assumption; SPA-R Confidence left out as a covariate after violating the independence of the covariate assumption; *Also included pre-intervention expectations regarding post-intervention performance as a covariate; *Pre-intervention expectations regarding post-intervention enjoyment left out as a covariate after violating the independence of the covariate assumption; *Sphericity assumption violated, Greenhouse-Geisser test used.
### Table 5

**Readiness: RM ANCOVA Interactions and Estimated Marginal Means (Times 1-3)**

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<td>0.23</td>
<td>0.25</td>
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</tr>
<tr>
<td>Sport</td>
<td>5.65</td>
<td>6.84</td>
<td>7.08</td>
<td>6.89</td>
<td>6.86</td>
<td>6.57</td>
<td>4.36*</td>
<td>.09</td>
</tr>
<tr>
<td>Enjoyment&lt;sup&gt;c,e&lt;/sup&gt;</td>
<td>0.55</td>
<td>0.46</td>
<td>0.45</td>
<td>0.39</td>
<td>0.33</td>
<td>0.32</td>
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<td></td>
</tr>
</tbody>
</table>

*Note:*<sup>1</sup> Indicates statistical significance (< .05);<sup>2</sup> SPA-R Stigma left out as a covariate after violating the independence of the covariate assumption;<sup>3</sup> SPA-R Confidence left out as a covariate after violating the independence of the covariate assumption;<sup>4</sup> Sphericity violated, Greenhouse-Geisser statistic interpreted;<sup>5</sup> Also included pre-intervention expectations regarding post-intervention performance as a covariate;<sup>6</sup> Pre-intervention expectations regarding post-intervention enjoyment left out as a covariate after violating the independence of the covariate assumption.
Table 6

*Independent Samples T-Test Results: PEQ and Readiness*

<table>
<thead>
<tr>
<th></th>
<th>High Readiness</th>
<th>Low Readiness</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>5.95 (0.78)</td>
<td>5.33 (0.99)</td>
<td>2.35*</td>
</tr>
<tr>
<td>Anxiety Reduction &amp; Relaxation</td>
<td>6.05 (0.83)</td>
<td>5.31 (0.95)</td>
<td>2.94*</td>
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<tr>
<td>Focus &amp; Attention</td>
<td>5.65 (1.04)</td>
<td>5.19 (1.35)</td>
<td>1.31</td>
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<tr>
<td>Non-Reactance &amp; Non-Judgment</td>
<td>5.10 (1.48)</td>
<td>5.08 (1.59)</td>
<td>0.04</td>
</tr>
<tr>
<td>Emotion Regulation &amp; Awareness</td>
<td>5.80 (0.95)</td>
<td>4.92 (1.18)</td>
<td>2.87*</td>
</tr>
<tr>
<td>Confidence (Sport)</td>
<td>5.90 (1.02)</td>
<td>5.03 (1.28)</td>
<td>2.62*</td>
</tr>
<tr>
<td>Confidence (General)</td>
<td>5.90 (1.07)</td>
<td>4.86 (1.22)</td>
<td>3.18*</td>
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</table>

*Note.* *Indicates statistical significance (p < .05)
Table 7

<table>
<thead>
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<th>Team</th>
<th>Mean (in minutes per day)</th>
<th>Standard Deviation</th>
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<td>Acro</td>
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<td>Volleyball</td>
<td>7.46</td>
<td>1.38</td>
</tr>
<tr>
<td>W. Soccer</td>
<td>4.10</td>
<td>1.29</td>
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<td>M. Soccer</td>
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<td>1.33</td>
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Table 8

*Time One Means, Standard Deviations, and Correlations (W-Ss)*

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<th>Variable</th>
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<th>7.</th>
<th>8.</th>
<th>9.</th>
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<td>-.77*</td>
<td>-.63*</td>
<td>.58*</td>
<td>.58*</td>
<td>-.38*</td>
<td>-.01</td>
<td>.44*</td>
<td>.38*</td>
</tr>
<tr>
<td>2. DERS – R</td>
<td>2.23</td>
<td>0.75</td>
<td>-</td>
<td>.80*</td>
<td>-.55*</td>
<td>-.46*</td>
<td>.40*</td>
<td>-.01</td>
<td>-.49*</td>
<td>-.47*</td>
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</tr>
<tr>
<td>3. DASS – SF</td>
<td>26.34</td>
<td>20.55</td>
<td>-</td>
<td>-.52*</td>
<td>-.47*</td>
<td>.35*</td>
<td>.07</td>
<td>-.27*</td>
<td>-.44*</td>
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<td>4. SWLS</td>
<td>24.51</td>
<td>5.61</td>
<td>-</td>
<td>.52*</td>
<td>-.26</td>
<td>.03</td>
<td>.35*</td>
<td>.47*</td>
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<td>5. SDFS</td>
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<td>0.51</td>
<td>-</td>
<td>-.35*</td>
<td>.09</td>
<td>.38*</td>
<td>.43*</td>
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<tr>
<td>6. SPA-R Stigma</td>
<td>2.35</td>
<td>1.33</td>
<td>-</td>
<td>-.48*</td>
<td>-.34*</td>
<td>-.28*</td>
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</tr>
<tr>
<td>7. SPA-R Conf.</td>
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<td>.12</td>
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<tr>
<td>8. Perf.</td>
<td>5.75</td>
<td>1.78</td>
<td>-</td>
<td>.41*</td>
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<td>9. Enjoy.</td>
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<td>2.17</td>
<td>-</td>
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</tr>
</tbody>
</table>

*Note.* *Indicates statistical significance (*p* < .05)
### Table 9

*Time Two Means, Standard Deviations, and Correlations (W-Ss)*

| Variable   | M   | SD  | 1.   | 2.   | 3.   | 4.   | 5.   | 6.   | 7.   | 8.   | 9.   |
|------------|-----|-----|------|------|------|------|------|------|------|------|------|------|
| 1. CAMS    | 32.56 | 5.89 |      | - .78* | - .60* | .56* | .67* | - .50* | .31* | .52* | .42* |      |
| – R        |      |      |      |      |      |      |      |      |      |      |      |      |
| 2. DERS    | 2.12 | 0.66 |      | .79*  | - .49* | - .58* | .55* | - .37* | - .49* | - .40* |      |      |
| – SF       |      |      |      |      |      |      |      |      |      |      |      |      |
| 3. DASS    | 25.31 | 18.77 |      |      | - .50* | - .54* | .36* | - .28* | - .43* | - .39* |      |      |
| – T        |      |      |      |      |      |      |      |      |      |      |      |      |
| 4. SWLS    | 25.93 | 5.19 |      |      |      |      | .51* |      | .14 | .48* | .31* |      |
| 5. SDFS    | 3.64 | 0.54 |      |      |      |      | - .41* |      | .40* | .56* | .62* |      |
| 6. SPA-R   | 2.11 | 1.13 |      |      |      |      |      | - .34* |      | - .19 | - .20 |      |
| Stigma Conf. | 5.33 | 0.78 |      |      |      |      |      |      |      |      |      | .38* | .30* |
| 7. SPA-R   |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Perf.      | 6.71 | 1.59 |      |      |      |      |      |      |      |      |      |      | .53* |
| Enjoy.     | 6.78 | 1.89 |      |      |      |      |      |      |      |      |      |      |      |

*Note.* *Indicates statistical significance (p < .05)
Table 10

*Time Two Means, Standard Deviations, and Correlations (W-Ss)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
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<th>2.</th>
<th>3.</th>
<th>4.</th>
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<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
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</thead>
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<td>1. CAMS</td>
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<td>6.34</td>
<td>-</td>
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<td>-.33*</td>
<td>.58*</td>
<td>.55*</td>
<td>-.40*</td>
<td>.28*</td>
<td>.30*</td>
<td>.24</td>
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<td>2. DERS – R</td>
<td>2.02</td>
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<td>-.39*</td>
<td>-.32*</td>
<td>.57*</td>
<td>-.13*</td>
<td>-.13</td>
<td>-.21</td>
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<td>3. DASS - SF</td>
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<td>-.35*</td>
<td>.29*</td>
<td>.12</td>
<td>.04</td>
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<td>-.34*</td>
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<td>-.27</td>
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<td>7. SPA-R Conf.</td>
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<td>8. Perf.</td>
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<td>.62*</td>
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<td>9. Enjoy.</td>
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<td>1.85</td>
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Note. *Indicates statistical significance (p < .05)
Table 11

*Correlations Between Dosage and Sport Psychology Attitudes*

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<tr>
<th></th>
<th>1. 1-2D&lt;sup&gt;1&lt;/sup&gt;</th>
<th>2. 1-3D&lt;sup&gt;2&lt;/sup&gt;</th>
<th>3. T1 Stigma</th>
<th>4. T1 Conf.&lt;sup&gt;3&lt;/sup&gt;</th>
<th>5. T2 Stigma</th>
<th>6. T2 Conf.</th>
<th>7. T3 Stigma</th>
<th>8. T3 Conf.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1-2D&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>.84*</td>
<td>.08</td>
<td>-.01</td>
<td>.07</td>
<td>.30*</td>
<td>.20</td>
<td>.11</td>
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<td>2. 1-3D&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>-</td>
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<td>.21</td>
<td>.04</td>
<td>.37*</td>
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<td>3. T1 Stigma</td>
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<td>-</td>
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<td>.81*</td>
<td>-.40*</td>
<td>.63*</td>
<td>-.37*</td>
</tr>
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<td>4. T1 Conf.&lt;sup&gt;3&lt;/sup&gt;</td>
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<td>-</td>
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<td>.43*</td>
<td>-.32*</td>
<td>.53*</td>
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<tr>
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<td>.76*</td>
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<td>8. T3 Conf.</td>
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*Note.* *Indicates statistical significance (*p* < .05); 1Dosage between times 1 and 2; 2Dosage between times 1 and 3; 3Confidence in sport psychology sub-scale
Table 12

*Correlations Between Attitudes to Sport Psychology and Ratings of Program Success*

<table>
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<th>2.</th>
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<td>-.11</td>
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<td>.27*</td>
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<td>6. Anxiety Reduction &amp; Relaxation</td>
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<td>9. Emotion Regulation &amp; Awareness</td>
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<td>10. Confidence (Sport)</td>
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<td>11. Confidence (General)</td>
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</tbody>
</table>

*Note.* <sup>1</sup>SPA-R stigma tolerance sub-scale; <sup>2</sup>SPA-R confidence sub-scale; *Indicates statistical significance (p < .05)
Table 13

*T – Tests Comparing Sport Psychology Attitudes by Post-MABI Readiness*

<table>
<thead>
<tr>
<th></th>
<th>High Readiness</th>
<th>Low Readiness</th>
<th>t</th>
<th>d</th>
</tr>
</thead>
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<tr>
<td>T2 SPA-R Con.</td>
<td>5.58 (0.74)</td>
<td>5.20 (0.78)</td>
<td>1.81</td>
<td>.50</td>
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<tr>
<td>T2 SPA-R ST</td>
<td>2.03 (1.15)</td>
<td>2.16 (1.13)</td>
<td>-0.42</td>
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</tr>
</tbody>
</table>
Extended Review of the Literature

Mindfulness and Sport

Researchers and practitioners within Sport, Exercise, and Performance Psychology (SEPP) are increasingly investigating and utilizing mindfulness-based interventions (MBIs) with sport participants. For simplicity, and because much of the literature refers to them as such (though Creswell, 2017) makes an important distinction), all interventions that are mindfulness-based (e.g., Mindfulness-Based Stress Reduction) or mindfulness-related (e.g., Mindfulness-Acceptance-Commitment) will be referred to as “MBIs” in the proceeding pages. Interest in MBIs for athletes has grown concurrently as mindfulness practices have expanded in the clinical domain (Kabat-Zinn, 2003). The mental skills that mindfulness aims to cultivate—attention, present-moment awareness and acceptance of experiences, psychological flexibility, flow, and attention—are theoretically and logically related to sport performance (Birrer, Röthlin, & Morgan, 2012), and research is beginning to address and clarify the proposed outcomes of mindfulness practice with sport participants. Extant literature with athletes evaluating the effectiveness of MBIs is promising, although many SEPP and professionals have raised concerns surrounding methodology and research quality (McAlarnen & Longshore, 2018; Noetel et al., 2019; Sappington & Longshore, 2015). The purpose of this literature review is thus to describe and evaluate the findings from current mindfulness and MBI research with sport participants. In the proceeding pages, readers will find descriptions and evaluations of studies utilizing a range of research designs; quantitative studies are featured initially, beginning with comparison studies, moving into open trials, and concluding with cross-sectional research. Qualitative studies are then reviewed, followed by a commentary on the state of MBI research in sport, taking reviewed studies into account.
Reviews and Meta-analyses

Although methodological concerns are present in literature, current MBI research in sport has revealed several potential outcomes and mechanisms through which mindfulness may be useful for athletes (Bühlmayer et al., 2017; Noetel et al., 2019). Sappington and Longshore (2015) conducted one of the first comprehensive reviews of the mindfulness literature in sport, which included a systematic analysis of 19 empirical trials. The summary of results indicates limited evidence that MBIs benefit objective performance, with more support for benefits related to performance related outcomes (i.e., flow, competitive anxiety), although just four of the 19 studies included in the review were randomized trials. Noetel and colleagues (2019) conducted a larger review of mindfulness and acceptance-based interventions in sport, which included 66 studies. Though more studies were included, the quality of evidence indicating that MBIs benefit sport performance or sport related outcomes was low—similar to Sappington and Longshore (2015). Two primary concerns regarding the studies included in the review were a high risk of bias and imprecise effect sizes related to mindfulness and outcomes of interest (e.g. mindfulness, flow, anxiety, sport performance). With a more specific population (i.e., long-distance runners), Corbally and colleagues (2020) conducted a systematic review of the effects of mindfulness practice on running performance. Seven studies met inclusion criteria, two of which were RCTs; there was a high risk of bias and low standards of reporting in most of the included studies, which greatly limits generalizability and reproducibility. Neither RCT included mindfulness as an outcome, but the remaining studies reveal limited evidence that these interventions led to greater mindfulness or running performance. The most noteworthy results were small to moderate reductions in anxiety. Though work like this to integrate results across studies is
critically important to evaluate the ubiquitous effects of MBIs, the evidence with this specific population “remains far from clear” (Corbally et al., 2020, p. 16).

Finally, Bühlmayer and colleagues (2017) conducted a meta-analysis examining the impact that MBIs may have on sport performance by reviewing 9 studies of low to moderate quality (average Physiotherapy Evidence Database (PEDro) scale score of 5.4 out of 11). Across the 9 studies, the meta-analysis included 290 participants. Although each study included a comparison group, 3 did not randomize participants to groups. Significant improvements in mindfulness and physiological performance outcomes (i.e., lactate concentration, oxygen uptake, resting heart rate) were observed in MBI participants, with larger effects reported in the higher quality studies (i.e., studies with higher PEDro scores). Compared to controls, MBI participants also increased significantly on psychological outcomes (i.e., flow, anxiety), although effect sizes were moderate. Finally, only objective measures related to dart throwing and shooting performance showed significant increases with large effect sizes, providing some support for the use of MBIs for precision and/or shooting sports. This study was one of the first to identify sport type as a key variable in assessing MBI effectiveness; the mechanisms through which mindfulness is proposed to directly influence performance may be more easily observed in closed-performance tasks (such as shooting or dart throwing), though more research is needed to confirm this finding. Each reviews and the lone meta-analysis have described the need for more methodologically rigorous evaluations of MBIs with sport participants, including randomized trials and more systematic research. In the meta-analysis, mindfulness dosage also ranged from just 4 weeks to almost 2 years using a variety of MBI protocols and comparison groups; while MBI literature in SEPP is promising, any word stronger than “promising” would be too strong—based on available evidence from reviews and meta-analyses (McAlarnen & Longshore, 2018).
There is still much that is unknown about what drives change in MBI participants that future research has yet to fully address.

**Comparison Studies and Open Trials (Cohort Studies)**

While reviews and meta-analyses provide a macro-level view of the current state of the literature, specific studies provide a more detailed examination of MBI effects. The highest quality research has compared MBIs to active controls using randomized designs, though few such studies have utilized this type of design. The most recent RCT was conducted by Röthlin and colleagues (2020), where 95 adult, recreational athletes from four different sports in Switzerland were allocated to an MBI, a traditional psychological skills training (PST) intervention (arousal regulation, imagery, self-talk, goal setting), or a waitlist (WL) control and evaluated on measures of mindfulness, use of psychological skills, emotional and attentional regulation, experiential avoidance, cognitive interference, and ability to handle failure. Differential effects included MBI participants reporting greater improvements in several dimensions of mindfulness and experiential avoidance compared to PST participants; both interventions led to reductions in cognitive interference with performance and greater emotional and attentional control, suggesting that both intervention modalities may contribute to changes in psychological factors related to performance. Effect sizes were not reported, as a Bayesian

A notable feature of Röthlin and colleagues’ (2020) study was the successful manipulation check, which revealed that MBI participants improved on mindfulness measures to a greater degree than PST participants; conversely, PST participants improved to a greater degree than MBI participants on the use of psychological techniques to control arousal and attention—suggesting that each intervention, to some degree, served its intended purpose and promoted change in observed shared effects through differential mechanisms. Röthlin and Birrer (2020)
described the specific content of each intervention, including dosage, in a separate article; each intervention lasted for 4 consecutive weeks, and individual sessions were 90-minutes long. In terms of actual exposure to meditation specifically, and mindfulness more broadly, the amount is ambiguous. Participants practiced one of two breathing meditations in each of the sessions, but sessions included stronger didactic and discussion components structured around one of three Acceptance and Commitment Therapy (ACT)-influenced themes: (1) present-moment attention, (2) cognitive defusion, and (3) acceptance. Exposure to formal meditation and mindfulness practices for MBI participants, thus, was quite low, and there are concerns related to the lack of meaningful, objective outcomes—which is certainly not unique to this study and has been a noted concern of others within SEPP (McAlarnen & Longshore, 2017).

With 69 elite athletes in Sweden, Josefsson and colleagues (2019) compared an ACT-derived mindfulness-acceptance-commitment (MAC) intervention—the first of three manualized MBIs for sport participants that will be discussed in this review—to a PST control via randomized design, and evaluated participants on measures of mindfulness, emotion regulation, and perceived athletic performance. Both interventions ran for 7 consecutive weeks, meeting weekly for 50 minutes. Participants competed in either floorball, soccer, golf, cycling, or wrestling, and over 80% were competing at the national or international level; the sample consisted of 36 men and 33 women, with an average age of 20.9 (SD = 4.17). The researchers observed that MAC participants improved more than PST participants on measures of mindfulness and emotion regulation difficulties with moderate to large effects ($d > .74$), and reported higher post-intervention performance ratings, with a small effect ($d = .29$).

Moreover, mindfulness and emotion regulation were found to independently mediate the association between intervention condition and self-rated performance such that steeper increases
in mindfulness and decreases in emotion regulation difficulties were associated with higher subjective performance ratings for MAC participants compared to those in the PST condition. This finding, particularly related to emotion regulation, confirms findings by Gross et al. (2018), who also utilized a randomized design to compare a MAC intervention to a PST control with 18 members of an NCAA Division III women’s basketball team. Student-athletes in the experimental condition (n = 9) received the weekly, 7-session MAC protocol, and those in the PST control (n = 9) received 7 sessions that followed a manualized PST protocol (see Suinn, 1986). Gross and his colleagues (2018) observed greater reductions in hostility, substance use, and emotion regulation difficulties, with large effect sizes ($\eta^2_p > .19$) for MAC participants compared to those in the PST group over time; moreover, via coach ratings, MAC participants’ performance increased significantly from pre- to post-intervention. Although coach ratings provide a different perspective on performance than an athletes’ self-perception, they are still subjective in nature; future research would benefit from continued use of more objective measures of performance. No improvements in dispositional mindfulness were observed—which is interesting considering an important component of the MAC protocol has to do with learning mindfulness skills. Another interesting finding is that changes reaching statistical significance were only observed after the one-month follow-up data collection period. The small sample size also may have contributed to the limited findings, as a large effect would have been needed to find a significant effect with such a small sample size.

In another RCT with 24 American collegiate Track and Field athletes, Hut and colleagues (2023) evaluated the efficacy of MSPE using a mixed-method design. There was a high degree of attrition in the study—of the 35 team members that participated in the pre-study informational session, only 32 consented, and 24 completed pre- and post-intervention measures. Consenting
participants were block randomized (stratified by gender) to either an MSPE group or a control group consisting of PST (i.e., progressive muscle relaxation, self-talk change strategies, and imagery). Between groups, there were few differential findings on quantitative assessments; a main effect for time was observed, such that both interventions led to significant reductions in overall sport anxiety, worry, and somatic anxiety, with large effects (all $\eta^2_p > .17$). MSPE participants also reported significantly heightened satisfaction with their sport performance after the intervention compared to PST controls, with large effects ($\eta^2_p > .18$).

Though quantitative assessments showed no between- or within-groups changes on measures of flow, mindfulness, or emotion regulation difficulties, responses from open-ended questions revealed that MSPE participants found benefits related to attention and emotion regulation. Seventy-five percent of MSPE participants found that the intervention benefited their sport performance in that they learned to maintain focus and attention in the present moment. Nearly all MSPE participants who offered a response reported at least one intervention exercise that they enjoyed learning about and utilizing, either in the context of their sport or everyday life. Participants in the PST group also reported several benefits as evidenced by open-ended responses, including comments related to focus, awareness, confidence, and motivation. Different patterns of responses between groups revealed that MSPE participants tended to offer responses connected to less self-judgment, more acceptance, and improved attention, whereas PST participants tended to focus more on benefits to their overall mindset. In contrast to other MSPE and mindfulness intervention research, no changes were observed in quantitative measures of flow, mindfulness, or emotion regulation difficulties. There were only two data collection points for quantitative measures, and the lack of significant findings could have to do with dosage. Gross and colleagues (2018) observed most of their significant results between
post-intervention and follow-up, which might suggest that more time to practice intervention exercises (i.e., dosage) might lead to more robust change. There was also a high degree of attrition in the intervention, and it was reported that several team members quit as a new coach was hired just before the intervention began; these shifts in team culture and dynamics may have thus impacted engagement and readiness.

Considerations brought up by both Gross et al. (2018) and Gardner and Moore (2017) are questions related to mindfulness dosage: what is the threshold of mindfulness practice necessary to elicit effects? In understanding dosage, it is important to outline the structure and content of the protocols reviewed. The MAC protocol—heavily influenced by Acceptance and Commitment Therapy (ACT)—consists of 7 weekly 60-minute sessions. In the first MAC module, participants receive psychoeducation about the theoretical underpinnings and practical applications of mindfulness; in modules two through six, didactic instruction, discussion, and practice of mindfulness and cognitive defusion, values and values-congruent behavior, acceptance, commitment to values, consolidation of mindfulness skills, maintenance of said skills, respectively, are covered (Gardner & Moore, 2007). Participants are encouraged to practice mindfulness skills outside of sessions—unfortunately neither of the previously mentioned MAC interventions provide substantial detail about the amount of between-session mindfulness practice, although Gross et al. (2018) does mention that dosage (or lack thereof) may have played a role in the lack of changes in outcomes from pre- to post-intervention, suggesting that practice following the end of the intervention could have contributed to significant changes. Moreover, the flexible nature of the MAC intervention—which is ideal for practitioners but presents challenges for researchers—suggests that dosage may vary in different studies, making it particularly difficult to draw conclusions: Josefsson et al.’s (2019) study
consisted of 7, 50-minute sessions whereas Gross et al.’s (2018) study consisted of slightly longer sessions but demonstrated fewer meaningful changes over time and differences between groups. Not enough detail is provided about the specific content of sessions or dosage of mindfulness practice across the interventions to say with some degree of certainty what leads to the differences in the two studies. Because of the variability in observed changes across studies, it seems that some athletes are benefitting from MBIs more than others for reasons that are, at present, not completely clear. It could be related to different levels of engagement (i.e., dosage), but if it is not related to engagement/dosage, then other explanatory threads must be investigated—later in this review, the question of athlete readiness for mindfulness or sport psychology will be investigated as a possible moderator of change. While many questions remain, other evidence further suggests possible benefits for athletes following MBIs, with some using objective measures.

In a shorter, 4-week intervention period similar to Röthlin et al. (2020), Rooks and colleagues (2017) conducted a quasi-experimental comparison study—using an objective measure of attention—in which 100 members of an NCAA Division I football team were allocated either to a 4-week MBI (n = 56) or a time-matched relaxation training (RT) intervention (n = 44). The MBI included “selected practices” from Kabat-Zinn’s Mindfulness-Based Stress Reduction (MBSR) and the RT intervention incorporated stress-reduction and relaxation exercises taught in cognitive-behavioral therapy (CBT; as cited in Beck, 2011; Rooks et al., 2017, pp. 143). Participants completed a computer-administered sustained attention test as well as self-report measures of positive and negative affect, state anxiety, and depression. A major strength of this study was the strict reporting of dosage within each intervention. Both training programs were made up of 9 total hours over the 4-week period: this included 3 hours of
didactic instruction (once per week for 45 minutes), 2.4 hours of proctored training (4 times per week for 12 minutes, either before or after strength training), and 3.6 hours of assigned home practice (7 times per week for 12 minutes a day, self-reported). Within groups, attention, depressive symptoms, anxiety, and positive affect worsened during the training period with small to moderate effect sizes (d ranging from 0.27-0.55)—a result that the authors suggest could be related to the fact that the training took place during the team’s stressful, high intensity pre-season period. A chi-square difference test found that adherence to mindfulness training had a significant effect on attention, such that more mindfulness practice by MBI participants was associated with smaller decreases, and in some cases increases, in attention scores; moreover, amount of time practicing intervention exercises in both groups was inversely related to anxiety. This data indicates that more practice time (or dosage) was related to improved outcomes for MBI participants in this sample.

In addition to RCTs or quasi-experimental studies utilizing active controls, several studies have examined MBI effectiveness compared to WL controls in SEPP. Aherne and colleagues (2011) randomly assigned (stratified by sport and gender) 13 high performing athletes ($M_{\text{age}} = 21$) to a 6-week MBI or no-condition control; compared to control participants, and with large effects, athletes in the MBI reported significant improvements on global flow ($\eta^2 = .51$), two dimensions of state flow (clear goals and sense of control; $\eta^2 = .52$ and .57, respectively) and mindfulness ($\eta^2 = .41$). Participants were recruited from a University “High Performance Centre” and were competing at either the national or interventional level in rugby, tennis, track and field, or field hockey. The sample size was small (6 in the experimental group and 7 in the control group), which the authors note may have contributed to possible type II errors. Although most of the state flow subscales were not significant, the effect sizes on the group by time interaction
were all medium to large ($\eta^2 > .08$). Furthermore, the MBI was dissimilar to previously mentioned studies in that it was self-guided: participants were provided with recordings of four mindfulness exercises, including two breathing meditations (10 minutes each), a standing yoga practice (10 minutes), and a body scan (30 minutes). Daily text messages reminded participants to practice, and 10-30 minutes of practice was recommended per day over the study period. A major weakness was the lack of data assessing adherence and degree of home practice.

Another quasi-experimental study with 27 members Division I women’s rowing team in the United States, conducted by Jones and colleagues (2020), evaluated the effectiveness of a Mindfulness-Based Stress Reduction (MBSR) intervention for psychological well-being, sleep, athletic coping, and performance. Team members were quasi-randomly assigned (i.e., based on availability) to either the MBSR ($n = 15$) or control group ($n = 12$). The intervention took place over nine weeks, with eight MBSR sessions in those nine weeks; sessions were 75 minutes in duration, and participants were encouraged to practice intervention exercises for at least 10 minutes per day between sessions prior to going to sleep. Results revealed that MBSR participants, compared to no-treatment controls, reported significant improvements in mindfulness, psychological well-being, sleep quality, and athletic coping skills. MBSR participants also recorded significantly better performances on an objective measure of rowing performance (i.e., 6,000-meter ergometer test) compared to controls. The groups were well-matched at baseline with no significant differences on outcomes, suggesting solid evidence for the effectiveness of MBSR with college athletes in promoting both well-being and performance; due to the fact that the control group did not receive any kind of active intervention for comparison, it is impossible to deduce that the MBI would be more effective than an intervention consisting of other commonly integrated psychological skills training (e.g., relaxation training,
imagery). Moreover, firm conclusions about the effect of dosage on outcomes in this study are inconclusive as adherence to home practice was not measured.

Also with rowers, Sparks and Ring (2022) conducted a cluster RCT with adult athletes in the U. K., comparing a 6-week rowing-specific MBI ($n = 23$) combining MMTS with MSPE to a waiting-list control ($n = 21$). Compared to controls, MBI participants reported significant improvements in flow, perceived athletic performance, and mindfulness, though the mindfulness scores were not significantly different between groups after the intervention. MBI participants practiced intervention exercises for nearly 11 minutes per day, though dosage was not explored as a mediator of change. There was a high degree of attrition in the study, with both groups losing nearly half of their initial participants (e.g., the control group originally consisted of 40 rowers, and the MBI group originally enrolled 42 rowers). Moreover, the range of ages was markedly different by group: MBI participants were 36 years old on average, whereas control participants were 55 years old. Age related differences in intervention uptake have been explored sparingly (e.g., Hut et al., 2021), but there is some evidence suggesting that age may play a role. Moreover, the intervention was delivered virtually due to the COVID-19 pandemic; more research comparing virtual to in-person MBI delivery would be beneficial to explore differential effects.

Also utilizing a randomized design with a no-condition control, Dehghani and colleagues (2018) examined the effectiveness of a MAC intervention with 29 female university athletes. The researchers observed that the 14 participants in the MAC group improved significantly on measures of self-rated athletic performance and reported reductions in experiential avoidance and sport-related anxiety. As previously mentioned, the MAC intervention is flexible in nature, and there is no detail provided about the degree to which Dehghani et al. (2018) adhered to the
protocol described by Gardner and Moore (2007). There is also no mention of between-session practice nor effect sizes associated with the significant changes, and participant details are sparse; although this study has been cited several times, the low standard of reporting indicates that this study provides weak evidence in support of MBIs compared to much of the existing literature.

Glass and colleagues (2019) conducted an RCT with a larger sample of 52 mixed-sport collegiate student-athletes during which voluntary participants were randomly allocated to either a 6-week Mindful Sport Performance Enhancement (MSPE) intervention—the second of three manualized MBIs—or a WL control. The current MSPE protocol (Kaufman et al., 2018) consists of 6 modules ranging from 75 to 90 minutes (but can be shortened to a low as 60 minutes) and are heavily influenced by both MBSR and Mindfulness-Based Cognitive Therapy. Following a description of the rationale for and practical applications of mindfulness, sessions begin with sedentary mindfulness practices and meditations, and gradually incorporate mindfulness exercises in motion culminating in a sport-specific mindfulness exercise. Exercises range from 3 to 30 minutes in duration, and home-practice and discussion of experiences is encouraged. Similar to MAC, MSPE has been described as flexible in nature in order to meet the needs and abilities of different populations—which, again, may be ideal for practitioners but presents some difficulties for researchers.

In the initial phase of the Glass et al. (2019) study, the 29 participants in the WL control experienced significant increases in depressive symptoms whereas the 23 MSPE participants reported non-significant reductions. Once WL control participants had received the intervention, participants in both groups deemed “treatment completers” (attended 5 of the 6 sessions; n = 43) reported significant improvements in 3 dimensions of flow (merging of action and awareness, d
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=.63; clear goals, d = .60; and challenge/skill balance, d = .86), 2 dimensions of trait mindfulness (observing, d = .81; nonreactivity, d = .50), life satisfaction (d = .60), satisfaction with physical (d = .69) and cognitive/emotional (d = .73) performance, and sport-related worry (d = -.47); they also practiced mindfulness for an average of 3.88 days per week. While this provides some preliminary evidence that completing the program and practicing somewhat regularly may be associated with change in outcome measures, it is unclear to what the participants were adhering (i.e., which exercises they were practicing between sessions) and the duration of practice each day. Moreover, associations between amount of between-session practice and change were limited: more practice was associated with greater self-reported flow, but also increased general anxiety. The ambiguous dosage and outcome assessments leave questions about who changed more and why.

De Petrillo and colleagues (2009) also evaluated the effectiveness of a 4-week MSPE intervention with 25 mostly female (n = 15) long distance runners (M_age = 34.73). Participants were randomly assigned to the MBI (n = 13) or the WL control (n = 12), and were evaluated on measures of sport anxiety, cognitive interference, perfectionism, credibility of the training (measured by an adapted version of the Credibility/Expectancy Questionnaire; see Devilly & Borkovec, 2000), and mindfulness. The duration of the 4 weekly sessions was 2.5-3 hours, and incorporated elements from Kabat-Zinn’s MBSR and Segal et al.’s Mindfulness-Based Cognitive Therapy; exercise included a mindful eating exercise, body scans, mindful breathing, sitting meditations, mindful walking, and a sport specific mindfulness exercise. Although there were no differences between groups on outcome measures, MSPE participants found the training to be credible and expected positive outcomes before the intervention. Once WL control participants
had received the training, the 25 total participants reported significant reductions in sport related worry, two dimensions of perfectionism (out of 6), and the ability to act with awareness.

In another randomized design with a WL control, Scott-Hamilton and colleagues (2016) conducted an MBI with 47, mostly male ($n = 42$) competitive cyclists ($M_{\text{age}} = 38.96$, $SD = 12.4$) in Australia. Of the initial 60 that were randomized, 27 participants participated in and completed measures before and after the MBI, while 20 participants comprised the control group. The MBI consisted of 8 weeks of the modified mindfulness-integrated cognitive behavior therapy (MiCBT) program and consisted of 4.33 hours of total meditation exposure in sessions (including both sedentary breathing meditations and mindfulness exercises on stationary bikes) with prescribed home practice. MBI participants reported significant improvements in mindfulness and flow with moderate effect sizes ($d = .75$ and .63, respectively), and reductions in pessimism with a small effect size ($d = .34$) compared to the control group. For the intervention group, Pearson correlations revealed that greater increases in mindfulness were associated with increases in dimensions of flow and reductions in anxiety. An important finding is that MBI participants were not significantly less anxious than control participants post-intervention. Also, a point that applies to each of the aforementioned studies with WL controls is that without an active comparison group it is impossible to say whether the mindfulness training specifically caused the observed changes, or if some other driver of change was present (i.e. therapeutic relationship between participants and intervention leader).

Liu et al. (2021) examined the effect of a brief, single session mindfulness intervention on flow, mindfulness, and resilience with female and male Chinese athletes at a sport university. Participants were randomized into a mindfulness condition ($n = 29$) or a control condition ($n = 28$). The intervention consisted of a single, 30-minnute recorded MAC-based intervention where
participants listened to audio of intervention concepts and exercises. The control group was time-matched, and participants listened to a neutral news audio recording in their 30-minute session. Results indicated that MBI participants reported significantly improved mindfulness, flow, and resilience scores at post-intervention, and the authors reported that improvements in resilience mediated the association between condition and improvements in flow. Though these results are encouraging, there are some notable limitations particularly related to the method and the lack of detail; specifically, participant information is scarce (e.g., sport participated in and experience, age, experience with mindfulness and/or mental training, participant engagement) and intervention timing (day and time, season, etc.) is not included. Moreover, as the authors note, the longer-term effects of this brief, single session intervention were not assessed for durability.

In addition to randomized designs, studies utilizing non-randomized control groups have reported some similar benefits for sport participants following MBIs. Recently, Chen & Meggs (2020) conducted an adapted 8-week MSPE intervention with 9 elite, adolescent swimmers and evaluated intervention effectiveness on outcomes related to both state and dispositional measures of flow and mindfulness; a non-randomized control group of 7 elite, adolescent swimmers underwent a concurrent relaxation training program. Intervention meetings were scheduled in 30-minute blocks each week over 8 weeks. For MSPE participants, significant improvements were observed in global state flow ($d = .74$) as well on the trait flow subscale of “loss of self-consciousness” ($d = .90$); there were no significant improvements in measures of mindfulness, and a significant decrease in the mindfulness sub-scale of curiosity. Compared to relaxation training, the MSPE group showed significantly greater improvements in global trait flow ($\eta^2 = .60$) and the trait flow subscale of “merging of action and awareness” ($\eta^2 = .60$), as well as the state flow subscale of “clear goals” ($\eta^2 = .29$) The notable limitation of the investigation by Chen
and Meggs (2020) was the small sample size. Additionally, no details were provided about the content of the adapted MSPE sessions, and between-session mindfulness practice was not reported.

Another recent study by Kostrna and D’Addario (2022) utilized a non-randomized control group design to study the effects of MSPE with 25 female-identified members of a NCAA Division I Swimming and Diving team compared to an equivalent, no-treatment control group consisting of 22 female-identified members of a separate NCAA Division I Swimming and Diving team. Similar to Minkler et al. (2021), the first author read the MSPE book and engaged in MSPE training to learn to protocol before delivering it to participants in their fall semester before their championship meet. Instead of the typical 60-90 weekly minute sessions recommended by Kaufman et al. (2018), Kostrna and D’Addario (2022) adapted the program to consist of six 45-minute sessions every other week; the program lasted for a total of 12 weeks, and participants completed pre- and post-intervention measures of rumination, sport anxiety, attention control, flow, and mindful attention and awareness.

Though no significant differences were observed between groups on improvements in flow or mindful attention, 20% and 28% of MSPE-trained participants reported significant improvements with large effects on the attentional control sub-scales of focusing and concentration control, respectively—which constituted significantly greater increases than scores reported by control-group participants. Moreover, between 36% and 56% of MSPE-trained individuals reported reliable reductions in rumination, trait anxiety, and all three sport anxiety sub-scales (i.e., worry, cognitive disruption, somatic anxiety), with large effects, in comparison to no-treatment controls. No measure of dosage or intervention engagement was included, and little information about for whom MSPE was more effective was included—which leaves many
questions for future research—though results suggest that the intervention exerted beneficial effects for many participants. The lack of both randomization to condition and objective performance measures were some important limitations.

Similar to Kostma and D’Addario, Goodman et al. (2014) utilized a non-randomized control group design to evaluate a MAC and hatha yoga intervention with a 13-member NCAA Division I men’s basketball team; thirteen mixed-sport student-athletes competing in club sports made up the no-treatment comparison group. The experimental group went through an adapted MAC protocol on a voluntary basis, consisting of eight 90-minute MAC sessions followed by 60-minute hatha yoga sessions. MBI participants reported significantly higher levels of mindfulness and goal-directed energy (a subscale of the Adult Hope scale assessing goal motivation; see Snyder et al., 1991) after the intervention, with moderate to large effect sizes (d = .48 and .99, respectively), as well as less perceived stress—with a small effect size (d = .26). A between-group comparison also revealed an interaction effect, such that participants in the experimental conditions improved significantly more on mindfulness and goal-directed energy measures, though an effect size for the interaction was not reported.

Important to note is that significant change was not observed on the measures of grit, commitment to values, cognitive defusion, and psychological distress; moreover, the combination of MAC and hatha yoga makes it difficult to discern the driver of observed changes. Also, similar to a majority of reviewed studies thus far, neither subjective nor objective performance outcomes were assessed. Although difficult to confirm, participants in the Goodman et al. (2014) study were likely exposed to a higher dose of mindfulness/meditation than previously mentioned MAC interventions given the nearly 20 hours spent in intervention sessions, combining both the MAC protocol and yoga sessions. A limitation is the use of a non-
equivalent control group, dissimilar to Kostrna and D’Addario (2022), who attempted to make up for the lack of randomization by including a relatively comparable group for comparison.

Baltzell & Akhtar (2014) evaluated the third manualized MBI included in this review—Mindfulness Meditation Training for Sport (MMTS)—with a team of 19 NCAA Division I women’s soccer players using a design similar to Goodman et al. (2014). The women’s rowing team from the same university (n = 23) served as the control group. MMTS consists of twelve 30-minute modules, during which 20 minutes are devoted to didactic instruction and 10 minutes are devoted to meditation practice. The four primary components of MMTS are a capacity for open awareness, compassion for self and others, concentration, and acceptance. In addition to intervention exercises, participants are encouraged to practice at home for 5-10 minutes per day (Baltzell & Akhtar, 2014). According to Baltzell & Akhtar (2014), the MMTS group reported improvements on measures of mindfulness with moderate effects ($d = .56$), while both groups’ scores on the measure of positive affect remained constant; on the measure of negative affect, control group scores increased significantly over time with substantial effects ($d = 1.74$) while the MMTS groups’ scores remained stable. Neither main effects nor interaction effects were observed on measures of psychological well-being or satisfaction with life and noted in the discussion is the intentional omission of performance measures. Also, important to note is that the 89 student-athletes were required to participate in the training by the coach; while average mindfulness scores improved, some improved more than others, which leaves questions regarding why some may have changed more than others.

Open trials not including a comparison group have provided further information for researchers and practitioners to consider. In a follow-up of the previously discussed research by Scott-Hamilton et al. (2016), Scott-Hamilton and Schutte (2016) conducted an MBI with 12
competitive athletes in Australia ($M_{age} = 33.57$, $SD = 12.50$) who competed in road cycling ($n = 5$), cross-country mountain biking ($n = 5$), alpine skiing ($n = 1$), and swimming ($n = 1$) and specifically evaluated the dosage component of the intervention. The athletes participated in the same 8-week MiCBT (Mindfulness-Integrated Cognitive Behavioral Therapy) program described by Scott-Hamilton et al. (2016) and it was adapted for the non-cycling athletes. After the intervention period, participants were split into high and low adherence groups; high adherers ($n = 5$) attended an average of 7.4 sessions ($SD = .89$) and meditated for an average of 986 self-reported minutes over the eight-week intervention ($SD = 396$), and low adherers attended an average of 3.1 sessions ($SD = 1.95$) and meditated for an average of 143 self-reported minutes over the eight-week period ($SD = 127$). Compared to the low adherence group, increases in mindfulness and global flow were observed with large effect sizes ($\eta^2 = .49$ and .43, respectively) in the high adherence group—though changes were not significant (likely due to the small sample size of 4 participants in the high adherence group). Significant reductions in pessimism and anxiety were also observed in the high adherence group relative to the low adherence group, with moderate effect sizes. Though the sample size was quite small, this dosage comparison indicates that amount of practice may play a role in outcomes, although a more precise measure of between-session practice would be preferable. Moreover, participants were divided at post-intervention into high and low adherence groups; no information is provided as to why those in the high adherence group attended more sessions and practiced more—information that would be useful to both practitioners and researchers.

Though the specific dosage or adherence component was not measured, Goisbault et al. (2022) studied the effects of a MBI with 40 elite adolescent basketball players ($M_{age} = 16.33$, $SD = 0.75$ years) in France with a specific focus on personality traits as a potential moderator of
Drivers of Change in MABIs

The 15-week MBI, the Mindfulness Basketball Integrated (MBBI) program, was modeled after a similar program created by Doron et al. (2020) for elite Badminton players. The program was adapted from the MAC protocol (Gardner and Moore, 2007), and included five modules: psychoeducation, goals and values, awareness, acceptance, and performance routines. A primary aim of this investigation was to understand when and for whom an integrated MBI was most effective, using a mixed-method design; to that end, participants were invited to complete a personality inventory (assessing the big five personality traits of neuroticism, extraversion, conscientiousness, agreeableness, and openness to experience) before engaging in the intervention, and also completed outcome measures assessing mindfulness (i.e., awareness, acceptance, non-reactivity and non-judgment), perceived stress intensity and direction, and performance satisfaction at three time points: pre-intervention, halfway through the intervention, and immediately following the last session. Participants also completed semi-structured interviews one month after the MBI.

Results revealed that, in aggregate, participants reported significant increases over time in three components of mindfulness (i.e., non-reactivity, non-judgement, and acceptance), and performance satisfaction, and significant reductions in perceived stress direction, with small to moderate effect sizes (i.e., .36 < d > .68). Moderation analyses revealed that athletes lower in neuroticism and conscientiousness reported significantly greater improvements over time in non-reactivity than those with higher levels of the same personality traits. Moreover, athletes higher in agreeableness experienced significantly greater increases in non-judgement than did the athletes lower in agreeableness. Finally, extraversion and openness to experience were significantly and negatively associated with stress intensity and stress direction, respectively (i.e., higher levels of extraversion were associated with significant reductions over time in stress.
intensity and higher levels of openness to experience were associated with reductions in negative perceptions of stress). Qualitative results also revealed that many athletes enjoyed the program and observed many benefits including enhanced attentional monitoring and regulation, increased commitment to values-driven behavior, and reduced interference of emotions in their performance. Though dosage was not specifically measured, qualitative results indicated that many participants practiced exercises between sessions and after the conclusion of the MBI, indicating that adherence may be a contributing factor in outcomes. A major strength of this study is the exploration of personality traits as potential moderators for intervention effectiveness. The lack of a control group and the use of non-validated measures for performance satisfaction and perceived stress intensity and direction were notable limitations, though the results provide a useful foundation for future research.

Doron and colleagues (2020) conducted a mixed-method non-randomized control group investigation integrating a similar MBI to the one used by Goisbault et al. (2022)—in fact the Doron et al. (2020) MBI served as the foundation for the Goisbault et al. (2022) intervention. Participants in the study by Doron et al. (2020) were allocated to either the MBI condition \((n = 18, 10 \text{ males, } M_{age} = 16.22, SD = 0.94)\) or an active control condition consisting of progressive muscle relaxation (PMR) training \((n = 11, 5 \text{ males, } M_{age} = 16.64, SD = 1.29)\). The MBI consisted of four modules (psychoeducation, introduction to mindfulness, acceptance, and attentional focus) and was integrated over the course of eight weeks; each module lasted two weeks, and module-specific content was introduced in either two or three sessions over the two week period. Sessions lasted between 20 and 45 minutes in duration. The PMR group met weekly for 30 minutes, where participants practiced physical relaxation exercises.
Participants were assessed on measures of mindfulness (i.e., awareness, acceptance, and refocusing), cognitive interference (i.e., performance worries, task-irrelevant thoughts, and thoughts of escape), performance satisfaction, and satisfaction with the MBI. Participants also completed follow-up semi-structured interviews. Thought a between-groups repeated measures multivariate analysis of covariance (MANCOVA) yielded a large effect ($\eta^2 = .58$) of the MBI on primary outcomes (i.e., mindfulness, thought interference, and performance satisfaction), follow-up analyses were mixed. Univariate ANCOVAs with follow-up $t$-tests revealed significant improvements with moderate effects ($.73 < d > .76$) in mindful awareness, interference of task-irrelevant thoughts for MBI participants only, though the same analyses revealed that MBI participants reported more performance worries after the intervention no improvements in performance satisfaction. Unexpectedly, PMR participants also reported significantly greater increases in acceptance compared the MBI participants during the course of the study. The authors hypothesize—similar to Gross et al. (2018)—that the MBI may have had greater or different effects had the protocol been sustained over a longer period of time. Gross et al. (2018) also observed that may outcomes worsened over the initial seven-week intervention period and did not improve until follow-up assessments were gathered. Though there are notable limitations—including the lack of randomization and the fact that the interventions were not time-matched—the results and discussion indicate that dosage could be considered as another avenue for exploration. Moreover, qualitative results demonstrate that athletes enjoyed and cognitively understood many of the concepts covered in the intervention, but also had difficulty applying them at times—further suggesting that a longer intervention period with more practice might be necessary for change.
Previous open trials have also investigated flow as a possible outcome of MBIs. For example, in the initial development and investigations of MSPE, Kaufman and colleagues (2009) evaluated the initial 4-session iteration of MSPE, described above (De Petrillo et al., 2009) with 32 recreational athletes (11 archers and 21 golfers, $M_{age} = 52.19$). Participants reported significantly higher ratings of their sport performance following the intervention, and significant improvements in state flow were observed after the intervention, although effect sizes were not provided. Some, but not all measures of mindfulness improved from pre- to post-intervention, including trait mindfulness and sport confidence for archers and the mindfulness subscale related to ability to describe aspects of experience for golfers. Again, no effect sizes were provided, nor was enough information provided to calculate Cohen’s $d$ estimates (e.g., only means were provided, not standard deviations). Apart from the observed changes associated with dimensions of mindfulness and flow, there were no changes related to anxiety, perfectionism, or thought disruption.

After the MSPE studies by De Petrillo et al. (2009) and Kaufman et al. (2009), 25 participants agreed to complete follow-up measures included in the study by Thompson et al. (2011): four archers, 8 golfers, and 13 long-distance runners participated and completed measures related to sport performance, workshop credibility, continued mindfulness practice, and trait measures of mindfulness. Golfers and runners reported significantly lower scores and mile times, respectively, at one-year follow-up (archers reported no significant improvements in scores); moreover, participants reported significantly higher levels of trait mindfulness and fewer task-related worries, task-irrelevant thoughts, and lower sport anxiety—although effect sizes were again not provided. 84% of participants reported occasionally practicing mindfulness exercises between the end of the intervention and follow-up data collection ($M = 1.15$ days per
week, range = 0-7 days per week), although Pearson correlations revealed no significant associations between amount of reported practice and changes in outcome measures. The retrospective nature of the study and reported dosage of mindfulness between post-test and follow-up make it difficult to discern the accuracy of mindfulness practice and possible associated effects.

Minkler and colleagues (2021) conducted another MSPE open trial with an entire NCAA Division III women’s lacrosse team with 30 student-athletes ($M_{age} = 19.63$). Participants went through the updated 6-week MSPE protocol during their preseason in weekly, hour long sessions before a morning practice; there was zero attrition, and all 30 members attended each session. Participants reported practicing mindfulness formally, informally, and during sport between sessions for an average of 2.37, 3.33, and 4.00 days per week, respectively. With large effect sizes, participants reported reductions in somatic anxiety ($\eta^2 = .22$), worry ($\eta^2 = .25$) and emotion regulation difficulties ($\eta^2 = .26$) over time; mindful acceptance and the mindful refocusing during sport improved from pre-test to follow-up, with moderate effect sizes ($\eta^2 = .14$ and .11, respectively), as did satisfaction with physical sport performance—with a large effect ($\eta^2 = .16$). Coach rated performance increased significantly from pre- to post-intervention, and then decreased significantly from post-intervention to follow-up. Without a comparison group, it is impossible to say whether the training effects were due to the MBI, or to the natural progression and improvement in various performance-related outcomes that would have otherwise occurred without the training. The degree of program engagement and qualitative responses suggests that participants were interested in and had mostly positive experiences with the program; if they did benefit from MSPE, though, there is no data suggesting why this group in particular was more
interested in, or ready for, mindfulness training compared to other groups. Moreover, no assessment of treatment fidelity nor intervention leader competency was included.

Vidic and colleagues (2017) conducted a similarly designed open trial with an NCAA Division I women’s basketball team consisting of 13 student-athletes (M<sub>age</sub> = 19.85). Participants were exposed to a 10-session MBI over the course of 16 weeks, with each session lasting roughly an hour. Sessions consisted of 10-20 minutes of education and didactic instruction of mindfulness concepts, followed by 15-20 minutes of guided practice (described as “calm-abiding meditation” (Vidic et al., 2017, pp. 150), which was followed by 10 minutes of silence, ending with 10-20 minutes for discussion and/or questions. Significant reductions in perceived stress (η² = .27) and improvements in overall ability to cope with situations in sport using mental skills (η² = .68) were observed from pre- to post-intervention. While participants reported generally positive experiences and benefits related to increased awareness and focus, applicability of practice in other life domains, presence, and relaxation, some athletes described difficulties putting their mindfulness skills into practice and staying present. Similar to the previously discussed open trial by Minkler and colleagues (2021), without a comparison group it is impossible to deduce true training effects. Because so many factors may influence stress and athletic coping—like coach-athlete relationships, need satisfaction, team cohesion, environmental conditions, etc.—it is would be inappropriate to give credit to the MBI in this and all other open trials, although the combined qualitative and quantitative results indicate that there may be some effect—the degree to which that may be true, though, is impossible to deduce.

With a men’s NCAA Division I varsity baseball team (n = 25), Vidic and Cherup (2022) conducted a study similar to the work of Vidic et al. (2017) with female-identified college basketball players—except they explored the effectiveness of an intervention combining
concepts from both mindfulness (as described by Kabat-Zinn (2003)) PST (specifically imagery, self-talk, and arousal control, as described by Weinberg and Gould (2019)). The intervention took place over the course of six weeks, and both quantitative (e.g., athletic coping skills, resilience, mindfulness, flow, perceived stress) and qualitative (i.e., open-ended, self-reported reflections) measures were utilized in this mixed-method approach. Though the lack of a control group limits the validity of the findings, the authors observed statistically significant decreases in perceived stress, as well as improvements in scores on measures of resilience, athletic coping, mindfulness, and flow. The authors also reported, via qualitative findings, that participants practiced mindfulness for an average of 2-3 times per week and that they observed benefits related to breathing, heightened awareness, present-moment focus, and utilization of PST techniques (e.g., using a cue word, learning about routines). All athletes reported that at least some of the concepts were applicable to their sport. Over 50% of athletes indicated they experienced challenges or difficulties related to the intervention, though none appeared to be clinical in nature. The combination of both mindfulness and PST skills represents a useful and potentially helpful integration of two different approaches that sport psychology professionals could consider using, but the study provides little detail as to when and for whom each approach may be more helpful. The dosage assessment was also conducted post-program, so adherence is subject to recency and social desirability biases. Moreover, few details were provided that address how the potentially conflicting philosophical underpinnings of each approach were resolved in implementation (e.g., non-striving nature of mindfulness and the control-oriented nature of PST). With that said, the authors provide a useful applied example of how the two approaches could be integrated and how acceptable it may be to college athletes.
Another open trial by Evers et al. (2020) evaluated the effectiveness of an MBI with 29 male (n = 7) and female (n = 22) NCAA athletes on outcomes related to mindfulness, stress, and overall mental health. Participants completed a 4-week adaptation of the Athlete Mindfulness intervention (see Scholefield et al., 2018) during which participants were provided a rationale for mindfulness, guided through various mindfulness exercises and meditations (breathing meditations, body scans, mindful movements, sports imagery meditations, labelling exercises, and loving-kindness meditations), and provided with a year-long subscription of the Headspace app. Length of sessions nor specific dosage was provided. After the intervention, self-reported mindfulness and mental health scores were significantly higher, with moderate effect sizes (d = .49 and .53, respectively). Perceived stress was also lower, but not significantly so (d = .35). Limitations included low reliability of the mindfulness measure in the sample (Cronbach’s alpha = .68) and lack of reporting on dosage both in session and between sessions, as well as the previously mentioned limitations that come with the omission of a comparison group.

**Descriptive and Correlational Studies**

While comparison studies and open trials provide some support for change following MBIs, cross-sectional research has also been conducted associating mindfulness with various constructs of interest. In the broader literature, Tomlinson and colleagues (2018) reviewed 93 studies exploring the cross-sectional effect of dispositional mindfulness on psychological health. Over 40% of included studies examined the relationship between mindfulness and pathological symptom (e.g., depression, anxiety, eating pathology, and personality disorders); the most commonly explored association was between mindfulness and depression, with all finding significant negative associations between mindfulness and depressive symptoms. Dispositional mindfulness was also found to be inversely associated with symptoms of Borderline Personality
Disorder (BPD) in two studies—providing further support for the integration of mindfulness skill-building in Dialectical Behavior Therapy (which was originally designed to treat BPD; Linehan, 1993). Negative associations in multiple studies were also observed between mindfulness and rumination and catastrophizing—both of which are risk factors for depression. The highest percentage of papers explored the association between mindfulness and emotional factors (i.e., 45%), with dispositional mindfulness significantly and inversely correlated with perceived stress and recovery time proceeding a stressful situation, and positively with emotion regulation. These cross-sectional data suggest that dispositional mindfulness is beneficial for a range of outcomes in clinical and non-clinical populations, which justifies the integration of MBIs aimed at helping people cultivate mindfulness as either a state or a trait (i.e. disposition), though this review only included studies published in English and includes few population-specific details that may indicate differences in baseline mindfulness levels.

The more general psychological literature connecting mindfulness with beneficial outcomes related to mental health and well-being is relatively strong, and the sport psychology literature indicates similarly encouraging associations between mindfulness and performance-relevant factors. With 182 university athletes, Kee and Wang (2008) collected survey data on measures of mindfulness, flow, and performance strategies, and observed that participants high in mindfulness reported higher scores on several dimensions of flow and attention and emotional control compared to those with lower reported mindfulness. Cathcart and colleagues (2014) also conducted cross-sectional research with 92 elite athletes in Australia and observed that mindfulness scores were significantly positively associated with 4 of the 9 dimensions of flow, including clear goals, focus on the task at hand, sense of control, and loss of self-consciousness. They also found few differences between males and females on outcome measures but observed
that athletes from individual and pacing sports reported a greater disposition to “observe, notice, or attend to present moment feelings, thoughts, and sensations” in comparison to team sport athletes (Cathcart et al., 2014, pp. 134). These sport-type differences could imply that the nature of coactive vs. interactive sports may influence mindful dispositions.

With a sample of 220 NCAA Division I athletes from a variety of sports (e.g. track and field, cross country, soccer, volleyball, golf, and tennis), Foster and Chow (2020) observed via path analysis that both mindfulness and use of psychological skills had a significant, moderate effect on sport wellbeing; moreover, only mindfulness had a direct relationship with global wellbeing. The nonjudgment subscale of the mindfulness assessment utilized also revealed moderate to strong correlations with sport (r = .592) and global wellbeing (r = .909). In addition to wellbeing, associations between mindfulness and sport performance have also been investigated in cross-sectional designs. Röthlin and colleagues (2016) recruited a sample of 133 elite athletes (M

\text{age} = 23.68) from 23 sports and evaluated them on measures of trait mindfulness, competitive anxiety, and self-reported performance. Using a moderated mediation model, they observed an indirect relationship between mindfulness and performance through reductions in cognitive anxiety such that mindfulness inversely predicted cognitive, but not somatic anxiety, which was thus negatively associated with subjective performance. Cross-sectional research by nature precludes any meaningful conclusions regarding the effectiveness of mindfulness training on the ability to enhance performance, but the data indicates that there may be a positive association between mindfulness, as a disposition, and perceived performance.

Another cross-sectional study utilizing path analysis by Bondár et al. (2022) sought to understand the potential mediating role of dispositional mindfulness between personality characteristics and functional (and dysfunctional) psychobiosocial performance states with 221
Italian athletes ($M_{age} = 29.29, SD = 9.55, 109$ men, 112 women), with nearly 70% competing at the professional level in their sport. Participants completed a measure of sport mindfulness, in addition to an assessment of dominant personality traits (i.e., the big five—neuroticism/emotional stability, extraversion, conscientiousness, agreeableness, and openness to experience) and psychobiosocial states associated with successful and unsuccessful performances. Emotional stability and conscientiousness were each indirectly and positively linked with functional psychobiosocial performance states through mindful refocusing, and a nonjudgmental attitude mediated the significant inverse association between emotional stability and dysfunctional states. Moreover, mindful awareness mediated the positive association between conscientiousness and functional performance states. These results suggest which personality traits may be more or less associated with certain aspects of mindfulness, and how those associations contribute to adaptive or maladaptive psychological performance-related states. Because of the cross-sectional nature of the research, though, causal inferences cannot be made; furthermore, these results provide no context surrounding how mindfulness may be cultivated, how mindfulness training may alter either/both mindfulness and/or personality traits, and when or for whom mindfulness interventions may be more effective.

In addition to quantitative studies—which provide some level of detail about possible effects of MBI or mechanisms through which they may be beneficial for athletes—qualitative investigations provide another lens and shed some light on athlete perspectives on, experiences with, and attitudes toward MBIs. Seven athletes who participated in the previously mentioned MMTS study (Baltzel & Akhtar, 2014) also participated in post-intervention semi-structured interviews ranging from 20 minutes to one hour (Baltzel et al., 2014). Several higher order themes emerged from the data, including an improvement or shift in how they related to their
intense or negative emotions on and off the field, improved ability to focus, and a positive
evolution regarding attitudes and perceptions of meditation—with data suggesting that
participants were hesitant to participate in the training at first and found meditation more difficult
to engage in at the start of the intervention, but were experienced a positive shift in their attitudes
as they practiced more and were able to connect the practice to sport participation. Most
participants reported positive experiences with the program; while the Baltzell & Akhtar (2014)
study was mandated by the coach, the interviews conducted by Baltzell et al. (2014) were
voluntary, and it is thus possible that participants who had better experiences with the program
were more inclined to participate in an interview.

More recently, Cote and colleagues (2019) conducted a qualitative exploration of an
updated version of MMTS (MMTS 2.0) with 9 NCAA Division I Tennis players (5 male and 4
female, M_age = 21.3). The 9 participants experienced MMTS 2.0 with the teammates (n = 23)
prior to the season and consented to follow-up interviews upon the conclusion of the training.
The MBI consists of 6 modules that are either broken into two 30-minute segments or combined
for a one-hour session; 30-minute segments consist of 10 minutes each of psychoeducation,
guided mindfulness practice, and group discussion, and participants were provided with a
recording of a 10-minute guided meditation, to which they were encouraged to listen each day
between sessions. Semi-structured interviews ranged from 15 to 25 minutes, and many benefits
were reported by participants including greater awareness of internal and external stimuli, ability
to not react to difficult/negative thoughts and emotions, self-compassion, focus, emotion
regulation, confidence, and personal growth.

They were also candid in providing challenges related to the MBI, which included lack of
time and discomfort associated with practicing meditation independently—with one participant
describing how meditation worsened her stress—as well as misgivings about sharing anxiety and perceived weaknesses with their teammates during discussions. Some commented that they would have preferred one-on-one sessions, and the three participants with previous experience with mindfulness noted that prior exposure enhanced their experience with MMTS 2.0. Again, the self-selection bias associated with voluntary participation makes it difficult to determine true intervention effects on the group, although the fact that both benefits and barriers or negative reactions were reported indicates that not everyone who volunteered had overwhelmingly positive experiences, which may generalize to others who went through the program. Both benefits and barriers of MBIs and mindfulness practice are important for researchers and practitioners to understand in order to improve the quality-of-service delivery. The literature, at present, seems to focus more on the positive aspects and changes following MBIs and less on possible negative experiences or adverse effects, which the literature outside of sport suggests may be more common than is reported (Farias et al., 2020).

In another qualitative study, Mistretta and colleagues (2017) collected pre-intervention qualitative, open-ended responses from 45 NCAA Division III student-athletes inquiring about participant expectations and what they hoped to gain from an MSPE training—which included 6 weekly meetings 75 minutes in duration. After the training, 22 of the original 45 participants completed open-ended response questions assessing what they liked about the training, how it helped them in their sport, negative reactions to MSPE, and recommendations for improving the training. Before the training, 69% of participants hoped or expected to gain some psychological benefit related to their sport—with 24% reporting a desire to reduce sport related anxiety or stress—and 27% hoped to directly enhance their performance. Outside of sport, over 50% of respondents hoped to increase their capacity for resilience, confidence, or self-understanding.
After the program, participants described several psychological benefits related to stress management, relaxation, focus, and other psychological benefits both in sport and in everyday life. In terms of negative experiences, the length and time of sessions (which took place on Sunday evenings) were barriers according to half of the respondents, and many would have preferred to have gone through the training with their teammates. Because this qualitative design relied upon open-ended questions to which participants had to write their answers, member checking and other measures to improve trustworthiness were not utilized which reduces the explanatory power of these results. Also, the high degree of attrition could be due to a lack of engagement or interest in the program—and possibly negative experiences.

Case studies also provide information about possible impacts and experiences with MBIs. In their dual study paper, Bernier and colleagues (2009) first interviewed 10 elite swimmers in France (6 men and 4 women, M<sub>age</sub> = 20.23) to describe their experiences with the construct of flow; the researchers observed that participants described all of the 9 elements of flow, defined by Jackson and Csikszentmihalyi (1999), as well as aspects of awareness and acceptance related to mindfulness. In the Bernier et al.’s (2009) second study, 7 elite, adolescent golfers (2 female, 5 male, M<sub>age</sub> = 15.67) from France were exposed to mindfulness training (adapted from MBCT and supplemented with ACT materials) over the course of 9-month (two semester) season. A consultant met with participants over the course of the intervention period, although session length and frequency were not reported, and participants were encouraged to listen to, and practice, recorded mindfulness and acceptance exercises twice per week. Each participants’ national ranking improved during the course of the training and had gained skills related to attention, awareness of activation levels, and behavioral flexibility. Adherence to practice and dosage was not explicitly discussed, although the longer duration of exposure to mindfulness
practice (over the course two semesters) could have played a role in outcomes. Moreover, these two studies were not described as case studies, but the standard of reporting and narrative surrounding the qualitative interviews and observations seem to be more in line with a case study approach, which has inherent research limitations—and also applied benefits.

With an NCAA Division III women’s lacrosse team over the course of a two-year period, Pineau and colleagues (2019) implemented a 6-session MSPE intervention with monthly follow-up meetings. During the follow-up meetings, in addition to practicing exercises taught in the MSPE program, participants and the intervention leader continued discussing and exploring their mindfulness practice as it related to lacrosse. In addition to participants reporting improvements in mindfulness and flow and reductions in sport anxiety and experiential avoidance, case study observations point to a number of cultural shifts; over the course of the two-year period, the team’s record had gone from well under 500 to competing for and winning a regional conference championship, with the coach commenting that mindfulness training contributed to a shift in team culture. Another observation was that buy in from coaches, athletes, and administrators, as well as consistent follow-up and continued practice, may be necessary for promoting change. Another case study by Ford and colleagues (2016) utilized objective measures during an MBI—namely neurofeedback—with a Division I female collegiate golfer who had experienced anxiety surrounding her performance. The athlete—Anna—underwent three weeks of mindfulness-based CBT, heart rate variability (HRV) and neurofeedback training, and was reportedly able to change her relationship with her anxiety, detach from it, and recognize how it was helping her in some capacity. The utilization of objective, physiological measures in MBI research within SEPP is limited, and future investigations may benefit from using larger samples with randomized designs.
The purpose of the present review is to propose what is currently known about the impact MBIs may have on the thoughts, feelings, and behaviors of sport participants. The most recent reviews (Noetel et al., 2019; Sappington & Longshore, 2015) and the lone-reviewed metanalysis (Bühlmayer et al., 2017) provide preliminary, albeit low quality evidence, that mindfulness and meditation—as well as dispositional and state mindfulness—have some kind of an effect for some, but not all, individuals who engage in such practices. Outcomes range from increased mindfulness levels, flow and one’s capacity to experience it, reduced anxiety and stress, and subjective performance, although many outcomes differed across studies. In order to address lingering questions related to differential effects and mechanisms of change, recent investigations have made efforts to advance the knowledge base surrounding MBIs—through more methodologically rigorous outcome studies including active controls and randomized designs (Josefsson et al., 2019; Röthlin et al., 2020), stricter standards of reporting around the dosage and intervention effects to explore potential mediators and moderators (Rooks et al., 2017), and the use of manualized and replicable MBI protocols (Glass et al., 2019; Gross et al., 2018). In order for the field to more fully understand the influence that MBIs have on both the subjective athlete experience (and overall wellbeing) as well as objective performance outcomes, more research is needed which includes methodological rigor, strict standards of reporting, and the use of replicable MBI protocols.

While many questions remain, an important one to consider is why some MBIs lead to expected change when others do not. For example, in some of the previously referenced evidence, why do some interventions lead to improvements in mindfulness (Goodman et al., 2014; Josefsson et al., 2019; Röthlin et al., 2020) while others do not (Chen & Meggs; Gross et al., 2018)? A simple explanation could be related to exposure to mindfulness and meditation—or
dosage. Although Goodman et al. (2014) observed significant changes on outcomes related to mindfulness and stress following a MAC intervention, Gross et al. (2018) found no significant changes in mindfulness immediately after the same intervention—and it was not until the follow-up data collection period when significant changes were reported, albeit on different outcomes. What is unknown is specifically how much mindfulness practice in which participants accurately engaged over the intervention period—not only in the studies by both Goodman et al. (2014) and Gross et al. (2018) but also in most mindfulness literature in sport. Compared to the other manualized protocols, the MAC approach seems to have the most evidence related to meaningful change, and even among this highly researched intervention (relative to other MBIs and manualized interventions in SEPP), there are still differential effects.

MSPE is another intervention that has received more attention in recent years. In its initial 4-session iteration, a more critical take on the approach reveals few meaningful changes related to the many outcomes investigated (De Petrillo et al., 2009; Kaufman et al., 2009). It was not until a follow-up collection period a year later that more change was observed. The latter, 6-session iteration has been associated with more immediate changes (Glass et al., 2019; Minkler et al., 2021), although more specific and detailed data collection regarding amount of practice would be useful. With MSPE, and certainly with many MBIs, it seems as though researchers have tried to include as many assessment tools as possible in an attempt to see what “works” and what does not. Regardless, for many MSPE studies, and MBIs in general in the clinical literature, it seems as though more and longer practice is associated with more change in outcomes theorized to be influenced by mindfulness practice (Lloyd et al., 2018). While this has some degree of face validity and makes sense theoretically—that more practice leads to greater change—investigations need to be more stringent in keeping track of dosage and also perhaps be
more deliberate and theory-driven in assessment. Questions related to dosage have been explored in the broader psychology literature (e.g., Carmody & Baer, 2008; Carmody and Baer, 2009), and the sport psychology researchers may add to the literature through replications of those studies with athlete populations (using sport-specific or similar MBIs geared toward athletes).

In addition, the literature would benefit from the inclusion of more descriptive record-keeping of treatment fidelity to enhance the replicability of MBIs. Zakrajsek and Blanton (2017) have described the importance for SEPP intervention evaluation research to include assessments of treatment fidelity in designing research; the degree of adherence to prescribed MBI protocols, in addition to amount of practice, may be a moderator of change. It is possible that differential effects of the many mindfulness interventions reviewed had to do with effectiveness and acceptability of program delivery, which could very well differ depending on the intervention leader. Another point made by Zakrajsek and Blanton (2017 is that SEPP research may be improved by including a measure of the strength of the relationship between participants and consultants. In psychotherapy, it is recognized and empirically proven that an important driver of change is the alliance between therapist and client (Lambert and Bartley, 2001), and the same could be true for interventions in SEPP. Gross et al. (2018) included a measure of participant perceptions of the relationship with the intervention leader, although the measure was not used in analyses related to MBI effectiveness.

Another important area for more exploration is in how researchers in the field are assessing change in mindfulness interventions. While a range of outcomes have been proposed following mindfulness interventions, at their core MBIs are theorized to improve mindfulness in participants—which is inherently difficult to measure and concerns related to self-report assessments have been raised (Van Dam et al., 2017). Many different assessment tools were used
to measure this complex and multi-dimensional construct at both the dispositional and state level in reviewed studies; perhaps a reason why differential self-reported mindfulness scores have been reported is due to the fact that there is not one (or two) universally recognized tools that measure mindfulness (with excellent and replicable evidence of reliability and validity). Van Dam and colleagues (2018) have pointed out many of the limitations of the current state of MBI research, including the lack of really strong measures of mindfulness and the reliance on self-report assessments, as well as the replication crisis that currently plagues the literature (i.e., the scant quantity of replicated findings).

An avenue for future research, specifically as it relates to measurement, could be the integration of neuroimaging techniques (e.g., functional magnetic resonance imaging, electroencephalogram, etc.) to complement self-report assessments in order to explore the functional and structural changes in the brain that may occur during and after MBIs, thus influencing behavior. A widely cited review by Tang and colleagues (2015) reviewed the mindfulness and neuroscience literature and commented that a wide variety of brain locations have been shown to be affected by meditation—possibly due to the diversity of study designs utilized and various meditation traditions (e.g., Vipassana, Dzogchen, Zen) and protocols (e.g., MBSR) investigated. The review by Tang et al. (2015) included a discussion of the different brain regions proposed to be affected by different forms of meditation; both longitudinal and cross-sectional research demonstrates that brain regions associated with self-regulation of attention (e.g., anterior cingulate cortex, dorsolateral prefrontal cortex) show functional (i.e., increased activation) and structural (i.e., increased gray and white matter) changes—though no studies have linked these changes with behavioral improvements in attentional performance (e.g., Stroop test).
Also cited are the brain regions associated with self-awareness (e.g., insula) and self-regulation of emotions and emotional processing (e.g., amygdala, striatum), which consistently demonstrate changes in response to meditation (over time, in longitudinal studies, and between groups in cross-sectional research exploring differences between experienced meditators and non-practicing controls). In their review, Wheeler and colleagues (2017) also commented on studies that identify deactivation in brain regions associated with emotion regulation in meditators, including the amygdala specifically and the default mode network generally, as well as increased myelination and axonal performance in networks of executive attention (e.g., anterior cingulate cortex). Notable limitations related to the empirical base in the neuroscience of mindfulness are the small sample sizes, the incomplete understanding of the connection between functional and structural changes in the brain in response to meditation and their associated behavioral changes, and the lack of replicated results. Moreover, though the entirety of the neuroscience and mindfulness literature is encouraging, a recent randomized trial conducted by Kral et al. (2022) failed to replicate the structural changes in brain regions associated with emotional control (e.g., gray matter volume and density in the right amygdala) and awareness (e.g., insula) after MBSR that has been observed in previous studies. In the same study, participants in both the MBSR group and the active control increased significantly in mindfulness, suggesting that something other than the mindfulness training could be a contributing factor to changes in mindfulness. The main purpose in briefly reviewing this research is to point out that the mindfulness literature in sport can and should take inspiration from the empirical base upon which the clinical and neuroscience literature stands as it relates to mindfulness—including in how studies are designed and how mindfulness is ultimately measured.
While neuroimaging techniques and different measurement modalities would add significant context to the mindfulness and sport literature, qualitative studies also provide useful information about the efficacy of MBIs. The qualitative studies included in the review provide support for MBIs in describing some of the benefits participants have garnered, and they also identify common barriers to practice that participants have faced as well as attitudes and readiness for MBIs. These barriers and negative experiences are important to understand, and researchers and practitioners must be aware of them in order limit possible adverse effects and experiences—which evidence from the literature outside of sport indicates may occur more commonly than one might expect from looking exclusively at the MBI literature in sport (Farias et al., 2020). Currently, little research in SEPP has focused on possible negative effects or experiences with MBIs. Attitudes and readiness for sport psychology services will be covered in greater detail in the proceeding section, but based on the studies by Baltzell et al. (2014) and Cote et al. (2019), it appears that some participants had varying degrees of reticence regarding mindfulness practice and how it could help them. Many of those who were interviewed expressed hesitation and difficulty with mindfulness at the beginning, but eventually came to enjoy it and see benefits related to the practice over the course of the intervention. The likely presence of self-selection bias makes it difficult to know for certain if all participants had similar experiences. Readiness and willingness to engage may have played a role, and although attitudes shifted for some, that may not have been the case for all participants in reviewed studies. Therefore, there is a need to understand attitudes and readiness for MBIs, and how attitudes and readiness may influence outcomes over time. MAC creators Gardner and Moore (2017, pp. 182) have commented that future MBI research could consider participant readiness, or “commitment
to mindfulness/acceptance concepts,” among other process-based concerns for adoption of mindfulness skills and behaviors.

**Negative Effects and Adverse Experiences with Mindfulness Practice**

A cursory review of the mindfulness literature, and particularly the mindfulness literature in sport, reveals somewhat of a misleading picture of the potential outcomes of mindfulness interventions. Critics of the widespread proliferation and popularization of mindfulness have described exaggerated claims of the potential benefits of mindfulness due to poor research methodology—contributing to popular enthusiasm that is far ahead of the evidence—as well as general misunderstandings about what mindfulness is and how it is practiced (Farias et al., 2016; Van Dam et al., 2018; McAlarnen & Longshore, 2017). However well-intentioned, this blossoming enthusiasm—founded on a research base that lacks methodological rigor and conceptual frameworks, as well as haphazard utilization—has contributed to unfamiliarity with the range of potential outcomes of mindfulness, including adverse effects (Farias et al., 2016).

The commonly reported benefits of mindfulness often wildly overshadow the potentially harmful effects that engaging in mindfulness practices can have for some individuals, which demonstrates a pervasive positivity bias present in the mindfulness literature (Britton et al., 2019). Many mindfulness researchers have called for more nuanced investigations that identify both positive and negative effects of mindfulness in a more methodologically rigorous manner—by including active control groups, controlling for pre-intervention effects, and exploring factors contributing to individual differences (Britton et al., 2019; Farias et al., 2016). The purpose of this section of the review is to provide readers with a more complete understanding of the potential effects that mindfulness interventions can have on participants, with a particular emphasis on adverse experiences.
As referenced previously, the sport literature generally focuses on the positive aspects of mindfulness and the benefits sport participants may experience during and after engagement in mindfulness practice. Though studies do exist in the sport literature demonstrating possible adverse experiences during mindfulness practice—like discomfort meditating or increases in stress (Cote et al., 2019)—the literature outside of sport suggests that such negative experiences may be more prevalent than typically reported (Farias et al., 2020). Farias and colleagues (2020) conducted a systematic review of 83 studies published over a nearly 45-year period that included an assessment of adverse experiences associated with mindfulness or meditation. Across all 83 studies, 6,464 participants engaged in either an experimental study (n = 54), an observational study (n = 14), or a case study (n = 15). Though the prevalence of adverse experiences differed depending on the research methodology (i.e., experimental vs. observational), the total prevalence of adverse experiences was 8.3% (i.e., 8.3% of studies reported at least one adverse event or effect among at least one participant); the prevalence was notably lower in experimental studies (3.7%), and markedly higher in observational studies (33.2%), which the authors suggest could be a function of how adverse experiences were assessed in different contexts. The most commonly reported adverse experiences were increases in anxiety, depression, and cognitive anomalies (e.g., “confusion,” “attention problems,” “false memories,” “reduced memory accuracy;” Farias et al., 2020, pp. 377), though some participants also re-experienced trauma, dissociated, or had suicidal ideation—most of which occurred during or shortly after the meditations (though few studies included long-term follow-up data, so whether these adverse experiences persisted over time is unclear). Though the review provides important insights into the possible adverse experiences that practitioners of mindfulness or meditation can experience,
it is still unclear regarding for whom and under what circumstances these adverse effects may occur.

An important limitation in the review by Farias et al. (2020) was that “adverse events” were not assessed in a standardized way (not due to a fault on the part of the authors, but instead because of the nature in which adverse effects were reported). Britton and colleagues (2021) sought to assess adverse effects in a more systematic way with 96 people in the United States (\(M_{age} = 40.4, SD = 12.9, 73\%\) female-identified) who were randomized into one of three mindfulness groups: (1) standard Mindfulness-Based Cognitive Therapy (MBCT; including both open monitoring (OM) and focused attention (FA) meditations), (2) MBCT including only OM meditations, and (3) MBCT including only FA meditations. Across groups, participants practiced mindfulness for an average of 17 minutes per day and experienced improvements in depression symptomology from baseline to post-intervention as well as post-intervention to follow-up, with large effect sizes (1.34 < \(d_s\) > 1.65). That said, 83% of participants reported experiencing at least one meditation-related side effect (which includes positive, neutral, and negative side effects), and 58% further reported a side effect that was negative. For 6-14% of participants, negative effects persisted for more than a day. The most prevalent negative side effects were re-experience of trauma, increases in anxiety or panic, time/space distortions, and visual lights, though they were not typically associated with persisting negative effects; more commonly, negative effects that persisted were associated with executive dysfunction, derealization, insomnia, and emotional blunting, though the prevalence of these adverse effects were lower. The results from this study indicate that negative, adverse effects can and often do occur, though it is not clear how much these negative effects are related to pre-intervention experiences. The
authors suggest that future research and practice monitor for adverse experiences in a more active way.

Goldberg and colleagues (2021) sought to further understand the prevalence of adverse experiences associated with meditation through a population-based survey. A total of 434 participants from the United States ($M_{\text{age}} = 43.77$, $SD = 15.53$) who had engaged in meditation practice at some point in their lives completed measures assessing depression and anxiety symptoms, loneliness, adverse childhood experiences, social desirability, mediation-related adverse experiences, and a single item assessing whether participants were “glad to have practiced meditation” (Goldberg et al., 2021, pp. 13). Overall, 217 (50%) reported experiencing at least one meditation-related adverse effect in their life. Of those who reported an adverse experience, 30% reported that the effect of their adverse experience persisted for more than a day, and 6.5% reported that the effect persisted for a year or more. The most commonly reported adverse effects were increases in anxiety, re-experience of trauma, and emotional sensitivity. Importantly, there was a positive association between adverse childhood experiences (ACEs) and prevalence of adverse effects, so it may be important for intervention leaders to be aware of previous trauma or high ACEs scores and to communicate that these factors might contribute to adverse effects. Moreover, depression and adverse effects were also positively associated, so it may be important for meditation teachers to assess for baseline depression scores. Given the prevalence of adverse experiences, 87.9% of participants who experienced an adverse effect were still glad to have practiced meditation, so it seems reasonable to extrapolate that adverse experiences may not necessarily always deter participants from continuing to practice meditation. In fact, Goldberg and colleagues (2021) propose that adverse experiences simply be part of the meditative process, as more hours of meditation practice in their sample was
positively associated with likelihood of experiencing an adverse effect. This finding supports the need for meditation teachers and students not only to be aware of, but also to expect that difficult experiences can arise in the process of meditating. Therefore, having protocols in place and competency in addressing such issues as they arise is advised.

Baer and colleagues (2021) conducted two separate studies exploring the prevalence of negative or harmful effects during a mindfulness intervention. In the first study, 84 teachers ($M_{age} = 38.00, SD = 9.70, 81\%$ female-identified) were recruited to participate in an eight-week mindfulness intervention based on MBCT. Though mean anxiety and depression symptoms decreased from pre- to post-intervention, many reported challenging or uncomfortable experiences, including anxiety, frustration, or thoughts of upsetting memories. In the second study, 74 undergraduate and graduate students ($M_{age} = 24.00, SD = 5.37, 68\%$ female-identified) underwent the same 8-week MBI from study 1. After the intervention, $66\%$ ($n = 49$) reported having at least one unpleasant experience, though $92\%$ of them rated their experiences as “not at all” or “somewhat” upsetting, communicating perhaps temporary or transient discomfort. Two participants, though, reported being “somewhat” harmed by the intervention, and nine participants responded to difficult experiences by reaching out for help to the intervention leader, family, friends, or healthcare professionals. These findings highlight that although most participants did not experience clinically significant harm, some did indeed need support—emphasizing to researchers and meditation teachers the need for referral plans and psychoeducation regarding the range of possible experiences participants might experience.

Though the purpose of this dissertation is to determine potential factors influencing change following an MBI, it is important to consider the range of potential experiences and outcomes—including adverse effects—in order to mitigate harm among the participant sample.
The reviewed studies demonstrate that unpleasant and potentially adverse effects can and often do occur—likely more frequently than reported—though the prevalence of incredibly intense events that persist long after the initial unpleasant experience may be rare (Goldberg et al., 2021). That said, there is a notable lack of research investigating the potential harmful effects of meditation and mindfulness-based programs in general (Baer et al., 2019). Baer and colleagues (2019) note that a potential source of harm when practicing mindfulness might be related to factors that participants bring with them into practice—like psychiatric and/or trauma history. These, and other risk factors, present challenges; although mindfulness interventions have been adapted to meet the needs of various non-clinical (Khoury et al., 2015) as well as clinical and/or vulnerable populations with small to moderate effects (Baer et al., 2019; Khoury et al., 2013), adverse effects can still occur (though with lower prevalence rates (0-10%); Baer et al., 2019). Baer and colleagues (2019) also address the potential effect that teacher competency might have on the mitigation of harmful effects, though they address that no research exists to substantiate that hypothesis. Overall, though more research is needed to understand when and for whom negative or harmful effects of mindfulness can occur, the current state of the research communicates that researchers and practitioners would benefit from a more intentional and nuanced approach in the implementation of MBIs. Mindfulness is not the panacea of positive outcomes with which it has been popularly associated (Van Dam et al., 2018), and, therefore, a more holistic and realistic picture of what one’s experiences could be during and after engaging in mindfulness practices must be communicated.

Attitudes Toward Sport Psychology and Mental Health Services

Despite rising interest and popularity levels as well as data suggesting that psychological interventions can be helpful in improving sport performance both directly and indirectly
(Zakrajsek and Blanton, 2017), some sport participants are still hesitant to engage in sport psychology consultation (Martin et al., 2012). The purpose of this portion of the review is to outline what is currently known about attitudes and perceptions of sport psychology and mental health services—which can overlap. A discussion of athlete attitudes toward sport psychology precedes a discussion of attitudes related to mental health help-seeking.

A body of work demonstrates that significant efforts have been made to address stigma and improve attitudes toward sport psychology service provision (Martin et al., 2012). A commonly used instrument to assess attitudes toward sport psychology and related services is the Sport Psychology Attitudes-Revised (SPA-R; Martin et al., 2002). Exploratory and Confirmatory Factor Analyses (EFA and CFA, respectively) were conducted with 647 and then 1,077 high school and college athletes, respectively, in the United States, Great Britain, and Germany, providing initial evidence of factorial validity. It was determined that a 25-item, four-factor model was the most appropriate factor structure. The SPA-R measures the overarching second order latent variable of attitudes toward sport psychology, and first order latent variables of stigma tolerance, confidence in sport psychology consultation, personal openness, and cultural preference in working with a consultant.

Martin and colleagues (2004) again used the SPA-R to assess attitudes toward sport psychology with another group of athletes from the United States, Germany, and Great Britain. The sample consisted of 811 athletes (440 male) ranging in age from 18 to 27 ($M_{\text{age}} = 20.57, SD = 2.42$). A multivariate analysis of variance (MANOVA) revealed a significant difference in attitudes based on the amount of experience with sport psychology, Wilks’ Lambda = .93, $F(4, 806) = 15.30, p < .001, \eta^2 = .07$; specifically, athletes who had utilized sport psychology services in the past indicated more positive attitudes toward sport psychology. Step-down analyses using
four separate univariate analyses of variance revealed that confidence in sport psychology services, $F(1, 809) = 44.56, p < .001, \eta^2 = .05, r^2 = .80$, and stigma tolerance, $F(1, 809) = 16.06, p < .001, \eta^2 = .02, r^2 = .52$, were the only two significant dependent variables, though effect sizes were small; athletes who had never sought sport psychology services reported significantly more stigma, and their counterparts who had utilized services had significantly more confidence in sport psychology services. The results also indicated that male athletes were more likely to stigmatize the use of sport psychology services, were less open to said services, and preferred a consultant from their own culture/ethnicity more so than female-identified athletes did. These results suggest that both experience and gender might influence attitudes and perceptions toward sport psychology practitioners, though the present study did not indicate if there are differences depending on athlete age.

To evaluate possible differences with another, younger sample Martin (2005) later used the SPA-R with a sample of 793 high school ($n = 362, 56.08\%$ female) and college ($n = 431, 42.69\%$ female) athletes. Analysis of the responses communicated that high school athletes (compared to college athletes) and those competing in contact sports (i.e., football, wrestling) reported more stigma ($\eta^2 = .04, \eta^2 = .02$, respectively) associated with service utilization. Moreover, female athletes had significantly different attitudes toward SPC services ($\eta^2 = .07$) which included less stigma and less cultural preference than males. The interaction between gender, age group, and type of sport revealed that college athletes competing in non-contact sports were significantly more confident seeking services and held fewer stigmatic beliefs regarding sport psychology consultation ($\eta^2 = .03$) than other groups (i.e., high school athletes competing in contact sports). Finally, athletes who had utilized the services of a sport psychology consultant (SPC) in the past were more likely to seek similar services in the future ($\eta^2 = .07$) and
less likely to report stigma associated with SPC service use ($\eta^2 = .06$) compared to those who had not previously worked with an SPC.

Wrisberg and colleagues (2009) utilized a 1 (not at all) to 5 (extremely) Likert scale survey with 29 items and assessed 2,440 NCAA Division I (75.74% female) student-athlete on their willingness to seek out mental training for various reasons (13 items), perceived benefits both individually and for their teammates related to mental skills training (13 items), and support for the various roles of SPCs (3 items). In order to obtain such a large sample, an email with the survey link was sent to every college coach across all teams at the NCAA Division I level, and they were asked to forward the link to their athletes. Reliability analyses revealed Cronbach’s alphas ranging from .75 to .91 on the three subscales, indicating acceptable levels. If participants had sought consultation in the past, they were significantly more willing to seek SPC services to help them with 11 of 13 possible purposes (i.e., dealing with pressure, building confidence, etc.), reported benefits for their teams related to mental training on all but one response, and supported all three roles of a consultant (i.e., provide occasional services, full-time staff member, being available at practice and competition) to a greater degree than student-athletes who had not sought SPC services in the past.

Moreover, on all 29 items, those who perceived the effectiveness of their prior service utilization to be high were also more willing to use SPC services again, observe benefits for their teams related to SPC use, support the many different roles an SPC may play compared to those who reported that prior SPC effectiveness was moderate or low. Finally, female student-athletes were more likely than males to report a willingness to seek SPC services related to dealing with pressure, building confidence, communicating with coaches and teammates, and managing anxiety and emotions during competition; female student-athletes also perceived more benefits
related to SPC services to improve communication between teammates and coaches, building cohesion, and dealing with personal issues compared to males. Females also supported the consultant’s role as either an occasional or full-time staff member to a greater degree than males. Sport type (team sport or individual sport) was also investigated in relation to attitudes toward mental skills training; a significantly higher percentage of team sport athletes were more willing to utilize SPC services in a team and individual capacity to improve communication with and between coaches and teammates, whereas a higher percentage of individual sport athletes were more willing to seek assistance for improving performance during practices and competitions. This study’s cross-sectional nature has both benefits and drawbacks. The study provides a great deal of detail about what contributes to Division I student-athletes’ attitudes toward sport psychology service utilization based on many different factors; the large sample size also enhances external validity, although that is limited to one sub-population of athletes. The NCAA consists of divisions II and III, so their voices may or may not be similar to Division I student athletes, or athletes in different contexts. Conversely, the cross-sectional nature provides a snapshot of this sample’s attitudes, whereas a longitudinal design could have assessed both attitudes toward current and future service utilization, the ability to use attitudes to predict future use. Overall, the observed differences benefit the literature and provide practitioners with useful information to consider. Notably, the authors found no significant differences based on ethnicity.

Related to ethnicity and cultural background, Ong and Harwood (2018) utilized the SPA-R with 219 (M age = 22.39, 57.99% male athletes) from western and eastern cultures to determine how cultural affiliation and personality were related to attitudes toward SPC service use. The 111 participants from eastern cultures and 108 from western cultures reported significant differences on several subscales of the SPA-R, although it is important to note that Cronbach’s alphas ranged
from 0.52 to 0.87—guidelines described by Cohen (1988) indicate that alphas below .70 are not adequate reliability estimates. Regardless of this weakness, the study produced interesting results. Confirming previous research, there was a significant relationship with a moderate effect size between prior SPC service utilization and positive attitudes toward SPC regardless of cultural affiliation ($\eta^2 = .05$). Controlling for perceived effectiveness of past SPC use, multivariate analyses of covariance (MANCOVA) found that western athletes were less likely to stigmatize SPC service utilization ($\eta^2 = .08$), demonstrated more openness to sport psychology ($\eta^2 = .07$), and had fewer preferences related to cultural or ethnic background of their hypothetical consultant ($\eta^2 = .11$) compared to eastern athletes. This study was important as it investigated a possible driver of change (i.e., culture) that has received less attention; most research in this domain has been done with relatively homogenous samples, and understanding attitudes across cultures can provide some level of detail about the generalizability of services and attitudes toward and utilization of said services.

Sport psychology services fall, in many ways, under the umbrella of mental health and help-seeking; Aoyagi and colleagues (2012) described that an important component of the training for SPCs is mental health counseling due to the common co-occurrence of performance and mental health issues. Perhaps unsurprisingly, attitudes toward sport psychology services are similar in many ways to attitudes toward mental health services in athlete populations. In a systematic review of the mental health help seeking attitudes and behaviors of collegiate student athletes, Moreland and colleagues (2018) evaluated 21 studies over an 11-year period. At least two of the studies included in the analysis assessed attitudes toward sport psychology/mental training among athletes, while most assessed attitudes and perceptions toward mental health help-seeking more broadly among athletes, coaches, athletic trainers, and administrators. Among
the reviewed studies, the authors gleaned that male athletes—and specifically male athletes who strongly identified with masculine ideals—were significantly less likely or willing to seek help related to mental health concerns. Also, prior mental health or sport psychology service use that was perceived to be effective was a facilitator of future use, and prior use that was perceived as ineffective was a barrier.

Included in the review by Moreland and colleagues (2018) was a study conducted by Lopez and Levy (2013) in which 165 NCAA Division I student athletes (67.30% female) completed measures assessing barriers to mental health help-seeking and preferences in counseling and psychotherapy. A perceived lack of time to utilize mental health services, fear of stigma related to seeking help, fear of their teammates finding out they utilized services, and the fear they would be considered weak were reportedly significantly more of a concern than any other barriers. Also, participants reported significantly stronger preferences for mental health professionals who had knowledge of their sport or sport experience over and above race/ethnicity of the mental health provider. Effect sizes were not provided, and scores on the individual items in each questionnaire were compared to the average score on the measure.

In a smaller sample (n = 43) of college student-athletes, Wahto and colleagues (2016) observed the important role that stigma plays in mental health help-seeking. Participants completed questionnaires assessing attitudes toward mental health help-seeking, self-stigma, and public-stigma. The independent variables of gender and prior mental health service use as well as social and self-stigma were found to significantly inversely predict 77% of the variance in attitudes—66% of which was explained by public and self-stigma. Neither gender nor previous service use uniquely predicted attitudes, though self-stigma was found to mediate the association between public stigma and attitudes toward mental health help-seeking. This data indicates that
more stigma, either related to negative personal opinions or perceived public perception, is related to negative attitudes toward mental health service provision and help seeking. Another notable finding is related to referral source: student-athletes were significantly more likely to seek help when referred by a family member compared to a coach, teammate, or self-referral with a large effect size ($\eta^2 = .22$).

Also investigating attitudes and stigma, Hilliard and colleagues (2020) collected data from 328 student-athletes competing at either the Division II or Division III level—of which 312 participants were included in analyses. Participants completed questionnaires on perceived stigma from others in one’s social network, perceived stigma from the general public, self-stigma, attitudes toward counseling or mental health service use, intentions to seek mental health services, and concerns for which student-athletes would be most willing to seek mental health consultation. The hypothesized model had public stigma and social network stigma predicting attitudes, and thus intentions, through the mediator of self-stigma. Demonstrating good fit to the data, all of the pathways in the proposed model were significant, except for the pathway between social network stigma and self-stigma—indicating that stigma from the public influences self-stigma, which thus impacts attitudes toward help seeking and ultimately the decision to seek help. Other outcomes of interest are related to help-seeking topics: student-athletes reported that substance problems and depression were the presenting concerns with which they would most likely seek out help from a mental health professional. Finally, related to what has been observed in other studies, previous utilization was significantly related to self-stigma and attitudes: student-athletes who reported higher self-stigma and attitude scores were less likely to have sought help related to mental health concerns in the past.
What has clearly emerged from reviewed studies is the consistent discrepancy in attitudes toward sport psychology and mental health help seeking between athletes who identify as male and female. Using both standardized (Martin 2005) and unstandardized measures (Wrisberg et al., 2009), the data consistently shows that female athletes generally perceive less stigma and more openness associated with help seeking—both in a mental health capacity and sport psychology/mental training capacity. This information is important for both practitioners and researchers to understand, as interventions with males and females may have to be tailored to the specific population. More specific than gender, it seems that the data communicates that not only gender, but the nature of the sport (e.g., contact vs. non-contact, individual vs. team) may also play a role in determining athletes’ attitudes toward sport psychology and mental health. Athletes competing in contact sports, and sports in which “traditional” masculinity norms are (or have been) perpetuated typically view help seeking behaviors more negatively than athletes competing in non-contact, individual sports. The interaction between age and gender is another important finding. Younger male athletes—and again, those who have been socialized via contact sports with traditional masculinity norms—have more negative views toward sport psychology services. These considerations, again, are important for both researchers and practitioners to consider as they develop and test different SEPP interventions. While these are general trends, it would be interesting to learn more about how attitudes differ among specific genders in similar age cohorts. The following section will hopefully address some of the discrepancies.

A predictor of future sport psychology service use or mental health help-seeking behavior across several studies was related to prior use, and specifically prior use that was perceived to be helpful or effective. If athletes had sought mental health or sport psychology services in the past, they generally reported they would be willing to use those services again. While this is perhaps
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unsurprising, it speaks to a barrier that may exist for many who have not sought sport psychology or mental health services in the past: perhaps they simply do not know enough about the services or have the experiential knowledge to understand how such services can be helpful (or harmful, for that matter). Clearly, the rate and consistency with which athletes who had sought mental health and sport psychology services would be willing to do so again in the future could imply that the mere exposure could be enough to change attitudes, but more targeted investigations are needed to reveal if that is the case. Although one study in this review looked at ethnicity as a moderator, more information is needed to confirm that culture plays a role in determining attitudes, although the Ong and Harwood (2018) study indicates that it likely may.

A main contributing factor to attitudes across the board, as well as help-seeking behavior, is stigma and the perception that one is “weak” for seeking sport psychology or mental health-related services. Stigma comes from many sources, but public stigma and self-stigma were related to attitudes toward help-seeking, and the data suggests that sampled athletes may feel uncomfortable being referred by a coach—perhaps due to the perception that they would appear weak. Awareness and stigma reduction work surrounding help-seeking in athletics—particularly at the NCAA level—is becoming more normalized (Brown, 2014). Work to reduce stigma at the highest and most salient levels, it appears, must continue in order to improve attitudes toward sport psychology and mental health help seeking, as the public stigma appears to be a strong predictor of attitudes.

Readiness for Sport Psychology Interventions

Closely related to attitudes toward sport psychology/mental skills consulting (and mental health help-seeking by athletes more broadly) is readiness to engage in SEPP interventions. The Transtheoretical Model (TTM) is a stage model of change, originally developed in the field of
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psychotherapy integration (Prochaska & DiClemente, 2005), that many SEPP researchers have utilized to investigate readiness, among other proposed mechanisms of change. From low to high readiness, the stages of change within TTM include precontemplation, contemplation, preparation, action, and maintenance, and the “changer” is theorized to move (or oscillate) between the different stages in succession as they attempt to adopt or extinguish a specific behavior (Prochaska and DiClemente, 2005). In addition to the stages of change, the model also includes the decisional balance (i.e., pros and cons) associated with changing, self-efficacy for changing, and the use of skills necessary for change at different levels. The purpose of this portion of the review is to describe the literature base related to the degree of readiness (i.e., stage of change) and how that potentially impacts acceptability of, and change in, SEPP interventions, highlighting a lack of understanding on the possible role that readiness plays in MBIs.

Leffingwell and colleagues (2001) conducted an interesting study with 308 NCAA Division I student-athletes from two universities in which the goals were twofold: (1) they tested whether TTM could be applied to sport psychology consultation, and (2) they examined the psychometric properties of assessments designed to measure three components of TTM—stage of change, decisional balance, and self-efficacy. They also assessed social desirability, history of mental training practice, and use of mental skills training/sport psychology consultation in the year following the initial study. In order to address the second research question, a CFA on each of TTM measures was conducted with half of the sample. After revising the original stage of change model as well as the decisional balance model by eliminating items that did not load onto theorized factors and cross-validating the model with the other half of the participants, they found adequate fit for a 12-item, four-factor model of stage of change (the preparation factor was
removed; CFI = .91, RMSEA = .071), and 20-item, two-factor model of decisional balance (CFI = .92, RMSEA = .072). The original five-item assessment of self-efficacy loading onto a single factor achieved adequate fit (CFI = .98, RMSEA = .064). Evidence for reliability for subscales is evidenced via Cronbach’s alphas—each subscale surpassed the .70 alpha-level convention.

To answer the first question, they categorized participants into stage of change based on their responses to assessment—which revealed that 5% were in precontemplation, 70% were in contemplation, 20% were in action, and 5% were in maintenance. Repeated-measures MANOVAs revealed a significant interaction between stage of change and pros and cons associated with sport psychology consultation ($\eta^2 = .14$). Specifically, pre-contemplators reported more cons and fewer pros than contemplators ($\eta^2 = .25$), with contemplators reporting more pros than cons compared to pre-contemplators ($\eta^2 = .19$). Regarding self-efficacy, a one-way ANOVA revealed that scores were significantly different across stages, though the effect size was small ($\eta^2 = .04$). Post-hoc analyses revealed that those in action (M = 20.14) reported significantly higher self-efficacy levels than those in precontemplation (M = 17.78), contemplation (18.06), and maintenance (18.00). Another important finding was that stage of change, to some degree, predicted future use of mental skills training. Follow-up data available form 117 of the original participants revealed that participants in later stages of change were more likely to seek services related to mental training; 64% of participants in the action stage at the time of the original study sought mental skills training services over the course of the next year, compared to 49% of contemplators and 19% of pre-contemplators. The data demonstrates that different levels of self-efficacy and perception of the decisional balance may influence present and future use of mental skills training, although the evidence for predictive validity in
this study is limited by the much smaller sample from which data could be collected at follow-up.

Zizzi and Perna (2003) were interested in the effect that a piloted brief mental skills training intervention might have on stage of change and decisional balance with 220 high school (n = 108) and college (n = 112) student athletes (54.55% female) competing in basketball, baseball, softball, tennis, lacrosse, and volleyball. In addition to a demographic questionnaire, participants completed measures before and after the 45-minute mental skills training intervention that assessed stage of change (pre-contemplation, contemplation, or action) with regard to mental training as well as decisional balance; the measures utilized were previously validated by Leffingwell et al. (2001), although the pre-contemplation subscale of the stage of change measure and the pros subscale of the decisional balance measure were below the .70 convention (.55 and .61, respectively) in the present study. After the workshop, decisional balance con scores decreased significantly for pre-contemplators (d = .57) while decisional balance pro scores increased significantly for contemplators (d = .68), indicating moderate effects. A manipulation check also revealed that the brief workshop had mostly positive impacts on their attitudes toward sport psychology—with just 4% reporting negative or neutral reactions. Also, findings related to stage assignment revealed that 32% of athletes (n = 71) shifted from one stage to another; 24 student-athletes who were classified as pre-contemplators before the workshop advanced into the contemplation stage and 11 moved from contemplation to action—a final 36 athletes moved to a lower stage. While not statistically significant, the shifts in stage assignment indicate that the workshop had some kind of an effect on a meaningful percentage of participants—either positive or negative. As the authors point out, durability of effects was not measured and could have assessed long-term impact; moreover, there was no investigation into
how effects may have differed by age group/maturity or gender, which some of the previously reviewed literature shows may play a role in attitudes and/or readiness.

Keeler and Watson (2009) took an extremely applied approach to their investigation of the application of TTM and stage of change with 31 elite female rugby players (ranged from <23 to >34) in the United States. Participants completed measures assessing stage of change, decisional balance, self-efficacy, and processes of change (cognitive and behavioral) at four different time points just over a three-month period—the first two took place over a five-day period at the start of the season and pre-season tryout camp, with a 1- and 3-month follow-up data collection effort. Over the course of the three months, the first author provided SPC services to the team via workshops between time 1 and 2; individual consultation rates were recorded between times 2 and 4, and 13 athletes contacted the SPC for individual consulting during the study period. Of those who contacted the SPC, 50% had previously utilized SPC services. In order to evaluate differences in TTM components, those who contacted the SPC and those who did not were divided into 2 groups; Repeated-measures ANOVAs found a main effect for stage of change (\( \eta^2 = .19 \)) such that pre-contemplation scores decreased significantly over time from the first data collection period. Self-efficacy scores at each time point were also positively related to action scores and negatively related to pre-contemplation scores, indicating the role that self-efficacy plays in influencing stage and readiness. In terms of initiating contact with the SPC at or around data collection period 2, zero pre-contemplators reached out to the SPC for consultation—only contemplators (45.50%) and participants in action (27.30%) or maintenance (27.30%) reached out. Over the course of 5 months, there was also significant variation in oscillation between stages; at each data collection period, there were positive (i.e., contemplation to action) and negative (i.e., contemplation to pre-contemplation) shifts. These results are
hampered by the fact that less is known about the nature of change over the study period; qualitative results or interviews may have been able to provide more insight into the limited findings. Also, the authors highlight one of the core difficulties with applied research: internal validity, and specifically the inability to control for the many factors that may influence outcomes. A possible conflict related to team cohesion/culture came up early on in the study, which may have influenced experiences of participants.

To better understand facilitators of readiness to engage in PST interventions, Massey and colleagues (2015) utilized TTM framework in their cross-sectional investigation with 453 NCAA Division I student-athletes (Mage = 19.75; 69.32% female) competing in both team and individual sports. In order to assess readiness for change, participants completed measures related to their current stage of change (adaptation of the URICA), processes of change currently used (Process of Change in PST Questionnaire, see Massey et al., 2015), decisional balance associated with changing (see Leffingwell et al., 2001), and self-efficacy (see Leffingwell et al., 2001)—all of which were adapted to align within the context of adoption of PST skills. According to the data, a majority of respondents (60%) were in pre-action stages, and there were no differences between stage of change and gender, race, and sport type distribution. One-way ANOVAs revealed that participants in action and maintenance perceived more pros than cons in the decisional balance consideration compared to contemplators and precontemplators ($\eta^2 = .27$), whereas precontemplators perceived more cons than pros compared to the other stages ($\eta^2 = .19$). Similarly, those in contemplation, maintenance, and action used more cognitive ($\eta^2 = .14$) and behavioral ($\eta^2 = .21$) strategies associated with processes of change than precontemplators. Moreover, significant negative correlations were found between the costs associated with change and other mediating variables, including pros/benefits of change, self-efficacy for change, and
cognitive and behavioral processes of change. These data indicate that it may be important for SPCs to assess for readiness, specifically perceived benefits and self-efficacy; targeting self-efficacy through the use of cognitive processes of change, the authors suggest, may help increase readiness as contemplators had higher levels of self-efficacy, perceived benefits, and utilized more cognitive processes associated with change—which may influence them to consider changing their behavior/adopting mental skills. A major weakness of this study is that it is cross-sectional and does not measure the moderating effect that readiness may have on intervention effectiveness or engagement. Also, as the authors point out, PST refers to a broad range of skills, and it is possible that participants may be more ready for some skills compared to others.

Gnacinski and colleagues (2017) took a similar approach to Massey and colleagues (2015) and examined readiness for PST interventions with collegiate student-athletes with a particular interest in the effect of gender. Using the same outcome measures that Massey et al. (2015) assessed with their participant sample, Gnacinski and colleagues recruited 602 NCAA Division I student-athletes (62.96% female). Also similar to the sample included in the study by Massey and colleagues (2015), 64% of participants were in pre-action stages of change. An important observation Gnacinski and colleagues made, based on their data, was that distinct combinations of processes, levels of self-efficacy, and decisional balance separated pre-action and post-action stages ($\eta^2 = .19$): participants in contemplation, compared to pre-contemplation, saw pros outweighing cons on the decisional balance scale and used cognitive processes of change to a greater degree; decisional balance pros as well as cognitive and behavioral strategies related to processes of change used by participants in action accounted for significant separation between contemplation and action. These data suggest, according to the authors, that practitioners should focus on cognitive processes of change (as opposed to behavioral) when
working with student-athletes in pre-contemplation. Another finding was that a main effect for
gender was observed, although the effect size was small ($\eta^2 = .05$): in terms of significant
differences, post hoc analyses revealed that males reported significantly fewer pros and more
cons than females. Inconsistent with the body of literature (outside of sport) and theoretical
underpinnings of TTM, self-efficacy played a relatively minor role in separating participants in
different stages. A major limitation is the cross-sectional nature of the design, though it provides
more evidence that stage of change is associated with varied use of cognitive and behavioral
strategies for changing and also differential reports of pros and cons associated with changing.
There is also evidence that male and female athletes may differ on the spectrum of decisional
balance, though without measuring some kind of behavior associated with readiness or intentions
to seek services, neither this study nor the one by Massey and colleagues (2015) expand
significantly on the work of Leffingwell and colleagues (2001).

It is clear from reviewed studies that assessing readiness to engage in psychological skills
training or sport psychology interventions is worthwhile endeavor, though more research would
benefit from not only assessing readiness, but also service utilization or engagement in
interventions. Using TTM, or aspects of it (i.e., stage of change, decisional balance, self-efficacy,
and/or processes of change), has proven to be useful; the information that can be gleaned from
assessing readiness can help applied practitioners create targeted interventions for participants in
different stages. For example, the studies by Massey and colleagues (2015) and Gnacinski and
colleagues (2017) demonstrated that pre-action—which made up over 60% of each their
respective samples—perceived more costs than benefits related to the adoption or use of mental
skills and also that cognitive process of change (including psychoeducation) may be important
for participants in lower levels of readiness (i.e., pre-contemplation and contemplation). Jumping
right into teaching behavioral strategies may be off-putting for athletes with lower levels of readiness. It may also be important for practitioners to realize that many clients may be in pre-contemplation, evidenced by the reported stages in Massey et al. (2015), Gnacinski et al. (2017), and Leffingwell et al. (2001).

Similar to the discussion related to attitudes, pre-contemplators may need to simply be exposed to sport psychology in some capacity to shift their readiness—evidence supported to some degree by Keeler and Watson (2011) and Zizzi and Perna (2001). There were positive, and negative, changes regarding stage of change following intervention from an SPC in each of those studies, although more research into the durability of changes—and facilitators of such durability—is needed. Self-efficacy is another component that appeared to play a key role for participants in post-preparation stages (Gnacinski et al., 2017; Keeler & Watson, 2011; Massey et al., 2015), communicating that belief in one’s ability to use and possibly benefit from skills taught in sport psychology interventions is an important factor. Preliminary evidence was also provided by Leffingwell et al. (2001) that TTM may be used to predict future use of SPC services.

While all the research focusing on readiness for sport psychology interventions has focused on psychological skills training, there is a need to understand how readiness may impact participants experiences following mindfulness- and acceptance-based interventions. The increasing popularity and use of such interventions have yielded promising support for their application with athlete populations, but much is still unknown about their utility. Understanding athlete readiness, including stage of change, self-efficacy, decisional balance, and process utilized, may elucidate some of the ambiguity in results discussed in the first section. Because there is evidence in the clinical literature that pre-psychotherapy stage of change predicts
outcomes such that later stage of change at pre-treatment is associated with better post-treatment outcomes (Krebs et al., 2018), it is hypothesized that pre-intervention stage of change for student-athletes engaged in an MBI will also predict post-intervention outcomes.
Extended References


https://doi.org/10.1080/10413200.2021.1989521


https://doi.org/10.1080/10413200.2020.1739169


https://doi.org/10.1016/j.brat.2017.05.004


https://doi.org/10.1080/21520704.2018.1549639


https://researchrepository.wvu.edu/cgi/viewcontent.cgi?article=3854&context=faculty_publications
Appendix A

**Background Questionnaire**

1. **Age:** ______

2. **Race/Ethnic background:**
   - ___ African American
   - ___ Asian or Pacific Islander
   - ___ Caucasian
   - ___ Hispanic or Latino
   - ___ Native American
   - ___ Other (please specify): __________________

3. **Gender Identity:**
   - _____ Female          _____ Male          _____ Other (option to specify): __________________
   - _____ Prefer not to answer

4. **Have you had any previous exposure to sport psychology?** Yes____  No____
   If yes, what did you do? (place a checkmark next to all that apply):
   - ___ Read a book about sport psychology
   - ___ Took a sport psychology class
   - ___ Worked with a sport psychologist
   - ___ Attended a sport psychology workshop
   - ___ Learned from my coach
   - ___ Used a sport psychology app
   - ___ Other (please describe): ____________________________________________

5. **Do you currently practice meditation?** Yes ____ No ____
   If yes, please report the average number of **days per week** that you practice meditation: _________ days per week.
   If yes, please report the average number of **minutes per day** that you practice meditation: _________ minutes per day.

6. **Have you ever had a negative experience practicing meditation?**
   - Yes _____ No _____
   If yes, please describe the negative experience:

   __________________________________________________________________________

7. **The next questions are about problems and complaints that people sometimes have in response to stressful life experiences. Please indicate by circling how much you have been bothered by each problem in the past month.** For these questions, the response options are: “not at all”, “a little bit”, “moderately”, “quite a bit”, or “extremely”.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Repeated, disturbing memories, thoughts, or images of a stressful experience from the past</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Feeling very upset when something reminded you of a stressful experience from the past?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Continue to the next page…
8. Do you have a history of trauma? (please check one)
   Yes____ No____

9. Are you currently seeing a mental health clinician? (please check one)
   Yes____ No____

10. The following question will ask you about your knowledge and/or practice of mindfulness.

Mindfulness refers to the process of paying attention in the present moment, intentionally, and in a non-judgmental way. It can be practiced through formal “meditations” (like focusing on the breath, body, sensations, or a mantra), or through informal mindfulness practices (walking or eating in a mindful way).

“Regular” mindfulness practice is defined as a few times per week.

Please check one statement that most accurately describes your relationship to mindfulness and/or meditation:

_______ I currently practice mindfulness regularly and have done so for 6 months or more.

_______ I currently practice mindfulness regularly but have done so for less than 6 months.

_______ I practice mindfulness sometimes but not regularly.

_______ I am not currently practicing mindfulness, but I may try it sometime in the next 6 months.

_______ I am not currently practicing mindfulness and I do not plan on starting a mindfulness practice in the next 6 months.
Appendix B

CAMS-R

Instructions: People have a variety of ways of relating to their thoughts and feelings. For each of the items below, rate how much each of these ways applies to you.

<table>
<thead>
<tr>
<th></th>
<th>Rarely/Not at All</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rarely / Not at All</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>2</td>
<td>It is easy for me to concentrate on what I am doing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>I am preoccupied by the future.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>I can tolerate emotional pain.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>I can accept things I cannot change.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>I can usually describe how I feel at the moment in considerable detail.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>I am easily distracted.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>I am preoccupied by the past.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>It's easy for me to keep track of my thoughts and feelings.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>I try to notice my thoughts without judging them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>I am able to accept the thoughts and feelings I have.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>I am able to focus on the present moment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>I am able to pay close attention to one thing for a long period of time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Appendix C

DASS-21

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers, please circle your response.

The rating scale is as follows:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Did not apply to me at all (not at all)</td>
</tr>
<tr>
<td>1</td>
<td>Applied to me to some degree, or some of the time (sometimes)</td>
</tr>
<tr>
<td>2</td>
<td>Applied to me to a considerable degree, or a good part of time (a lot)</td>
</tr>
<tr>
<td>3</td>
<td>Applied to me very much, or most of the time (most of the time)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all</th>
<th>Sometimes</th>
<th>A lot</th>
<th>Most of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I found it hard to wind down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. I was aware of dryness of my mouth</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. I couldn’t seem to experience any positive feeling at all</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. I found it difficult to work up the initiative to do things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. I tended to over-react to situations</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. I experienced trembling (eg, in the hands)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. I felt that I was using a lot of nervous energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. I was worried about situations in which I might panic and make a fool of myself</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. I felt that I had nothing to look forward to</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. I found myself getting agitated</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. I found it difficult to relax</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. I felt down-hearted and blue</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. I was intolerant of anything that kept me from getting on with what I was doing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. I felt I was close to panic</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. I was unable to become enthusiastic about anything</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. I felt I wasn’t worth much as a person</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. I felt that I was rather touchy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Question</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>19. I was aware of the action of my heart in the absence of physical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exertion (e.g., sense of heart rate increase, heart missing a beat)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I felt scared without any good reason</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. I felt that life was meaningless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please indicate how often the following apply to you.

<table>
<thead>
<tr>
<th></th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>About Half Of the Time</th>
<th>Most of the Time</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I pay attention to how I feel</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I have no idea how I am feeling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I have difficulty making sense out of my feelings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I care about what I am feeling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I am confused about how I feel</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. When I’m upset, I acknowledge my emotions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. When I’m upset, I become embarrassed for feeling that way</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. When I’m upset, I have difficulty getting work done</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. When I’m upset, I become out of control</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. When I’m upset, I believe that I will end up feeling very depressed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. When I’m upset, I have difficulty focusing on other things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. When I’m upset, I feel guilty for feeling that way</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. When I’m upset, I have difficulty concentrating</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. When I’m upset, I have difficulty controlling my behaviors</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. When I’m upset, I believe there is nothing I can do to make myself feel better</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. When I’m upset, I become irritated with myself for feeling that way</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. When I’m upset, I lose control over my behavior</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. When I’m upset, it takes me a long time to feel better</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix E
Between Session Practice Assessments

Week 1 6-digit ID number: _________________________ (last 4 digits of your cell, first 2 digits of your zip code)

Report the amount of home practice in which you engaged over the past week. Please be as honest as you can – we are interested in hearing from everyone, including those who practiced a lot, those who did not practice at all, and everyone else in between!

1. Over the past week, I completed the 3-minute diaphragmatic breathing exercise _____ time(s).
2. Over the past week, I completed the 9-minute sitting meditation with a focus on the breath _____ time(s).
3. Over the past week, I used the STOP acronym to pay attention mindfully _____ time(s).
4. Did you engage in any other mindfulness exercises beyond the prescribed home practice exercises listed above? (please check one)
   _____Yes
   _____No
5. If Yes, on how many days did you practice mindfulness exercises? _____ day(s)
   a. For how many minutes per day did you practice? _____minute(s)
   b. Please list what you did (describe the activity, and if you used an app)

6. Did you have any negative or adverse experiences/effects during or after a mindfulness exercise over the past week? (please check one)
   _____Yes
   _____No
7. If yes, please describe the negative effect that the mindfulness exercise had on you:

8. Would you like to be contacted by a member of the Counseling Center to discuss the difficult experience or adverse effect? Your coaches, teammates, and the mindfulness group facilitator will not be made aware of this communication. (please check one)
   _____Yes
   _____No, I am already seeing a mental health professional
   _____No, I am not interested right now

9. Please describe any barriers you encountered which made practicing mindfulness exercises difficult over the past week:

10. Please describe any benefits you experienced during or after a mindfulness exercise or meditation over the past week:
Report the amount of home practice in which you engaged over the past week. Please be as honest as you can – we are interested in hearing from everyone, including those who practiced a lot, those who did not practice at all, and everyone else in between!

1. Over the past week, I completed the 30-minute body scan exercise _____ time(s).
2. Over the past week, I completed the 9-minute sitting meditation with a focus on the breath _____ time(s).
3. Over the past week, I used the STOP acronym to pay attention mindfully _____ time(s).
4. Did you engage in any other mindfulness exercises beyond the prescribed home practice exercises listed above? (please check one)
   _____Yes
   _____No

5. If Yes, on how many days did you practice mindfulness exercises? _____ day(s)
   a. For how many minutes per day did you practice? _____minute(s)
   b. Please list what you did (describe the activity, and if you used an app)

6. Please describe any barriers you encountered which made practicing mindfulness exercises difficult over the past week:

7. Please describe any benefits you experienced during or after a mindfulness exercise or meditation over the past week:

8. Did you have any negative or adverse experiences/effects during or after a mindfulness exercise over the past week? (please check one)
   _____Yes
   _____No

9. If yes, please describe the negative effect that the mindfulness exercise had on you:

10. Are you receiving support from counseling services as it relates to the negative experience? (please check one)
    _____Yes
    _____No

11. If yes on question 9, would you like to be contacted by a member of the Counseling Center to discuss the difficult experience or adverse effect? Your coaches, teammates, and the mindfulness group facilitator will not be made aware of this communication. (please check one)
    _____Yes
    _____No
Week 3 6-digit ID number: ______________________ (last 4 digits of your cell, first 2 digits of your zip code)

Report the amount of home practice in which you engaged over the past week. Please be as honest as you can—we are interested in hearing from everyone, including those who practiced a lot, those who did not practice at all, and everyone else in between!

1. Over the past week, I completed the 14-minute sitting meditation with a focus on the body _____ time(s).
2. Over the past week, I completed the 40-minute mindful yoga routine _____ time(s).
3. Over the past week, I used the STOP acronym to pay attention mindfully _____ time(s).
4. Did you engage in any other mindfulness exercises beyond the prescribed home practice exercises listed above? (please check one)
   _____Yes
   _____No
5. If Yes, on how many days did you practice mindfulness exercises? _____ day(s)
   a. For how many minutes per day did you practice? _____ minute(s)
   b. Please list what you did (describe the activity, and if you used an app)
6. Please describe any benefits you experienced during or after a mindfulness exercise or meditation over the past week:
7. Did you have any negative or adverse experiences/effects during or after a mindfulness exercise over the past week? (please check one)
   _____Yes
   _____No
8. If yes, please describe the negative effect that the mindfulness exercise had on you:
9. Are you receiving support from counseling services as it relates to the negative experience? (please check one)
   _____Yes
   _____No
10. If yes on question 8, would you like to be contacted by a member of the Counseling Center to discuss the difficult experience or adverse effect? Your coaches, teammates, and the mindfulness group facilitator will not be made aware of this communication. (please check one)
    _____Yes
    _____No
11. Please describe any barriers you encountered which made practicing mindfulness exercises difficult over the past week:
Week 4  6-digit ID number: ________________________ (last 4 digits of your cell, first 2 digits of your zip code)

Report the amount of home practice in which you engaged over the past week. Please be as honest as you can – we are interested in hearing from everyone, including those who practiced a lot, those who did not practice at all, and everyone else in between!

1. Over the past week, I completed the 11-minute walking meditation _____ time(s).
2. Over the past week, I completed the 30-minute body scan exercise _____ time(s).
3. Over the past week, I completed the 40-minute mindful yoga routine _____ time(s).
4. Over the past week, I used the STOP acronym to pay attention mindfully _____ time(s).
5. Did you engage in any other mindfulness exercises beyond the prescribed home practice exercises listed above? (please check one)
   _____Yes
   _____No

6. If Yes, on how many days did you practice mindfulness exercises? _____ day(s)
   a. For how many minutes per day did you practice? _____minute(s)
   b. Please list what you did (describe the activity, and if you used an app)

7. Did you have any negative or adverse experiences/effects during or after a mindfulness exercise over the past week? (please check one)
   _____Yes
   _____No

8. If yes, please describe the negative effect that the mindfulness exercise had on you:

9. Are you receiving support from counseling services as it relates to the negative experience? (please check one)
   _____Yes
   _____No

10. If yes on question 7, would you like to be contacted by a member of the Counseling Center to discuss the difficult experience or adverse effect? Your coaches, teammates, and the mindfulness group facilitator will not be made aware of this communication. (please check one)
    _____Yes
    _____No, I am already seeing a mental health professional
    _____No, I am not interested right now

11. Please describe any benefits you experienced during or after a mindfulness exercise or meditation over the past week:

12. Please describe any barriers you encountered which made practicing mindfulness exercises difficult over the past week:
Week 5  6-digit ID number: ______________________ (last 4 digits of your cell, first 2 digits of your zip code)

Report the amount of home practice in which you engaged over the past week. Please be as honest as you can—we are interested in hearing from everyone, including those who practiced a lot, those who did not practice at all, and everyone else in between!

1. Over the past week, I completed the **sport meditation** _____ time(s), for a total of _____ minute(s).
2. Over the past week, I completed the **21-minute sitting meditation** with a focus on the breath, body, and sound _____ time(s).
3. Over the past week, I used the **STOP acronym** to pay attention mindfully _____ time(s).
4. Did you engage in any other mindfulness exercises **beyond the prescribed home practice exercises listed above**? (please check one)
   _____Yes
   _____No
5. If Yes, on how many days did you practice mindfulness exercises? _____ day(s)
   a. For how many **minutes per day** did you practice? _____ minute(s)
   b. Please list what you did (describe the activity, and if you used an app)

6. Did you have any **negative or adverse experiences/effects** during or after a mindfulness exercise over the past week? (please check one)
   _____Yes
   _____No

7. If yes, please describe the negative effect that the mindfulness exercise had on you:

8. Are you receiving support from counseling services as it relates to the negative experience? (please check one)
   _____Yes
   _____No

9. If yes on question 7, would you like to be contacted by a member of the Counseling Center to discuss the difficult experience or adverse effect? Your coaches, teammates, and the mindfulness group facilitator will not be made aware of this communication. (please check one)
   _____Yes
   _____No, I am already seeing a mental health professional
   _____No, I am not interested right now

10. Please describe any barriers you encountered which made practicing mindfulness exercises difficult over the past week:

11. Please describe any benefits you experienced during or after a mindfulness exercise or meditation over the past week:
Week 6   6-digit ID number: ______________________ (last 4 digits of your cell, first 2 digits of your zip code)

Report the amount of home practice in which you engaged over the past week. Please be as honest as you can – we are interested in hearing from everyone, including those who practiced a lot, those who did not practice at all, and everyone else in between!

Over the past week,
1. I completed the 3-minute diaphragmatic breathing exercise _____ time(s).
2. I completed the 9-minute sitting meditation with a focus on the breath _____ time(s).
3. I completed the 30-minute body scan exercise _____ time(s).
4. I completed the 9-minute sitting meditation with a focus on the breath _____ time(s).
5. I completed the 14-minute sitting meditation with a focus on the body _____ time(s).
6. I completed the 40-minute mindful yoga routine _____ time(s).
7. I completed the 11-minute walking meditation _____ time(s).
8. I completed the 30-minute body scan exercise _____ time(s).
9. I completed the 40-minute mindful yoga routine _____ time(s).
10. I completed the sport meditation _____ time(s), for a total of _____ minute(s)
11. I completed the 21-minute sitting meditation with a focus on the breath, body, and sound _____ time(s).
12. I used the STOP acronym to pay attention mindfully _____ time(s).

11. Did you engage in any other mindfulness exercises beyond the exercises listed above? (please check one)
   _____ Yes
   _____ No

12. If Yes, on how many days did you practice mindfulness exercises? _____ day(s)
   a. For how many minutes per day did you practice? _____ minute(s)
   b. Please list what you did (describe the activity, and if you used an app)

13. Did you have any negative or adverse experiences/effects during or after a mindfulness exercise over the past week? (please check one)
   _____ Yes
   _____ No

14. If yes, please describe the negative effect that the mindfulness exercise had on you:

15. Are you receiving support from counseling services as it relates to the negative experience? (please check one)
   _____ Yes
   _____ No

16. If yes on question 16, would you like to be contacted by a member of the Counseling Center to discuss the difficult experience or adverse effect?
   _____ Yes
   _____ No

Continue onto the next page....
17. Please describe any barriers you encountered which made practicing mindfulness exercises difficult over the past week:

__________________________________________________________________________________

18. Please describe any benefits you experienced during or after a mindfulness exercise or meditation over the past week:

__________________________________________________________________________________
Appendix F

Program Evaluation Questionnaire

1. How many mindfulness sessions did you attend? _____ sessions

2. Using the scale below, please indicate how successful you think this mental skills training program was in helping you make improvements in the following areas:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All Helpful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat Helpful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely Helpful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   _____ Being “in the zone” during workouts, practice, or games
   _____ Anxiety reduction/relaxation
   _____ Ability to focus and pay attention in the moment
   _____ Ability to not react to or judge my experience and let things go
   _____ Ability to be aware of my thoughts and feelings and handle things better when I’m upset

3. On the scale below, please circle the number that best represents how confident you are that you will continue to incorporate mindfulness when playing sports:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. On the scale below, please circle the number that best represents how confident you are that you will continue to incorporate mindfulness into your everyday life outside of sport:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. What parts of the training did you find most challenging?

6. What, if any, meaningful benefits did you gain from participating in the program and practicing mindfulness in the last six weeks?

7. Do you consent to being contacted for a follow-up interview? (please indicate with a check)
   _____ Yes
   _____ No

Thank you very much for your participation in the study!
Appendix G

URICA (adapted from Massey et al., 2015)

Please respond with your degree of agreement to the following prompts on a 1 to 5 scale.

1 = strongly disagree.
2 = disagree
3 = neither disagree nor agree
4 = agree
5 = strongly agree

Please respond with your degree of agreement to the following prompts on a 1 to 5 scale, as it relates to your practice of mindfulness. Indicate your response by circling one number per prompt.

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mindfulness may help me perform, but I don’t think so.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I have difficulty being mindful, but so do most athletes. Why spend time thinking about it?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I would rather cope with lack of mindfulness than try to change it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. It might be worthwhile to work on practicing mindfulness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I’m hoping someone could help me improve my mindfulness practice.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Maybe a sport psychologist will be able to help me be more mindful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I’m really working hard to improve my mindfulness practice.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Anyone can talk about becoming more mindful. I am actually doing something about it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I am actively working on becoming more mindful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I have been successful working on being more mindful for at least the last six months.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I have used mindfulness for at least six months and plan to continue working on being mindful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. After all I have done to become more mindful, I feel confident in this new habit.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix H

SWLS

Instructions: Below are five statements that you may agree or disagree with. Using the 1 – 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 – Strongly agree
- 6 – Agree
- 5 – Slightly agree
- 4 – Neither agree nor disagree
- 3 – Slightly disagree
- 2 – Disagree
- 1 – Strongly disagree

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In most ways my life is close to my ideal.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. The conditions of my life are excellent.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. I am satisfied with my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. So far I have gotten the important things I want in life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. If I could live my life over, I would change almost nothing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
Appendix I

**SDFS-2**

Please answer the following questions in relation to your experience in your chosen sport. These questions relate to the thoughts and feelings you may experience during participation in your activity. You may experience these characteristics some of the time, all of the time, or none of the time. There are no right or wrong answers. Think about how often you experience each characteristic during your activity, and then choose the number that best matches your experience.

<table>
<thead>
<tr>
<th>When participating in my sport…</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I feel I am competent enough to meet the demands of the situation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2 I do things spontaneously and automatically without having to think</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3 I have a strong sense of what I want to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4 I have a good idea about how well I am doing while I am involved in the task/activity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5 I am completely focused on the task at hand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6 I have a feeling of total control over what I am doing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7 I am not worried about what others may be thinking of me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8 The way time passes seems to be different from normal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9 The experience is extremely rewarding</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
# Appendix J

## Experiences in Sport

Please respond to the prompt below based on the following rating scale

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very poor</td>
<td>Poor</td>
<td>Average</td>
<td>Good</td>
<td>Very good</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. During the last two weeks, I rate my *performance* in my sport as: _____  
2. During the last two weeks, I would rate my *enjoyment* of my sport as: _____  
3. In 6 weeks after experiencing the mental training we are about to receive, I expect to rate my sport performance as: _______  
4. In 6 weeks after experiencing the mental training we are about to receive, I expect to rate my sport enjoyment as: _______  

*Items 3 and 4 were omitted on post-intervention questionnaires*
Please indicate your level of agreement with each of the following statements by circling the response on the answer sheet that corresponds with your feelings toward each statement. Please respond to each statement as truthfully as you can.

<table>
<thead>
<tr>
<th>Question</th>
<th>SD</th>
<th>D</th>
<th>MD</th>
<th>N</th>
<th>MA</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A sport psychology consultant can help athletes improve their mental toughness. (C)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. If an athlete asked my advice about personal feelings of failure related to sport, I might recommend that he/she see a sport psychology consultant. (C)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. I would not go to a sport psychology consultant because my teammates would harass me. (S)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. To help me better understand myself as an athlete, I would like the assistance of a sport psychology consultant. (C)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. I would feel uneasy going to a sport psychology consultant because some people would disapprove. (S)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6. An athlete with emotional problems during sport performances would feel most secure in receiving assistance from a sport psychology consultant. (C)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7. Having seen a sport psychology consultant is bad for an athlete’s reputation. (S)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8. If I was worried or upset about my sport performance, I would want to get help from a sport psychology consultant. (C)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9. I think a sport psychology consultant would help me perform better under pressure. (C)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>10. I would not want someone to know about me receiving help from a sport psychology consultant. (S)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>11. If I went to a sport psychology consultant, I would not want my coach to know about it. (S)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>12. A sport psychology consultant could help me fine-tune my sport performance. (C)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>13. If I went to a sport psychology consultant, I would not want other athletes to know about it. (S)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>14. At times I have felt lost and would have welcomed professional advice for a personal or emotional problem. (C)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>15. The coach would think less of me if I went to a sport psychology consultant. (S)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
# Appendix L

Overview of Mindful Sport Performance Enhancement (MSPE) Protocol*

<table>
<thead>
<tr>
<th>Session</th>
<th>Key Concepts</th>
<th>Exercises</th>
<th>Assigned Home Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 1: Building Mindfulness Fundamentals</td>
<td>Defining mindfulness, rationale for MSPE, and getting off of automatic pilot</td>
<td>Candy exercise, diaphragmatic breathing, sitting meditation with a focus on the breath</td>
<td>3-minute diaphragmatic breathing (x3), 9-minute breath meditation (x3), use STOP acronym throughout the day</td>
</tr>
<tr>
<td>Session 2: Strengthening the Muscle of Attention</td>
<td>Overcoming practice obstacles, core performance facilitators, present-moment attention</td>
<td>Body scan, sitting meditation with a focus on the breath review</td>
<td>30-minute body scan (x1), 9-minute breathing meditation (x5), use STOP acronym throughout the day</td>
</tr>
<tr>
<td>Session 3: Stretching the Body’s Limits Mindfully</td>
<td>Recognizing the power of expectations, the body as a route to awareness</td>
<td>Mindful yoga, sitting meditation with a focus on the body as a whole</td>
<td>14-minute meditation with the focus on the body (x5), 40-minute mindful yoga (x1), use STOP acronym throughout the day</td>
</tr>
<tr>
<td>Session 4: Embracing “What Is” In Stride</td>
<td>Letting go of attachments, acceptance vs. resignation</td>
<td>Mindful yoga review, walking meditation</td>
<td>11-minute walking meditation (x4), 30-minute body scan (x1), 40-minute mindful yoga (x1), use STOP acronym throughout the day</td>
</tr>
<tr>
<td>Session 5: Embodying the Mindful Performer</td>
<td>Achieving through nonstriving, choice in self-care</td>
<td>Sport Meditation, sitting meditation with a focus on the breath, body, and sound</td>
<td>Sport meditation (x4), 21-minute sitting meditation with a focus on breath, body, and sound (x2), use STOP acronym throughout the day</td>
</tr>
<tr>
<td>Session 6: Ending the Beginning</td>
<td>Ending MSPE, building an ongoing practice routine</td>
<td>Body scan review, sport meditation review</td>
<td>No assigned home practice, encouraged to engage home practice of any kind</td>
</tr>
</tbody>
</table>

*Adapted from Kaufman et al. (2018)
### Overview of Follow-Up Sessions for Initial MSPE Participants (VB)

<table>
<thead>
<tr>
<th>Session Information</th>
<th>Key Concepts</th>
<th>Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 7 (30 minutes)</td>
<td>Application of mindfulness to sport and life</td>
<td>Discussion of home practice and applications to sport; sitting meditation with focus on breath (10 minutes)</td>
</tr>
<tr>
<td>Session 8 (30 minutes)</td>
<td>Compassion for self and others</td>
<td>Discussion of home practice; lovingkindness meditation (10 minutes)</td>
</tr>
<tr>
<td>Session 9 (30 minutes)</td>
<td>Mind-body connection, awareness of strengths</td>
<td>Discussion of home practice and individual strengths; body scan and diaphragmatic breathing (12 minutes)</td>
</tr>
<tr>
<td>Session 10 (30 minutes)</td>
<td>Interpersonal mindfulness</td>
<td>Discussion of mindfulness and team culture, standing meditation (8 minutes)</td>
</tr>
</tbody>
</table>

### Overview of Follow-Up Sessions for Initial MSPE Participants (Acro)

<table>
<thead>
<tr>
<th>Session Information</th>
<th>Key Concepts</th>
<th>Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 7 (45 minutes)</td>
<td>Mindfulness and team culture</td>
<td>Discussion of home practice, applications of mindfulness to sport and discussion of team culture; sitting meditation with a focus on the breath (10 minutes)</td>
</tr>
<tr>
<td>Session 8 (60 minutes)</td>
<td>Mindfulness and team values; interpersonal mindfulness and emotions</td>
<td>Discussion of home practice and team values (and pursing them mindfully); body scan (10 minutes)</td>
</tr>
<tr>
<td>Session 9 (45 minutes)</td>
<td>Mindfulness and team cohesion, nonjudgment and stress management</td>
<td>Discussion of home practice and bringing mindfulness into interactions with teammates on and off mat; discussion of self-judgement, expectations, and letting go in the context of stress; lovingkindness meditation (10 minutes)</td>
</tr>
<tr>
<td>Session 10 (60 minutes)</td>
<td>Mindfulness and team values, self-care</td>
<td>Discussion of home practice, team values, and pursing values mindfully, and self-care strategies based in mindfulness; body scan and diaphragmatic breathing (12 minutes)</td>
</tr>
</tbody>
</table>
**Appendix M – PEQ Codebook**

**PEQ Open-Ended Response 1**
What Parts of the Training did you find Challenging?

Categories

1) Intervention Timing and/or Practice Environment
2) Busy Schedule, Lack of Time to Practice, or Not Prioritizing Practice:
3) Difficulty with Intervention Exercises or Mindfulness Practices
4) Difficulty with Intervention Concepts or Skills
   a. Single pointed attention, focus
   b. Awareness and/or acceptance
   c. Dealing with distractions
   d. Breathing
   e. Non-striving and Not Having Expectations
5) Unclear understanding about how to practice:
6) Adverse/Uncomfortable Experiences
7) Other:

1. **Intervention Timing and/or Practice Environment**
   o One of the most challenging parts of training was doing the mindfulness exercises right after practice. It was hard to focus on breathing when I was so aware of my post practice aches and pains. I also found it hard to concentrate during the sessions at first because my teammates would be laughing or shuffling around but as I got more skilled at focusing it helped better prepare me for meet days because in reality, when I needed mindfulness most, it's not in a quiet room but a loud gym. (1)
   o It made it difficult that some people didn't "buy" into the mindfulness training (6)
   o trying to concentrate in a room full of my teammates and outside noise (7)
   o The distraction around me (48) and the thoughts going through my head. The stress that I was facing.

2) **Busy Schedule, Lack of Time to Practice, or Not Prioritizing Practice:**

   o Just finding the time to feel centered (2)
   o No part was challenging, but making mindfulness more of a routine after never doing it prior is the difficulty (55)
   o Making time throughout the day to incorporate practice (49)
   o It was most difficult to create a habit outside of our normal time to do mindful activities. (52)
   o Lot of stuff on my plate doing soccer and track and trying to do mindfulness (47)
   o Doing soccer and track at the same time while trying to stay healthy (45)
   o Consistency (46)
   o making time for the outside practice (28)

3) **Difficulty with Intervention Exercises or Mindfulness Practices**
   - Staying focused during the breathing + body scan exercises. It was hard for me to stop letting my brain wander (3)
   - Yoga (43)
   - The most challenging part for me was trying to focus while doing body scans or other meditations (39)
- deep conversation (13)
- The length of how long each exercise is sometimes I feel I don't have enough time to do it for the full length (17)
- The days that I was very overwhelmed, I found it hard to be in the moment during the body scans and sitting meditations (23)
- meditation-->focusing the whole time (26)
- The full body (body scan) meditation. It was hard for me to keep my entire body still for so long and not think about moving too much w/o breaking my train of thought. (33)
- body scan (38)

4) Difficulty with Intervention Concepts or Skills
   - Single pointed attention, focus
     1. Focus on one thing at a time (8)
     2. Focus (9)
     3. Staying focused without letting my mind think of other things (10)
     4. letting go of things that may have bothered me (49)
     5. I think training the mind to learn repetitive abilities to return to focus (54)
     6. keeping my mind from wandering off (50)
     7. focusing for longer periods of time without becoming distracted (51)
     8. Focusing (13)
     9. Focusing on breathing & nothing (16)
     10. paying attention (28)
     11. to concentrate (29)
     12. Being able to focus and not get distracted (34)
     13. focusing on one thing at a time (35)
     14. letting my mind rest (36)
     15. focusing on my breathing (38)
   - Awareness and/or acceptance
     a. sitting with my thoughts, acknowledging everything going on and accepting it (4)
     b. Calming my brain & accepting my thoughts and feelings without judgment (11)
     c. Expressing how I was feeling and putting it into words. (44)
     d. Letting go (41)
     e. having nothing on my mind and letting it all go. (42)
     f. Acknowledging bad thoughts/feelings and not necessarily getting rid of them (14)
     g. Keeping thoughts out of my head. (15)
     h. being aware of my thoughts + letting them go (20)
     i. I found it most challenging to completely blank my mind, because I've always been an overthinker (21)
     j. I found it most challenging in doing what I say I'm going to do. Like acknowledge my feelings, absorb the present feelings. (24)
     k. Shake off mistakes
     l. not thinking (27)
     m. Just trying to relax (31)
     n. calming myself down in the frustrating moment (32)
     o. sitting in silence (37)
   - Dealing with distractions
     a. When distraction occurred I felt overwhelmed like I didn't know how to come back to the task at hand (12)
     b. distractions and blocking outside thoughts that were negative or letting go (40)
     c. trying to stay calm and clear my mind (14)
d. Not getting distracted and getting comfortable (19)
e. the thoughts going through my head. The stress that I was facing (48)

- **Breathing (1)**
a. learning how to allow myself to breathe (5)

- **Non-striving and Not Having Expectations**
a. Trying to anything without expectations (53)
b. "non-striving"; Always learned to always be working toward something so it was different to not really have a goal in mind (41)

5. **Unclear understanding about how to practice:**
a. I also found it difficult because I was trying hard to understand what I was supposed to feel. (15)

6. **Adverse/Uncomfortable Experiences**
a. The parts I found most challenging was when we were focusing on our breathing. I feel like I would focus so hard that it would cause me [illegible] and feeling like I couldn't breath. Also, learning how to block out the sounds around us. (22)

7. **Other:**
a. I was out the entire spring season with a head injury (30)
b. I am a christian and believe that God is the creator of peace. So when doing a mindfulness practice, if you aren't actively seeking God to be your peace, then that's an open invite to many different spirits that you don't want in your life. Satan will disguise to be who you want him to be. I actively invite God to give me (16)
**PEQ Open-Ended Response 2**

What, if any, meaningful benefits did you gain from participating in the program and practicing mindfulness in the last six weeks?

1) Self-Regulation of Arousal/Emotions:
2) Confidence, Positivity, and Compassion for Self and Others:
3) Improved Sport Performance or Enjoyment:
4) Mindset or perspective shift contributing to well-being:
5) Awareness/Self-Awareness, Non-judgment, and Acceptance
6) Focus on the Present Moment, Groundedness, and Attention Regulation:
7) Intervention Exercises or Environment
8) General Benefits / Other:

### 1. Self-Regulation of Arousal/Emotions:

- a. helpful with anxiety (6)
- b. In the meet, I was feeling calm and confident and was able to guide several teammates in taking a minute to close their eyes and take deep breaths to calm themselves which I believe helped their performance (2)
- c. A sense of calmness, - Better able to manage my emotions (4)
- d. I found that I felt a sense of calmness after each session (8)
- e. Calmness (10)
- f. relaxation…less anxiety, and ways to calm myself down. (11)
- g. able to … calm myself down when overwhelmed (12)
- h. better relaxation (13)
- i. I found new ways to quiet my mind (16)
- j. relaxing with a focus on my body; - not getting overwhelmed in practice when I make mistakes (18)
- k. I gained from this program was to become more calm (23)
- l. Calm & collect myself (25)
- m. learn to not hold mistakes too strong (26)
- n. less stress and not as worried about past experience (30)
- o. It really felt relaxing and made not to worry about things so much. (35)
- p. Practicing has made me more relaxed and less nervous in certain situations (40)
- q. calm mindset during sports practices/games (41)
- r. I think I improved in my ability to relax (42)
- s. learned how to really relax while doing anything. Also learned how to clear my mind
- t. I felt calmer after doing mindfulness, more relaxed (44)
- u. Being able to reduce stress (46)
- v. releasing strong emotions; -relaxing; -letting things go (47)
- w. Mindfulness when I am stressed or can't fall asleep (48)
- x. I felt more relaxed with everything I have done. (49)
- y. Reduction of anxiety … Better sleep/ability to relax (50)
- z. being able to relax whenever (51)
- aa. helps me fall asleep (52)
- bb. Stress relief/relaxation; -letting go of things in the past (53)
- cc. Learning to calm the mind and the body (54)

### 2. Confidence and Positivity:
Drivers of Change in MABIS

a. Found myself being more positive (7)
   b. Confidence (11)
   c. More confidence in myself during a game/practice (27)

3. Compassion for Self and Others:
   a. Nicer to myself (27)
   b. Being Kinder to myself (38)

4. Improved Sport Performance or Enjoyment:
   a. Doing better in the weight room and on the mat (7)
   b. The last six weeks have helped me to realize that it's important to be self-aware to perform better (24)
   c. Finding enjoyment in sport (29)
   d. Better performance academically and in sport (53)

5. Mindset or perspective shift contributing to well-being:
   a. I learned its okay to not be doing anything, it can be extremely helpful (5)
   b. (I gained from this program was to become more calm.) This allowed me to have self care and allow my body to relax after a long day (23)
   c. Put myself into a better looking perspective and acknowledge that I'm doing all I can (33)

6. Awareness/Self-Awareness, Non-judgment, and Acceptance
   a. I was able to recognize my emotions more and judge them less. (2)
   b. Control over my body (14)
   c. I try to notice my feelings more and I take more deep breaths (15)
   d. Being much less judgmental of my thoughts (18)
   e. Focus on what you feel and don't react to them (21)
   f. I am now more able to understand my emotions and am beginning to react a little better (22)
   g. The last six weeks have helped me to realize that it's important to be self-aware to perform better (24)
   h. Acceptance of my own feelings (25)
   i. Being aware of thoughts and feelings (28)
   j. Trying not to judge my thoughts (29)
   k. I really liked the not reacting or judging my experiences, I have been using it a lot (32)
   l. Taking just a few minutes out of my day just to sit and breathe really allowed me to clear my thoughts. Also, seeing that just simply doing things with no intention also helped me prioritize better. (34)
   m. It helped me to take a deep breath before reacting to things. (35)
   n. Helped me acknowledge my predominate thoughts while playing soccer (39)
   o. Ability to be aware of feelings and approach them with curiosity to handle them better (50)
   p. Being conscious of how I feel when I need to (52)

7. Focus on the Present Moment, Concentration, and/or Grounding
   a. In practice, using verbal cues and deep breathing helps me stay focused at the task at hand rather than getting ahead of myself thinking about what next. (2)
   b. Being + feeling grounded and in somewhere else besides my head (3)
   c. I feel that I can now more easily ground myself while practicing or competing (8)
   d. More concentrated (10)
   e. Able to focus/refocus (12)
   f. More focused on being in the moment (13)
   g. I try to be in the moment as well, but I still struggle with it sometimes (15)
   h. I found new ways to … bring me back to the present moment (16)
DRIVERS OF CHANGE IN MABIS

i. Being more intentional about what I’m doing and living in the moment (17)
j. ground yourself (19)
k. Be present (25)
l. I breathe slower sometimes, focusing on it (31)
m. Focus (41)
n. I think I improved in my ability to… focus on things much better (42)
o. It is much easier for me to not care what others are saying or would say. I am more focused on what I care/think. (45)
p. Being able to … focus/concentrate on the small things (46)
q. being in the moment (47)
r. can pull myself to focus (48)
s. A lot of new ways to regain my focus (55)

8. Intervention Exercises or Environment
   a. Tommy was very helpful and created a safe space for us to talk things through and relax (4)
b. Using the STOP method (34)
c. I really enjoyed the mindfulness walking exercise and think that really resonated with me (37)
d. STOP acronym helped me during the day with classes (52)

9. General Benefits / Other:
   a. In my personal life outside of Acro, I used mindfulness strategies a lot (9)
b. went to sleep easier (20)
c. talking/ranting of what was bothering me (36)