EXAMINING THE EFFECTS OF A COMBINED MINDFULNESS-IMAGERY INTERVENTION ON COLLEGIATE PERFORMANCE

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MINDFULNESS-IMAGERY INTERVENTION
ON COLLEGIATE PERFORMANCE

A Thesis
by
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Summer 2020

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DEDICATION

I would like to dedicate this thesis to my mom, Irene, who has always been my biggest supporter,
and to all my close friends who help me be the best version of myself.
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I would like to express my deep and sincere gratitude to my committee chair, Dr. Aubrey Newland, for providing me with invaluable guidance, continuous motivation, and unequivocal support throughout the writing of this thesis. Her kindness and encouragement propelled me in moments of doubt. I am grateful for our meetings which inspired me to think outside of the box. Without Dr. Newland’s patience, dedication, and supervision, this thesis would not have been possible.

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ABSTRACT

Student-athletes have been identified as an at-risk population of the general student body for increased levels of psychological stress (Beauchemin, 2014). College students report increased trends in anxiety due to factors such as time-management and academic stress (Misra & McKean, 2000; Sax, 1997). Student athletes face the same challenges in addition to the pressures that come with athletics—performance, training, gameplay, and minimum grade requirements. Within these high-achieving environments, student athletes are expected to continuously excel despite their demanding schedule but are not always given guidance or training to navigate through anxiety, focus, and confidence (DiBernardo, 2018). These stressors can cloud athletes’ minds and affect performance. Mindfulness training and imagery are effective tools for increasing focus and skill, respectively. With continuous practice, mindfulness stimulates the brain to break out of autopilot mode—where automatic thoughts, unhealthy behaviour patterns, or common habits occur—and, instead, enforce informed decisions. Increasing informed decisions could increase performance. The purpose of this study was to implement a mindfulness and imagery intervention on female collegiate athletes and assess its effect on sport performance. Thirty-four female soccer athletes in a DII program participated in a mixed methods study design, where mindfulness and imagery instruction were delivered twice a week for 12 weeks. To evaluate the effectiveness of the intervention, pre- and post-mindfulness data, and pre- and post-self-perceived soccer performance data was collected. Additionally, the team’s coach assessed each player’s overall growth over the season (soccer ability and overall player development). Results indicated that although there was no significant difference between change in mindfulness and the coach’s perceptions of athletes’ ability, the intervention was successful in increasing mindfulness and increasing self-perceived ability.
Qualitative data supported these findings; athletes felt that the program increased their awareness and increased their skill level (especially through imagery).
CHAPTER I

INTRODUCTION

Athletes, young to elite, are often put in high intensity situations (like a closely scored game, high expectations from others/self, a large audience, etc.) which can affect psychological states by influencing sport-related anxiety and self-doubt. Sport-related anxiety is one of the key influencers of sport performance (Baltzell & Summers, 2016). Unrealistic expectations, injury, competition anxiety, anger, perceived pressure and avoidance behaviours have also been identified as important factors that inhibit performance in athletes (Hill, Hall, Duda, & Appleton, 2011; Gardner & Moore, 2007; Hardy, Jones, Gould, 1996; Hanin, 2000; Elbe, Beckmann, & Szymanski, 2003; Beilock & Gray, 2007; Jordet & Hartman, 2008).

College students report increased trends in anxiety nationwide, with factors such as time-management and academic stress intensifying anxiety (Misra & McKean, 2000; Sax, 1997). Student athletes face the same challenges plus the pressures that come with athletics—performance, training, gameplay, etc. Because of this, student-athletes have been identified as an at-risk population of the general student body for increased levels of psychological stress (Beauchemin, 2014). Statistics show 15.6% of student athletes reported depression despite the psychological benefits of exercise and sport (Proctor & Boan-Lenzo, 2010). Within these high-achieving environments, student athletes are expected to continuously excel despite their demanding schedule but are not given the proper guidance or training to navigate through anxiety, focus, and confidence (DiBernardo, 2018). Sport psychology consultants can aid in education and training for effective performance.

The use of traditional sport psychology techniques, sometimes called Psychological Skills Training (PST), has been the predominant style of mental training for athletes over the last
30 years (Birrer, Rothlin, & Morgan, 2012). PST uses self-talk, imagery, goal-setting, and arousal regulation to control internal thoughts and emotions (Hardy et al., 1996). Since the reduction of negative emotions, thoughts, and anxiety are correlated to more successful performers, PST was developed to hone in on controlling these stimuli (Gardner & Moore, 2004; Hardy et al., 1996). Although psychological studies have shown the efficacy of PST, only a few have shown a clear performance-relevant impact (Birrer et al., 2012; Gardner & Moore, 2006). Many athletes find it difficult to control thoughts through traditional PST which may limit its usefulness as a sole psychological skills practice (Birrer et al., 2012). Subsequently, in some cases, attempts at controlling thoughts of undesired behaviour may cause an opposite effect: conscious suppression of negative thoughts may potentially influence an athlete to perform the undesired behaviour (Birrer et al., 2012; Rothlin, Birrer, Horvath, & Grosse Holtforth, 2016). To combat this, mindfulness-based techniques add an acceptance attitude to psychological training—a new strategy to traditional approaches; mindfulness encourages acceptance (Rothlin et al., 2016). With that, the use of mindfulness in sport has started to gain a positive reputation through empirical research.

Mindfulness has its roots in Eastern spiritual traditions and is known as the heart of Buddhist meditation and other contemplative traditions (Kabat-Zinn, 2003; Brown & Ryan, 2003). Although Buddhism brought the aspects of mindfulness to life through meditation and practice, mindfulness itself is universal; “we are all mindful to one degree or another” (Kabat-Zinn, 2003, pg. 146). The working definition of mindfulness is “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). Simply said, mindfulness is being conscious.
Consciousness can be broken down into two categories: awareness and attention (Brown & Ryan, 2003). Awareness is identified as the background of consciousness, where one can monitor inner and outer environments simultaneously. Attention is focusing that awareness on specific experiences to enhance focus (Westen, 1999). Through the practice of mindfulness meditation practices, attention and awareness can be developed and strengthened (Kabat-Zinn, 2003). Practice is essential in growing mindfulness since complete awareness of the present is something that is rarely executed; rather, people tend to react automatically (Kabat-Zinn, 1994). Thus, the practice of mindfulness enhances consciousness, which is important for the maintenance and enhancement of well-being (Wilber, 2000).

The benefits of mindfulness have been discussed by theorists in many fields of psychotherapy. Awareness and attention are imperative in increasing self-regulation and well-being (Martin, 1997). Mindfulness stimulates the brain to break out of autopilot mode—where automatic thoughts, unhealthy behaviour patterns, or common habits occur—and, instead, enforce informed decisions. Higher levels of mindfulness were found to be correlated to increased emotional intelligence and ability to fulfill psychological needs as well as decreased levels of self-consciousness, rumination, and social anxieties when compared to individuals with lower levels of mindfulness (Brown & Ryan, 2003). Each of the aforementioned benefits are valuable for athletes and may lead to enhanced performance.

The conclusion that mindfulness enhances well-being has influenced researchers to study the practice mindfulness in educational, clinical, workplace, and now sport environments (DiBernardo, 2018). The first use of mindfulness in sport was with college and Olympic rowers using Mindfulness Based Stress Reduction (MBSR) (Kabat-Zinn, Beall, & Rippe, 1985). As a result, coaches indicated that their athletes displayed improved performance from the
intervention. Although deemed successful, mindfulness interventions did not show up in sport related research again for almost two decades (DiBernardo, 2018).

Gardner and Moore (2004, 2007) pioneered Mindfulness-Acceptance-Commitment (MAC). This intervention was inspired by Acceptance Commitment Therapy (ACT) and designed specifically for sport related environments (Gardner & Moore, 2004). Case studies with MAC have identified benefits of enhanced mindfulness, attention, awareness, and athletic performance (Gardner & Moore, 2004; Lutkenhouse, 2007; Schwanhausser, 2009). Although effective, case studies do not allow for generalizability. Larger studies with MAC found higher levels of competitiveness, acceptance, action towards goals, and relationships with inner experience. Both studies used coaches’ rating of athletic performance and one study used self-rating of athletic performance (Hasker, 2010; Wolanin, 2005). Wolanin (2005) conducted a randomized study with an intervention and control group. The results presented that coaches’ ratings of performance increased significantly when compared to the control group but had no significant difference when viewed as a homogenous group—a potential consequence of treatment effect. Suggestions for future research included athletic statistics for comparison in addition to coaches’ perceptions (Wolanin, 2005).

Since then, we have seen an eruption of research and techniques in mindfulness in sport. Mindfulness Sport Performance Enhancement (MSPE) was designed by Kaufman and Glass (2006) inspired by MBSR. MSPE has been shown to result in higher levels of flow and mindfulness but no significant changes in sport performance (Kaufman, Glass, & Arnkoff, 2009; De Petrillo, Kaufman, Glass, & Arnkoff, 2009). Studies suggested a longer intervention period to affect performance results.
Alongside intervention period, another concern about mindfulness interventions is that they demand too much time and resources of athletes in regard to an overwhelmingly busy schedule and lack of knowledge by practitioners (Baltzell, Caraballo, Chipman, & Hayden, 2014). To address the issue of length of sessions seen in all interventions discussed to this point, Baltzell, et al. (2014) created Mindfulness Meditation Training in Sport (MMTS) with shorter session time using acceptance and self-compassion in practice. Results of MMTS have shown increased mindfulness, self-compassion, and flow (DiBernardo, 2018; Baltzell et al., 2014; Baltzell et al., 2015). Similar to previous studies, no statistics measuring athletic performance have been measured.

In summation, PST and mindfulness-based interventions are beneficial for athletes. Mindfulness has expanded from PST and included the need for acceptance attitudes to combat difficulties that arise from attempts at controlling internal stimuli. Mindfulness-based interventions have improved well-being, increased mindfulness, and reduced anxiety in athletes. All of these factors contribute to optimizing athletic performance, however, there are no athletic statistical measurements regarding the effect of mindfulness on performance. Subsequently, there is still a need for more empirical research in mindfulness techniques in sport. To date, there are no studies that measure the effects of a combination of any specific PST skills with a mindfulness intervention on college athletes.

Purpose of the Study

The purpose of this study is to develop an intervention consisting of imagery and a modified MMTS 2.0—implementing suggestions of lengthened intervention time, shorter sessions, and increased mindfulness practice—for college athletes to assess its effect on the sport performance.
Mindfulness stems from Buddhist psychology but is intensely concurrent with philosophical and psychological traditions from Greek philosophy to humanism in Western culture (Brown, Ryan, & Creswell, 2007). In the mindfulness framework suggested above, mindfulness is situated as the result of consciousness; consciousness can be broken into attention and awareness (Brown, Ryan, & Creswell, 2007; Brown & Ryan, 2003). The ability to be present was preliminarily associated with attention control and increased concentration abilities (Brown, 2006). In summation, Brown, et al. (2007) concluded that the practice of mindfulness through attention and awareness supports healthy and adaptive human function and growth.

Limitations

Anticipated limitations of the study are:

1. Different factors that measure performance
a. To address this limitation, two measures will be used for each position—forward: goals, assists; midfield: number of passes, pass accuracy; defender: interceptions, blocks; goalie: goals against, saves. All statistics will be converted to percentage of difference to view trends between positions.

2. Possible absences from intervention days

   a. To address this limitation, athletes will be advised to meet with the mindfulness practitioner for a replicated one-on-one mindfulness intervention.

   b. Daily Meditation Log – “Done” task app will be used by athletes to keep track of days meditation is performed. This daily meditation log will be kept by athletes as a form of accountability to ensure daily meditation outside of the intervention. Coaches will assist in reminders during away time. This will increase internal validity

3. Small sample size of statistical athletic performance outcomes

   a. A priori statistical analysis was done to determine effect size

   b. To supplement performance statistics, athletes perceived ability and coach’s ratings of athlete ability will be measured
Definition of Terms

FG1 .................................................................................................................. Focus Group 1

FG2 .................................................................................................................. Focus Group 2

MAC ................................................................................................................. Mindfulness-Acceptance-Commitment

MBSR .............................................................................................................. Mindfulness Based Stress Reduction

MI ...................................................................................................................... Mindfulness Interventions

MIS .................................................................................................................... Mindfulness Intervention for Sport

MMTS ................................................................................................................ Mindfulness Meditation Training in Sport

MSPE .................................................................................................................. Mindfulness Sport Performance Enhancement

PST ..................................................................................................................... Psychological Skills Training

TA ....................................................................................................................... Thematical Analysis
CHAPTER II
LITERATURE REVIEW

This thesis will explore the implementation of a mindfulness-based intervention on elite athletes. Competitive atmospheres can lead to high expectations in athletes which can create sport-related anxiety, burnout, and decreased performance outcomes. Sport psychologists try to find the best methods that assist athletes in achieving optimal performance. Factors that can negatively influence an athlete’s performance include incorrect arousal amounts, negative outcome expectations, or attentional focus on external stimuli (Rothlin et al., 2016). Sport psychologist practitioners use two main categories of skills to assist athletes: (1) Psychological Skills Training (PST)—a more traditional approach, or (2) Mindfulness Interventions (MI)—a newer approach (Rothlin et al., 2016).  

The main difference between PST and MI is that PST focuses on control while MI is an acceptance-based approach. PST has dominated most research in sport psychology (Gardner & Moore, 2004). However, some research has even described the use of PST as inferior to newer research using MI (Gardner & Moore, 2004). PST includes four main techniques—self-talk, imagery, goal setting, and arousal regulation—to control internal processes, such as thoughts and feelings, of external stimuli. These four processes are practiced in an attempt to increase athlete’s performance (Hardy et al., 1996). Previous assumptions connected to PST suggest that reduction of negative emotions and increase in positive cognitions will increase an “ideal performance state” (Gardner & Moore, 2004; Hardy et al., 1996). However, literature has found that attempting to suppress or control unwanted internal processes may have the opposite effect; efforts in suppressing negative thoughts may induce an increased frequency of undesired thoughts and emotions (Rothlin, et al., 2016; Purdon, 1999; Clark, Ball, & Pape, 1991).
Therefore, PST alone may negatively affect athletic performance. Rothlin et al. (2016) created and published a design for a comparative PST and MI study; it has not been executed with participants. As of yet, there are also no studies that have investigated the effects of a combination of PST and MI on sport performance.

Furthermore, MIs have been rapidly emerging in research within the last decade (DiBernardo, 2018). Compared to the control-based behaviours of PST, MI places an emphasis on acceptance-based behaviours (Gardner & Moore, 2004). Practicing acceptance creates a new relationship between the athlete and his/her difficult or negative thoughts, feelings, and emotions which improves mental health (Harris, 2006). Being able to accept and observe current situations without judgment allows for the athlete to act as an external observer. The role of an external observer permits the athlete to detach emotions from actions and make focused decisions in the moment (Jekaec, 2016). Mindfulness strengthens acceptance and acceptance empowers wiser decisions (Baltzell, 2018). Decisions are important in fast paced scenarios (i.e. game play). Thus, mindfulness can be a useful tool to enhance athletic performance.

Measures of mindfulness are plentiful. In early mindfulness in sport research, the two most commonly used scales are Mindfulness Attention Awareness Scale (MAAS) and Five Facet Mindfulness Questionnaire (FFMQ). MAAS is used (Brown & Ryan, 2003). This is a 15-item questionnaire that is well supported in displaying self-awareness. A sample item from this measure is “I forget a person’s name almost as soon as I’ve been told it for the first time.” Similarly, the FFMQ is a 39-item self-report questionnaire that assesses mindfulness through five factors: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience (Baer, Smith, Hopkins, Krietzemeyer, & Toney, 2006). Although both scales adequately measure mindfulness, they lack sport-specific mindfulness
questions. Additionally, the FFMQ is lengthy at 39 items, and is not complimentary to the time sensitivity of athletes. The Mindfulness Inventory for Sport (MIS) is considered by some to be a superior choice when measuring mindfulness in athletes (Thienot et al., 2014). This 15-item questionnaire is sport specific to mindfulness and will be discussed in detail in the methodology section.

Mindfulness has been adapted into different forms to investigate its empirical effectiveness in sport. This literature review will briefly describe the relationship between flow and mindfulness as well as the most prevalent adaptations of mindfulness in sport: (1) Mindfulness Based Stress Reduction (MBSR); (2) Mindfulness-Acceptance-Commitment (MAC), adapted from Acceptance Commitment Therapy (ACT); (3) Mindfulness Sport Performance Enhancement (MSPE); and (4) Mindfulness Meditation Training in Sport (MMTS).

Flow and Mindfulness

Flow is a state where an individual is aware of the challenges that are occurring and finds a balance between noticing and being able to fulfil them (Csikszentmihalyi, 1990). An individual becomes entirely involved in the activity such that it is the only focus in that specific moment; an athlete is absorbed in an activity while still finding it enjoyable (Csikszentmihalyi, 1999). The idea of ‘flow’ is a “highly coveted yet elusive” state of mind where an individual is completely absorbed by their task, so much so that nothing is distracting him/her (Aherne, Moran, & Lonsdale, 2011). Flow state is associated with achieving peak performance; mindfulness has been shown to increase flow states in athletes which, therefore, should enhance performance (Jackson, 2016).

Many mindfulness intervention studies have investigated the relationship between mindfulness and flow. Two large sample size investigations (n=182 and n=60) implemented a
mindfulness intervention on athletes and investigated flow states with the Dispositional Flow Scale-2 (DFS-2). Both studies found that increased levels of dispositional flow were related to athletes scoring higher levels of mindfulness (Hamilton, Schutte, & Brown, 2016; Kee & Wang, 2008). Similarly, Kaufman et al. (2009) used the DFS-2 to measure athletes flow after a mindfulness intervention. Both mindfulness and flow measures increased while sport-specific anxiety decreased (Kaufman et al., 2009). Flow state has been shown to increase after mindfulness interventions (Aherne et al., 2011; Kaufman et al., 2009; & Schwanhausser, 2009).

Imagery

Imagery is the use of an existing memory of a movement (e.g. soccer athlete is accurately passing a ball) or self-generated images of a desired movement to vividly experience a specific situation (Röthlin et al., 2016). Imagery, a form of mental rehearsal, has been successful in sport performance. Mizuguchi, Nakata, Uchida, and Kanosue (2012) found that motor imagery, specifically, was useful for increasing motor skills. Additionally, brain regions that are active during motor execution were also active during motor imagery. If used correctly, imagery may increase functional behaviour in athletes by influencing cognitive states and movements (Röthlin et al., 2016). Together, imagery and mindfulness could positively influence athletic performance.

Although PST and MI have not been implemented together, PST has been measured alongside flow—and the practice of mindfulness may lead to flow states (Jackson, 2016). Three of the four PST techniques, goal setting, arousal regulation, and self-talk, have had mixed results in increasing flow in athletes (Johnson, Hrycaiko, Johnson, & Halas, 2004; Kaufman, Glass, & Arnkoff, 2009; Kornspan, Overby, & Lerner, 2004). The fourth technique, imagery—the
process in which memories are used to reinvent/reexperience a movement (Rothlin et al., 2016)—would be beneficial to use alongside an MI because it helps induce greater relaxation.

When practicing mindfulness meditation, beginners often drift off into thought before noticing and gently bring awareness back to the present. Creating an imagery first, mindfulness intervention second environment using an imagery exercise with athletes could strengthen the sport-specific mindset of athletes before a mindfulness practice. The constant repetition of catching a drifting thought and coming back to awareness strengthens mindfulness and instils the habit. In DiBernardo’s (2018) dissertation with MMTS 2.0, one module of the intervention incorporates an imagery exercise, similar to Kabat-Zinn and colleagues (1985) incorporating imagery in their mindfulness intervention with Olympic Rowers. Using traditional PST cues—such as imagery—as alternative focus points within MI could deliver valuable results (Baltzell & Akhtar, 2014).

**Mindfulness Based Stress Reduction (MBSR)**

In a conference presentation, Kabat-Zinn, Beall, and Rippe (1985) displayed the first empirical test of mindfulness-based intervention for athletes on Olympic rowers. It is important to note that this study was never published, and its results should be viewed accordingly. Rowers were instructed to focus on concentrating, relaxing, letting go of thoughts, and noting key associations to stay centered, which resulted in flow and synchronization between athletes and the boat. The participants concluded that their mindfulness training helped them prepare for and achieve optimal performance during their races (Kabat-Zinn et al., 1985). Kabat-Zinn used this experience to create the Mindfulness Based Stress Reduction (MBSR) program. This program runs for 8 weeks, with two-hour long sessions that cover various types of meditation emphasizing their uses in everyday life. This technique has been used around the world for a
wide, diverse audience (Kaufman et al., 2016), though its initial purpose was for an outpatient stress reduction clinic (Kabat-Zinn, 2003).

More commonly, MBSR has been implemented as a one-on-one intervention, since it was originally created for clinical settings. In sport, a Brazilian study, Demarzo et al. (2015) conducted a case study with a single Olympic runner while implementing an adapted MBSR. This athlete suffered from severe sleep disturbance and had a previous injury that affected current performance. After the 23-week intervention, a qualitative interview concluded that the athlete displayed improvements in physiological and psychological parameters within the sport and daily life. It is recommended that a more flexible program, adapted for each athlete with training routines and professional demands in mind, should be used with elite athletes in the future (Demarzo et al., 2015).

Similarly, Bernier, Thienot, Pelosse, Emilie, and Fournier (2014) also conducted a case study. They followed two elite figure skaters in two separate case studies while implementing an MBSR intervention program concurrently. Both participants displayed an increase in technical scores throughout their intervention which exceeded those in the control (Bernier, 2014). Through questionnaires, both studies concluded that mindfulness increased. This intervention was influential to the start of many other mindfulness-based sport performance enhancing techniques. MBSR is effective with athletes to improve mindfulness during performance but lacks performance related evidence when used in group settings. Although effective in case-studies, MBSR is not group or sport-specific, therefore may not be the most effective method with college sport teams.

**Mindfulness-Acceptance-Commitment (MAC)**
Mindfulness-Acceptance-Commitment (MAC) was also one of the first mindfulness training programs to emerge specifically for sport. While traditional Psychological Skills Training (PST)—imagery, goal setting, energy management, and self-talk—was being continuously used in research, Gardner and Moore (2001) conceptualized MAC as an alternative approach. Research shows that because PST focused on controlling, eliminating, and replacing negative thoughts, it could potentially produce a negative or opposite effect (Gardner & Moore, 2004). To combat the possible negative effects of control, MAC was adapted from a clinical model of Acceptance and Commitment Therapy (Hayes et al., 1999) and Mindfulness-Based Cognitive Therapy (Segal et al., 1999) to influence an acceptance mindset rather than control.

Acceptance of internal experiences while simultaneously responding to external stimuli was a new and alternative way to achieve a set goal. An athlete practicing MAC would alter his/her relationship with experiences by increasing awareness (Gardner, 2004). Gardner and Moore’s (2004) MAC program is offered in a group administered format in 8-sessions for 1.5 hour each or individual format in 12 sessions for 1 hour each. Sessions continue through five phases: psychoeducation, mindfulness, value identification and commitment, acceptance, and integration and practice (the full program is found in their manual, Gardner & Moore, 2007). In 2004, Gardner and Moore conducted two case studies with their newly perfected intervention. Conclusions of these studies suggested that a MAC approach can be successfully applied to athletes wishing to solely enhance performance (Gardner, 2004).

Commonly, research using MAC based interventions were conducted as case studies. Lutkenhouse (2007) and Schwanhausser (2009) exemplify two MAC case studies. Lutkenhouse (2007) conducted a MAC intervention with a 19-year-old female lacrosse player. The eight individual sessions were built specifically for her needs incorporating clinical and sport related
concerns with results displaying enhanced behavioural functioning and athletic performance. Lutkenhouse (2007) explains that the careful case formulation targeted athlete specific needs, which lead to success.

Schwanhausser (2009) conducted a modified MAC protocol with an adolescent springboard diver. The modification altered the length of the intervention as well as the original protocol jargon; MAC was reworded to optimize understanding for the participant’s education level. The protocol was conducted within 7 sessions at 45-minutes each (Schwanhausser, 2009). Results showed an increase in mindfulness, attention, awareness and performance. Although the one-on-one aspect of a case study allows a participant to be more involved in an intervention, case studies also allow an intervention to be modified and molded specifically for that athlete, therefore case studies cannot determine the efficacy of the intervention (Schwanhausser, 2009).

MAC has also been used with larger sample sizes. Wolanin (2005) and Hasker (2010) compared MAC to a separate group—control and PST respectively. Wolanin (2005) compared MAC in Division I athletes with a nonintervention control group. Coaches observed higher competitive performance in the MAC experimental group. Hasker (2010) compared MAC to PST in 19 Division II athletes from multiple sports. MAC was shown to have greater impact on acceptance, action towards goals, and relationship with inner experiences. Once again, athletic performance was not measured (Hasker, 2010). Although effective in mindfulness and related aspects of mindfulness, there was no direct measurement of performance enhancement. A limitation with both of these studies was that no objective performance measures were examined.

Gardner and Moore (2012) state that, “at present, mindfulness and acceptance-based interventions should be considered viable, empirically informed interventions for the enhancement of athletic performance” (Gardner & Moore, 2012, p. 316). In the past, MAC has
been most frequently used in case studies (Gardner & Moore, 2004; Lutkenhouse, 2007; Schwanhausser, 2009). Although case studies have shown direct improvements in sport performance, case studies cannot be generalized. When working with athletic teams—especially college teams—resources for constant one-on-one sport practitioner practice are not always viable.

**Mindfulness Sport Performance Enhancement (MSPE)**

Kaufman and Glass (2006) developed the initial manual for MPSE, which was inspired and built off of a combination of MBSR (Kabat-Zinn, 1990) and a Mindfulness Based Cognitive Therapy (MBCT) intervention from Segal, Williams, and Teasdale (2002). Originally MSPE was implemented as a four-week program with 2.5-3-hour long sessions. Currently, the expanded version of MSPE takes place over six weeks in 90-minute sessions once a week. Participants are encouraged to practice mindfulness at home with provided MSPE digital recordings (Pineau, Glass, & Kaufman, 2014). The main goal of MSPE is to teach mindfulness to athletes and gradually help them implement it directly into their sport through sport specific rationale and sport-specific meditation. MSPE moves through 6 protocols including: a candy exercise—based off of the raisin exercise, a sitting meditation, a body scan, a mindful yoga practice, a walking meditation, and a sport-specific meditation. The order of the protocols are strategically placed to enhance understanding and practice progressively (Pineau et al., 2014).

The four-week version of MSPE was used in two studies (De Petrillo, Kaufman, Glass, & Arnkoff, 2009; Kaufman, Glass, & Arnkoff, 2009). MSPE implemented with archers and golfers resulted in significantly increased mindfulness, optimism, and flow, but not performance (Kaufman et al., 2009). De Petrillo et al. (2009) implemented MSPE on long distance runners and found a decrease in sport related anxiety and self-criticism and an increase in mindfulness.
but not performance. Kaufman et al. (2009) could not compare performance between archers because of large variance in data (number of arrows shot, type of archery, target distance, and target size) and also found no significant performance enhancement change in golfers over the 4-week period. However, participants’ feedback showed trends of self-perceived enhanced performance and expected benefits in the future. Kaufman et al. (2009) and De Petrillo et al. (2009) both suggested a longer program than 4-weeks, as it may take longer than a month for changes to occur.

A 1-year follow up of Kaufman et al. (2009) and De Petrillo et al. (2009) was implemented to observe the long-term effects of MSPE (Thompson, Kaufman, De Petrillo, Glass, & Arnkoff, 2011). 25 participants followed up with questionnaires; 84% reported continued practice of mindfulness 12 months later. Significant performance improvement was seen in athletes after continuous practice of mindfulness. Although one of the main mindfulness models used in sport, MPSE demands a lot of time and resources (Baltzell, 2014). Additionally, Thompson et al. (2011) suggest comparing average scores in future research for clearer indication of performance enhancement. MSPE has positively influenced many different aspects of athletes, however, has not measured athletic performance directly.

**Mindfulness Meditation Training in Sport (MMTS)**

Mindfulness Meditation Training in Sport (MMTS) was created by Joshua Summers and Dr. Amy Baltzell (2014, 2015). MMTS is a mindfulness mediation style program that incorporates an educational backbone to influence athletes’ attention and concentration during performance. The original version of MMTS was organized into 30-minute sessions, twice a week for 6 weeks. Participants were also encouraged to practice mindfulness on their own daily, for at least 10-minutes. The MMTS design incorporated suggestions from previous research as
well as recommendations from athletes and coaches to have shorter sessions than other mindfulness interventions (DiBernardo, 2018).

In its original version, MMTS was effective in increasing mindfulness and was related to lower reported negative emotions and experiences by the intervention group compared to the control group (Baltzell et al., 2014). This study, like many in this field, was not designed to consider performance outcomes. However, MMTS has primarily been shown to provide benefits for athletes including factors related to enhanced performance. Baltzell and Akhtar (2014) explained that performance enhancement is inferred through higher levels of quantitative mindfulness, acceptance, and positivity, but there is not enough empirical quantitative data collected on actual performance.

Baltzell (2015) included coaches into her first trial of MMTS to achieve feedback on how effective coaches perceived MMTS to be for their athletes and to offer suggestions on improvement of the program. Coaches suggested less time in their sessions be spent on understanding meditation, and more time be spent on actively practicing meditation (Baltzell, 2015). Similarly, athletes in another trial suggested being lectured at continuously while participants stay inactive may cause boredom (Goodman, 2014).

MMTS 2.0, the second version, was created and modified from the original to incorporate lessons about compassion, as this would combat performance anxiety and self-criticism (Baltzell, 2018). Upon feedback, MMTS 2.0 centers around transferability of mindfulness into sport, sport-specificity, customization to personal training schedules, and lower dose of in-session and out-of-session requirements (DiBernardo, 2018). The program is 6-hours long with the option of practicing once a week at 1-hour, or twice at ½-hour sessions—continuing to allow for flexibility with the demanding schedules of athletes. Each 30-minute segment is split into three 10-minute
sections: instruction, practice, and discussion (Baltzell, 2018). The three goals of MMTS 2.0 are (1) increased attention and ability to focus, (2) increase in ability to cope with negative emotions; poise, and (3) ability to be present and adjust during performance. The main differences between the two versions are the delivery, increase of Langerian Mindfulness—a mindfulness-based practice originating from Western social psychology, boosted connection to sport, audio-guided meditations for recommended daily home practice, and self-compassion concepts (DiBernardo, 2018).

MMTS 2.0 was used in a dissertation with 10 Division III Basketball players. Unfortunately, no significant differences in mindfulness and self-compassion showed in pre- and post-testing. Factors predicted to influence lack of significance were small sample size and short—6-week—duration of the intervention. No performance data was collected. Although quantitative data showed no significance, qualitative data displayed themes in enhanced awareness, focus, stress management, and team climate (DiBernardo, 2018). Similarly, a study conducted with elite tennis players also did not find any significance in mindfulness scores after an MMTS 2.0 intervention (Diehl & Baltzell, 2018). With a shorter length of intervention (6-weeks), participants may not have had enough time to practice the core concepts of the training and incorporate them correctly in their performance. Coaches and players suggested a longer program to increase practice time, such as the length of the entire season (DiBernardo, 2018). Similar to Baltzell’s (2015) coaches’ suggestions, several participants desired more in-session time be dedicated to actively practice mindfulness meditation (DiBernardo, 2018).
CHAPTER III

METHODOLOGY

Mindfulness practice increases mindfulness in athletes. Studies have shown increase in things such as flow, quality of life, attention, and self-compassion as well as reduced sport-related stress and anxiety. However, few studies truly measure performance. Some studies have measured athlete perceived performance, as well as coaches perceived performance of athletes. Subsequently, mindfulness interventions require overwhelming amounts of committed time; individual sessions have lasted up to 3 hours. The purpose of this study is to determine if an integration of imagery—a highly used skill in the sport psychology field—and MMTS 2.0—a time sensitive mindfulness intervention—with Division II female athletes has an effect on sport performance.

Because of the nature of imagery, it is hypothesized that the integration of the two psychological skills will enhance performance in athletes. These two factors will influence athletes to focus during high-stress situations which will result in better team and individual statistics. According to previous research, coaches and athletes will, concurrently, perceive performance as increasing.

Research Questions:

1. What is the effect of a combination of a MMTS 2.0 and Imagery program on Division II athletes’ levels of mindfulness?

2. What is the impact of the mindfulness and imagery program on NCAA Division II women’s soccer performance using:
   a. Statistical performance data
b. Self-perceived data

c. Coach’s perceived data

3. What benefits and challenges do the student athletes report after completing the program?

Independent variables:

1. Division II male and female athletes

2. Mindfulness intervention

3. Imagery exercises

Dependent variables:

1. Athletic performance
   a. Athlete statistics
   b. Athlete’s perceived performance
   c. Coaches rating of athlete performance and player development

2. Change in mindfulness

This will be a mixed-methods study. Quantitatively, mindfulness will be measures pre and post intervention for all athletes. Statistical athletic performance will be measured through video recordings and performance data from the athletic website. Statistical athletic performance will be compared from the first three games of the intervention season to the last three games of the intervention season. Athlete’s perceived performance will be measured pre and post intervention to detect perceived performance enhancement. Last, the coach will score each athlete on a percentage scale of their improvement in athletic ability and player development.

Qualitative data will be collected after the last intervention session. Eight athletes will be separated into two focus groups dependent on the frequency of self-practice (high vs. low). Focus groups will participate in semi-structured interviews.
Participants:

Participants will be ~26 female college athletes. Participants will be recruited through email and a sign-up list through the head coach. Data for statistical athletic performance will only be compared from sophomore or higher—as freshmen will not have athletic statistics from the year prior to compare to. Subjects will be selected as a convenience sample due to time restrictions of the thesis and mindfulness intervention. A power analysis was run to detect sufficient number of subjects. When alpha is set to 0.05 and effect size is 0.3, 26 subjects will be sufficient to answer the research question.

Quantitative Instruments

1. **Mindfulness Inventory for Sport (MIS)** was created by Thienot et al. in 2014. MIS a 15-item questionnaire measured with a 6-point Likert scale from 1 (*not at all*) to 6 (*very much*). This inventory assesses the use of mindfulness specifically in sport (e.g. “When I become aware that I am really excited because I am winning, I stay focused on what I do”). The 15 items are separated into three subscales: awareness, non-judgment, and refocusing. This questionnaire has shown consistency throughout various sports.

4. **Statistical Athletic Performance** will be scored from the first three games of the season prior to the intervention to be compared to the last three games of the season after the intervention. Statistics will be captured for individual athletes by two graduate students from the athletic website. From the available data, athletes will be scored from four categories: shots, shots on goal (SOG), goals, and assists. All statistics will be converted to percentage over the total six games utilized to view trends between variables.
2. **The Soccer Competence Scale (SCS)** was created by Moore and Weiller-Abels (2018) to measure players’ perception of their ability in general as well as specifically in soccer in relation to teammates. SCS is an 8-item questionnaire measured on a 5-point Likert scale from 1 (top performing 1-20%) to 5 (bottom 81-100%) with questions such as, “Rate how you think you compare to other soccer players your age at passing/shooting, ex. With both feet: accuracy, speed, distance”. Not all categories need to be used (example: defensive items for offensive players).

3. **Coach’s perception of athletic ability** will be scored similar to Charbonneau, Kelloway, and Barling (2001) where performance of athletes is measured at the end of the seasons with two questions. Coaches will (1) provide an estimated percentage of improvement of each athlete throughout season and intervention, and (2) categorize athletes on a 5-point Likert scale from (1) poor to 5 (excellent) in relation to the rest of the athletes on the team.

**Qualitative Questions**

1. Tell me about your experience during the mindfulness/imagery sessions. What is your general impression of the exercises we did with mindfulness and imagery?

2. How do you think practicing mindfulness influenced your performance?

3. I’m interested in learning about the process of learning mindfulness as a group of people. What can you tell me about the group process you experienced? How difficult/easy was it to practice mindfulness altogether? Why?

4. How often did you practice on your own? What made this difficult/easy for you to do?
   a. If your practice amount were different (more/less), how would this have affected your mindset about the program?
b. How did using the Done app affect your personal practice? I’d love some feedback on how the tracking app influenced your practice.

c. What would make regular individual practice more realistic?

5. If you were going to rewind this season and the experiences with mindfulness and imagery sessions, what would you do different/same? Why?

**Procedure:**

Statistics will be calculated from the university’s athletic website from the first three games before the intervention is initiated by the researcher. Individual returning athletes will be coded according to position statistics (mentioned above). Process will be repeated post intervention at the end of the season.

Pre-test data will be collected in a quiet classroom during the initial meeting (orientation) and introduction to the study. The study will take place over a 12-week semester, and a post-intervention data collection and debrief will occur at the end in a quiet classroom. The intervention will take place as follows:

**Week 1 (Orientation):**

Participants will have signed a consent form prior to attending orientation. Here, participants will learn the benefits of mindfulness, the agenda for the semester, and the purpose of the intervention. Participants will also be instructed to practice mindfulness daily on their own time. Participants will download the Done Task App to use as a Meditation Log to ensure cohesion and accountability for mindfulness practice.

**Week 2-12:**

2 sessions a week at 30-minutes each. Group sessions will be held in a quiet room and will cover aspects of a modified MMTS 2.0 and imagery exercises by a skilled mindfulness practitioner.
Sections of MMTS 2.0 will include exercises that focus on attention, awareness, self-compassion, and focus (See Dr. Amy Baltzell’s MMTS program outline for more details).

**Week 12, final session:**

In the final session participants will be offered the choice to participate in the final questionnaires. Eight students will be recruited for semi-structured interviews in the following week.

**Semi-Structured Interviews**

Two interviews will take place independently in a quiet office the week following the last session. All questions will be posed in the same manner to ensure credibility between focus groups.

**Data Analysis**

Quantitative data will be entered into SPSS. The quantitative instruments, prior to running analysis, will review for normality by investigation of descriptive statistics. All quantitative data will then be analyzed through a 2x4 Factorial ANOVA to determine if there is significance between pre- and post-mindfulness, statistical performance, and perceived performance data.

Qualitative data will be coded by the researcher and an impartial research assistant individually. After separately coding, data will be brought together and compared to determine common themes. Themes will be ranked by consistency. An audit trail will be implemented to ensure trustworthiness.
CHAPTER IV
RESULTS

Quantitative Analysis

Participant Demographics

The Chico State Women’s Division II soccer athletes \((n=34)\) agreed to participate in the mindfulness and imagery intervention. Due to team cuts, 32 participants were included in the analyses. Athletes’ ages ranged from 19-21 years with a mean age of 19.47 ± 0.67 (11 freshmen, 11 sophomores, 6 juniors, and 4 seniors). Of the entire sample, 72% \((n=32)\) identify as white and 15% \((n=32)\) identify as Hispanic. All participants identified as female.

Descriptive Statistics for Mindfulness

All data was checked for normality, homogeneity of variance, and independence and were found to be normal. Data was cleaned by checking for coding errors and missing data analysis with Missing at Random and Missing Completely at Random set to 5% missing. The mean pre and post mindfulness scores from the MIS were 3.85±0.63 and 4.23±0.59 respectively. Mindfulness scores were found to be normal using the Shapiro-Wilk test. To assess reliability of pre and post mindfulness scores, Cronbach’s Alpha was used. Both were determined reliable where \(\alpha = .71, \alpha = .77,\)

The MIS consisted of three subscales: Awareness, Non-judgment, and Refocusing. Each subscale had 5 items and were determined reliable. Pre scores were \(\alpha = .72, \alpha = .82,\) and \(\alpha = .81\) and post scores were \(\alpha = .67, \alpha = .89,\) and \(\alpha = .85\) respectively. Internal consistency of the MIS was acceptable. All mindfulness scores met acceptable standards to move forward with statistical analysis.

Difference in Mindfulness

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Hypothesis 1 examined the potential increase in mindfulness scores from pre- to post-intervention. Mindfulness scores were tested for significance using a paired sample t-test to determine if a difference in mindfulness occurred after the implementation of the intervention (Figure 1). A significant difference in overall mindfulness was observed from pre- to post-intervention, \( p = 0.02 \) (two-tailed). Additionally, paired sample t-tests were conducted for the three subscales. Awareness and refocusing both indicated a significant difference, \( p = .00 \). However, the non-judgmental subscale indicated no significant difference, \( p = .06 \). Hypothesis 1 is largely supported by these findings. Therefore, the mindfulness and imagery intervention successfully increased mindfulness in athletes.

![Figure 1. Total mindfulness and the MIS three subscales comparative pre to post.](image)

**Athletic Performance**

Hypothesis 2 anticipated athletic performance would increase from pre- to post-intervention. Due to limitations in the video monitoring the games, the data collection used is...
different from the original analysis plan. Athletic ability was computed using statistics from the university athletics website. Each athlete was evaluated on shots, shots on goal (SOG), goals, and assists from the first and last 3 games of the current season (Figure 2). All categories, except goals, displayed an average-per-game increase from pre to post. Paired sample t-tests revealed that there was a significant difference in shots from pre- to post-intervention, \( p = .04 \) (two tailed). There were no significant differences in SOG, goals, or assists.

![Figure 2. Statistical athletic data from the first and last three games of the 2019 season.](image)

**Mindfulness and Athletic Performance**

Hypothesis 3 anticipated a relationship between mindfulness and statistically significant athletic performance scores. A Pearson’s correlation was used to determine a relationship between change in mindfulness and the difference in shots from pre- to post-intervention. Although both mindfulness and shots statistically increased, no significant relationship between
the two was present. Hypothesis 3 was not supported by these findings, as mindfulness increase
was found to have no relationship to enhanced athletic performance.

Difference in Self-Perceived Ability

Hypothesis 4 predicted an increase in self-perceived ability from pre- to post-
intervention. Self-perceived ability was measured for each athlete using the SCS (Moore &
Weiller-Abels, 2018). Lower numbers indicate a perception of high ability (i.e. top 10% = 1 vs.
bottom 90% = 5). The means of pre- and post-self-perceived ability were $2.47 \pm 0.74$ and
$2.03 \pm 0.61$ respectively. A paired sample t-test revealed a significant difference in self-perceived
ability from pre- to post-intervention, $p = .005$ (two tailed). Furthermore, the SCS consisted of
eight separate aspects of ability (Table 1). Paired sample t-test for each aspect of ability
revealed that all but one aspect—work-level—displayed a significant difference from pre- to
post-intervention. This data supports hypothesis 4 which states that athletes who participate in a
mindfulness intervention are likely to experience an increase in their self-perceived ability.

Table 1

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall, soccer player</td>
<td>2.61 (1.19)</td>
<td>2.25 (1.08)</td>
<td>0.048*</td>
</tr>
<tr>
<td>Defensive skills</td>
<td>2.79 (1.13)</td>
<td>2.50 (1.04)</td>
<td>0.043*</td>
</tr>
<tr>
<td>Ball handling skills</td>
<td>2.67 (1.14)</td>
<td>2.15 (0.82)</td>
<td>0.013*</td>
</tr>
<tr>
<td>Passing/Shooting</td>
<td>2.79 (0.83)</td>
<td>2.18 (0.91)</td>
<td>0.002*</td>
</tr>
<tr>
<td>Read player movement on the field</td>
<td>2.29 (0.86)</td>
<td>1.96 (0.84)</td>
<td>0.036*</td>
</tr>
<tr>
<td>Leadership on the field</td>
<td>2.96 (1.35)</td>
<td>2.32 (1.09)</td>
<td>0.042*</td>
</tr>
<tr>
<td>Sportspersonship</td>
<td>2.11 (1.13)</td>
<td>1.46 (0.64)</td>
<td>0.010*</td>
</tr>
<tr>
<td>Work-level</td>
<td>1.86 (1.04)</td>
<td>1.46 (0.64)</td>
<td>0.102</td>
</tr>
</tbody>
</table>
Mindfulness and Self-perceived Ability

Hypothesis 5 predicted that there would be a relationship between mindfulness and self-perceived ability. Means for mindfulness and self-perceived ability pre and post are shown in figure 3. A Pearson correlation was utilized to test the relationship between the difference in mindfulness change and self-perceived ability change. There was no significant relationship between these two factors, $p = 0.62$ (two tailed).

To further determine a relationship between mindfulness and self-perceived ability, Pearson correlations were used to investigate any relationship between mindfulness and self-perceived ability on pre and post tests. Pre-test scores indicated that mindfulness and self-perceived ability were negatively correlated, $p = .004, r = -.52$. Post-test scores indicated that there was still a negative correlation, but it was not significant, $p = .06, r = -.38$. Because there was a significant relationship between pre-tests (lower mindfulness scores to weaker perception of ability), hypothesis 5 is supported.

![Figure 3. Average mindfulness and self-perceived ability scores from pre- to post-intervention](image-url)
Coach’s Perception

Hypothesis 6 predicted a relationship between the coach’s perception of athletic ability and mindfulness scores. The coach scored each player \( n = 32 \) individually post-intervention in two categories: (1) \% increase in soccer ability over the course of the season and (2) \% increase in player development (i.e. effort, consistency, positivity, teammate, chemistry) over the course of the season. The average increase was 46.85\% and 49.81\% respectively. Half of the athletes were scored at a 50\% or higher increase in both categories by the coach. A Pearson’s correlation was used to determine a relationship between change in mindfulness and an increase in the coach’s perception of each athlete’s ability. No relationship between the variables was determined; (1) \( p = 0.5, r = -.16 \) and (2) \( p = 0.5, r = -.15 \). Therefore, hypothesis 6 is not supported.

Qualitative Analysis

Qualitative Methodology

A phenomenological approach was used to understand the experience of the participants after the mindfulness program. Observing and studying mindfulness in western culture is still in its infancy and requires sensitivity to fully understand its effect (Kabat-Zinn, 2003; Shapiro et al., 2006). The interview questions were developed in the essence of the mind/body phenomena.

Participants

Additional to the biweekly program meetings, athletes were encouraged to practice mindfulness on their own 3-4 times a week for about 10 minutes. Self-practice was encouraged but not mandatory. To enhance accountability, the researcher recommended that all athletes download the Done tracking app. Athletes would tally mindfulness self-practices throughout the program and send the researcher a screen shot monthly to report totals. On average, athletes
practiced 1-2 days per week outside of the program’s bi-weekly sessions. From this information, eight athletes were asked to participate in semi-structured interviews. The eight athletes were split into two focus groups consisting of four athletes: Focus Group 1 (FG1) had no self-practice sessions and Focus Group 2 (FG2) had a high percentage of self-practice.

Trustworthiness

To enhance trustworthiness and quality of work, interview and researcher triangulation was used as well as an audit trail. Dependability and credibility were established using a semi-structured interview process and then treating both focus groups as individual sets of data. Next, a research assistant who was not involved in the research project was selected. Researcher triangulation through peer debriefing was implemented throughout the six stages of the thematical analysis. Finally, an audit trail was created by the researcher and research assistant to increase confirmability.

Procedure

Two separate interviews took place privately in a closed office. The questions asked were developed to gain a deeper understanding of the impact of the program and collect data on the benefits and challenges the athletes experienced. All questions were posed in the same manner for both interview sessions. To prompt the athletes, the first question asked to describe their experience and general impression of the program as a whole. Second, they were asked to describe how practicing mindfulness influenced their performance. Third, they were asked to explain the experience of learning mindfulness as a large group, and how difficult or easy this experience was. Fourth, athletes were asked about their amount of self-practice, what made it difficult/easy to self-practice, and what would have been different about their mindset of the program if this amount was different (higher/lower). Last, athletes were asked if they were to
rewind the season and the experiences with mindfulness/imagery, what would they do differently or the same and why. The interviews lasted approximately one hour each and were video recorded.

A Thematic Analysis (TA) was used to identify themes within the semi-structured interviews of two focus groups by the researcher and a graduate student assistant. The TA consisted of six phases: (1) familiarization of data, (2) generating initial codes, (3) searching for themes, (4) reviewing potential themes, (5) defining and naming themes, and (6) producing the report (Braun & Clarke, 2012). The TA phases are expanded on in Figure 4. The researcher and assistant worked through each phase separately first, then together, to increase credibility and trustworthiness of results.

| Phase 1: Familiarization of Data | - Watched video interviews  
| - Transcribed interviews using Otranscribe  
| - Read and reread transcripts  
| - Watched and rewatched videos with transcripts  
| - Took notes on the data |
| Phase 2: Generating Initial Codes | - Read the data sets and labeled phrases and sentences with descriptive code names |
| Phase 3: Searching for Themes | - Compiled a resulting list of codes and identified possible themes  
| - Explored relationships between codes  
| - Produced initial themes |
| Phase 4: Reviewing Potential Themes | - Themes are reviewed in relation to coded data and entire data set  
| - Collapsing themes together |
Phase 5: Defining and Naming Themes  
- After verifying themes, named and defined each theme

Phase 6: Producing the Report  
- All finding written and presented in the final report

Figure 4: Thematic Analysis Process (Braun & Clarke, 2012).

The first phase of TA is the familiarization of the data. After recording and watching the semi-structured interviews separately, the researcher transcribed the answers from both groups through Otranscribe (an open source software used to assist in transcription). Next, the researcher and assistant worked independently to read and reread the transcripts while watching the videos. After completing 3-5 repetitions of reading and watching each interview, the researcher and assistant took notes and high-lighted recurring topics and important information separately. They then came together to discuss notable topics and came to a conclusive list based on the impact of the statements (Figure 5). Each focus group was treated as separate sets of data to establish credibility through triangulation.

<table>
<thead>
<tr>
<th>Focus Group 1 (no self-practice)</th>
<th>Focus Group 2 (high self-practice)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Calming</td>
<td>- Awareness</td>
</tr>
<tr>
<td>- Relaxing</td>
<td>- Increased focus</td>
</tr>
<tr>
<td>- Increasing skills</td>
<td>- Self-compassion</td>
</tr>
<tr>
<td>- Awareness</td>
<td>- Easy/natural</td>
</tr>
<tr>
<td>- “Next play”</td>
<td>- Distractions</td>
</tr>
<tr>
<td>- Distracted</td>
<td>- Progression</td>
</tr>
<tr>
<td>- Working together</td>
<td>- Fun</td>
</tr>
<tr>
<td>- Wanting small groups</td>
<td>- Small groups</td>
</tr>
<tr>
<td>- More imagery</td>
<td>- Better skills</td>
</tr>
<tr>
<td>- Start sooner</td>
<td>- More mindfulness “games”</td>
</tr>
<tr>
<td>- Longer sessions</td>
<td>- Pre-made self-practice schedules</td>
</tr>
</tbody>
</table>
The second phase of TA is the generation of initial codes. The researcher and research assistant used the notes above to support coding throughout the interviews. Both individuals examined the transcripts line by line and coded separately. After establishing codes, they then discussed findings together as a form of triangulation to ensure trustworthiness. After discussion, both researchers agreed on a total of 54 codes between the two groups. Some examples are shown in figure 6.

<table>
<thead>
<tr>
<th>Code</th>
<th>Raw Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having a deeper understanding of mindfulness</td>
<td>“I feel like we also got to know what the meaning of mindfulness is. Like, before I felt like we knew what mindfulness was, but like, we didn’t understand it to the level that we understand it now to like, if we do it in spring, or if we talk about mindfulness in the spring, we all know what we’re talking about.”</td>
</tr>
<tr>
<td>Being able to catch myself being distracted</td>
<td>“I think it helped me notice a lot when I wasn’t being focused or being present. We were just talking about this a little bit last week about how that was something we noticed. But um, I would notice I’m not paying attention.”</td>
</tr>
</tbody>
</table>
Needing someone to tell me to self-practice is mandatory. “So, if someone says like you have to do this, like I know for a fact we’re going to do it. Like if it was more of like a mandatory thing, like you need to do mindfulness on your own, or like when you sent out the videos, like you need to watch this video, like I’m going to ask you about it type of thing, like if it was more mandatory for us to do things then I think it would’ve—like obviously people would have done it because I know a lot of people might not have watched the video, a lot of people didn't even download the Done app, but like, if it was a mandatory thing it's like well that's making me go sit down and do it. And getting into like a start of doing that more often.”

Figure 6. Coding Examples and Raw Data

The third phase of TA is searching for themes through the codes developed in phase two. After compiling a full list of codes, the researcher and the assistant worked independently to sort each code into categories that would become themes. During this process, relationships between the two sets of data emerged. After all codes were organized by their relationship and reduced into similar categories as much as possible, initial themes were decided. The researcher and assistant compared lists. In the final step, differences between the two sets were discussed and resulted in a final set of themes agreed upon by both individuals. From this stage, eight main themes emerged. These themes were supported across both data sets.

The fourth phase of the TA is the reviewing of potential themes. Here the researcher and the assistant reviewed eight themes in relation to the coded data and collapsed any overlapping codes and themes together to ensure an accurate representation of the data set. Next, the
researcher and assistant used phase five to verify, name, and define each of the final five themes (Figure 7).

**Emerging Themes**

**Impact of Mindfulness Training on Soccer Performance**
- Increased Awareness
- Increased focus/refocus
- “Letting go” mentality
- Enhanced skill acquisition

**Impact of Mindfulness Training on Team**
- Relatability
- Team Cohesion

**Impact of Mindfulness Training on Self**
- Self-compassion
- Habit/Routine of mindfulness
- Calming/Relaxation

**Barriers to Large Group Mindfulness Practice**
- Low participation
- Distractions
- Disconnect between academic class

**Suggested Improvements**
- Mandatory self-practice
- Increased participation
- Increased exposure to mindfulness

*Figure 7. Five Themes.*

**Qualitative Findings**

Six themes emerged from the TA: (1) Impact of Mindfulness Training on Soccer Performance, (2) Impact of Mindfulness Training on Team, (3) Impact of Mindfulness Training on Self, (4) Barriers to Large Group Mindfulness Practice, and (5) Suggested Improvements to the Program. All themes were prevalent in both focus groups. All themes emerged through the five questions within the semi-structured interview.
Theme 1: Impact of Mindfulness Training on Soccer Performance

This theme is defined by responses that specifically mentioned the individual benefits athletes received in relation to their soccer performance. Subthemes that were present in this theme included: awareness, increased focus/refocus, letting go mentality, and enhanced skill acquisition. Each subtheme was expressed similarly between both groups.

Subtheme 1: Increased Awareness. One of the most used words within the interview was “aware.” Athletes felt “more aware of how [they were] feeling” and “more aware of [their] mindset in practice.” Awareness was also used to describe moments during practice and play. In Focus Group 1 (FG1)—no self-practice—athletes discussed awareness and focus simultaneously. Many mentioned how their awareness of their lack of awareness had progressed over the course of the program. FG2 had more experience with mindfulness outside of the training program. One athlete discussed how the practice enhanced her awareness and how this impact directly translated over into the game.

“I noticed when certain places on my body started to hurt more or my emotions that I was feeling that day, so I could be like ok so, I really need to focus on the drill that I'm doing, I know that my head's not really in it right now, but like, I can--I was more aware to like, put myself in the mindset to practice.” – V (FG2)

This athlete was able to use what she learned in mindfulness to develop an awareness of her body and her thoughts and emotions. It seems that she also recognized when she was distracted.

Subtheme 2: Increased Focus/Refocus. Athletes continued to comment on how they noticed more often their loss of focus and the ability to bring it back to the task at hand. One athlete expressed the increased ease and ability to refocus while receiving instruction and feedback from the coach—a moment in which athletes used to find themselves distracted.
“I think for me because I’m a goalkeeper, I’m with our trainer. I kind of started noticing it was easier for me to transition from being at goalkeeper training and then going with coach and the rest of the team and translating that. And it was easier for me to like, kind of like, ok now I have to do this, type of thing where before I feel like it took me longer to realize, ok you have to refocus now.” – G (FG1)

Her application of refocusing techniques learned from the mindfulness program helped to bring her awareness from task to task to her practice. She seemed to be able to find ease in switching between different coaches and drills.

Athletes mirrored the same theme throughout the interview and expanded on their ability to refocus in games.

“Just being present in that moment and if something’s not going my way in practice, I usually take a breath and then I’ll be like ok, It’s fine. It happens, that’s how life is. It’s going to happen. You’re going to mess up every once in a while. And just like kind of refocusing myself and kind of bringing myself back to the present moment and being like, well that play is done. What’s happening next? What can I do next to make sure that my touch is better? Bringing it back to mindful and being like, ok you’re fine. Deep breath. Let’s go again. Like that stuff.” – A (FG2)

During the program, athlete A caught herself in a moment of discomfort and reminded herself to continue focusing on the present. Additionally, she integrated aspects of self-compassion and letting go.

Subtheme 3: “Letting Go.” The subtheme of “letting go” was mentioned by multiple athletes. This theme describes how the athlete would move on from a mistake during a game—
instead of ruminating on that specific encounter. This allowed the athlete to continue to focus on the play, which in turn, increased performance.

“I think for me, being not focused when I mess up or something and then practicing self-compassion…not holding on to something for so long and just being like, it’s ok, next thing. That relayed right over to my game, I feel like. It was nice because I feel like it’s better when I just say, ‘it’s ok, next thing,’ and then I’m not stuck on the bad thing and then it helps me play better. Like, I don’t stay stuck in my head.” – K (FG1)

The program’s self-compassion lessons directly transferred into this athlete’s gameplay. It seems that she felt the self-compassion practice increased her performance.

**Subtheme 4: Skill Acquisition.** Finally, athletes discussed the benefits of the program on skills in practice and in gameplay.

“I really liked the imagery. The trying to be descriptive. I didn’t realize how not specific we are when we talk… like, actually getting down to the specifics. It helps you describe the movement more and like, kind of helps you understand, like when we did the imagery of our skill and stuff… It helped me with my thought process of like, how to do it and that helped me actually do the skill on the field.” – N (FG1)

Incorporating imagery into mindfulness helped athlete N improve her skills on the field. She seemed to first have understood the skill better which then enhanced her ability to execute the skill in game.

Other athletes also stated an increase in specific skill acquisition especially through their individualized imagery exercises.

“When we wrote the first imagery script, I wrote it about the opening scene of the game, and so every game I stood there and I looked around and did everything that I
remembered writing about and tried to like, get myself in that moment, and then I felt like
that helped me a lot.” – S (FG2)

The quote above examines the athlete’s increase in mindfulness in game due to the practice of
imagery and mindfulness simultaneously throughout the program.

**Theme 2: Impact of Mindfulness Training on Team**

This theme is defined by responses that described the impact of the program on the team
dynamics and team cohesion. Subthemes that were present in this theme included: relatability
and team cohesion. When discussing the impact on the team, FG1 directed most of their
conversation towards how they could have improved as a team, barriers of working in such a
large group, and improvements for the future (see Themes 3, 4, and 5). Each subtheme was
expressed in both groups but more prevalently in FG2.

**Subtheme 1: Relatability.** Athletes expressed that sharing personal anecdotes at the
beginning of the program was intimidating, but once participation in discussion increased,
athletes felt more comfortable. One athlete expressed that sharing with each other increased
relatability between teammates.

“I liked having other people to work with as well because when we were able to like, talk
in smaller groups, I feel like I could relate. I like [that] they brought up stuff that I didn’t
think about, but I was like, wait, that’s so applicable in my life” – C (FG1).

Hearing the perspectives that other athletes shared in the discussions of difficult topics within the
program helped athlete C feel a sense of solidarity.

**Subtheme 2: Team cohesion.** Athletes discussed team cohesion as connectedness and
team building. Implemented as one of the mindfulness exercises, the team practiced the Mindful
Jump (see Appendix B for details). The inclusion of “mindful games” in the program required
every member to participate in order for the activity to work; “[The game] got people to participate that usually don’t in a way that they don’t feel uncomfortable.” – N (FG1). Athletes reflected how this exercise improved their connection as a team.

“It was kind of cool to see that we all kind of like, obviously because you’re not looking, it was cool to kind of see the whole team was able to realize we were going to do [the jump] at the same time. So, it kind of like, showed how we can all be on the same page at the same time.” – G (FG1)

Athlete G expressed a stronger connection to the team as a whole through the activities of the program. She also noted that group work included others who were less likely to participate—which seemed to increase connection or social cohesion.

Similarly, some athletes expressed how the increased participation and mindfulness games were beneficial for the team as a whole. Social cohesion topics were the most predominant within the subtheme 2.

“I kind of like when we did those game type things because I felt like … those things connected us before we were to do the mindfulness. I liked how it brought us all together. We did this as a group. We’re a big group and then it was like, ok now we’re all connected, we’re all in the same space, and now do mindfulness on your own. And I thought that was a really good way to do it: bring the group together and then do it individually.” – S (FG2)

Being together through the practice of mindfulness connected them all despite the solitude of the meditation. For example, the following quote expresses that the program helped with team building through practicing together in one space while simultaneously working on oneself.
“Related to soccer, we are a team. We are a team. There’s not one person that’s going to win us the game. Like, but at the end of the day, what you do can benefit our team. So, like we’re doing something as a team but you’re also doing something for yourself … when we’re being mindful, we do something as a group, and then we also focus on ourselves.” – M (FG2)

**Theme 3: Impact of Mindfulness Training on Self.**

This theme is defined by participants’ responses that expressed the benefits each athlete felt from the program and how mindfulness extended out of sport and into their daily life. These impacts were not specific to their athletic performance but were related. Athletes expressed how mindfulness fit into their day-to-day lifestyle, which included but was not limited to their sport involvement. Subthemes that were present in this theme included: self-compassion, habit/routine, and calming/relaxation.

**Subtheme 1: Self-Compassion.** There was a clear difference between the focus groups within this subtheme. Although some self-compassion sessions were missed due to scheduling conflicts, FG2 agreed that a mutual increase in self-compassion was felt. “I felt like this helped me a lot because I felt like overall, I was able to be more positive to myself.” – S (FG2).

Oppositely, FG1 briefly touched on self-compassion, relating it more to the letting go mentality (see Theme 1), but did not expand on it much more than that.

“I felt like it was really calming and made me think a lot about things that I never thought really mattered before … stuff I’d never thought about before like the self-compassion” – K (FG1)

This quote suggests that the program enlightened her on many topics, especially self-compassion.
**Subtheme 2: Habit/routine.** A difference between focus groups within this subtheme emerged. FG1 expressed a desire to form a habit and routine of mindfulness, “It would just be nice to have a routine of doing [mindfulness]. And then I feel like it wouldn’t be—it would just come like, naturally for people to like, use their skills outside of the mindfulness practice.” – K (FG1). FG1 athletes expressed that if mindfulness became a routine, they would have seen more improvement in many different aspects.

Oppositely, FG2 had already adopted a mindfulness routine. FG2 spoke about the integration of mindfulness into their schedules and frequently used the terms “habit” and “routine.” “I tried to do [mindfulness] like pretty much every morning and it was—I’m like a big routine person, so I just got into a routine of it.” – S (FG2). Each athlete expressed how they integrated mindfulness practice into regular, daily tasks which increased their overall practice of mindfulness.

The frequency of practice became so integrated into their schedules that they were “just doing it automatically.” – V (FG2).

“I practiced it when I wasn’t aware that I was practicing it. I think I would be like, I wouldn’t be thinking, oh I’m being mindful right now … I wasn’t actually doing it when my app reminded me, I was just doing it.” – M (FG2) Practicing mindfulness requires consistency; the athletes in FG2 practiced consistently in and out of the program and commented frequently on their automaticity of mindfulness.

**Subtheme 3: Calming/relaxation.** Athletes shared the experience of calmness after the sessions each week. Mindfulness is a tool often used for anxiety; athletes felt the effect of mindfulness on their anxiety, “I feel like I get a lot of anxiety. So, when we did the [hand to heart
exercise] I really felt it. So, I was able to calm myself down and be like, ok I just need to breathe type thing.” – G (FG1).

Some even expressed that it made them feel too calm before practice and suggested that they move mindfulness to after practice,

“I was like calm and sleepy and then like going to practice was like a hard switch kind of. So, I think after would be cool to do it when I just had a day at practice to think about like maybe all the bad stuff I did. Or what I was not doing well at practice and kind of take that and regroup and calm down and do more mindfulness stuff”– K (FG1).

At times, the calmness of the mindfulness practice left athletes feeling sleepy. Athlete K felt that mindfulness would be more beneficial after practice to calm the mind and would offer more material to focus on during the activities.

**Theme 4: Barriers to Large Group Mindfulness Practice.**

In this mindfulness training program, the total attendance for each session was 35: the women’s soccer team (n = 34) and one practitioner. This theme reflects the barriers that the athletes faced due to the large athlete to practitioner ratio. Most barriers were more strongly prevalent in the first sessions before changes were implemented by the practitioner. Subthemes that defined the barriers were low participation, distractions, and disconnect between academic class.

**Subtheme 1: Low participation.** During the first few sessions, participation in group discussions was lower than desired. Athletes explained that low participation was a result of the lack of vulnerability of opening up in a big group. Many open-ended questions required the team to answer in front of everyone. One athlete found this to be a major barrier for her.
“It was a little intimidating having such a big group I feel like. Because it may be just the person I am. [I’m] way less inclined to participate and just because it’s like a quiet room and like, I just don’t like talking in front of big groups of people” – C (FG1)

Part of the low participation can be looked at through the lens of the bystander phenomena. The bystander effect explains how an individual is less likely to display helping behavior in an emergency situation when others are present. When this lens is applied to participation, athletes may be discouraged to contribute in the presence of their peers due to their anticipation of others’ participation.

One athlete said, “When it’s kind of like, who wants to answer? Like the same people answer every time,” – T (FG2). Athletes held back their answers for the more frequent participators to answer.

“It was a lot of upperclassmen [participating]. It’s the people that already talk a lot. There are no shy people that talked a lot, you know. Like, it’s a lot of the same people. I mean not really any of the freshmen kind of talked.” – S (FG2)

The emphasis on the lack of underclassmen participation, especially freshmen, demonstrated the bystander effect; the more frequent participators dominated the discussions.

One athlete that wanted to participate seemed to have low confidence in her response, which led to her low participation. This may be indicative of how other athletes felt as well. She said,

“I’ll be like, oh yeah I could answer this but [player a] will probably say the same thing in better words. So, I’ll just let her answer it. She’ll word it way better than I ever could.” – T (FG2)
The quote above displays how her lack of confidence in the quality of her response discouraged her participation. This athlete felt that her peers could contribute superiorly.

**Subtheme 2: Distractions.** A common distraction mentioned was the giggles of other teammates, “I just wish a lot more people took it a little bit more seriously,” – M (FG2). The topic of seriousness was discussed in further detail. For example, in the following quote, athletes expressed their frustration in the peers around them that were not fully participating in mindful activities.

“If someone messed up you would be like, come on! Just be mindful! …It was hard because you’re trying to be mindful but then like you can’t control other people’s mindfulness so it’s more difficult” – T (FG2)

Oppositely, one athlete mentioned that she even “caught herself” giggling and losing focus during the exercise. Although this was an internal distraction, in general, the lack of focus from other teammates hindered the focus of the athletes during sessions, as mentioned in the following quote,

“I think sometimes it could be difficult because some people are giggly or people that don’t— not like they’re not focused as much, but like they’ll make little noses here and there and some people are just like, when they’re doing it, they’re more serious. So, I feel like everyone’s personality is like, different so it kind of, sometimes, it could be a little distracting.” – K (FG1)

Athletes discussed the possibility that the distractions were caused because of the size of the practicing group.
“I feel like it’s kind of hard sometimes in a big group setting to focus on yourself and especially when a lot of things are going on or if people aren’t paying as much attention to the mindfulness practices as you are… We all have big personalities” – V (FG2)

Athletes mention “big personalities” in reference to being more extroverted, silly, and high energy as observed by the practitioner. These traits may potentially cause distractions through the behaviours manifested (i.e. giggling and joking).

**Subtheme 3: Disconnect between academic class.** The separation between each academic class was a common subtheme throughout the discussion of possible barriers. Cliques are formed and each athlete would often sit with her usual friend group. Often, friend groups were based on class. One athlete discussed how captains tried to integrate all classes at the beginning of the program but eventually reverted back to their cliques.

“A couple of us at the beginning of the year were trying to mix up like the freshman with the seniors and we really didn't follow through on that to be honest. Like, towards the end we started reverting back to our own ways. But I think having been more intertwined would have been less noisy too because we don't like talk to them as often. But also when we do our pair stuff like "ok now talk in a pair and what you could have done" like, we could have figured out what the freshman were thinking and the freshman could figure out like a vet was thinking, you know. Like that would have been cool too. It would've minimized the giggling obviously because we're not as close with them. But it still would've been really beneficial because we'd probably stay on topic.” – N (FG1)

This athlete expressed how sitting in cliques decreased focus. The tendency to talk to their close friends during sessions increased when they were in close proximity. More randomization in break off groups would have increased focus and decreased side conversation.
**Theme 5: Suggested Improvements**

The researcher used the time with each focus group to understand areas of improvement for the program. This theme comprises the suggestions that FG1 and FG2 made to enhance the program. Subthemes of improvement are mandatory self-practice, increased participation, and increased practice. All subthemes were prevalent between both focus groups.

**Subtheme 1: Mandatory self-practice.** Athletes were given the suggestion to practice mindfulness on their own time. The Done app was a tallying tool which the practitioner recommended be downloaded as a tool to hold them accountable for their practice. Each athlete would then screen shot their monthly calendar, which displayed the number of days an athlete would practice on her own time and send it to the practitioner. This was highly recommended but not required. Both focus groups expressed that a mandatory self-practice should be implemented for future implementations of the program. Additionally, one athlete suggested the practitioner create a self-practice schedule for the athletes to follow with strict days and times to practice.

“I honestly think that it was great to have us have free-range, but I know for me and them being like a student athlete, if you give us something, we will do it because we’re so built that way. School and soccer. That’s what we’re doing, and we have to fit all this in our schedule. So, if we had something that was like, ok you have to do this today at this time, we would make time for it.” – M (FG2)

This quote emphasizes the desire for structure in collegiate athletics. This athlete suggests that student athletes strive when having a mandatory schedule and would benefit more if the self-practice program was implemented similarly.
Subtheme 2: Increased participation Increasing participation was a unanimous topic from both focus groups. Suggestions to increase participation were to increase the amount of times the practitioner split them into smaller breakout groups before discussions and to “force” participation by calling on athletes rather than raising hands.

“It makes you feel personally accountable. As a group it’s easy to be like, oh well 15 of us didn’t do it so it’s fine. But if you called me and asked me to answer the question, I would be ready.” – K (FG1)

The term ‘families’ was discussed in both groups. These families consist of one freshman, one sophomore, one junior and one senior that are grouped together based on personality. Families are created at the beginning of each season by the veteran athletes. One athlete suggested that they group together by family to increase participation.

“I would be curious, because we do our families, and so I would be curious if we had to get into our families and then [the practitioner] would be like, oh this week a freshman is going to have to talk. This week a sophomore, like just kind of rotate it.” – M (FG2)

The implication is that a higher level of engagement may come from the use of their families which would have led to an increase in participation—especially from the underclassmen. Athlete M questions the benefit that may have come from recreating the familiar environment of their family while simultaneously requiring participation from each member.

Subtheme 3: Increased exposure to mindfulness. An overall longer practice of mindfulness was discussed within both focus groups. Due to a delay to the start of the program, athletes agreed that an earlier start would have been more beneficial for them. In the following example, athlete V stresses the advantage that the team would have gained if the mindfulness program started earlier.
“I think if we would've started mindfulness at the very beginning, it would've been better kind of like, and maybe not just for the freshmen but maybe for all of us, kind of like, this is the beginning of the season, games haven't really started yet, like let's start working on it now so then like, from the very first game to the last game like, we could really see the bigger kind of improvement for our whole team than just starting kind of half way through and be like, oh let's get on this now and hope for the best I guess kind of thing. I feel like if we would've started it earlier, like did more practice on our own I feel like it would've been better for everyone.” – V (FG2)

Longer session times were suggested as well as a continuation of the program into the next semester. One athlete suggested the program be implemented as part of the soccer curriculum.

“I think it would be nice to have a consistent person the whole time I was here. Like just someone, and then it gives more of like, that you have a personal connection with us. And then we started doing it all the time for the whole four years … eventually [the sessions] didn’t have to be as long certain days or something, but it would be nice to have a routine of [mindfulness].” – K (FG1)

The athletes agreed that more practice time in sessions, a longer program, and a consistent mindfulness practitioner for the duration of their collegiate career would have been advantageous to their practice.
CHAPTER V

DISCUSSION

The present study investigated the implementation and impact of a mindfulness (modified MMTS 2.0) and imagery program on a women’s collegiate soccer team. Evidence based mindfulness interventions in sport are growing in popularity. Although the current research shows relationships between mindfulness-based interventions and performance enhancing factors—such as flow, awareness, and well-being (Kabat-Zinn, 2003; Kaufman et al., 2009; Martin, 1997; Wilber, 2000)—qualitative data is often the only means used to support a direct link between mindfulness and athletic performance. To fill the gap in the research, the purpose of this study was to observe the impact of a mindfulness and imagery intervention on sport performance using quantitative and qualitative methods.

Four research questions informed the quantitative analysis: (1) Will mindfulness significantly increase from pre to post intervention? Will there be a significant relationship between (2) mindfulness and statistical performance, (3) mindfulness and self-perceived ability, and (4) mindfulness and coach’s perception of athletic ability? Mindfulness, shots (statistical performance data), and self-perceived ability increased significantly from pre to post intervention. There were no significant findings in the remainder of the performance data or the coach’s perception of athletic ability. Results suggested a significant relationship between mindfulness and self-perceived ability pre-intervention but no significant relationship between mindfulness and statistical performance data or mindfulness and coach’s perception of athletic ability.

The qualitative analysis aimed to further understand the effects of the mindfulness intervention on athletic performance through semi-structured interviews. Additionally,
Qualitative methods were used to gather feedback about how to improve the program for future use. Reports of increased skill acquisition and awareness on the field emerged. Athletes reported clear benefits of the program in three different areas (soccer performance, team, and self). Additionally, athletes addressed improvements for future implementations and possible barriers throughout the program. Qualitative methods were also used to inquire about athletes’ firsthand experiences with mindfulness-based interventions, another current gap in the research (DiBernardo, 2018). Five themes emerged from the qualitative data. Athletes indicated that a positive impact of mindfulness training on (1) soccer performance, (2) team, and (3) self. Additionally, athletes reported (4) barriers of working in a large group and (5) suggested improvements for future implementations of the program. The remainder of this section will first examine the quantitative results and describe the findings in terms of the extant research. Next, qualitative findings will also be discussed and related to current and previous findings.

Mindfulness

The mindfulness and imagery program used in this study was a modified version of the MMTS 2.0 program (Baltzell & Akhtar, 2014) combined with general imagery exercises. Consistent with MMTS research—and many other mindfulness studies—athletes significantly increased in mindfulness after the program was implemented (Baltzell et al., 2014; Baltzell et al., 2015; Baltzell et al. 2018; De Petrillo et al., 2009; Gardner & Moore, 2007; Hamilton et al., 2016; Jackson, 2016; Kabat-Zinn et al., 1985; Kaufman et al., 2009). Unlike other MMTS 2.0 studies, coaches opted out of mindfulness practice—this did not affect the mindfulness results, but the inclusion of coaches was briefly mentioned by one athlete in the qualitative interviews. Previously, coaches’ participation was studied to explore the coaches’ perception of the program (for themselves and for the athletes) and to offer suggestions for program improvement (Baltzell
et al., 2015). Coaches identified athlete benefits from the MMTS program (Baltzell et al., 2015). Pineau (2014) identified the lack of coach involvement to be a key limitation that negatively impacted the study. The lack of coaches’ involvement may have communicated a lack of support for the mindfulness training, which could have affected the athlete’s perception (Pineau, 2014). In the current study, the coach opted out of participating in the mindfulness sessions and only offered her perception at the end of the program. The coach’s lack of participation in the current study may have affected the results relating to coach’s perception of athletic ability.

The first research question explored how the current program affected the level of mindfulness of the athletes. Mindfulness was measured by the MIS which indicated a significant increase from pre- to post-intervention overall. The MIS includes three subscales: awareness, non-judgmental, and refocusing (Thienot et al., 2014). In the current study, athletes significantly increased in awareness and refocusing from pre to post intervention. Non-judgmental thoughts decreased from pre to post intervention however, they showed no significant change. All of the six non-judgmental subscale items were reverse scored. Reverse scored items may have been misread/misunderstood by athletes which could be an explanation to the lack of significance in this section. Additionally, it should be noted that the delivery of the program was interrupted five times due to scheduling conflicts. Three of the five cancelled sessions consisted of self-compassion and non-judgmental topics. The questions within the non-judgment subscale discuss “self-criticism” and “self-blame.” These two topics were the core focus of the self-compassion sessions. The removal of these sessions may have been a contributing factor to the non-significant findings in the non-judgmental subscale.

The researcher suggested athletes practice mindfulness daily outside of program sessions. An increase in practice has been shown to increase mindfulness scores significantly in other
studies (Pineau et al., 2014; Thompson et al., 2011). Athletes were free to guide themselves in their mindfulness sessions and were asked to track their sessions with the Done app. Similarly, other research has used accountability systems, such as a practice logbook for athletes to track and comment on self-practice (Hussey, Weinberg, & Assar, 2020; Kaufman et al., 2009). In a case study, Hussey et al. (2020) monitored one logbook frequently and the participant expressed the logbook to be helpful to his practice. Oppositely, Kaufman et al. (2009) reported athletes’ inconsistency in filling out performance logs. In this study, athletes were asked to send their progress to the researcher once a month. A more frequent monitoring may have yielded a higher participation in self-practice. Most, but not all, athletes participated in self-practice. Despite cancellations in mindfulness practice, self-practice may have influenced the significant increase in mindfulness scores. The Done app was chosen instead of a logbook as a convenience for the athletes. A logbook may have offered more self-reflection opportunities which could have increased participation during the beginning sessions.

Athletic Performance

The second research question was about the impact of mindfulness training on athletic performance. There are no current mindfulness studies that incorporated a statistical analysis of performance data when implemented on large groups (Hasker, 2010; Kaufman et al., 2009). Additionally, there were no found statistical methods for soccer performance data that ensured consistency across all positions. Therefore, statistical methods were created by the researcher to encompass all positions to increase reliability. All data was to be gathered from video recorded games from the last three games of the season prior to the intervention and compared to video recordings from the last three games of the intervention season. Athletes’ positions on the field were to be cross-referenced to the athletic website game rosters. Due to limitations in the video
monitoring and inconsistencies in the position labels on the athletic website, athletic performance was computed solely by the statistics reported on the athletic website. Additionally, due to the limitation of a high turnover from the previous season, the first three games of the intervention season were compared to the last three games of the same season.

With these changes, performance data was collected and analyzed. Performance data on the athletic website consisted of 4 categories: shots, shots on goal, goals, and assists. Athletes showed a significant increase in the number of shots attempted per game. Although non-significant, shots on goal and assists increased as well, while goals decreased. This finding may be meaningful if the program lasted longer. Outside factors may be a possible explanation for a lack of statistically significant increase in shots on goal, goals, and assists.

The significant increase in shots per game may suggest an increase in performance. Zhou et al. (2018) showed that winning teams are significantly higher in shots, shots on goal, and other statistics that are not relevant to the current study. Lago et al. (2010) found that shots and shots on goal, along with three other factors that this study did not measure, were strongly related to the winningest team. It is noteworthy that mindfulness stimulates the brain to break out of autopilot mode and enforces informed in-moment decisions (Jekaec, 2016); wiser decisions are made due to strengthened acceptance (Baltzell, 2018). In other words, the athletes in this study were making clear and informed decisions on when to shoot the ball. Because mindfulness had increased in these athletes, it might have led to an increase in shots taken. An increase in shots is often connected to a more winning team. Therefore, the increase of shots from pre to post intervention may be related to an increase in ability to make informed decisions from mindfulness practice. This is consistent with current research relating mindfulness and decision making (Hafenbrack, Kinias, & Barsade, 2014; Karlin, 2018).
Both mindfulness and shots showed a statistically significant increase from pre to post intervention. Unfortunately, the relationship between mindfulness and shots was not found to be statistically correlated despite each variable increasing from pre to post intervention. It is important to note that the mindfulness statistics were taken from the whole team, but the performance statistics were only supplied from the starting athletes and substitutes. This skew in data may be one possible explanation for lack of significance. Additionally, the shot statistics were specific to athletes generally placed in forward and midfield positions—this also left out defenders and goalkeepers. The statistical analysis of soccer performance in general is a limitation and should be further developed and explored in future research.

**Self-Perceived Ability**

The Soccer Competence Scale (SCS) resulted from an unpublished study by Moore and Weiller-Abels (2018). The SCS was used to measure players’ perception of their ability in general and at specific components. This was an ideal method because it encompassed all positions in a distributed manner. Currently, tools used to measure athlete’s perception of their ability are minimal in sport psychology literature. Current research uses self-ratings of athletic performance in addition to the coach’s ratings to reflect improvement (Hasker, 2010). Other studies use self-report instruments to measure athlete confidence and self-consciousness in relation to ability; results indicate an increase in confidence and a decrease in self-consciousness (Kaufman et al., 2009; Walker, 2019). High confidence and low self-consciousness would affect self-perceived ability scores. In the current study, self-perceived ability scores supported the hypothesis; scores significantly changed from pre- to post-intervention. The results are consistent with other findings of self-perceived ratings of ability (Lutkenhouse et al. 2007; Lutkenhouse, 2007; Kaufman et al., 2009; Hasker, 2010).
Although the change in mindfulness and the change in self-perceived ability were significant, the relationship between the two factors was not significant. However, there was a significant relationship between the pre-test scores of mindfulness and pre-test self-perceived ability. The relationship suggests that lower mindfulness scores may be related to lower awareness, more judgment to self, and less refocusing as demonstrated in the MIS subscales. As mentioned previously, mindfulness has also increased confidence and decreased self-consciousness (Kaufman et al., 2009; Walker, 2019). Mindfulness and confidence are related, even outside of sport (Kemper, Rao, Gascon, & Mahan, 2017). In conclusion, the significant relationship between low mindfulness and low self-perception of ability may be explained by low confidence, less awareness, high levels of judgement, and less refocusing.

Simultaneously, the lack of significance between post-test scores demonstrates that there was no relationship between mindfulness and a superior perception of ability. A high self-perception of ability could indicate an increase in athletic ability. A reason for this lack of significance could be due to the losing season. Another reason for the discrepancy could be caused by gaps in the program. As previously mentioned, scheduling conflicts and holidays disrupted the consistency of a bi-weekly practice (see Appendix A for schedule). There was a trend moving in the direction of an increase, therefore suggesting more time with mindfulness training could have affected the athletes’ self-perceptions.

Coaches’ Perception

The coach’s perception of athletes’ (1) soccer ability and (2) player development was predicted to have a significant relationship to mindfulness. As Wolanin (2005) suggested, multiple ratings of performance were used. Additionally, the use of multiple coach’s ratings was
also suggested but was not possible for this study. Similar to Hasker (2010), the rating system was developed for this study. It therefore needs further investigation for validity and reliability.

Although there was no significant relationship between the coach’s perceptions and athletes’ change in mindfulness, the coach rated half (n=16) of the athletes at a 50% or higher in both categories. Lack of statistical findings of coach’s perception of athletic ability was similar to Hasker (2010) but unlike the outcome with other mindfulness-based interventions that measured significant improvement through coach’s ratings (Lutkenhouse et al., 2007; Lutkenhouse, 2007; Wolanin, 2005). In general, coaches perceived a statistically significant increase in performance after programs were implemented. The lack of a significant relationship could be due to the fact that the coach believed older players (junior and senior athletes) “were already top players and did not have much to grow on” (personal communication from the coach).

**Qualitative**

The qualitative results served to enhance the understanding of the impact of the mindfulness program on the women’s soccer team. The results indicated an impact on soccer performance, team, and self. Additionally, the qualitative results offered an insight into the firsthand experiences of athletes who participated in a mindfulness-based intervention—a current gap in the research (DiBernardo, 2018).

**Impact of the Program**

Through the semi-structured interviews, five themes emerged. Three of the five themes captured the impact of mindfulness training. Athletes reported an impact on their soccer performance, an impact on the team as a whole, and an impact on themselves.
Within performance impacts, athletes unanimously reported an increased sense of awareness and focus due to the program. The benefits of increased awareness and focus translated onto the field during games and practice. Mindfulness stimulates the brain to pay attention on purpose, which trains awareness. Continuous mindfulness practice strengthens awareness (Kabat-Zinn, 2003). With bi-weekly mindfulness meetings and self-practice over a 12-week period, athletes in this study were able to practice awareness through mindfulness training. Awareness is the most reported benefit within similar studies (DiBernardo, 2018; Gardner & Moore, 2004; Lutkenhouse, 2007; Schwanhausser, 2009). A high level of awareness on the field is related to decreased levels of rumination (Brown & Ryan, 2003). Similar to current findings, athletes reported an increasing ability to “let go” of mistakes and continue to play without ruminating. This coincides with a decrease the in nonjudgmental thoughts.

Finally, participants reported the feeling of enhanced skill acquisition specific to imagery practice. Similar to current research, imagery increased motor skills akin to specific skill acquisition (Mizuguchi et al., 2016; Röthlin et al., 2016). Imagery has been paired with mindfulness—sparingly—but has yet to be fully incorporated throughout a program (DiBernardo, 2018, Kabat-Zinn et al., 1985; Baltzell & Akhtar, 2014). In summation, the mindfulness intervention positively impacted the women’s soccer team in three areas: performance, team, and self.

According to the qualitative data, the team dynamic was enhanced by participation in the mindfulness training program. Athletes found relatedness and more team cohesion between their peers. Because some topics where more intimidating to be vulnerable about during discussions, athletes found that it was “hard to share” at first. Afterwards, athletes felt a strong sense of relatedness after hearing others share. Some athletes had not previously thought deeply about
the topics discussed during the program. When others shared, one athlete said, “I didn’t realize they felt that too.” The athletes discussed how the connectedness sparked an increase in team cohesion and reported the program helped in team building. One athlete reported that since there are so many team members, they rarely have everyone present at the same time, “It was fun doing it with our team because it was with the people that weren’t around all the time.” Team cohesion is often seen as a by-product in mindfulness studies (Baltzell et al., 2014; Caracca, 2018; DiBernardo, 2018; Hasker, 2010). A team that is more cohesive is more likely to perform better (Carron, Colman, Wheeler, & Stevens, 2002).

The final topic considering the impact of the mindfulness program was the impact on self. It is important to note that these impacts translated to athletes’ lives inside and outside of sport. Athletes in the current study reported higher levels of self-compassion, consistent with current MMTS research (Baltzell, 2014; Baltzell, 2015; DiBernardo, 2018) and many other mindfulness-based interventions (Bear et al., 2006; Carraca et al., 2018; Pineau, 2013). Self-compassion has suggested many benefits to athletes in research. A compassion approach often is infused into mindfulness trainings to help athletes tolerate emotionally difficult moments in sport (Baltzell, 2014; DiBernardo, 2018). It is also revealed that self-compassion exercises increase self-improvement motivation (Carraca et al., 2018). These are important factors that may affect athletic performance.

Athletes in FG2 discussed increased levels of self-compassion more than FG1. Since FG2 spent more time self-practicing, this finding suggests that the impact of self-compassion is more prevalent through frequent practice. Non-judgment and self-compassion exercises overlap within the program. This noteworthy discrepancy between the qualitative and quantitative may be explained by the difference in practice amounts between groups. Subsequently, FG2 reported
the integration of mindfulness into a habit and routine so much so, that it became automatic within their daily routine. Athletes with less practice stated a routine would have increased their self-compassion, understanding and positive impacts. One athlete (FG1) stated, “…I feel like if I did practice [mindfulness on my own], it would have translated faster for me.” The focus group with no self-practice may suggest a lack of participation from certain athletes. This, in turn, may have influenced the results.

The three themes listed above (impact on soccer performance, impact on team, and impact on self) emerged from the thematic analysis of the semi-structured interview data. These findings suggest athletes felt an overall benefit of the program in and out of soccer.

Improvements and Barriers

The final two of the five themes include improvements for future implementations of the program and barriers of practicing mindfulness in a large group. As stated previously, the current program was based on the MMTS 2.0 program (Baltzell & Summers, 2017). Modifications to the program were influenced by researcher suggestions from multiple mindfulness-based interventions. The program was created to be flexible and adapted for each athlete (DiBernardo, 2018; Demarzo et al., 2015), longer in program duration at 12-weeks (Kaufman et al., 2009; De Petrillo et al., 2009; DiBernardo, 2018), and shorter in session duration at 30 minutes, twice a week to account for a busy student athlete schedule (Baltzell, 2014; DiBernardo, 2018). Additionally, due to the similarity between imagery and mindfulness, imagery was integrated into the program to aid in enhancing performance in athletes.

Although these changes influenced by other practitioners were implemented, athletes in the current study requested similar improvements. Athletes desired a longer program and longer/more sessions. Longer program suggestions are common in the current mindfulness
research (De Petrillo et al., 2009; DiBernardo, 2018; Kaufman et al., 2009). One athlete suggested the program “start before season and continue after … for like the whole four years.” To develop mental skills, such as mindfulness, consistent practice is a necessity. Additionally, athletes suggested longer session times. Though all athletes mentioned the 30-minute sessions were too short for their liking, one specifically suggested that the time for each practice should be “at least 1-hour.” This finding is contradictory to most feedback from other training programs (Baltzell, 2014; DiBernardo, 2018). Research suggests shorter session times to consider the busy schedule of student athletes (Baltzell, 2014; DiBernardo, 2018). This suggestion may not have applied to this specific group because sessions were scheduled directly before practice at a time that everyone was available.

Furthermore, athletes desired more structure in their self-practice regimen. The researcher asked the athletes to practice on their own and asked athletes to download a tracking app for accountability. Athletes were not mandated to practice on their own, merely reminded and asked to do so for the benefit of developing their mindfulness skills. In the interviews, athletes unanimously agreed that a mandatory self-practice schedule be implemented and checked up on with discussion questions at the beginning of each practice. This may be explained by the research which suggest that the amount of structure in athletics promotes dependence (Martens & Lee, 1998). Athletes in the current study suggested a pre-determined schedule for self-practice be distributed at the beginning of the semester, similar to a practice schedule. In addition, the athletes suggested that pre-recorded mindfulness sessions or links, as well as directions and suggestions for where to practice be included. Interestingly, the free-range option of self-practice was disagreeable to most participants. Without a schedule, athletes found themselves “not having time” to practice, or “getting distracted with other tasks” on their
College athletes don’t often independently schedule their college activities. The continuous structure for athletes, from course selection to work out schedule, may influence an athlete’s ability to develop time management skills (Martens & Lee, 1998). Athletes may become dependent on a highly structured lifestyle (Watt & Moore, 2001). This may suggest that student athletes require a more structured program intervention to align with their already structured life, although some studies warn too much structure may hinder skills needed for adulthood (Watt & Moore, 2001).

Finally, athletes suggested an increase in participation at beginning of the program. The first few sessions of the program lacked participation from a majority of the athletes. Before the sessions started, athletes grouped together by their cliques and sat separately. The researcher led a mindfulness practice to the large group then asked follow-up and discussion questions. Participation was low; participation came mostly from upperclassmen. The first few sessions continued this way until the researcher used integration strategies and mindfulness games. In reference to the mindfulness games, one athlete said that “it got the people to participate that usually don’t in a way that they don’t feel uncomfortable.”

For integration strategies, athletes were divided into small breakout groups for discussions to increase participation. Athlete’s agreed that this was beneficial and suggested it be implemented from the start of the program. Another suggestion was that the athletes were divided into their predetermined “families.” Families consisted of one member of each academic class and were assigned by personality traits. This is an “old tradition” the soccer team has practiced over the years that is implemented by the vets at the beginning of each season. Additionally, athletes suggested that the practitioner call on different athletes to answer questions
to increase participation from quieter members. This improvement invariably aligned with the detected barriers.

The lack of participation during the first sessions was seen as a barrier conducive to practicing in a large group. As mentioned earlier, opening up during the group sessions was intimidating due to the large team size (34 participants). This hindered athletes from participating during the first half of the program. FG2 suggested that the lack of participation and vulnerability at the beginning of the program led athletes to stick to their cliques which created a large divide in academic classes. Once segregated into cliques, athletes were less attentive which caused a lack of participation. The lack of participation left room for distractions for participants until midway when changes were implemented to increase participation. These barriers were seen as suggestions for improvement in the practitioner’s methods.

**Limitations and Future Directions**

**Performance Data**

One of the main limitations in the current study was a lack of statistical performance data. It is difficult to quantify soccer performance using statistics. However, the researcher created a position-specific formula to compare soccer performance of all soccer players regardless of position for the purposes of this study.

Additionally, the performance data originally decided on was compromised due to several factors. The turnover in starter athletes from the previous year to the current year made it impossible to compare performance from one season to the next as no athletes played in both seasons. The video recording quality made the athletes imperceptible. Lastly, the website data incorrectly labeled the position of the players which rendered the videos useless. Thus, only
website data was used to calculate performance data. Future directions might look to using more accurate and consistent performance data.

**Rapport**

Another limitation was the lack of rapport between the practitioner and the participants prior to the program. The practitioner had no relationship with the athletes until the “introduction” day. Because mindfulness was new to the soccer team, buy in was more difficult to achieve. Additionally, athletes were less inclined to participate, self-practice, and fully commit to a practice with a stranger. It would have been beneficial to have a relationship with the athletes before implementing a time-consuming program. One participant agreed a better relationship would have influenced her practice at the start. An increase in rapport may have also assisted the practitioner in learning about “families,” reduced cliques, and decreased intimidation. Future studies might utilize a long-term practitioner solely dedicated to the team.

**Scheduling**

One of the limitations was the several scheduling conflicts. In total, five sessions were cancelled; two sessions due to advisor appointments, two sessions due to holidays, and one session due to a rescheduled game. Cancelled sessions were not rescheduled due to time constraints of the athletes and the practitioner. Flexibility to reschedule missed sessions is suggested for future studies. Additionally, future studies might look to offer multiple mindfulness “make up” sessions throughout the week which athletes may choose to attend.

**Measurement**

Lastly, a limitation in the quantitative data may have been the omission of imagery and pre-intervention coach measurements. Imagery was integrated into the mindfulness practice and athletes suggested its substantial positive impact. Assessing the coach’s perception of
improvement from pre- to post-intervention would have been beneficial to more clearly understand the coach’s perception and its relationship to mindfulness. Future studies may use a different measurement tool for coach’s perception.

Practical Implications

Implications for Collegiate Sport

The impact of the mindfulness on athletes in and out of their sport is noteworthy. The sport community, especially collegiate levels, fights for the attention of its athletes. Student athletes must balance their attention between their education, athletic performance, practice schedules, and social life. Within performance, athletes must operate within a highly stimulating environment. The ability to control awareness is a powerful tool for athletes to develop.

Mindfulness is a trainable skill that promotes attention and awareness to performance-relevant and contextual cues (Gardner & Moore, 2004, 2006).

Beyond performance, mindfulness training enhances the well-being and life satisfaction (Change et al., 2018). Results indicated athletes viewed the program as beneficial and suggested every team participate in mindfulness throughout their collegiate career. Integrating mindfulness into collegiate athletics could be a valuable tool to enhance athletes’ experiences, decrease stress, and enhance performance. Results from this study suggest the integration of mindfulness as a core practice in collegiate sports is beneficial.

Implications for Sport Psychology Consultants

Mindfulness-based interventions are rooted in acceptance mindsets. Acceptance and mindfulness strategies have been integrated to increase psychological flexibility (Hayes, 2009). Psychological flexibility refers to the ability to contact the present moment fully, and if possible,
changing or persisting behavior (Hayes, 2009). Athletes may have negative experiences trying to implement an acceptance mindset in certain situations. It is important for sport psychology consultants to empathize and create a safe environment for mindfulness practices. A modification to the current program may be higher levels of rapport between practitioner and athletes, integration of academic classes, and small discussion groups create an ideal environment for practice.

**Conclusion**

The current study investigated the impact of a mindfulness and imagery intervention on athletic performance on a women’s soccer team. The quantitative results of the study showed that self-perceived athletic performance and performance of shots per game increased statistically, but not in any other category (shots on goal, goals, assists, or coach’s perception of ability). Additionally, a significant relationship between low levels of mindfulness and an inferior self-perception of ability was found.

Qualitative results suggested athletes perceived benefits of the program. The themes of Impact on Soccer Performance, Impact on Team, and Impact on Self highlighted the benefits of the program and suggested an overall positive effect on athletes. Athletes were more aware, ruminated less, connected more with the team, and felt an improvement in skill acquisition. The themes of Barriers to Large Group Mindfulness Practice and Suggested Improvements offered insight to what challenges the athletes faced from the program. Athletes reported a desire to practice longer and integrate mindfulness completely into the athletic program. In conclusion, athletes indicated clear benefits of the mindfulness and imagery program and recommended the program.
This study contributes in a meaningful and significant way to the development of mindfulness practice and research. Results of the study show that an integration of mindfulness practice into an athletic schedule is beneficial to athletes in and out of their sport. This study may be beneficial to future researchers attempting to fill the relational gap between mindfulness and performance. This is one of the first studies to collect performance data and relate it to mindfulness in a large group setting. The performance data collected in this study was disrupted due to faulty video equipment which may have affected the results. Future research could focus on statistical performance data collection through a more reliable format. Additionally, the mindfulness program was highly regarded by the athletes, who suggested the program be a permanent practice for all collegiate athletic programs. Through interviews, more firsthand experiences with mindfulness have been observed, helping to fill this gap in the research. This study provides an exploratory perspective in filling the gap in the research that explores the link between mindfulness and athletic performance.
REFERENCES


## Appendix A

### Intervention Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intro to Mindfulness and Pre-Assessment</td>
<td>Intro to Imagery (PETTLEP Model)</td>
</tr>
<tr>
<td>2</td>
<td>Self-Compassion</td>
<td>Guided Imagery Practice</td>
</tr>
<tr>
<td>3</td>
<td>Tolerating Sport Distress</td>
<td>Create your own Imagery Script</td>
</tr>
<tr>
<td>4</td>
<td>Uninvited vs. Invited Thoughts</td>
<td>Imagery Circle (Pre-Game Awareness)</td>
</tr>
<tr>
<td>5</td>
<td>Refocusing</td>
<td>Cancelled Session</td>
</tr>
<tr>
<td>6</td>
<td>Self-Compassion in Difficult Moments</td>
<td>Cancelled Session</td>
</tr>
<tr>
<td>7</td>
<td>Mindfulness for Self and Others</td>
<td>Breathing Awareness / New Imagery Scripts</td>
</tr>
<tr>
<td>8</td>
<td>Core Values</td>
<td>Compassionate Breathing</td>
</tr>
<tr>
<td>9</td>
<td>Cancelled Session</td>
<td>Cancelled Session</td>
</tr>
<tr>
<td>10</td>
<td>Self-Regulation</td>
<td>Body Awareness</td>
</tr>
<tr>
<td>11</td>
<td>Cancelled Session</td>
<td>Prep. to Adapt and Adjust in Performance</td>
</tr>
<tr>
<td>12</td>
<td>Moment-to-Moment Open Awareness</td>
<td>Self-Guided and Post-Assessment</td>
</tr>
</tbody>
</table>
Appendix B

The Mindful Jump

Main focus: Concentration
- Focus on cues
- Maintain attentional focus
- Situational awareness

Goal:
- The group must complete one single successful jump simultaneously without communicating (words or actions)

Set up:
- Athletes stand in a circle but do not touch
- Athletes may make eye contact but cannot give physical or verbal cues
Chico State University Informed Consent

You are being asked to participate in a research study. Before you give your consent to volunteer, it is important that you read the following information to be sure you understand what you will be asked to do.

Investigators

The research will be conducted by Maya Trajkovski, a Master’s candidate at California State University, Chico under the supervision of Dr. Aubrey Newland. The purpose of this study is to investigate the effects of Mindfulness Meditation Training for Sport and Imagery on the athletic performance of NCAA DII soccer players.

This research study is designed to study increased mindfulness and its relation to performance. The data from this research will be used for publication in a journal relating to sports psychology.

Procedures

If you volunteer to participate in this study, you will be asked to attend mindfulness sessions administered by a mindfulness expert in which you will practice 2-3 different techniques related to soccer. Your participation will take approximately 30 minutes, twice a week for the fall semester (15 weeks). You will also be asked to complete some surveys about your experience with mindfulness. In addition, your performance will be monitored and coded using recordings of the matches during last season and this season.

Potential Risks or Discomforts

There are little to no foreseeable risks associated with the study. If the participant feels uncomfortable at any time in the program, they may remove themselves from the program as a participant.

Potential Benefits of the Research

There may be benefits from this study. Increased mindfulness has been proven to increase positive emotions, quality of life, and athletic performance.

Confidentiality and Data Storage

All the information that I obtain from you during the research will be kept confidential. All data will be kept secure and password protected. Only I will have access to the passwords and codes
used for confidentiality purposes and any hard copy papers will be destroyed after being transferred to digital copies. Coaches will not have access to data collected during the study.

**Participation and Withdrawal**

Your participation in this research study is voluntary. You may refuse to participate or stop participation at anytime without penalty. **This will not affect your standing on the soccer team.** The program is voluntary and choosing not to be in the program is your choice without any repercussions.

**Questions about the Research**

If you have any questions about the research, you may contact Maya Trajkovski at 813-400-5697 or Dr. Aubrey Newland at anewland@csuchico.edu. If you have questions regarding your rights as a research participant, please contact the CSU, Chico Human Subjects in Research Committee at 530-898-3145 or irb@csuchico.edu.

I have read the information provided above. I understand that by signing this form I agree to take part in the research and I am at least 18 years of age.

**PLEASE SIGN HERE :**
Being a soccer player combines a lot of different types of skills. As players, we each are stronger in some skills than others. We know everyone on this team is highly skilled. So, we’d like you to rate how you think you compare to the other players on this team for each of the following skills.

(It is okay to not use all the categories.)

<table>
<thead>
<tr>
<th>Rate how you think you compare to the other soccer players your age at ODP on each of these skills/components of the game.</th>
<th>Top 1-20%</th>
<th>21-40%</th>
<th>41-60%</th>
<th>61-80%</th>
<th>81-100%</th>
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</thead>
<tbody>
<tr>
<td>Overall, soccer player</td>
<td></td>
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<tr>
<td>Defensive skills (ex. 1v1, 2v2 defense)</td>
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<tr>
<td>Ball handling skills</td>
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<tr>
<td>Ex. With both feet: Dribbling, trapping ground/air balls, and 1v1 moves</td>
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<tr>
<td>Passing/Shooting</td>
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<tr>
<td>1.Ex. With both feet: accuracy, speed, distance</td>
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<tr>
<td>Read player movement on the field</td>
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<td>Leadership on the field</td>
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<td>2.Ex. Organize and direct players</td>
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<td>Sportspersonship (Playing hard, while playing with respect for the game, opponents, teammates, and referees.)</td>
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<tr>
<td>Work-level</td>
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<td>3.Ex. effort, intensity</td>
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### Appendix E

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</thead>
<tbody>
<tr>
<td>1</td>
<td>I am able to notice the intensity of nervousness in my body.</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I pay attention to the type of emotions I am feeling.</td>
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<tr>
<td>3</td>
<td>I am aware of the thoughts that are passing through my mind.</td>
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<tr>
<td>4</td>
<td>I am able to notice the sensations of excitement in my body.</td>
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<tr>
<td>5</td>
<td>I am able to notice the location of physical discomfort when I experience it.</td>
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<tr>
<td>6</td>
<td>When I become aware that I am thinking of the final result, I blame myself for not being focused on relevant cues for my performance.</td>
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<tr>
<td>7</td>
<td>When I become aware that I am really upset because I am losing, I criticize myself for reacting this way.</td>
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<tr>
<td>8</td>
<td>When I become aware that I am not focusing on my own performance, I blame myself for being distracted.</td>
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<tr>
<td>9</td>
<td>When I become aware that I am thinking about a past performance, I criticize myself for not being focused on my current performance.</td>
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<tr>
<td>10</td>
<td>When I become aware that I am angry at myself for making a mistake, I criticize myself for having this reaction.</td>
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<tr>
<td>11</td>
<td>When I become aware that I am tense, I am able to quickly bring my attention back to what I should focus on.</td>
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<tr>
<td>12</td>
<td>When I become aware that I am thinking about how tired I am, I quickly bring my attention back to what I should focus on.</td>
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<tr>
<td>13</td>
<td>When I become aware that I am not focusing on my own performance, I am able to quickly refocus my attention on things that help me to perform well.</td>
<td></td>
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<tr>
<td>14</td>
<td>When I become aware that some of my muscles are sore, I quickly refocus on what I have to do.</td>
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<tr>
<td>15</td>
<td>When I become aware that I am really excited because I am winning, I stay focused on what I have to do.</td>
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<td></td>
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</tr>
</tbody>
</table>

83