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Collegiate Athletes' Expectations and Experiences with Mindful Sport Performance Enhancement

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Abstract

Although mindfulness training for athletes is an area of increasing interest, few studies have focused on the qualitative experiences of athletes in such programs. Prior to beginning six sessions of mindful sport performance enhancement (MSPE) training, 45 mixed-sport collegiate athletes reported what they hoped and expected to get from the training, and responded afterward to open-ended questions about their experiences. Participants' responses were coded for themes with high inter-rater reliability. Athletes initially hoped to gain psychological benefits in both sport and everyday life, such as relaxation and less stress or anxiety, better emotion regulation, mental toughness, and self-awareness, as well as sport performance improvement. Overall, they found MSPE to be a positive experience and reported many of the same benefits that they expected. Participants also provided constructive feedback and recommendations for future MSPE training. Finally, there was evidence to suggest that athletes' expectations predicted similar improvements in outcome measures.

Mindfulness is the act of moment-to-moment non-judgmental awareness (Kabat-Zinn, 1994). This increasingly popular concept has been adapted into many treatment modalities and shown to improve physical (Chiesa & Serretti, 2011b; Creswell & Lindsay, 2014) as well as emotional well-being (Chiesa & Serretti, 2011a; Hoffman, Sawyer, Witt, & Oh, 2010; Keng, Smoski, & Robins, 2011). Research additionally shows that practicing mindfulness can be beneficial for non-clinical populations (Chiesa & Serretti, 2009; Khoury, Sharma, Rush, & Fournier, 2015), including athletes (Kaufman, Glass, & Pineau, 2018).

Excessive anxiety, expectations to be perfect, and fearing defeat can hinder athletic performance during intense competition where there is little room for error. Other factors that may negatively influence performance include overtraining, work-life imbalance, and poor coping styles. Mindfulness may help athletes detach from rigid, repetitive patterns of thought, emotion, and behavior that have solidified through extensive sports training by teaching athletes to attend to present-moment experience (Birrer, Röthlin, & Morgan, 2012).

Mindfulness also relates to the experience of flow (Cathcart, McGregor, & Groundwater, 2014; Kaufman, Glass, & Arnkoff, 2009), which is associated with peak performance (Jackson & Roberts, 1992). Flow occurs when a person achieves a balance between the skills necessary for a challenging task and one's perceived ability to succeed in the task (Jackson & Csikszentmihalyi, 1999). For athletes, common aspects of flow include

experiencing heightened concentration and merging of action and awareness (Swann, Keegan, Piggott, & Crust, 2012). Attention and awareness are both foundational concepts of mindfulness (Chiesa, Calati, & Serretti, 2011), meaning that increasing mindfulness could potentially maximize flow and athletic performance (Pineau, Glass, & Kaufman, 2014).

What appears to be the first study incorporating mindfulness in sport was conducted by Jon Kabat-Zinn, the developer of mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990). Through mindfulness training, collegiate rowers reported being better equipped to handle sport-related pain, fatigue, and negative thoughts, along with an increased ability to concentrate and relax during their sport (Kabat-Zinn, Beall, & Rippe, 1985). Since that time, a number of mindfulness-based interventions for athletes have appeared, such as the mindfulness-acceptance-commitment approach (MAC; Gardner & Moore, 2007), mindfulness meditation training for sport (MMTS; Baltzell & Summers, 2016), and mindful sport performance enhancement (MSPE; Kaufman et al., 2009; Kaufman et al., 2018).

The MAC approach includes seven modules that emphasize valued goal-directed behavior and nonjudgmental acceptance of internal experiences (Gardner & Moore, 2007). Empirical studies using the MAC approach have found significant improvements in experiential acceptance, mindfulness, self- and coach-rated sport performance, psychological distress and substance use (e.g., Gross et al., 2016; Hasker, 2010). Using a modification of the MAC approach, Goodman, Kashdan, Mallard, and Schumann (2014) also reported qualitative participant feedback, in which athletes indicated specific mindfulness activities, such as mindfulness of breath and the body scan, being the most helpful to their sport. The majority of responses indicated that the brief MAC and yoga intervention helped them to focus and shift attention.

MMTS uses 12 short (30-minute), twice-a-week sessions that focus on increasing mindfulness through Vipassana-based meditation exercises to foster concentration, open awareness, and acceptance (Baltzell & Summers, 2016). Athletes have shown increases in mindfulness compared to non-randomized controls, who reported increased negative affect (Baltzell & Akhtar, 2014). In order to better understand the experience of participating in MMTS, Baltzell, Caraballo, Chipman, and Hayden (2014) conducted post-intervention interviews with seven Division I female soccer players and their coaches. Interviews revealed a mix of attitudes prior to the intervention, and reported increases in positive perceptions of meditation, recommendations for program improvement, challenges in practicing meditation, and positive thoughts of self and team. Collectively, team members and coaches expressed benefits in and outside of sport. Coaches also reported positive changes in their relationships with athletes, such as increased sensitivity to athletes' feelings and deeper connections established through meditation (Baltzell, Chipman, Hayden, & Bowman, 2015).

MSPE, rooted in the MBSR tradition, focuses on introducing mindfulness skills to help athletes and coaches become more aware and accepting of present-moment experience and teach them how to incorporate this into their sport and everyday lives (Kaufman, Glass, & Pineau, 2016; Kaufman et al., 2018). Archers and golfers who received 4 weeks of MSPE training showed increases in state flow and mindfulness, and distance runners decreased

aspects of perfectionism and sport-related anxiety (De Petrillo, Kaufman, Glass, & Arnkoff, 2009; Kaufman et al., 2009). Although a control group was not included in this study, at 1-year follow-up, both groups of athletes showed significant improvements in mindfulness and reductions in thought disruption, and runners reported significantly faster mile times (Thompson, Kaufman, De Petrillo, Glass, & Arnkoff, 2011).

More recent studies with an expanded 6-week training have found significant increases in mindfulness, flow, and self-rated performance, and decreases in sport-related anxiety and experiential avoidance in teams of collegiate athletes (Pineau, 2016). MSPE has also shown promise with high school athletic teams, with increased sport mindfulness, challenge-skill balance and clear goals dimensions of flow, and decreases in difficulties regulating emotion (Mistretta, Kaufman, Glass, & Spears, 2016). Finally, a randomized controlled trial with collegiate athletes from a variety of sports showed that MSPE prevented increases in depressive symptoms, compared to wait-list controls (Glass, Spears, Perskaudas, & Kaufman, 2016). After all athletes received MSPE, treatment completers had significant increases in flow, mindfulness, quality of life, and self-rated sport performance, along with decreases in sport anxiety.

While the positive outcomes of mindfulness interventions for athletes are well documented (see reviews by Gardner & Moore, 2012; Sappington & Longshore, 2015; Wolanin & Gross, 2016), there is little research to date on athletes' expectations for mindfulness interventions or insight into their experiences after participating in mindfulness-based training (Baltzell et al., 2014). While a recent study assessed athletes' numerical ratings of their experiences with a mindfulness training program (Worthen & Luiselli, 2016), both quantitative and qualitative analyses are important when examining the efficacy of an intervention, as they answer different questions and the results can complement one another (Arnkoff, Glass, Elkin, Levy, & Gershefski, 1996). Qualitative analysis may be more fitting to examine a richer, more holistic understanding of athletes' perceptions of an intervention. Qualitative studies in sport psychology are a small but growing body of research (Culver, Gilbert, & Sparkes, 2012), but few have focused on the experiences of athletes in mindfulness-based training programs.

Although MSPE has growing empirical support, prior studies that included qualitative feedback did not explore athletes' experiences in depth or address expectations prior to training, and included only adult athletes in the community who participated in co-active individual sports (i.e., archery, golf, and running; Kaufman et al., 2009; Thompson et al., 2011). Kaufman et al. (2009) reported that athletes thought the training benefited their performance and helped them focus on the task at hand as well as cope with stress in and outside of sport, and predicted that they would see additional benefits in the future. At a 1-year follow-up, archers, golfers, and long-distance runners noted that they experienced increased enjoyment in sport and a greater understanding of the mental aspects of sport, which they attributed to increases in mindfulness and relaxation (Thompson et al., 2011). Athletes also reported an enhanced ability to deal with life stressors, increased confidence, and reductions in anxiety and stress. These data provide some initial impressions of MSPE for adult athletes, but additional research is needed to gauge program acceptability and deeper analysis of expectations in collegiate athletes.

The present study thus used qualitative data to further the understanding of athletes' hopes and expectations for MSPE, as well as experiences with MSPE, in a larger sample of college athletes from multiple sports, including interactive team sports (see Glass et al., 2016). An additional research question explored how athletes' expectations of the program might predict quantitative change on primary outcome measures over the course of the intervention. We expected that they would describe improvements in sport performance and sport-related stress, as well as the ability to regulate attention and emotion. Because MSPE teaches mindfulness skills that are applicable not only in sport but also daily life, we predicted that participants would report expectations and benefits across a range of domains.

Method

Participants

Participants were 45 collegiate student athletes from a private, urban NCAA Division III university who attended at least one session of MSPE training and completed quantitative and qualitative pre-intervention assessments. Twenty-two of them also responded to most qualitative post-intervention questions. Athletes were predominantly female ($n = 37$, 82%), with an average age of 19.3. The sample was largely Caucasian ($n = 42$, 93%), but also included Hispanic/Latino ($n = 2$, 5%) and African American ($n = 1$; 2%) athletes. The most frequent sports represented were lacrosse (31%) and field hockey (18%), followed by cross-country/track (13%), swimming (11%), soccer (9%), baseball and tennis (each 7%), and football and volleyball (each 2%). Fewer participants had prior experience with sport psychology (8%) compared to exposure to yoga/meditation (64%), but only seven athletes (16%) indicated participating in regular yoga practice and none reported practicing meditation regularly.

Procedure

Participants were recruited through emails after coaches were informed about the research. Interested athletes provided informed consent and completed online questionnaires prior to the beginning of training. Participants were then randomized to either of two training groups in the MSPE condition or to a wait-list control (who received the program in two groups immediately following the end of the first training). All groups met early on Sunday evenings, which was the only time available among the diverse group of athletes. Participants were asked to complete the same online questionnaires as soon as possible during the 2 weeks following completion of the training, with the addition of a program evaluation questionnaire that included open-ended questions regarding their experience.

MSPE Training

Each of the MSPE groups met for six weekly 75-minute sessions that were facilitated by two of the program co-developers. All sessions incorporated educational components as well as experiential practice of exercises to build mindful awareness and acceptance, along with discussions of athletes' experiences and how mindfulness can be utilized both within and outside of sport. Participants were provided access to recordings of all mindfulness exercises and asked to practice throughout the week. For a thorough description of the development and content of MSPE training, see Kaufman et al. (2018).

Measures

Background Questionnaire—Questions on this form assess age, gender, year in school, race/ethnic background, and sport played. Other items ask about prior exposure to sport psychology and yoga/mindfulness, in addition to an open-ended question focused on the top three things athletes hope to get out of the mindfulness training.

Depression, Anxiety, and Stress Scales (DASS-21)—The DASS-21 (Henry & Crawford, 2005) is a 21-item self-report measure of psychological distress. Four-point Likert scales ranging from 0 (Does not apply to me) to 3 (Applied to me very much, or most of the time) are used to assess the severity of symptoms of depression, anxiety and stress during the past week.

Satisfaction with Life Scale (SWLS)—The SWLS (Diener, Emmons, Larsen, & Griffin, 1985) is a five-item self-report measure of global life satisfaction, and includes 7-point scales with scores ranging from 1 (strongly disagree) to 7 (strongly agree).

Five Facet Mindfulness Questionnaire (FFMQ)—The 39 items of the FFMQ (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) measure dispositional mindfulness using a 5-point Likert scale ranging from 1 (Never or very rarely true) to 5 (Very often or always true). The instrument has five subscales: observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. Examples of scale items include “I watch my feelings without getting lost in them” and “I make judgments about whether my thoughts are good or bad” (reverse scored).

Acceptance and Action Questionnaire-II (AAQ-II)—The AAQ-II (Bond et al., 2011) is a seven-item measure of psychological inflexibility and experiential avoidance, with items rated on 7-point scales from 1 (Never true) to 7 (Always true).

Dispositional Flow Scale (DFS-2)—The DFS-2 (Jackson & Eklund, 2002, 2004) measures the experience of flow in sport. The 36 items are rated on a 5-point Likert scale from 1 (Never) to 5 (Always). A total flow score is calculated in addition to subscale scores of nine dimensions of flow: challenge-skill balance, merging of action and awareness, clear goals, unambiguous feedback, concentration on the task at hand, sense of control, loss of self-consciousness, transformation of time, and autotelic experience.

Sport Anxiety Scale (SAS)—The SAS (Smith, Smoll, & Schutz, 1990) is a 21-item measure that examines athletes’ self-reported anxiety before and during competition. The SAS uses 4-point Likert scales from 1 (Not at all) to 4 (Very much so) and yields a total score along with three subscales: somatic anxiety, worrying, and concentration disruption. The revised scoring method was used in the current study (Smith, Cumming, & Smoll, 2006).

Sport Rating Form—This measure, adapted from Wolanin (2004) and Hasker (2010), asks athletes to rate 14 dimensions of sport performance (e.g., concentration, strength, mental toughness, emotion regulation, agility, social cohesion) on a 9-point rating scale from

1 (Very Poor) to 9 (Excellent). The measure has three subscales assessing physical performance, attention/emotion regulation, and cohesion.

Program Evaluation Questionnaire—The program evaluation questionnaire includes five open-ended questions asking what athletes liked the most about the mindfulness training workshop, how it was helpful for their sport, how it was beneficial in their everyday life, what they disliked about the program, and what their recommendations were for improving the training. Two 5-point ratings then assess how confident athletes are that they will continue to incorporate mindfulness into their sport training and everyday life, respectively, on a scale from 1 (Not at all confident) to 5 (Very confident). Finally, athletes rate the extent to which they would recommend the mindfulness program for other collegiate athletes, on a scale from 1 (Would not recommend) to 5 (Would definitely recommend).

Qualitative Coding—A coding manual was developed to classify athletes' responses to open-ended questions on both the Background and Program Evaluation Questionnaires. Responses were first itemized into discrete content units, and then coded by the first and sixth authors, who reached a high level of agreement on practice items before actual data coding took place. Overall, these independent raters were highly reliable, with a kappa of .90 for the Background Questionnaire item asking what three things participants hoped to get out of the mindfulness training, and .92 for athletes' responses to the five program evaluation questions. The coding team discussed discrepancies and the first author resolved disagreements.

Results

Pre-program Hopes and Expectations for MSPE Training

Participants' reports of the top three things they hoped to get out of the program were coded into six distinct categories: psychological benefits for sport addressing stress, other psychological benefits for sport, psychological benefits outside of sport addressing stress, other psychological benefits outside of sport, sport performance, and mindfulness and mental training.

Psychological benefits for sport—The greatest number of responses addressed wanting benefits from mindfulness mental training that were specifically related to their sport, resulting in two categories that reflected either reducing stress and anxiety or gaining other psychological benefits, respectively. First, 11 athletes (24%) mentioned a desire for reductions in sport-related stress, worry, anxiety, or fear, such as “Being able to use my mind to calm myself during a game.” Some participants elaborated on these thoughts by stating that they wanted less distress in particular situations, such as less fear of injury, an “Ability to seriously approach a race without excessive anxiety,” or “Being less stressed at practice.”

Second, 31 athletes (69%) desired other psychological benefits for sport like having new perspectives, increased mental toughness, or more positive thinking. For example, participants listed “Be able to visualize what will happen on the field,” “How to understand and handle feelings and emotions after the games, whether we won and have happy feelings

or lost and have sad or angry feelings,” and often touched on a desire for increased mental toughness.

Psychological benefits outside of sport—A large number of the athletes also reported expectations that were categorized as more general psychological benefits from the training, which, like sport-related benefits, were represented by two similar categories. First, 10 athletes (22%) expressed general expectations that mindfulness training would lead to reductions in their stress, worry, fear, or anxiety. Increased relaxation was a common answer, along with improvements in coping with anxiety reflected in responses like “Understanding how to control nerves,” or “How to calm myself after I don’t accomplish what I want in school.”

The second sub-theme was seen in athletes who wanted to gain other psychological benefits such as deepening their sense of self and having a greater ability to handle difficult situations. For example, these 24 athletes (54%) hoped for benefits such as “Become more mentally resilient when something goes wrong,” “Become stronger as an individual and more confident,” and developing “A better understanding of myself.”

Sport performance—Prior to the training, 27% ($n = 12$) of the participants hoped to obtain some improvement in their athletic performance either during practice or competition. Athletes typically mentioned wanting general improvements such as “Improve my game,” or “Become a better athlete,” more so than improvements in particular performance skills or outcomes like increased speed or agility.

Mindfulness and mental training—Finally, in addition to improvements in specific areas, 12 athletes (27%) mentioned wanting to learn more about the concepts of mindfulness, yoga, and/or meditation. For example, such responses included “I have heard that this mindfulness workshop has helped many pro athletes so I am excited to see what I can learn and transfer to in-game situations,” and “Learning more about how yoga and meditation can help.”

Post-program Reports of Positive Reactions to MSPE Training

When asked at the end of the program what they liked most about the mindfulness training, responses from the 22 athletes (49%) who responded were coded primarily into four major categories (see first column of Table 1 for examples), in addition to “Other” responses.

Psychological benefits—Seven athletes (32% of those who responded) mentioned that they liked the MSPE training due to receiving general psychological benefits, not specifically described in relation to their sport. These included reductions in stress and worry, along with increased relaxation. Responses also included benefits received from mindfulness and mental training such as nonjudgment, increased focus, and self-awareness.

Mindfulness and mental training—Similarly, seven athletes (32%) described liking the training because of the mindfulness exercises that they practiced. Responses referred to liking specific mindfulness skills and techniques like the breathing exercises and yoga

practices that were taught, or referred more generally to the information or skills they had learned.

Group dynamics—Other athletes ($n = 5$, 23%) reported that they liked the training because of their experiences in the group, such as group discussions, feeling connected to other athletes, and the group leaders themselves.

Psychological benefits for sport—Finally, two respondents (9%) dealt specifically with psychological benefits noted for their sport, such as learning to control athletic stress and being more aware of their technique.

Post-program Reports of Benefits for Sport

A second open-ended question inquired how, if at all, athletes found the training to be helpful in their sport, and 22 participants (49%) responded. Replies were coded primarily into one of the following four themes (see second column of Table 1 for examples), and two athletes' responses considered as "Other."

Sport-related psychological benefits other than anxiety reduction—The largest category of responses to this question ($n = 9$ participants, 41%) mentioned that the training provided sport-related psychological benefits outside the realm of stress reduction, with many noting greater mental focus. In addition, these responses included understanding and letting go of emotions, obtaining a new perspective as an athlete, mental toughness, and increased awareness and self-confidence.

Sport-related psychological benefits addressing stress—Five athletes (23%) gave answers categorized as being helpful for dealing with or better understanding stress and anxiety in relation to their sport. Several responses spoke specifically about feeling more relaxed during competition.

Sport performance—Two athletes (9%) stated that the training was helpful for specific aspects of their athletic performance, with effects that were seen during practice and/or competition.

No help—Finally, two athletes (9%) had responses indicating that the training was not helpful for their sport, or that they had not applied it in this context.

Post-program Reports of Benefits for Everyday Life

Twenty-two participants (49%) responded to the third question, which asked how they had found the program helpful in their everyday life. Replies were coded primarily into one of the following three themes (see third column of Table 1 for examples).

Psychological benefits other than anxiety reduction—Ten of the respondents (45%) listed psychological benefits other than anxiety reduction, such as the program helping them to reduce mental distractions, become more calm and focused, stay in the moment, let go of negative feelings, and develop different perspectives of themselves and their lives.

Psychological benefits addressing stress—Eight athletes (36%) gave answers indicating that the training led to psychological benefits related to reductions in stress, worry, fear, or anxiety, including increased relaxation.

No help—Lastly, four athletes (18%) said that the training had not been helpful in their everyday life, or that they had not used it in this way.

Post-Program Reports of Negative Reactions to MSPE Training

A total of 15 athletes (33%) replied to the question asking what, if anything, they disliked about the training (see first column of Table 2 for examples).

Length/timing—Over half of these participants ($n = 8$, 53%) had problems with the way the training had been scheduled. Six athletes found the time and date inconvenient, and two thought the training was too long.

Group dynamics/environment—Five of the athletes (33%) gave responses that focused more on their experience in the group. This included feeling disconnected to other participants or instructors, reactions to expectations for sharing personal experiences, and thinking the groups were too large or too formal.

Content—Finally, two people (13%) reported not liking an aspect of the content of the training or learning about mindfulness. These comments specifically mentioned initial difficulty in understanding the concept of mindfulness and that, overall, the training was boring.

Post-program Recommendations for Improving MSPE Training

Answers to the final open-ended question, where 17 athletes (38%) gave recommendations for improving MSPE training, were closely related to what they had described not liking about the training (see second column of Table 2 for examples).

Length/timing—Nine respondents (53%) recommended making the sessions shorter, or holding them on a different day of the week.

Group dynamics/environment—Five athletes (29%) suggested changes in the way the program was run, such as allowing for more individual time and having a location with a better atmosphere. Although randomization procedures prevented many teammates from participating together, one athlete recommended that she would have liked teammates assigned to the same group.

Content—Finally, three respondents (18%) recommended modifications in the content of MSPE sessions, such as having a different speaking voice on recorded exercises, and making the exercises more sport-focused.

Quantitative Feedback

When asked on a 5-point scale how confident they were that they would continue to incorporate mindfulness *into their sport*, most (75%) of the 20 athletes who responded indicated that they were at least somewhat sure they would continue practicing mindfulness ($M = 3.25$). None reported that they were not at all confident, and 40% indicated that they were very confident (i.e., a rating of 4 or 5). Most (70%) of the athletes were at least somewhat sure that they would continue to incorporate mindfulness *into their everyday life* ($M = 3.15$). Again, none of the participants reported not being at all confident, and 35% were very confident that they would continue their practice.

Finally, when asked to rate on a 5-point scale whether they would recommend this mindfulness program for other collegiate athletes, 70% of respondents replied in the affirmative (i.e., with a rating of 4 or 5), with an additional 25% saying that they would “possibly” recommend MSPE training. The average strength of recommendation was 3.90, suggesting that overall the mindfulness training was very well received.

Associations between Expected/Desired Change and Outcome of Training

Change scores on all outcome measures were calculated for each athlete by subtracting pre-MSPE scores from those at post-intervention. Independent *t*-tests were then used to compare the amount of change in athletes who hoped for a particular benefit from MSPE and those who did not give an answer coded in that category (e.g., athletes who hoped it would lead to improved sport performance vs. those who did not list that expectation). Separate analyses were conducted for attenders and completers. Attenders were athletes who came to at least one session, while athletes who attended at least five of the six sessions were termed completers. Additional analyses were conducted to determine whether there was a moderation effect for number of sessions attended or frequency of personal practice, but results were not significant ($ps > .05$).

Psychological benefits for sport—Student athletes who hoped for improvements in sport-related stress, anxiety and worry showed significantly larger reductions on the Concentration Disruption subscale of the SAS, $t(43) = -2.88, p = .006$, and greater improvements in the DFS subscale of Action-Awareness Merging, $t(43) = 2.02, p = .049$, compared to athletes who did not hope for such benefits. Athletes who did not report responses coded as hoping for other sport-related psychological improvements (e.g., self-discovery and self-confidence) showed significantly greater improvements in both depression, $t(43) = 2.96, p = .005$, and concentration disruption, $t(43) = 2.47, p = .017$, compared to athletes who did desire such benefits.

Psychological benefits outside of sport—Compared to athletes who did not mention expectations for psychological benefits addressing stress, those who hoped for such benefits showed significantly greater improvement in the Cohesion subscale of the SRF, $t(43) = 2.21, p = .032$, and the DFS subscale of Clear Goals, $t(43) = 2.03, p = .048$. Completers who mentioned these expectations, compared to those who did not, also showed significantly larger improvements on the Non-Reactivity to Inner Experience subscale of the FFMQ, $t(17) = 2.27, p = .036$. Athletes who desired broader psychological benefits (e.g., relating to self-

discovery, self-confidence, inner peace) showed significantly greater improvements on the FFMQ Acting with Awareness subscale, $t(43) = 2.07, p = .044$, and the Cohesion subscale of the SRF, $t(43) = 2.50, p = .016$, as well as greater reductions in psychological inflexibility, $t(43) = -2.02, p = .049$, compared to athletes who did not hope for these benefits.

Mindfulness—Athletes who did not indicate prior to the program that they hoped to specifically learn about mindfulness and mental training skills showed significantly larger increases in an aspect of flow (the ability to concentrate on the task at hand, $t(43) = -2.07, p = .044$), and reductions in psychological inflexibility, $t(43) = 2.37, p = .022$, than athletes who did hope to gain such benefits.

Performance—Finally, athletes who expected benefits to their sport performance prior to beginning MSPE showed greater reductions in the Worry subscale of the SAS compared to athletes who did not hope for such benefits, $t(43) = -2.06, p = .045$. Athletes who did not hope for sport performance benefits showed greater increases in the Observing subscale of the FFMQ compared to those that did, $t(43) = -2.94, p = .005$. Completers expecting sport performance benefits additionally showed significantly greater reductions in psychological inflexibility compared to completers who did not hope for such benefits, $t(17) = -2.60, p = .019$.

Discussion

The present study was the first to explore the expectations and experiences of collegiate athletes from multiple sports who participated in MSPE training. Not surprisingly, over two thirds of athletes desired psychological benefits for their sport, such as mental toughness and emotion regulation during competition; an additional quarter cited both specific decreases in anxiety/increased relaxation and improved sport performance. Over half of the participants also hoped to gain more general psychological benefits not specifically described as related to sport, such as confidence or self-understanding, with almost a quarter hoping for general improvements in anxiety and relaxation. Athletes also showed curiosity for learning about the concept of mindfulness. Based on qualitative reports after the training, athletes found MSPE to be a positive experience, with benefits both for their sport and everyday life that related to similar themes. These insights help to elucidate the acceptability of mindfulness-based interventions like MSPE for collegiate athletes, our understanding of what athletes are looking for and find most helpful, and areas for growth.

Specific expectations have not been taken into consideration in sport mindfulness programs in the past, although research has included rating scales of treatment credibility and outcome expectations (De Petrillo et al., 2009; Kaufman et al., 2009). Yet, research finds that expectations about interventions more broadly, including mindfulness training, can be related to engagement and outcomes (Constantino, Glass, Arnkoff, Ametrano, & Smith, 2011; Goossens, Vlaeyen, Hidding, Kole-Snijders, & Evers, 2005; Quach, Gibler, & Mano, 2016; Schoultz, Macaden, & Hubbard, 2016). Most athletes in this study expected to see psychological and stress-related benefits for their sport, with fewer seeking specific effects on sport performance. It is also notable that many athletes hoped for other psychological benefits that were outside of their sport or not specifically described as sport-related. Such

expectations, (e.g., general mental resiliency, self-confidence, and calmness) are perhaps more typical of how non-athlete college students hope to benefit from mindfulness-based interventions. Further exploration is warranted into how athletes' expectations for change compare to those of non-athletes, and how hoped-for improvements from mindfulness-based approaches compare to other sport psychology interventions such as psychological skills training. Understanding athletes' expectations may also be helpful for informing how practitioners present the rationale for why athletes might want to learn and practice mindfulness.

The importance of knowing your participants when implementing a sport mindfulness program has been emphasized (Goodman & Kashdan, 2015; Kaufman et al., 2018). Identifying expectations is one aspect of this, which could help to inform leaders of what to emphasize during sessions. Addressing assumptions may also be helpful to dispel misconceptions about what mindfulness can offer to athletes. Collegiate student athletes must balance athletic, academic, and social lives, making the incorporation of additional time to formally practice mindfulness a potentially challenging task. Therefore, ensuring that athletes' expectations are at least acknowledged in the first sessions could help to support commitment to a mindfulness program.

In addition to focusing on the success of sport mindfulness interventions by assessing participant outcomes with both validated questionnaires and open-ended feedback, it is also important to examine whether athletes' expectations are met. The present study provides preliminary support for this assumption in that athlete expectations were related to measurable outcomes, such as improvements in mindfulness (acting with awareness, nonreactivity to inner experience), several aspects of flow, and psychological flexibility. Athletes who specifically hoped for sport-related benefits in stress, anxiety, or worry showed improvements in sport anxiety, such as reduced concentration disruption. These improvements could also be attributed in part to an expectancy effect, as client expectations are often considered to be a contributing factor to the outcome of psychotherapy (Constantino et al., 2011). Despite the smaller sample size, the fact that more significant associations between expectations and improvement were found for completers, suggests that athletes attending more sessions had a greater chance of seeing their expectations fulfilled. It is also possible that athletes who saw their expectations met sought greater involvement in the sport mindfulness intervention, leading to better adherence and attendance.

It is interesting that people who did not hope for particular benefits, compared to those who did, actually improved more on some measures. For example, athletes who did not specifically indicate interest in learning about mindfulness actually experienced greater improvements in concentration and psychological inflexibility. Thus, it seems worthwhile to encourage athletes to keep an open mind as they begin MSPE, recognizing that their experience may or may not be what they expect and that sometimes people reap benefits that they did not anticipate.

Interviews and open-ended questions about athletes' experiences of other mindfulness-based sport performance programs have showed reports of greater relaxation and focus (Furrer et

al., 2015). In addition, mindfulness was useful in relating differently to emotions on and off the field (Baltzell et al., 2014), as well as for increasing goal-directed behavior (Goodman et al., 2014). However, these qualitative studies have been limited to small focus groups of athletes from the same team. The present study adds to the qualitative understanding of athlete experience in mindfulness-based interventions by including people from a variety of sports. Athletes most readily expressed liking and benefiting from deeper self-awareness, and adoption of emotion regulation strategies both in and outside of sport. Both general psychological benefits and more sport-specific responses were also reflective of the core performance facilitators taught in MSPE (e.g., concentration, relaxation, letting go; Kaufman et al., 2018).

Greater understanding of what participants dislike about interventions is crucial for improving mental training programs for athletes. Previous qualitative research with athletes in mindfulness training has revealed some negative reactions and constructive feedback, such as workshops being “boring” and suggestions to include more sport-related examples (Baltzell et al., 2014; Goodman et al., 2014). Previous feedback from MSPE participants (De Petrillo et al., 2009) indicated a desire for a longer program, which led to the training being expanded to six sessions. By far the most reported aspect that some athletes in the present study disliked was the time when the training was held, which may have influenced perceptions that the training was too long. By including athletes from nine athletic teams, the only time when everyone could meet was early on Sunday evenings. Even though many participants enjoyed having a diverse group dynamic, it came at the cost of taking up valuable free time. Although not possible for this study because athletes were from diverse sports, getting coaches on board with the program by including them as part of the training could not only help with scheduling, but also help to establish these concepts as part of a team’s culture, as was the case in two studies of mindfulness training with high school athletes (Mistretta et al., 2016; Worthen & Luiselli, 2016).

The results of this study should be viewed in light of several limitations. Although 45 athletes who attended at least one session of MSPE completed the expectations question prior to the beginning of the program and responded to the online quantitative measures after the final session, only 22 completed the program evaluation questionnaire. However, analyses indicated no significant differences on the basis of race/ethnicity, gender, age, sport, year in school, or number of sessions attended between athletes who completed and those who did not complete the measure. In the future, providing participants with extra scheduled time to complete qualitative measures at the end of the final session, or scheduling an additional time for measure completion, might be more successful than having participants fill out a lengthy set of outcome measures online (with the open-ended questions at the end). Another limitation is that, although similar outcome measures were later used at 6-month follow-up, no qualitative follow-up data were collected. Thus, it cannot be determined whether athletes continued to perceive these same benefits, or perhaps procured additional benefits after continued practice, suggesting the importance of including qualitative measures in follow-up assessments. The addition of in-depth interviews, and the use of qualitative approaches such as grounded theory (Charmaz, 2014), may allow for greater understanding of complex issues. Finally, these results are based on the experiences of collegiate student athletes from a Division III, private, religiously affiliated university.

Although representing a wide range of sports, it is possible that student athletes from other regions of the country, religious backgrounds, race/ethnicity, and socioeconomic status, or from universities with greater athletic pressure (e.g., Division I), may have different experiences with a mindfulness mental training program like MSPE. Future studies with even larger numbers of participants could compare the experiences and expectations of athletes from different teams, male and female athletes, and co-active versus interactive sports.

The current study is an important first step in understanding the experiences of athletes while participating in MSPE training. The results provide insight into the potential for athletes to develop deeper self-reflection and psychological benefits beyond sport and provide suggestions for future improvements to mindfulness-based training. Additional research will need to consider athlete expectations of mindfulness interventions for sport and include in-depth qualitative analysis to extend these findings.

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Table 1

Athletes' Coded Responses to What They Liked about MSPE and Perceived Benefits to Sport and Everyday Life

What They Liked (<i>n</i> = 22)	Benefits to Sport (<i>n</i> = 22)	Benefits to Life (<i>n</i> = 22)
<i>Psychological Benefits Outside of Sport (32% n = 7)</i>	<i>Other Psychological Benefits for Sport (41% n = 9)</i>	<i>Other Psychological Benefits (45%, n = 10)</i>
Learning how to control my thoughts	It has made me more mentally tough. I used to become tired after the first set in tennis and now I last until the end of the match	The breathing when things in daily life got tough; taking a step back and thinking about the right now
It allowed me to relax more		
Its ability to help me access my conscious in a different way	It helped me actually have more confidence and be fully aware of every situation occurring	It made me realize how much I think about the uncontrollable past and future. I have come to minimize this making life more controllable and peaceful
The relaxation	Keeps me level headed	Let go of frustration with others
It helped me relax		Centering myself and my thoughts
Learning how to stay more focused on the moment and not dwell on mistakes or the future	I think I found a way to let go of things if I'm not doing them well in a game or practice	Reflected on my life
I liked how the mindfulness workshop gave me the opportunity to really focus on things I had been doing but in a more mindful and relaxed way	Focus on things I have control over	It enabled me to think about only what I'm doing at that moment
	It helped me learn to focus and learn when my mind wanders and how to bring it back	It keeps you calm
	Helps me refocus during games	It helped me focus
	I found that the workshop helped me to focus completely on what I was doing in my sport without any mental distractions	It helped me with my everyday life
	It helped me redirect my focus during intense moments	Allow me to focus completely on what I was doing without any mental distractions
<i>Mindfulness and Mental Training (32% n = 7)</i>	<i>Psychological Benefits Addressing Stress (23%, n = 5)</i>	<i>Psychological Benefits Addressing Stress (36%, n = 8)</i>
Very helpful, useful tools, lots of great information	I found it helpful when I was in stressful situations	Helped relieve stress
Breathing exercises	Helped me to relax with my breathing and allowed myself to relax before, during, and after the race	When being in high stress situations such as school work, work, and time management it's helped me take a step back and apply what I learned.
Gave helpful tips and opportunities to gain an understanding of mindfulness in sport and everyday life with using relevant examples	Helped me have a better understanding of my mind and how it acts during high stress situations such as when playing tennis.	It puts me at ease and helps me get through tough situations
Learning different methods I can use to practice mindfulness in a way that fits me	Helped me control my stress	Not worry about other things in life
I liked learning about all of the different types of ways to train your mind	It helped me relax more during games which is important for my sport	I used the breathing exercises whenever I felt stressed or nervous for an exam
Learning multiple meditations		I thought it helped me relax and bring me back to reality at times
Yoga		Allowed me to take a step back and relax
		Staying relaxed in times of stress
<i>Group Dynamics (23%, n = 5)</i>	<i>Sport Performance (9%, n = 2)</i>	<i>No Help (18%, n = 4)</i>
I liked the group discussions	Pushing myself beyond what I thought was my limit.	I did not find the workshop helpful in my everyday life
I liked that I was around other athletes who shared similar experiences to me prior and post competing		I did not find it helpful

What They Liked (n = 22)	Benefits to Sport (n = 22)	Benefits to Life (n = 22)
<p>I liked the enthusiasm and willingness to help from the trainers. Their time investment in mindfulness themselves motivated me to keep training on my own</p> <p>It was very beneficial that everyone in charge was kind and understanding. They made everyone feel comfortable while talking in the group</p> <p>Very open to everyone's experiences</p>	<p>Helped me to anchor certain aspects of my swimming</p>	<p>I didn't really use it in my everyday life</p> <p>I did not</p>
<p><i>Psychological Benefits for Sport (9%, n = 2)</i></p> <p>Learning different ways to control my stress towards sports</p> <p>It helped me to really think about my technique and my thoughts while working out</p>	<p><i>No Help (9%, n = 2)</i></p> <p>I did not find the workshop beneficial for my sport</p> <p>I did not apply it to my sport</p>	
<p><i>Other (4.5%, n = 1)</i></p> <p>I liked that we used specific sports examples during them</p>	<p><i>Other (9%, n = 2)</i></p> <p>I was injured most of the training</p> <p>I thought it was helpful but probably would be more helpful being disciplined in my home practice</p>	

Table 2

Athletes' Coded Responses to What They Disliked about MSPE and Future Recommendations

What They Disliked (<i>n</i> = 15)	Future Recommendations (<i>n</i> = 17)
<i>Length/Timing (53%, n = 8)</i>	<i>Length/Timing (53%, n = 9)</i>
It was held at an inconvenient time (<i>n</i> = 3)	Hold the workshop on a different day of the week
The workshop was too long (<i>n</i> = 2)	Make the workshop shorter (<i>n</i> = 2)
I did not like the time slot	Maybe not on a Sunday night (<i>n</i> = 3)
The time of it. Sunday evening is the time when everybody is doing laundry, homework, or whatever else to prepare for the week	Make the workshop approximately one hour long
I didn't like that it was on a Sunday evening because usually it's our only day off from practices and a prime homework time	Maybe better time schedules, but I know it's hard because we have all kinds of athletes with different schedules
<i>Group Dynamics/Environment (33%, n = 5)</i>	<i>Group Dynamics/Environment (29%, n = 5)</i>
There were too many people, I would have liked it to be more intimate	Have more personal time
The meetings were too formal	I would like it better if my friends could stay together
I was not thrilled with the one instructor	Pole of who is coming next week so not only a few people show up
I thought it was a little weird	Better atmosphere (<i>n</i> = 2)
Talking very often about personal experiences	
<i>Content (13%, n = 2)</i>	<i>Content (18%, n = 3)</i>
The concept of mindfulness was hard to get used to. They should ease us into it	Change the voices in the recordings
The workshop was often boring and sometimes puts me to sleep	Have meditations that relate to sports
	Make it more interesting