ABSTRACT

MINDFULNESS IN SPORT:

A PROPOSED INTERVENTION FOR CHOKING SUSCEPTIBLE ATHLETES

by Jenna Kaitlin Hussey

Although antecedents of choking under pressure have been studied, prevention efforts have been unsuccessful. Current choking susceptibility (CS) criteria includes trait anxiety (TA), self-consciousness (SC), and coping style. This study implemented a sport specific mindfulness (MF) intervention to reduce levels of TA, SC, and alter coping to reduce CS. Two CS athletes completed the 6 week Mindful Sport Performance Enhancement (MSPE) program. Anxiety direction, trait, and state MF were assessed throughout the program, with a follow-up 5-6 weeks post intervention to gain further insight into the continuing effects of the MF training. Visual analysis demonstrated increases in MF levels, and changes in TA, SC and coping, resulting in both participants failing to meet the CS criteria post-intervention, inferring a reduced likelihood of choking in future performances. Enhanced MF levels promoted greater awareness and acceptance, along with anxiety directional changes, which may help counter the negative effects of stressful sport performances.

MINDFULNESS IN SPORT:
A PROPOSED INTERVENTION FOR CHOKING SUSCEPTIBLE ATHLETES

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Chapter One

Introduction

The fickle nature of human beings is a curious thing. As Patmore (1979) eloquently states in her book, *Playing on Their Nerves*, (p.9) "Human beings under pressure are wonderfully unpredictable; their nature is a puzzle to us all, and psychology has only scratched the surface. When human beings are placed in an area, and their hopes and fears exposed in front of thousands of observers, they are likely to do extraordinary things." In some instances, the result of this pressure can be a remarkable and awe-inspiring performance. Unfortunately, this is sometimes contrasted by a catastrophic drop in performance for other individuals; a process often referred to as a "choke."

The outcome of athletic performance under pressure has perplexed athletes, coaches and researchers alike for decades. Why is it that some athletes excel and demonstrate clutch performance under extreme bouts of pressure while others crumble and fall? Choking under pressure is both a complex and difficult issue to address, as the choking process is an idiosyncratic event, unique to each athlete. Some individuals suffer from severe episodes of choking or experience chronic choking, where the incident can occur multiple times in one game or repetitively over a season (Gucciardi, Longbottom, Jackson, & Dimmock, 2010). Choking is not a matter of simply missing one free throw or failing to block a single shot on goal per se. Episodes of choking include significant underperformance, which are difficult and many times impossible to recover from, and may prove to be devastating to an athlete's game and even to their athletic career (Hill, Hanton, Matthews, & Fleming, 2010).

Noteworthy examples of choking in sport include Jana Novotna, a professional tennis player, and Dan O'Brien, a decathlon world record holder. During the 1993 Wimbledon finals Novotna had a 5-1 lead in the final set when she double faulted and went on to lose the entire match. Dan O'Brien choked in 1993 during the Olympic trials when he missed all three attempts at the pole vault event, even though previously he had jumped the height numerous times with ease. Because of his apparent choke, O'Brien never made it to the Olympics, shocking thousands of people, as he currently held the world record in the decathlon and was ranked number one in the world. Both of these scenarios include athletes who typically would excel at their sport, yet failed to meet the expectations that were placed upon them when the pressure was high and success mattered most.

Defining Choking

Choking is a complex process and although there are variations in the definition of choking, many researchers agree that in general, choking is an incidence that occurs when

individuals are motivated to succeed, yet believe they are unable to handle and/or cope with the situation at hand due to high amounts of perceived pressure, thereby experiencing a significant decrease in performance regardless of increasing effort (Baumeister, 1984; Hill, Hanton, Fleming, & Matthews, 2009; Beilock & Gray, 2007). Leading up to a choke, athletes are not able to execute the skills or maintain the abilities which they typically demonstrate in similar environments (Baumeister, 1984). For highly practiced skills like basketball free throws, which are extremely automatic for athletes, this is especially the case (Beilock & Carr, 2001). Although there are differences how choking is defined and described throughout sport psychology literature, a common consensus is that a significant drop in performance must occur in order to identify the situation as a true choke (Hill et al., 2009). However, physical performance alone does not dictate that the athlete has choked for certain. Researchers have recently explored potential underlying causes for choking in athletes through studying a variety of sports.

Over the years, qualitative studies have examined athletes who have experienced chronic choking episodes and discovered that there are many internal and external factors that may contribute to choking. Quantitative studies have included creating environments where pressure levels are controlled and the researchers can attempt to actually promote choking under high levels of pressure (see Wang, Marchant, Morris, & Gibbs, 2004; Geukes, Mesagno, Hanrahan, & Kellmann, 2013). Through both qualitative and quantitative research, a general consensus is that choking is caused in large part by attentional disturbances resulting from self-focus and/or distraction (Beilock & Gray, 2007; Wang, 2002; Beilock & Carr, 2001).

Influencing Variables

One recent study on choking under pressure investigated somatic and cognitive anxiety as well as self-confidence in athletes while they were tested under high and low pressure situations. Somatic and cognitive anxiety levels were significantly higher during the high pressure situation, and self-confidence was significantly lower (Geukes, et al., 2013). There is also a strong relationship between nervousness and high levels of self-consciousness with choking susceptibility (Baumeister, 1984), and high trait anxiety with those who choke under pressure (see Hashimoto & Tokunaga, 2000; Wang, Marchant, Morris & Gibbs, 2004). Other variables that impact choking include reinvestment (which will be explained upon further reading) (Masters, Polman, & Hammond, 1993), stereotype threat (Chalabaev, Sarrazin, Stone, & Curry, 2008), and coping styles (Wang, Marchant, & Morris, 2004). Self-consciousness can also contribute towards choking, as athletes may begin to think about the

audience or how others are judging their performance. Social anxiety and having a strong fear of negative evaluation are both products of this event, and may also contribute to the choking process (Wallace, Baumeister, & Vohs, 2005).

Consequences of Choking

Due to the high amount of pressure and the demand that is placed on competing not only well, but with peak performance- chokers may feel unprepared to handle the competition. Chronic choking may set the athlete up for having negative expectations for future performances, and in order to protect their ego they may possibly engage in self-handicapping behavior (see Hill et al., 2010; Prapavessis, Grove, & Eklund, 2004). Fear of failure, anxiety, and the heightened self-consciousness contribute to athletes feeling unprepared to face the challenges they are up against.

In many instances of choking, athletes may feel as though they are overmatched against the heavy demands of the competition. As a result, the athlete can develop a state of learned helplessness which undermines their motivation and ability to cope even more (Seligman, 1975). Learned helplessness is characterized by a loss in ability to discriminate between those aspects of the situation that are under control and those that are not. Eventually athletes may believe that there is nothing they can do to change. The well-being of athletes will suffer, and often athletes will consider dropping from their sport altogether due to decreases in enjoyment and satisfaction in their sport (Hill et al., 2010). Following a choke, athletes can become highly self-critical of their mistakes and performances, and suffer decreases in self-confidence, believing that in the future they will continue to fail under pressure. Hill and colleagues (2009), using a qualitative approach to understand choking, found that many athletes experience negative psychological effects which include dysfunctional thinking, and further concentration disruptions along with negative thoughts. Consequently, this has a negative impact on the next time they perform and may contribute to the self-handicapping.

Major consequences of chronic choking include the athlete being overstressed, leading to overload, burnout, dropout, and maladaptive fatigue syndrome (Fullerton, 2013), which develops when an athlete's high levels of stress and/or anxiety symptoms do not go away, leading to constant and prolonged psychological suffering. The athlete often experiences feelings of anger, anxiety, confusion, depression, sadness, as well as a lack of vigor and apathy (Hann, 2000).

Understanding the Stress Response

Stress is a process that is triggered by a situation that the individual perceives as dangerous, harmful or frustrating (Spielberger & Hackfort, 1989). This intricate process involves three components: the stressor, the perception and/or appraisal of the threat, and an emotional reaction (e.g. anxiety). Stress that leads to an anxiety reaction can also be caused by thoughts or memories the individual views as being threatening or frustrating. As an emotional state, anxiety is consciously experienced and is very subjective. Feelings of tension, apprehension, nervousness, worry, and increased levels of arousal are most often experienced (Beilock, 2010). Stress, even though at times complex, is something that individuals experience in their daily lives and does not always have negative consequences. All individuals face demands and challenges; however there are both inter and intra-individual variations in how people respond to life events (both acute and chronic) that have significant consequences on their well-being (Larsen, 2000). Although individuals may deal with a certain level of daily stress, thoughts and memories that arise from a specific event (such as highly pressurized competitions) may impact the individual to a much higher degree. Alongside these thoughts and memories comes the role of the individual's style of coping and their previous history and experience with handling similar situations (Spielberger & Hackfort, 1989). The perception of the threat is what facilitates the relationship between a stressor and the intensity of an anxiety response (Spielberger & Hackfort, 1989). Even when there is no objective threat, the *perception* of threat still transmits the essential message of stress to the athlete's brain which results in increased anxiety levels (Spielberger & Hackfort, 1989). The frequent appearance of negative stress responses can lead to anxiety being a conditioned emotional response to competition cues, resulting in sleep disturbances, excessive pre-competition worry, and impaired performance (Suinn, 1989).

In regards to stress appraisals, events are perceived as good, bad, or neutral, as positive or negative, and/or as involving challenge, threat, harm, or loss (Weinstein, Brown, & Ryan, 2008). Anxiety is experienced after the athlete has appraised their current situation/environment and concluded that it may have a significant negative affect on their performance, reputation, future opportunities, and emotional states (see Hill, et al., 2009). Martens (1987) suggested that there are two types of situational stress that may greatly impact an athlete's level of state anxiety: the importance if the competition event and the uncertainty that encompasses the event outcome. If the individual believes the situation is threatening, they will be more likely to establish a negative outlook on any anxiety they do experience.

To expand on this, Spielberger & Hackfort (1989) support that there are two central characteristics of threat appraisal. The first is that experience of threat is future orientated. That is, the individual anticipates that a potentially harmful event will occur as a result of the present situation. Secondly, the threat is mediated by a mental process such as perception, thoughts, memories, and judgements, which are all involved in the appraisal process. As Wang suggested in his integrated model of choking in sport (2002), the initial appraisal of the pressure situation is what sets the rest of the choking process into motion. Only when an athlete views the competition as negative and threatening, will they progress to the next step towards choking which is discussed in the following theories.

Theories behind the Choking Process

Many researchers have addressed theories originating from clinical psychology to help explain the underlying causes for the development of a choke. To begin, Mesagno and colleagues proposed that some athletes will choke under pressure because of issues with self-presentation (2011). A self-presentation model of choking was developed which proposed that choking susceptible (CS) athletes will have concerns with how they are viewed by others. This concern is brought out through public self-consciousness, social anxiety, and the fear of negative evaluation which then increasing levels of anxiety and promotes choking (Mesagno, Harvey, & Janelle, 2011). Another aspect that has more recently been studied is the effect of social physique anxiety on performance decrements and may also influence certain cases of choking (Thatcher & Hagger, 2008).

Wang also proposed a theory behind choking using his integrated model of choking in sport (2002). This model suggests that choking occurs for different reasons for different athletes, and may differ between novice and elite athletes. Wang argues that the first important stage is the athlete's perception of pressure. The athlete can either attribute the pressure to stable causal factors (i.e. dispositional characteristics such as trait anxiety and self-consciousness) or unstable causal factors (i.e. situational emotional states). The athlete experiences their own cognitive appraisal of the situation, and based on these causal factors, if they view the situation as negative or threatening then perceived pressure may increase (Wang, 2002). Wang's model also discusses the task's perceptual and motor skills, coping style, and level of skill from the athlete. The model touches on a very important matter, which is the initial appraisal of the pressure situation. Before the dominant theories behind choking are discussed, it is important to understand the foundations for which choking first takes shape. To do this, we will look at how individuals first interact with an environment that is stress provoking.

Among the numerous theories attempting to explain choking, there are two dominant theories popular among researchers today, which have been supported in both clinical and sport literature: Self focus theories and distraction theories (Hill et al., 2010; Beilock & Gray, 2007; Masters, 1992; Beilock & Carr, 2001; Baumeister, 1984). Self-Focus theories include the Explicit Monitoring Hypothesis (EMH; Beilock & Carr, 2001) and Consciousness Processing Hypothesis (CPH; Masters, 1992). These theories maintain that under high amounts of pressure, an individual experiences increased amounts of anxiety and self-consciousness, thereby increasing the attention paid to the skill being executed and reverting to a step by step control of that skill; referred to as reinvestment (Beilock and Carr, 2001; Masters, Polman, & Hammond, 1993).

To understand how this process occurs, one needs to look at how the brain functions with learning and memory. Once a task becomes well learned and automatic within the brain, it no longer requires deliberate, conscious attentional control while the skill is being carried out (Schmidt & Lee, 1999; Kimble & Perlmuter, 1970). In her book *Choke*, Beilock (2010) explains that as a person become better at performing a particular skill (such as a free throw or a golf swing) the process becomes more automatic, and a person's conscious memory for how they perform that skill becomes progressively worse over time. Choking under pressure does not occur because the athlete lacks ability, technical skills, or because they fail to put a high level of effort into their sport. Although these athletes may be motivated to perform their best under the high levels of stress, this type of critical environment can lead to them performing at their worst (Beilock, 2010). What guides athletic skills and one's ability to reason in sport is a person's procedural and explicit memory (responsible for helping individuals recall exact details). When an athlete attempts to break down their skill in a step by step execution, they are utilizing a large amount of working memory which becomes problematic. The prefrontal cortex (PFC) is responsible for temporarily storing information via working memory. Although working memory has the ability to grasp this information while concurrently focusing on another task, there is a threshold for the brain's capability to do this. For this reason, many previous interventions for choking have failed due to their lack of focus on working memory. Beilock (2010) has repeatedly stated that athletes who choke are doing so because they are not utilizing their working memory efficiently. These athletes are either devoting the majority of their attention to reinvesting in their skill which uses up too much working memory, or they are distracted from the task at hand which diverts their attention elsewhere. By limiting the amount of working memory that is being used and

limiting conscious control on skill execution can increase the possibility for success (Beilock, 2010).

Another model that has been created in order to explain choking is the Automatic Execution Model (Baumeister, 1984). This approach, similar to self-focus theories, asserts that the perceived high amount of pressure is what ultimately leads an extreme level of self-focus and the athlete attempting to control and reinvest in their skill (Baumeister, 1984). All of the self-focus theories believe that when an individual alters their focus to concentrate on the details of an automatic process, this will actually prove to disrupt that skill (Beilock, 2010). This monitoring and/or conscious control of a well learned skill serves to overload working memory (Reeves, Tenenbaum, & Lidor, 2007). The common phrase "paralysis by analysis" provides an accurate yet simple approach to this complex process of choking. When an athlete is under stress, their frontal lobe, specifically the PFC, will fail to meet the demands of the situation. The brain becomes over involved in what typically is an automatic course of action, and working memory is overworked in the process.

As stated earlier, the other commonly supported explanation for choking stems from distraction theories. Processing Efficiency Theory (Eysenck & Calvo, 1992) suggests that individuals try to process anxiety related thoughts such as worry, self-doubts, thoughts of negative evaluation, or fear of failure, at the same time that they attempt to process task related information. The information needed for task execution is therefore processed slower because of the distracting task-irrelevant thoughts. This is due to working memory serving not only as storage for information, but also as a place to store information while partaking in another activity concurrently (Beilock, 2010). In a pressure situation, anxiety serves as a major internal distraction which utilizes the vast majority of working memory resources, leaving the individual with an insufficient amount of resources left over for their performance task (Ashcraft & Kirk, 2001). The overload of working memory when an individual is performing under pressure has repeatedly been shown to lead to choking (Wilson, 2008; Reeves, Tenenbaum, & Lidor, 2007).

When athletes shift their attention to self-evaluation of their own performance they can become distracted by negatively evaluating themselves. This leads increases in private self-conscious levels, and the athlete's performance significantly drops (Edwards, Kingston, Hardy, & Gould, 2002). While some athletes focus on the external stimuli such as the audience or opponents, others will turn their attention to negatively based internal thoughts and emotions. Commonly athletes will choke because of the distraction caused from their cognitions such as focusing on past performance failures and their perceived likelihood of

making a mistake (Wilson, 2008). One particular study found that when athletes would change their attentional focus towards their performance by way of self-evaluation, their performance drastically dropped (see Edwards, Kingston, Hardy, & Gould, 2002). Another example of this process is when athletes succumb to thoughts regarding stereotype threat (Beilock & McConnell, 2004). Athletes become increasingly self-aware and think about other people's expectations regarding their sport performance. Again, this course of action recruits additional working memory alongside an increase in anxiety and negative cognitions which overload the brain and distract the athlete. The athlete may attempt to control his/her cognitive anxiety (worries, self-doubts, etc.) instead of staying focused on the present task. Self-awareness and the accompanying cognitive anxiety may help explain many instances of choking in various sports (Beilock, 2010). This process also demonstrates a self-fulfilling prophecy, where an individual thinks about making mistakes or failing at a task, and then consequently will fulfil this belief through their actions; consciously done or not (Merton,1948). Panic, which occurs from experiences of intense anxiety and emotion, may also lead to an extreme narrowing of attentional focus and lead to performance decrements. Panic has previously been used in an attempt to explain why some athletes choke, however, panic results in an absence of thinking due to the extreme arousal levels, and is in fact the opposite of information processing. An athlete ends up relying on their gut instincts and reactions, the body's fight or flight response may take over, and they will experience an intense behavioral urge to escape the situation (Barlow, 2004). Choking in contrast, involves distraction and/or overthinking a concept (reinvestment) and actively deciding to engage in a particular action in an attempt to change the circumstance.

Major Components of Choking

Identifying common characteristic of chokers has been of great interest to researchers in the field of sport psychology over the recent years. One proposal is that some athletes are choking susceptible (CS), meaning that these individuals are more prone to distraction and choking under pressure (Mesagno & Mullane-Grant, 2010). In support of this notion, Mesagno (2006) developed specific criteria for identifying CS athletes, which includes measuring levels of anxiety, self-consciousness, and coping styles (Mesagno, 2006; Mesagno, Marchant, & Morris, 2008). Choking in sport has repeatedly been associated with high amounts of self-focus and internalized attention to one's skill execution. This implies that there may actually be a certain disposition towards becoming self-focused under circumstances of extreme pressure, which may therefore make some athletes more vulnerable

and susceptible to choking. For this reason, trait measures of both anxiety and self-consciousness are included in the CS criteria (Mesagno, 2006; Kurosawa & Harackiwisz ,1995).

Anxiety. Increased levels of anxiety is a common occurrence for many athletes while competing under pressure and most often this anxiety arises due to situational and/or personal sources. Situational sources include uncertainty and the importance of the game or event, whereas personal sources include an individual's recollection of past experiences, self-evaluations, and potential social comparisons (Hayes, Wilson, Gifford, & Follette, 1996). Of great importance to the choking literature is the ability to understand the athlete's relationship with their anxiety pattern. Each athlete is unique in how they assign personal meanings to experiences of winning, losing, feeling nervous, etc. Athletes experience an ongoing process of cognitive appraisals during competition where they will assess for threats to their performance and well-being. According to Bandura, anxiety is ingrained with the experience of time, context, and the sense of efficacy (1977; 1982). According to Spielberger and Hackfort (1989) two central components of anxiety are worry and emotionality. Emotionality includes an increase in autonomic arousal levels, as an affective-physiological experience and also as a source of interference. These two components are direct results of both the athlete's competence (with regard to the intended action and the situational demands) and the importance of the situation's outcome. The idea is that there is a strong tie between the outcome of a particular situation and the consequence of that outcome that will directly impact the individual. In the case of athletes who choke, the outcome may be failure to meet performance expectations such as beating one's opponent.

The consequences of this outcome may result in the athlete dropping rank in their sport, disappointing their coach and team, or not proceeding to a higher level of competition. When the athlete does not believe they are competent enough to prevent a negative outcome from happening, they will experience greater amounts of worry. Furthermore, anxiety based emotional responses such as worry and nervousness will continue to occur from outcome cues (e.g. the score board or game time) that serve to remind the athlete of the possible negative consequences that will occur should they fail or perform poorly. These outcome cues may serve as a distraction for athletes and increases in anxiety will continue to negatively impact their perception of the pressure and their self-confidence.

Extreme levels of anxiety are characterized by intense feelings of fear, catastrophic thoughts, and panic behaviors (Spielberger & Hackfort, 1989). Research has characterized trait anxiety by experienced elevations in state anxiety, and individuals who are higher in trait

anxiety are more anxiety prone (Marchant, Morris, & Andersen, 1998; Martens, Vealey, & Burton, 1990) meaning that individuals perceive a wider range of situations as threatening and with a greater intensity. Athletes may experience state anxiety due to low self-esteem, their higher levels of trait anxiety, or due to social factors. During performance, anxiety states can lead to loss of smooth motor coordination, can disrupt concentration and attentional focus, impair decision making skills, lead to reductions in self-confidence, and may precipitate negative cognitions (Suinn, 1989). Because of the notable negative consequences that can arise from high anxiety levels, the desire to both reduce and control anxiety is frequently reported by athletes of all ages and skill levels (Mahoney & Meyers, 1989). Anxiety is not always negatively experienced however, as some athletes believe that they thrive off of anxiety, even at higher levels, and will actually perform at their best with its presence (Raglin & Hanin, 2000). Thus, the experience of anxiety is just as diverse as the range of individual meaning associated with it, as for one person it may be an uncomfortable annoyance, and for another, a horrible and catastrophic shock (Mahoney & Meyers, 1989).

For athletes who have choked, performance under low levels of pressure is often significantly higher than performing under high pressure, thus explaining how pressure influences the process of choking (Wallace, Baumeister, & Vohs, 2005). Anxiety accompanies the performance decrements from pressure changes, because the elevation of anxiety while performing under high amounts of pressure typically can lead to underperformance and in many cases choking (Mesagno, 2006). Because of this, high amounts of anxiety are usually viewed as one of the key causes of choking both in sport and academics (Masters & Maxwell, 2008; Hill et al., 2011; Omoregie & Adegbesan, 2011). Not only do most chokers experience elevated levels of both somatic and cognitive anxiety, their interpretation of the anxiety is most often negative (see Hill et al., 2010; 2011). That is, they believe that the presence of anxiety in any shape or form is detrimental towards their performance. Studies have supported the idea that an individual's interpretation of anxiety is more closely tied to predicting performance than the mere presence of anxiety itself (Jones, 1995). Athletes who have choked often reflect on their experiences as being pressure and anxiety driven. They experience higher levels of somatic anxiety (e.g. shaking, sweating, increased heart rate), and higher levels of cognitive anxiety (e.g. worry, nervousness, self-doubts, helplessness).

While the experience of anxiety symptoms may often be viewed as negative for some athletes, the extent to which the athlete believes they have the ability and the resources to meet the challenge at hand is a major aspect of state anxiety levels (Cheng, Hardy, &

Markland, 2009). Commonly, athletes who choke will feel like the anxiety is overwhelming and difficult to control; the outcome is often devastating, as anxiety is often experienced as intensely unpleasant. If an individual cannot avoid a stressor or lacks the skills needed to properly cope with a threatening situation, they can become overwhelmed with anxiety and attempt to use various coping mechanisms such as relaxation skills or breathing techniques that serve to alter the perception or appraisal of the stressful situation (Hann, 2000). Although the athlete may temporarily feel they can better handle the situation, the downside is that the individual ends up investing a lot of energy into this process in order to try and reduce the anxiety (while not always being successful) and the underlying causes of anxiety remains unchanged. Increased anxiety leads to a more narrowed focus of attention and if the attention becomes too narrow the athlete may respond to task irrelevant cues such as the crowd or other distractions (Nideffer, 1992). A more recent study found that the combination of high anxiety and the use of negative instructions (e.g. don't miss) would create an extremely high likelihood of choking (Oudejans, Binsch, & Bakker, 2013).

Findings in clinical psychology have established that when individuals experience negative post-event processing, it is often associated with increased anxiety about future performances. Subsequently this may lead to increasing amounts of self-focused attention and underperformance. This idea is very similar to choking theories in sport, where increased anxiety due to a high pressure situation will lead to increased self-focus, leading to either a distraction or reinvestment which will then trigger a choking event. Equally notable, is the occurrence of multiple choking episodes within the same game or completion. Some insight to why this snowball effect may occur is based off the notion that there are increases in state anxiety following failure experiences (Martens & Gill, 1976). The athlete would simply continue to increase their anxiety levels which would therefore lead to further self-focus and/or distraction leading to a subsequent choke.

Clinical findings have also found that perfectionism can influence anxiety. If individuals take on perfectionistic tendencies in a negative sense, and are highly self-critical of their performance outcomes, they can experience negative perceptions and higher levels of anxiety. The athletes who are unable to accept their mistakes or control their negative response to their imperfections and mistakes also often experience decreased self-confidence, have outcome orientated goals, and use maladaptive coping responses; all of which have been identified in chokers in qualitative explorations such as the work done by Hill and colleagues who investigated choking in elite golfers (2010). Results indicated that chokers are frequently highly self-critical regarding their underperformance and choking instances.

Although anxiety plays a major role in choking under pressure, it is not a sole predictor of choking, for its role is influenced by factors such as coping strategies (Gooding & Gardner, 2009).

Coping. Coping is an adaptation response to stressful situations (Gross & Thompson, 2007; Larsen, 2000). Coping can be defined as "the constantly changing cognitive and behavioral effort to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Masters (1992) maintained that an inability to properly cope may be reflected in many athletes who choke under pressure. This is because the more pressure and stress the athlete perceives, the more they will want to avoid negative outcomes and want to try and cope with the situation (Anshel & Kaissidis, 1997) by means of either regulating their emotions or engage in problem solving. When the athlete tries to cope with the stressful situation, this is a form on control which may lead to further negative consequences if the style of coping they use is inappropriate.

Coping styles can generally be classified as being either approach or avoidant (Roth & Cohen, 1986). Approach coping is when an individual actively puts in effort to change a situation or solve a problem that they may be faced with. The individual's behavior is directed toward changing the situation or how they interpret the situation in order to adjust to it. Approach coping includes three main forms which may be used by the individual: active coping, acceptance coping, and cognitive reinterpretation (Stowell, Kiecolt-Glaser, & Glaser, 2001). These types of approach style coping involves direct action, acknowledgment, and/or choosing to use and accept the stressful situation in the best way possible. Approach style coping generally considered to be an adaptive form of coping because the individual actively tries to resolve the stressful situation or overcome the stress that is associated with it. Although, as discussed further, this may not always be the case with athletes who choke.

Avoidance coping is considered to be a maladaptive response where an individual actively tries to avoid handling a stressful situation (Krohne, 1993). An individual may exhibit defensive behaviors such as mental and behavioral disengagement or even denial (Stowell, et al., 2001). Avoidance coping includes ignoring, distorting, or escaping threatening stimuli (Weinstein, Brown, & Ryan, 2009). Avoidance coping includes attributing the situation to external factors, and may also include lack of any coping at all (Krohne, 1993).

There have been mixed findings in previous research that attempted to determine the dominant coping style of athletes who often choke under pressure. In a more recent study,

athletes who choked were found to have engaged in several avoidance coping strategies that included venting and disengaging from their sport (Kristiansen, Roberts, & Abrahamsen, 2008). These maladaptive tendencies can also encourage subsequent choking episodes (Hill et al., 2010). This is because anxiety is not always reduced by this type of coping and therefore will continue to distract the athlete and promote further self-focus and possible reinvestment of skills (Mesagno, Harvey, & Janelle, 2012). The coping strategies that some chokers attempt to use also stem from the unfamiliarity they may feel during the competition and from their negative expectations they have regarding their goals (Hill et al., 2010). In some cases, chokers may lack effective coping skills altogether when they are faced highly pressurized situations and may revert to using defensive mechanisms such as projection (Mesagno et al., 2012).

Athletes who choke are unable to stay focused on the task at hand because the pressure may create abnormal reactions which may sway the athlete's attention elsewhere, to task-irrelevant cues. As an attempt to cope with the distraction that pulls them away from their task, the athlete may try to refocus as a way to cope with the situation (Beilock, 2010). Athletes will most often use coping strategies based on how they identify and assess their performance environments. Only after an athlete has viewed a situation as exceedingly difficult, will they attempt to change their thoughts and/or behavior (Lazarus & Folkman, 1984; Nicholls & Polman, 2007; Nieuwenhuys, Hanin, & Bakker, 2008). A study by Anshel, Porter, and Quek (1998) supports this notion by their finding that athletes who attempted to try harder (approach coping) most often followed an error in the sport.

Although athletes may engage in some avoidance coping styles, they more often engage in approach coping styles in a failed attempt to prevent mistakes and choking. Mesagno and colleagues support that approach style coping methods are more predominant for the majority of choking susceptible athletes (Mesagno, 2006; Mesagno, Marchant & Morris, 2008). Although approach coping is considered to be an adaptive form of coping which one might expect to help prevent choking, this unfortunately is not the case.

To support this further, Wang's (2002) integrated model of choking in sport indicates that approach coping typically leads to choking during pressure situations. Although the approach coping style would appear to help alleviate some negative symptoms of anxiety and cognitive overload by way of increasing effort, attempting to solve the problem, or an attempt to change the source that creates the anxiety, it fails to prevent the actual choke. There is actually a failed attempt to use approach style coping (in terms of saving one's performance) because the athletes lacks the resources to effectively implement these adaptive coping

strategies that would otherwise be effective with proper cognitive resources. This lack of resources stems from the cognitive and emotional overload that originates from the highly pressurized situation. By attempting to change the situation, the athlete will either try and control their technique (reinvestment) and/or change the way they think which ends up eating up more cognitive resources (i.e. working memory).

In terms of coping ability and perception of control, an athlete's coping style may also be linked to how they interpret anxiety (Eubank & Gilbourne, 2003). Eubank and Collins (2000) have supported that the way that coping techniques are acquired and subsequently incorporated into sport performance plays a major role in reflecting how anxiety is interpreted as being either beneficial or damaging towards performance. Athletes who typically perceive anxiety to be debilitative tend to struggle with coping-related issues during competition because they are limited in their coping resources and may be unable to properly use the coping strategies that they do have when they feel pressure during stressful situations (Eubank & Gilbourne, 2003).

Approach style coping is therefore ineffective for these particular athletes in highly pressurized situations since strategies such as increasing effort are not relevant and do not address the underlying causes for choking (i.e. working memory overload). As for avoidance coping, although in the long term can be damaging, in temporary instances athletes who would attempt to use this type of strategy may actually be able to ignore the pressure inducing information such as distractions, and could actually maintain a more task-relevant focus (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Therefore, one could conclude that use of more avoidance coping in some instances would in fact decrease the chances of choking in sport (Wang, 2002).

Self-consciousness. Trait and state levels of self-consciousness differ in athletes who are CS. Numerous studies have indicated that athletes who are higher in state self-consciousness are more likely to experience choking compared to athletes who are low (Wang, Marchant, Morris & Gibbs, 2004; Mesagno, 2006). Furthermore, Wang, Marchant & Morris (2004) discovered that the combined influences of both high self-consciousness and trait anxiety act as strong predictors of choking episodes.

A study by Baumeister (1984) however, found that levels of dispositional self-consciousness are low in those who often choke, while state self-consciousness tends to be high. Baumeister explains that pressure situations act to increase one's self awareness and those who are not used to experiencing the high levels of pressure during competition are the ones who choke (1984). Under high levels of pressure some athletes will have increased

levels of self-consciousness due to the increase in anxiety surrounding the large amount of pressure and will as a result have narrowed attention. Some athletes may experience high levels of public self-consciousness, where their self-awareness and attentional focus is more public driven under pressure, which is a task irrelevant focus that may prove to be a distraction for the athlete and trigger choking (Mesagno, Harvey, & Janelle, 2012).

Geukes and colleagues (2013) demonstrated that high levels of private self-consciousness leads to underperformance during high pressure situations, and this outcome has been supported by other research as well(see Masters et al., 1993; Wang, Marchant, Morris, & Gibbs, 2004). A consideration to Geukes's study is that the participants were performing in a private environment that did not contain an audience. More publicly based situations of pressure have often resulted in higher levels of public self-consciousness with regards to choking (Baumeister, 1984).

Although there has been varied results concerning the influence that private self-consciousness has on choking, many studies that have used gross motor tasks, such as free throwing in basketball, have found that private self-consciousness does impact performance and can influence episodes of choking (Wang, Marchant, Morris, & Gibbs, 2004). Although Baumeister's study (1984) found contradictory results, he did use tasks that directly involved the capability of working-memory under pressure, so this may explain the difference in findings (Geukes, et al., 2013). Overall, the leading literature on self-consciousness and choking maintains that athletes who have high levels of trait self-consciousness may be more CS (Mesagno et al., 2008, 2009).

Previous Interventions and Approaches to Choking

For athletes who often excel under pressure, there are various training techniques and psychological skills in both practice and competition that have claimed to be critical for success (Hill, et al., 2010). CS athletes however, either make no attempt at using these techniques, or they are simply unable to due to their overall negative and self-focused states during competition. The use of a pre-performance routine has been advised, as many athletes who excel under pressure or are identified as choking resistant include this during highly pressurized games (Hill, et al., 2010; Mesagno & Mullane-Grant, 2010). For chronic chokers however, the use of a pre-performance routine may not actually decrease the chances of choking or decrease the potential recurrence of choking (Mesagno & Mullane-Grant, 2010).

Traditional cognitive-behavioral techniques in sport psychology focus on changing the athlete's perceptions or thoughts. Sport psychologists use these techniques in psychological skills training (PST) using methods such as goal setting, positive self-talk,

cognitive restructuring, imagery, and thought stopping (Whelan, Mahoney, & Myers, 1991). Historically PST has been supported in improving performance and even promote flow by using these methods (Hardy, Jones, & Gould, 1996). The dominating belief is that if an athlete is able to eliminate negative thoughts then positive thoughts and outcomes should occur, resulting in optimal performance (Hardy, Jones, & Gould, 1996). Recent studies however, have suggested that traditional PST is not always highly beneficial for every athlete's sport performance (Gardner & Moore, 2006). The reason is because these techniques try to increase awareness, and the negative thoughts are brought out even more to the athlete's attention. Although the goal is to control these thoughts and /or eliminate them altogether, the outcome is not always a positive one and may actually lead to diminished performance (Wegner, 1994). CS athletes in particular already have to process an overwhelming amount of negative emotions and thoughts, so by targeting these negative emotions more, even with the intent to change them, may result in increased awareness which can create an even greater distraction. As high amounts of self-awareness and distraction have been supported to be a major cause of choking, the use of PST may possibly, thought inadvertently, encourage the choking process.

An example of how PST can fall short of enhancing performance with chokers is thought stopping, where the athlete attempts to "block" negative thoughts. While the use of thought stopping is meant to enable the athlete to prevent negative cognitions from impacting their athletic performance, the process of blocking does not free up working memory. The individual is in fact trying to control their thoughts by interrupting negative thoughts (e.g. worry, self-doubts) and switching them into positive ones. This conscious attempt in controlling one's thoughts acts as a distraction from the task relevant cues and it uses up additional working memory. To explain this more specifically, certain areas of the PFC are responsible for processing verbal tasks, such as self-talk. When an athlete engages in negative self-talk that is fueled by anxious and worrisome thoughts, working memory works harder to process this while also trying to stay focused on the task at hand. This is because being involved in two cognitive processes at once in the same area of the brain is harder than if these processes were in two separate areas (Beilock, 2010). Simply switching negative self-talk to positive self-talk, or using thought stopping to counter the anxious thoughts will not only fail to free up working memory, but it will actually serve as a catalyst in the choking process. By teaching athletes to control their internal thoughts and emotions, this may unintentionally result in increased self-consciousness, which consequently leads the athlete to focus on their anxiety and task-irrelevant cues, promoting additional distraction and/or self-

focus. Athletes will try to control negative cognitions in an attempt to avoid or erase them; their belief being that these thoughts and feelings are undesirable and thus should be ignored or changed (Moore, 2003).

The right side of the PFC is in charge of spatial task processing, and if an athlete is performing a skill that places a large demand on this area then using the necessary amount of working memory is more challenging, as mentioned before. This may also explain why some athletes = are unable to use imagery effectively while performing under extreme levels of pressure, or why they might experience negative imagery (see Hill et al., 2010). The right side of the PFC is also responsible for the experience of negative emotions like fear and heightened alertness. These emotions are often present when an athlete is performing under pressure and becomes highly anxious (Hill et al., 2009). Should the athlete be executing a task that relies heavily on processing spatial tasks, working memory will continue to overload and trigger the choking process.

Another suggested intervention is to have chokers practice their sport under pressure so that they are used to the feeling of performing with the associated stresses and emotions. Practicing under these moderate to high levels of pressure has been thought to help prevent choking when an athlete is later competing at high levels of pressure (Beilock, 2010). Unfortunately, creating similar types of pressure may be very difficult or even impossible as pressure is interpreted differently for different athletes. For some, the pressure may be from the presence of a large audience, cameras, and their game being televised for thousands of people to see. For others it may be from the high expectations from coaches, parents or significant others. Other sources include financial incentives, trophies, talent scouts, competing against long term rivalries, or having potential contracts at stake. Training in practice with a small audience or with a camera set up may help some, however this approach may prove ineffective for others as it does not target the real underlying causes of choking as discussed previously.

Some researchers suggest that focusing on building self-confidence and enhancing levels of mental toughness may benefit CS athletes (Hill et al., 2009). Focusing only on building mental toughness and self-confidence alone does not address the deeper, underlying issues regarding attentional focus, distraction, and anxiety management. Therefore, while building self-confidence may benefit in playing a helpful role in the athlete's performance, an alternative intervention approach is necessary to target more of the prevailing and significant factors included in the choking process. Many researchers believe interventions that center on reducing self-focus may have the most impact on preventing choking (e.g. Masters &

Poolton, 2012), while others believe that utilizing better coping techniques or using anxiety control techniques may be the key. Relaxation and basic coping skills are helpful for athletes who struggle with moderate, acute, and topical anxieties however incases of extreme, chronic, and general anxiety, more comprehensive interventions may be warranted (Mahoney & Meyers, 1989)**.**

Choking – Where to From Here

The idea of choking under pressure is overwhelming for some athletes, as it can eventually lead to dropping out of a sport altogether and also lead to lower levels of satisfaction with sport (Hill et al., 2010). Based off of an extensive collection of previous research, an athlete's interpretation of anxiety appears to play a significant role within sport performance and choking under pressure. In fact, Hanton and Jones (1999) state that there are significant implications regarding the way that people interpret their anxiety; one of these implications is that anxiety may be seen as being in one's control and can be managed and structured in order to have a facilitate outcome on performance as well as confidence in oneself. High levels of perceived control is critical for perceiving anxiety as facilitative; therefore an intervention that includes focusing on increasing this and encouraging this facilitative outlook of anxiety may help to alleviate choking for athletes when they are competing under pressure. Based off of the control-process model of anxiety (Jones, 1995) when an individual has a high level of perceived control, the outcome is a positive expectancy in their ability to cope with the situational demands, resulting in a facilitative approach for the anxiety they experience.

The choking phenomenon is an intricate process where cognitions, attentional focus, emotions, and the situation interact in different ways for different athletes (Gucciardi, et al., 2010). Therefore, an intervention that aims to thoroughly address the majority of these factors is ideal. Theories behind choking have made clear that the overloading of an athlete's working memory due to self-focus and/or distraction are key causes to choking under pressure (Beilock and Carr, 2001; Wilson, 2008). Researchers have fallen short of providing coaches and practitioners with an intervention that will competently do so. One particular method that has been used for anxiety management in sport in recent years (Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000) which may have high potential as an intervention for choking susceptible athletes is mindfulness.

Introduction to Mindfulness

Mindfulness is defined as the nonjudgmental observation of the present moment; including internal and external thoughts, emotions, and feelings (Kabat-Zinn, 1994). The core components of mindfulness are awareness and acceptance, encouraging individuals to embrace their thoughts and feelings non-judgmentally as they occur, rather than ignoring them altogether (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004). When an individual is mindful, they are able to accept their thoughts and able to stay focused on task relevant cues.

Training in mindfulness has been found to lessen the effects of somatic anxiety (Tang & Posner, 2009) and promote changes within the brain itself. Hölzel and colleagues recently discovered that activity in the amygdala decreases, and the hippocampus and PFC increase in volume and density (2011). Due to these changes, the mind is more resilient to stress and stress producing situations (Hölzel et al., 2011). Alongside physiological changes, mindfulness has been linked to anxiety management over the years in clinical settings (Thompson & Waltz, 2007), and with individuals struggling with strong perfectionistic tendencies and depression (Argus, & Thompson, 2008). Due to its success in clinical settings, mindfulness has recently been utilized in sport psychology research.

Individuals with higher levels of mindfulness who also use mindfulness techniques on a regular basis, are better at both reducing anxiety and having a better ability to cope with the anxiety and stress they do experience (Thompson & Waltz, 2007). Research has also suggested that an individual's level of mindfulness is associated with task concentration, sense of control, and lower levels of self-consciousness (Gardner & Moore, 2004; Kee & Wang, 2008), as well as decreases in concentration disruption, concern over mistakes, and doubting actions (Thompson, Kaufman, De Petrillo, Glass, & Arnkoff, 2011). In sport literature, mindfulness has been found to have a strong association with enhanced levels of flow and aspects of sport confidence (see Kaufman, Glass, and Arnkoff, 2009).

There is reason to believe that mindfulness may be more closely associated with choking then has been given credit. This study seeks to discover if higher levels of mindfulness may positively impact CS athletes. In competition, athletes are faced with many potential distractions: crowd noise, opponents, coach instructions, game pressures, and their own cognitions and affective states. Most often, athletes who are capable of focusing on task relevant cues and contingencies experience better performances than those who engage in self-focused attention and therefore not fully "in the moment" when competing (Gardner & Moore, 2004). According to Gardner and Moore (2004), traditional control-based interventions in sport may inadvertently cause excessively cognitive activity such as self-

focus, rather than the appropriate meta-cognitive activity such as present moment, non-judgmental thoughts and actions. This results in the automaticity of athletic skills becoming impaired during competition, leading athletes to focus on irrelevant cues rather than relevant ones, thus leading to performance decrements.

Bishop and colleagues (2004) state that a higher level of mindfulness leads to becoming more open, aware of, and accepting of one's experiences. Based off of this notion, enhancing an athlete's level of mindfulness may help them accept any worries and anxiety they are experiencing under pressure, without letting it become a distraction or detriment on their performance (De Petrillo, Kaufman, Glass & Arnkoff, 2009). There has been extensive evidence showing that mindfulness based intervention programs produce notable reductions in cases of anxiety in both clinical and non-clinical populations (Shapiro, Astin, Bishop, & Cordova, 2005; Williams, Kolar, Regar, & Pearson, 2001). The Mindfulness-Based Stress Reduction program (MBSR; Kabat-Zinn, 1982; 1990) and Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, and Teasdale, 2002) are popular mindfulness programs that have been utilized in both clinical and sport settings. Mindfulness interventions such as these have central aims of cultivating a mindful presence to facilitate stress reduction and to enhance well-being (Weinstein, Brown and Ryan, 2008). These two specific approaches have proven to decrease anxiety in athletes (Kabat-Zinn et al., 1992; Teasdale et al., 2000), decrease self-focused attention (Hindman et al., 2009) and perfectionism (Argus & Thompson, 2008). The Mindful Acceptance Communication (MAC; Gardner and Moore, 2004, 2006, 2007) is another method which was adapted from the MBCT and intended to be used specifically for athletes, to keep their focus and attention on the task at hand in competitive settings (Gardner & Moore, 2004, 2006, 2007). The MAC focuses on developing acceptance, values, and commitment in order to encourage more present moment awareness in self-based thoughts and emotions.

Potential Benefits of Mindfulness for CS Athletes

The absence of distraction has numerous benefits towards athletic performance. Mindfulness improves well-being and enhances decision making skills, problem solving, and cognitive functioning (Roemer & Orsillo, 2002). Both controlled and uncontrolled trials using various mindfulness based interventions have shown success in reducing stress levels and enhancing well-being effects in both short term and long term follow-up periods (Baer, 2003; Grossman, Niemann, Schmidt, & Walach, 2004). The Mindful Sport Performance Enhancement (MSPE; Kaufman & Glass, 2006) was created as an extension of both the MBSR and the MBCT, and like the MAC, MSPE is intended to be a mindfulness program

specifically athletes. The MSPE is a 6 week program, which is shorter than the other programs which typically run for 8 weeks. Although the MSPE is shorter, there has been support for the significant impact that brief mindfulness interventions have for reducing anxiety and stress (Mackenzie, Poulin, & Seidman-Carlson, 2006). The MSPE contains 90 minute training sessions which may prove to be ideal for student athletes who often struggle to balance their time with sport and school.

The use of the MSPE intervention has shown to decrease sport related worry in competitive long distance runners (De Petrillo et al., 2009). The MSPE has also shown significant effects overall mindfulness levels and in the athlete's capability to act with awareness. Other findings include increases in overall performance, decreases in task irrelevant thoughts, concentration disruption, concerns over mistakes, self-doubts, and levels of competitive anxiety (Thompson et al., 2011). These findings were noted immediately following the MSPE intervention program and with a follow-up study completed one year later with golfers, runners, and archers (Thompson et al., 2011). The levels of satisfaction in sport increased and general anxiety significantly dropped at the post intervention, and at the one year follow-up, athletes from all three sports attributed their lower feelings of anxiety to their increased ability to stay focused. The results signify an important finding in the amount and interpretation of anxiety. Athletes not only felt they had reduced their anxiety levels because of the mindfulness training, they believed they were finally able to cope with the anxiety and stress they did experience (Thompson et al., 2011).

Mindfulness training for CS athletes may have many beneficial outcomes. In a study conducted by Brown and Ryan (2003) mindfulness was related to a reduced amount of cognitive and emotional disturbances. Developing higher levels mindfulness may help individuals be better prepared for high pressure competitions since they are able to focus their attention on task relevant thoughts and staying focused on task relevant cues is linked with improved performance (Gould, Weiss, & Weinberg, 1981). Since those who choke often feel like their lack of preparation contributes to their episodes of choking, mindfulness training may help elevate this matter. Also, athletes may be better at becoming nonresponsive to any negative cognitions or feelings they may experience while competing, thus limiting distraction (Mahoney & Avener, 1977). Previous research has suggested that higher levels of mindful attention may serve to promote more adaptive appraisals (Brown & Ryan, 2003; Baer, 2003) and help individuals view their present environment as being neutral, rather than in the extreme dichotomy of being either "good or bad". This is done by way of promoting desensitization and reductions in emotional reactivity to potentially threatening stimuli (Arch

& Craske, 2006; Broderick, 2005; Creswell, Way, Eisenberger, & Lieberman, 2007). The use of mindfulness will then help to reduce the athlete's tendency to perceive highly pressurized situations in sport as stress-inducing. There is a more positive expectancy of being able to cope with high pressure situations which is created by athletes having more coping resources to use when they are met with a potentially stressful environment (Eubanks & Gilbourne, 2003).

Similar ideas have been supported in previous research which measured the impact of Zen meditation for athletes and performance (Beilock, 2010). Zen meditation has been used to help train the brain to discard negative thoughts that go through the mind. This method does not try to have the individual ignore, discharge, or repress negative cognitions; rather it focuses on acknowledging the thought, accepting its presence, and then letting it go (Pagnoni, Cekic, & Guo, 2008). The difference between ignoring thoughts and accepting them is that the brain does not have to use working memory when a person accepts their thoughts and lets go of them; when a person ignores or represses thoughts, working memory is being utilized (Beilock, 2010). Another study looking at Vipassana meditation showed that after a three month period of constant use, meditation reduced the presence of distracting and unwanted thoughts and helped with better attentional control (Davidson et al., 2003). Since Zen meditation, Vipassana meditation and mindfulness all stem from the same foundation regarding the focus on attention and awareness, mindfulness should therefore produce very similar outcomes.

Research over the years has continually supported that when an athlete is competing under pressure, it is absolutely crucial that they stay focused on task relevant cues and not drawn to task irrelevant cues. Faltering one's focus in these circumstances and choosing to instead focus on worries, negative instructions, or external factors such as the audience will inarguable lead to underperformance and for some, choking (Nieuwenhuys & Oudejans, 2012). Mindfulness may prove to combat these issues, as research (Siegel, 2007) confirmed that enhanced mindfulness leads to greater awareness, increasing the ability to regulate one's emotion and decrease emotional dysfunction, as well as improvements to one's thinking patterns. Mindfulness training in sport is also related to both more autonomous behavioral regulation (Brown & Ryan, 2003), and higher levels of mindfulness hold a strong connection with reductions in the presence of negative mindsets (Siegel, 2007).

A mindfulness based approach appears to be considerably more theoretically linked to the theories and causalities of choking than traditional cognitive-behavioral methods previously used. The purpose of the present investigation is to qualitatively and quantitatively

examine the impact of a sport specific mindfulness intervention program (i.e. the MSPE) on the choking susceptibility of collegiate athletes identified as being CS. By using an in-depth mixed methods approach to investigate collegiate athletes' experiences of this mindfulness intervention program and their choking in sport, this study builds on previous choking research. This study also seeks to support and extend the uses of mindfulness training in the field of sport psychology and its potential value in optimizing sport performance. Should study results support that mindfulness techniques can help improve levels of what have been identified as components of choking in sport (i.e., anxiety, self-consciousness, and coping style), then such an intervention may be a viable option for coaches, athletes, and sport psychologists to use.

Research Questions

Research Question 1: Does participation in the MSPE intervention program affect study participants' self-consciousness, sport trait anxiety, coping differential, and anxiety direction scores?

Research Question 2: Does the MSPE intervention affect levels of both state and sport trait mindfulness?

Research Question 3: How do study participants perceive and experience the MSPE intervention program in relation to their feelings of anxiety when performing under pressure in sport?

Research Question 4: How do study participants describe and perceive the effectiveness of the MSPE intervention program in relation to their sport performance when competing under pressure?

Chapter Two

Methods

Participant Selection

Athletes who participated in this study were recruited from a Division 1 women's softball team and a Division 1 men's track and field team. These specific athletes were chosen due to the larger size of the teams in order to have a larger pool of participants for baseline measure comparisons for the CS criteria. To date the MSPE program has only been used in larger group settings; groups ranging from 11-25 athletes, with long distance running, golf and archery which are individual sports (see Kaufman, Glass, & Arnkoff, 2009; De Petrillo, Kaufman, Glass, & Arnkoff, 2009). This study's intention was to expand the outreach of the MSPE program to athletes that come from a team sport setting and/or have different competition demands. The current study also aimed to investigate the impact of the program in a smaller group setting ($n<10$).

The men's track and field team's head coach and the softball head coach were contacted through email in order to establish a time to meet with the teams and recruit for this study (see contact script in Appendix K). Seventeen softball players and 13 track athletes attended the informational meeting for the initial recruitment. Athletes from both sports attended separate group meetings where the purpose, intent, and time commitment of the study was explained to them. Questionnaire packets that included the informed consent form (see Appendix B) and demographic sheet (see Appendix C) were distributed to the athletes, and those who were interested in volunteering were to complete the packet and return it to the researcher within four days. All participants took part on a purely volunteer basis and no compensation was given. Eight individuals returned completed packets, including three male track athletes and five female softball players. Ages ranged from 19-22 years old ($M=20.6$), with year in school ranging from freshman to senior.

Two of the original eight participants met the CS criteria for this study (see selection criteria). Lisa (pseudonym) is a 21 year old female softball player who has 14 years of experience in her sport and is in her senior year of college athletics. James (pseudonym) is a 19 year old male track and field athlete who has had 7 years of experience in his sport and is entering into his first season as a freshman collegiate athlete. Both participants stated that they had no prior experience working with a sport psychologist in the past or any exposure to mindfulness training. Because the two athletes would be unable to attend the same training due to differences in the training manual (e.g. the sport meditation, discussions, examples, etc.) and the purpose of this study was not to teach the MSPE program on a one-to-one basis,

the six remaining participants that did not meet the criteria were asked to remain in the study and completed the same procedures as the CS participants so that a small group setting could still be utilized. The two separate training groups were therefore comprised of five softball players for one group, and three track and field athletes for the other. None of the participants were informed of their CS criteria status or of the status of the other participants. Data collected from the athletes who did not meet the CS criteria will be analyzed and used in an additional research paper.

Due to the possibility that the nature of this study would inadvertently lead to having a negative impact on the perceived identity of the athletes as "chokers", participants were not told that this study was investigating choking under pressure. To enhance the volunteer rate of participants, they were told in the initial recruiting meeting that the purpose of this research study was to investigate the impact of a mindfulness program on sport performance; specifically for competitive anxiety levels and anxiety interpretations. Therefore, the word "choking" was strictly withheld from use in the interviews, consent forms, and general discussion of the program, as IRB had a general concern of informing an athlete they were being labeled as having a high propensity to choke, as it might affect the athlete's self-esteem and perhaps future in sport. Participants were also unaware that their questionnaire scores were used as an identifier for being choking susceptible. All participants were debriefed after the completion of the program (see Appendix M) and told that the purpose of the study was to investigate performance decrements while competing under pressure. The CS participants were informed that their initial scores for coping style, self-consciousness, and anxiety levels have previously been used to identify individuals who may be susceptible to "performance struggles" under pressure in sport which is why they were asked to take part in the mindfulness intervention.

Selection Criteria

Purposeful sampling (Creswell, 2007; Schram, 2006) was used for the participant selection in this study due to the necessary need to identify which participants were susceptible to choking under pressure. Purposeful sampling is the selection of participants based on specific relevance to one's research questions, and is used in order to represent a specific criterion, characteristics, or phenome (Mason, 2002). The criteria for participant inclusion was based on Mesagno and colleague's (2008, 2009) choking susceptible (CS) criteria that assess scores on the SAS, SCS, and CSIA inventories. In order to meet the criteria, athletes must have scored in the 75th-100th percentile on at least two out of the three inventories based on the initial sample of athletes that were used for baseline testing. The

remaining score must have fallen within the 50th-100th percentile range. The selected athletes should therefore have scored high in self-consciousness, high in trait anxiety, and have a positive differential score weighted towards approach style coping on the CSIA (e.g. approach coping [35]-avoidance coping [15]= differential score [+20].

Design

The use of a mixed methods design in the current study helped to triangulate data (Rossman and Wilson, 1985), add complementarity (see Greene, Caracelli, and Graham, 1989), and to enhance internal validity (see Patton, 2002). A case study design best suited the goals of the current study because it offers an in-depth approach using various data collection methods which serve to better understand the participants' experiences with the mindfulness training and their sport performance. Specifically, a multiple case design was employed. This study used a pre-test post-test approach. That is, both qualitative and quantitative data was collected prior to the mindfulness intervention, as well as after the intervention in order to compare the data using visual analysis. As noted by Thompson and colleagues (2011), the brief length of the MSPE program may result in seeing few or no substantial changes in trait measures in an immediate post-test. Hence, they argued for a follow-up evaluation to assess the long-term effectiveness of the MSPE (Thompson et al., 2011). Thus the current study conducted a follow-up assessment 5-6 weeks after the post-test assessment that included all of the initial inventories and a second in-depth semi-structured interview.

Measures

The following section describes the quantitative measures and qualitative measures that were used in the study. For a detailed outline of the timing and frequency of these quantitative and qualitative methods, see Table 1.

Sport Anxiety Scale (SAS; Smith, Smoll, & Schutz, 1990). The SAS is a 21 item questionnaire that was developed to assess multidimensional trait anxiety. The scale measures somatic anxiety, worry and concentration disruption. The questionnaire contains 9 items regarding somatic anxiety, 7 items that target worry, and 5 items that measure concentration disruption. The original scale contained 8 items in concentration disruption, however in order to keep the validity as high as possible, three concentration items were excluded which were identified as measuring more worry related areas than concentration disruption (Smith, Cumming, & Smoll, 2006). Total scores of the SAS range from 21 to 84, with higher scores indicating a high level of trait anxiety. The worry subscale has been found to have good

discriminant validity, and all three subscales have had acceptable levels of internal consistency reported. Reported ranges for concentration disruption have been between .74 and .81, somatic anxiety ranges from .88 to .92, and the worry subscale has ranges between .82 and .87 using Cronbach's alpha (e.g. Smith et al., 1990; Dunn, Causgrove-Dunn, Wilson, & Syrotuik, 2000). Further validation of these results has been confirmed in numerous studies including testing of the SAS by Dunn and colleagues (2000) where similar Cronbach's alphas were reported. The scale was originally used in samples of college students, therefore, the applicability of the results should generalize well to the similar demographics of the current sample.

Directional Modification of the Competitive State Anxiety Inventory-2 (DM-CSAI-2; Jones & Swain, 1992). As the purpose of this study was to explore both the intensity and direction of anxiety, the directional subscale from the modified CSAI-2 (Martens et al., 1990; Jones & Swain, 1992) was included as an adaptation to the SAS. The original CSAI-2 contains 27 items that measure self-confidence, somatic anxiety, and cognitive anxiety. The modified version used in this study excludes the self-confidence items, resulting in an 18 item scale. Somatic and cognitive anxiety intensity levels are scored using a 4-point Likert scale, where 1 represents *not at all*, and 4 represents *very much so*. Directional anxiety is measured as being either facilitative or debilitative using a 7-point Likert scale. The scale ranges from -3 (*very debilitative*) to +3 (*very facilitative)* and uses the value of 0 as a midpoint which represents the anxiety interpretation as being unimportant towards one's performance. The directional scores range from -21 to +21 for worry direction and -27 to +27 for somatic anxiety direction. The directional scale has been supported in having high levels of internal consistency in both the modified CSAI-2 and when used with the SAS. When the direction scale is used in conjunction with the SAS, Cronbach's alpha coefficients have been reported as 0.87 for worry direction and 0.85 for trait somatic anxiety direction (Hanton et al., 2003).

Self-Consciousness Scale (SCS; Fenigtsein, Scheir, & Buss, 1975). The self-consciousness scale (SCS) is a 23-item questionnaire that measures dispositional self-consciousness with three different subscales. There are ten items measuring private self-consciousness, seven items measuring public self-consciousness, and six items measuring social anxiety. The subscales are scored on a 4-point Likert scale which ranges from 1 (*extremely uncharacteristic*) to 4 (*extremely characteristic*). Total scores range from 23 to 92, with higher scores associating to high levels of self-consciousness. Feningstein and colleagues (1975) reported acceptable internal consistency (> .73) for all subscales. There is

also strong evidence for both construct and discriminant validity of each of the three subscales (Carver & Scheier, 1981).

Coping Style Inventory for Athletes (CSIA; Anshel & Kaissidis, 1997). The Coping Style Inventory for Athletes is an inventory with 16-questions that assess approach and avoidance coping styles. The scale consists of eight items for each coping dimension, with scores ranging from 8-40 for each subscale A higher score indicates that participant has a greater propensity to use that particular style of coping. The items in this questionnaire have been modified from another scale by Roth and Cohen (1986) that measures these two coping styles. Coping strategies on the CSIA are rated on a 5-point Likert scale, where a rating of 1 represents *very untrue* and a score of 5 represents *very true*. The CSIA has well established concurrent and construct validity. Internal consistency was reported by Kaissidis-Rodafinos, Anshel, and Porter (1997) with Cronbach's alpha scores of .79 for approach style coping and .84 for avoidance coping.

Mindfulness Inventory for Sport (MIS; Thienot, Jackson, Dimmock, Grove, Bernier, & Fournier, 2014). The MIS is a 15 item self-report inventory that uses a 6-point Likert scale to measure levels of trait-like sport mindfulness. The scale ranges from 1 (*not at all*) to 6 (*very much*) with each statement in the questionnaire representing a reflection of the participant's recent experiences in competition. Scores are totaled and the mean is taken to represent the overall mindfulness level, with higher levels representing greater mindfulness in a competitive sport setting. The MIS contains three subscales that measure awareness, non-judgmental thinking, and refocusing. The awareness subscale measures the athlete's ability to be aware of stimuli that may be disruptive as well as their internal reactions to such stimuli. The non-judgmental subscale measures an athlete's ability to attain an attitude towards stimuli and reactions that does not hold judgement. Finally, the refocusing subscale measures an athlete's ability to efficiently refocus their attention on task related cues. Each subscale contains 6 questions, 5 of which are reverse scored in the non-judgmental subscale. An acceptable level of internal consistency has been noted for each of the three subscales which ranged from a= .77 to .78 (Thienot et al., 2014).

Toronto Mindfulness Scale (TMS; Lau, et al., 2006). The TMS is a 13-item questionnaire that measures state mindfulness by use of two subscales: curiosity and decentering. The scale was created to measure acceptance and awareness levels of participants following their participation in mindful exercises. The TMS has demonstrated acceptable internal consistency and criteria validity (Lau et al., 2006). The questions on the

TMS are rated on a 5-point Likert scale ranging from 0 to 5 where 0 represent *not at all*, and 5 represents *very much*.

Demographic sheet. The demographic sheet included relevant items such as identifying how much experience each athlete has had in their sport, and their previous experience (if any) with sport psychology and/or mindfulness training (see questions in Appendix C).

Practice and Post-Intervention Logbooks. Qualitative data were generated during the intervention phase through study participants keeping 2 logbooks. In the mindfulness practice logbook participants documented the duration of their mindfulness practice, which skill they practiced, and the date the practice occurred. They were also asked to comment on their experiences with each mindfulness practice (e.g. struggles, noted improvements, etc.). The mindfulness practice log book was an adaptation of the Homework Record Form (Segal et al., 2002) and the mindfulness log book used by Kaufman and colleagues (2009). After the intervention was completed, the participants completed a sport performance log which was used for the period between the post-test and the follow-up. As observable changes would likely not be apparent throughout the learning process of the intervention, the use of the sport performance log was to extend beyond the initial pre-season practice phase to better measure subjective and objective performance improvements as mindfulness skills became mastered. During the post intervention phase, the participants were beginning their competitive season which afforded an ideal circumstance for them to observe their performance in a competitive setting rather than solely at practice, where pressure would typically be lower. The content and structure of the sport performance log (see Appendix H) was different from the mindfulness practice logbook in the questions that were asked. The athletes were asked to pick one competition to log their experiences of their athletic performance during that competition and answer questions regarding their recent mindfulness practice. The participants were asked to pick a competition that they believed to be of high importance, where they would be more likely to experience higher amounts of pressure so as to "test" their mindfulness skills in such a context.

The sport performance log was used to generate data on which mindfulness skills athletes were "naturally" inclined to use prior and during a competition, how they believed it impacted their sport performance, and their perceptions of their level of anxiety, and ability to handle high pressure situations. The sport performance log was turned in to the researcher after completion and the data was compared with the post intervention questionnaire scores and used for part of the interview during the follow-up. Questions in the interview would

include asking the participants about their experiences to see if what they described was also reflected in the quantitative data, looking for possible congruencies or incongruences and to add meaning as to why this may have occurred.

Procedure

Participants first completed an informed consent form (see Appendix B) as well as a general demographic information sheet (see Appendix C) before completing any of the baseline questionnaires. Each participant was given a copy of their informed consent forms to keep in their records. Due to the high volume of content in each testing and phase, each section is discussed separately, in chronological order. The phases are as follows: a) baseline assessment and interview; b) intervention and state assessment; c) post intervention assessment; and d) follow-up assessment and interview.

Baseline Assessment and Interview

The original sample of athletes (n=8) took part in the initial screening process, completing paper and pencil versions of the CSIA, SAS, and SCS inventories, along with the DM-CSAI-2 directional scale. Once all of the participants completed the inventories, they were told that they may be contacted within one week and asked to participate further. The participants were contacted via email and/or phone, and the objectives for the remainder of the study were further discussed in detail. Each participant was asked to take part in the MSPE intervention program, complete additional questionnaires, as well as log books (see Appendix F and Appendix H), and two in-depth interviews (see Appendices D, E, and Nfor interview guides).

Prior to completing the initial interview, all participants completed a second informed consent form which discussed the full details and objectives of the study in full detail. Each participant received a copy for their records prior to the start of the study, as well as a packet which also includes a description of the MSPE training program, contact information, and a general training/testing schedule outline (see Appendix A). Participants were asked to complete the MIS to assess their levels of sport mindfulness prior to receiving the intervention. The MIS was used to assess mindfulness alongside the MSPE because it was designed to be used in an athletic context (Thienot et al., 2014). The developers of the MIS support this by stating “By reflecting the athlete’s ability to mindfully self-regulate their focus of attention while facing disruptive stimuli, the MIS allows a more accurate assessment of the mechanism underlying mindfulness based intervention in the specific context of their sport” (Thienot et al., 2014, p. 78).

After the MIS was completed, the participants took part in a 10-15 minute interview where they were asked about their previous experiences competing under pressure (see Appendix D). The purpose of this interview was to confirm that the CS participants have actually experienced choking in the past, and not simply met the CS criteria on chance alone. This confirmation procedure has previously been used in the choking literature (see Hill et al., 2010). A definition of choking was read to them while the term "choking" was withheld from use to adhere to the method of deception. Each athlete was told to listen to the description and see if they had ever experienced a situation like it, and if so, to share a detailed example of when they had in their current sport. After each of the interviews, the participants were given a copy of the transcribed interview for accuracy checks.

Intervention and State Assessment Phase

The location of the mindfulness sessions was in a small private room located in one of the university's halls. The MSPE program was divided into two separate training workshops: one for the softball players and the other for the track and field athletes. This is necessary as the MSPE program is designed to be sport specific, and examples and discussion times during each session must be unique to that particular sport. Each group met once a week; the specific day and time were determined based on the school and training schedule of each sport. As each participant was asked to engage in a home practice regimen that required the use of six consecutive days every week, the MSPE training session days was kept as consistent as possible, occurring every seven days, with minor adjustments for travel or severe weather interferences.

The Toronto Mindfulness Scale, a state mindfulness inventory which has been used in multiple studies evaluating the MSPE program (see Kaufman, Glass, & Arnkoff, 2009; De Petrillo, Kaufman, Glass, & Arnkoff, 2009; Thompson, et al., 2011), was completed directly following every training session during the intervention. Along with being trait based, mindfulness can also be viewed and measured as a state, accomplished when one's attentional focus is based around being open and nonjudgmental towards the present moment experience (Bishop et al., 2004).The TMS was used to track changes in state mindfulness with each participant as they progressed through the training and to determine if they were able to better adapt each mindfulness technique that was to be learned. The TMS was also intended to be a possible indicator of the efficacy of mindfulness exercises in relation to enhancement of state mindfulness levels throughout the program.

Mindfulness training. A revised version of the pre-developed MSPE manual that was created by Kaufman and Glass (2006) was used in the current study. The manual was

modified to include examples and mindfulness training specific to both softball and track and field events to enhance personal relevance for the participants in the study. Information that was used to develop the sport specific aspects in the manual was developed through extensive research on softball and track and field articles and books as well as through talking with head and assistant coaches in these sports. The program was delivered by a sport psychology graduate student who has had personal experience and informal mentoring in training mindfulness. The MSPE mindfulness program was implemented over a 6 week time period that included weekly sessions lasting approximately 90 minutes. Each session introduced new mindfulness exercises and included a repeated practice of the previous weeks' exercises In the first session of the MSPE there was a sport-specific rationale that was addressed to the participants to explain how mindfulness is used in the realm of sport, in order to build rapport with the athletes and introduce the concept of mindfulness training. The MSPE training program employs numerous exercises that the participants learned over the six sessions, including diaphragmatic breathing, body scanning, mindful yoga, sitting meditation, walking meditation and sport specific meditation. In the days between each weekly mindfulness training session, each athlete was asked to engage in daily mindfulness practice based on the exercises that were previously taught to them. Each week varied in the number of times and the amount that each skill should be practiced at home, ranging from 10-40 minutes per day (see Appendix I for full home practice schedule) with each consecutive week increasing in practice time, with the exception of the final week. The participants completed the daily mindfulness practice log to track their home practice and were asked to discuss their independent practice with the group at the beginning of each weekly training session. Each session also included discussions of the mindfulness skills being learned and how each of the mindfulness skills may apply directly to the participants' sport and daily life. The final MSPE session concludes with a review of the program, and tips for the athletes for continuing mindfulness practice on their own.

Post Intervention Assessment

After the last MSPE session and TMS questionnaire were completed, each participant was asked to complete the same questionnaires that they had done prior to the mindfulness training: the SCS, SAS, CSIA, MIS and the DM-CSAI-2. Each participant was given a packet with the enclosed questionnaires, and asked to return the completed packet directly to the researcher within four days. The weekly mindfulness practice logs for each participant were collected, and the sport performance log (see Appendix H) was distributed to the participants. The participants were given an instruction sheet with instructions for how to complete the

entry log for the competition/game they choose to track (see Appendix G) along with a copy of the TMS which was to be completed within one day of their competition so that their state mindfulness levels could be measured and then later compared with previous measures from the intervention stage. A reminder slip (see Appendix L) was attached to the form which states that they would be contacted in 4-5 weeks to schedule a meeting for the follow-up interview and to complete the follow-up questionnaires.

Follow-Up Assessment and Interview

The full effect of the mindfulness training may not have been completely evident immediately following the last session of the program. Thus, to evaluate the retention effects of the mindfulness intervention, a follow-up was conducted 5-6 weeks after the intervention program was completed. The follow-up allowed the athletes to practice the mindfulness skills on their own and to better develop these skills and use them in a competitive setting. The follow-up period was planned so that it would fall during the first month of their competitive season. This was structured so that the athletes may take note of how the intervention training has potentially impacted their performance in competition. In the log which was distributed to them at the end of the last MSPE session, the participants were asked to document their thoughts and reflections of how their performance was when they competed, and any changes they have noticed in areas such as their perceptions, attentional focus, and anxiety levels (see Appendices M-N).

Once the participants reached the end of the follow-up period, they turned in their log and were asked to complete the SCS, SAS, CSIA, TMS, DM-CSAI-2, and the MIS one final time. Following the questionnaires, each participant engaged in a final in-depth interview where they were asked specific questions regarding their mindfulness training and about the competitions that they have logged about and asked about how often and which mindfulness exercises they practiced. The goal for the interview at this follow-up point was to gain insight into how the participants felt the mindfulness training impacted their thoughts, feelings, and performance (see Appendix E for full interview guide). Another purpose of the log was to see who had practiced on a more regular basis and kept up with the mindfulness exercises in their independent practice. An additional purpose to the follow-up was to determine if those who practiced more had greater positive expectations for their future performances, enhanced feelings of perceived confidence in themselves, and more positive cognitions and interpretations of anxiety.

The MSPE program was also assessed through extensive questions in the follow-up interview with each participant (see Appendix N). Participants were asked questions

regarding aspects such as their overall satisfaction with the program, the structure and content of the program, its appropriateness, as well as how the program has helped with their sport performance and continued mindfulness practice. Because the MSPE is a brief intervention and mindfulness is a concept and skill which participants did not have previous exposure to or deep understanding of, the use participant feedback is critical to understanding if variability in the results section is believed to be due to the limited time frame of the program, or the MSPE program itself.

Data Analysis

Quantitative data from this study was graphed and subsequently analyzed using visual inspection. This evaluation method is the ideal choice to use for this study because it has been one of the primary methods of data analysis in a single-subject design studies in the past (Nock, Michel, & Photos, 2007). The four main factors which guided the visual inspection were based off of the guiding criteria of Kazdin (1982) which are the levels, trends, variability, and the consistency of the data over the three phases of the study. Although these methods do not include using statistical tests to for evaluating the data, they strongly relate to the change in both the magnitude of behavior and rate of behavior (Nock, Michel, & Photos, 2007).

Qualitative data analysis was completed by using data triangulation and thematic analysis, which is the process of taking qualitative data and developing codes, words, and phrases, helping to both label and categorize important information (Boyatzis, 1998) and was used with raw data collected in the two interviews and multiple log books. Interviews were all recorded with participant permission, and transcribed verbatim. Data was sorted and categorized based on patterns that connected with pre-established themes. The major variables from the quantitative data (anxiety, self-consciousness, coping, and mindfulness) served as categories. As this was a mixed methods study, both conventional and direct content analysis techniques as outlined by Hsieh and Shannon (2005) were used for identifying themes and categories from the follow-up interview regarding participant feedback of the MSPE program. Validity was enhanced by receiving feedback from each participant via member checking (see Patton, 2002) which helped confirm and verify the concluded themes, and interpretations of the data collected.

Chapter Three

Results

Each participant is reported below as a separate case study. Pseudonyms have been used to adhere to confidentiality of the participants. As part of the qualitative analysis component, word clouds were created to identify patterns and themes from the interview and log books. Results from these word clouds can be found in Figures 18-20 in the appendices section. Quantitative data is reported along with themes and detailed descriptions from the interviews and journals. Results from each inventory are reported separately, followed by a detailed description of the mindfulness practice log and the sport performance log. Results pertaining to participant feedback of the MSPE program are described after the case studies. For assessing the participants' CS status at the end of the study, the participants' CS inventory scores were compared with the original sample group's baseline measures. Quantitative results for each participant can be found in Tables 3 and 4. Further descriptions from the interview and logbooks can be found in Table 5.

Case #1 Lisa (pseudonym)

Each of the two participants were analyzed with presentation of results from the different psychological variables measured in the present investigation. Both qualitative and quantitative data are presented.

Trait anxiety. Comparisons between the original SAS baseline measure to the follow-up show that Lisa's scores demonstrated a 13% decrease in her level of trait anxiety (see Figure 1) showing consistency over the three measurement points. On her baseline measure, Lisa scored a 62 which put her in the 50^{th} to 75^{th} percentile range within the original sample group (see Table 2). Lisa's follow-up score dropped 11 points down to a score of 51 and placed her in the 25^{th} and 50^{th} percentile range. Individual subscales varied, with a linear trend showing decreases in the worry and attentional disruption scales (see Figure 2). The worry subscale had the greatest decrease difference of all three subscales from pre-intervention to follow-up, with Lisa's score dropping 7 points (11%) from 20 to 13. Somatic anxiety demonstrated some variability, with a decrease from baseline to post intervention and an increased score of 28 at the follow up which matched her baseline score. Lisa described in her initial interview how she struggle with her anxiety prior to the intervention, "I'm thinking about oh my gosh I have to do this because if I don't get this hit then I won't be playing, then I won't get the next opportunity to either pitch in a game or get in at bat. I know I have to perform because then my shots over." In her second interview Lisa explained how she noticed herself becoming more aware of her experiences of anxiety, "I know I get nervous a

little bit, and my heart starts to race…I've notice those things that I didn't notice my body doing before." She also explained how the concept of acceptance, a key component of mindfulness, currently played a role with her anxiety. "I don't think I'm resisting it I think I'm accepting it because I know my body is doing that, I know it's there when I go out." She also noted how in certain situations she still struggles with being more accepting of her situation and being mindful of her thoughts, but recognized that when she doesn't she can still end up struggling. She commented in regards to her anxious thoughts, "I find them distracting, I don't think they're helping when I'm thinking about them."

Anxiety direction. Visual inspection of Figure 4 showed that Lisa's anxiety direction remained debilitative throughout the study. The intensity changed considerably however, with cognitive and somatic directional scores increasing 30% and 33% respectively, from baseline to follow-up (see Figure 4) showing an increasing trend towards becoming more facilitative. Cognitive and somatic directional scores at baseline were both -17 and increased to -15 at the post intervention. The most notable changes occurred between the post measure and the follow-up: cognitive anxiety increased 23% up to -9 and somatic anxiety increased 26% up to a score of -8.

Coping. Lisa's high differential score of +8 at baseline put her in the 75^{th}-100^{th} percentile range (see Table 2) and represented her predominant use of approach coping in her sport. In the initial interview she described her difficulty with handling pressure situations:

> Throughout my collegiate career I've had a lot of roles and it's been hard to adjust... it's hard because you get moved around and you want to perform and do so well and earn that spot…sometimes it's just so much pressure on your shoulders...I need to let that go because then that gets to me and then I don't perform as well.

Her differential score remained positive and approach coping dominant throughout the entire course of the study, however her score dropped 6 points (18.75%) from the baseline measure to the follow-up (see Figure 6). Her approach coping score increased from baseline to follow-up slightly, however it showed some variability throughout the three testing phases. The greatest increase was in her level of avoidance coping, which resulted in a 20% total increase from baseline to follow-up (see Figure 7). Approach and avoidance scores were both highest at the post intervention measure (approach =34 ; avoidance=31), and although they remained high at the follow-up, her results at this point showed the lowest differential score of +2 (see Figure 7) which dropped her into the 50^{th}-75^{th} percentile range

for the coping scale in regards to the CS criteria. Lisa reflected on her difficulty with coping during high pressure games prior to completing the intervention. “Getting myself out of slumps, it’s hard to do that just because you know you're not your best in that situation, or those games.” When asked how mindfulness was helping her in cope in particularly challenging competition situations, Lisa said “I think that's the biggest thing is knowing when things are getting out of hand, how can I turn it around.” She also added “I think that helped too, is just knowing I have these exercises to help me… say my sports not going well but, I'm going to try doing these exercises during, or after… I have them there. ” Lisa also noted using the breath as an anchor helped her in these types of situations to stay relaxed and focused, so that she would not focus on the tension in her body.

Self-consciousness. Lisa’s self-consciousness scores showed an 11% drop over the course of the study (see Figure 9). Lisa’s score on the SCS at baseline was 70, which put her in the 75th to 100th percentile range. Lisa discussed in the initial interview how in her previous experience with her sport, she had struggled with internalizing negative thoughts and self-doubts, which supported her high self-consciousness score. "Thoughts in my head are like ‘oh my gosh like I have to do this’, but then I know I have to let those go because then I'm so uptight and I can’t perform...but they do cross my mind for a glimpse…I *try* [emphasis added] to make them go away." She also talked about her realization about how self-conscious she can become, "Talking to someone, they're like ‘You're just thinking too much’ or I’ll start to question what I'm doing."

Lisa’s scores showed high consistency, as her baseline score dropped 10 points down to a final score of 60 which also dropped her to into the 50th to 75th percentile range in the CS criteria (see Table 2). Results from the subscales showed high variability and inconsistency in the changes in public and private self-consciousness over the three measurement phases, while social anxiety slightly decreased (see Figure 10). Lisa commented on how her awareness of her thoughts during both mindfulness practice and her sport had improved and how she was currently handling her thoughts. “The negative thoughts I've noticed more… [I’m] trying to realize that even though I have those thoughts I don't have to try and change them.” She also discussed how when at times, especially earlier in the mindfulness training, she struggled to be mindful during a game, and would notice her thoughts turning inward from feeling too dependent on mindfulness to save her performance: “Thinking it might not work, thinking it's not working…then that makes me even dwell on it more that’ ‘ok well I'm trying my best but it's not working’, and I think that's been the toughest thing is knowing I'm doing my best but the results aren't there.”

Sport mindfulness. Lisa's mindfulness score on the MIS increased 8% from her baseline score to her follow-up score (see Figure 15). Her baseline score of 3.73 improved to 4.20 with only a 1% drop from the post measure. The awareness subscale remained relatively stable and consistent throughout the study, with only marginal increases at the post intervention (see Figure 16). However her score on the refocusing subscale steadily increased from baseline to follow-up, with a 10% overall improvement. Lisa stated that as she reflected on her training "I didn't realize how much...I've noticed things while they're happening…I definitely feel a lot more focused from doing the training" She then expanded on why she believed her mindfulness levels have increased to help her become more aware during competition:

> When things are not going well, I've used the training....to help me in a positive way. I know that my mind still wanders, but, I catch it, and I notice it. And then I come back to it…even though if it does take me a little bit longer, at least I'm acknowledging the fact that it's there.

Additionally Lisa talked about her awareness levels and attentional focus during a game: "I'm focusing on a spot on my bat when I step in the box and taking that deep breath... I'm just trying to focus on the task at hand." She also explained, "I'm right here, this is what I'm doing, just finish the task at hand that's in front of me …which is good because before all these thoughts are going, and I wasn't focusing before on that." The most noticeable changes were in the non-judgmental subscale for Lisa. Her score jumped 20% from baseline to the post measure, with only a slight drop at the follow-up.

State mindfulness. Lisa's levels of state mindfulness demonstrated high amounts of variability and inconsistency throughout the intervention phase (see Figure 12). During the six training sessions, her highest score (45) was during session 1, where the participants engaged in the mindful eating and brief sitting meditation exercises. Her lowest score of 39 was during session 2, where the body scan exercise was introduced. The remainder of the training sessions led to only slight variance in total scores. Her post intervention TMS score, which was completed directly following a high pressure game she choose during her competitive season, dropped down to 33, which was lower than any of the training session scores. At the follow-up, when completed the TMS as a reflection of her most recent mindfulness practice, her score increased to 39.

There was some variability in the two state mindfulness subscales over the course of the study (see Figure 13). Lisa's curiosity score followed a similar pattern to the overall state mindfulness scores, with drops in session 2 and the post intervention measure, and an increased score at the follow-up. Her decentering scores however, oscillated during the training sessions and then experienced a greater drop at the post intervention score (22%). Her follow-up score for decentering did increase back up slightly (8%), however not to the same rate that her curiosity score did, which was a 17% increase. Lisa noted that her state mindfulness abilities are improving; however she admitted that it is a skill that takes time. "I think there is always room for improvement, I wouldn't say I'm great at it, but, I'm trying to get there (laughs), I'm trying to get better."

Mindfulness practice log. Over the course of the six weeks, Lisa completed 25 of the 30 homework sessions that were assigned; an overall completion rate of 83.3%. Her completion rate increased over the course of the program with 100% completion rate in the first two weeks. Her practice times also increased each week up to a peak of 90 minutes a week (see Table 6) with her total practice time totaling at 333.5 minutes.

The first week of home mindfulness practice was in some ways difficult for Lisa. She commented in her log that her thoughts were scattered and it took her a while to refocus. She said that she found it helpful to practice the sitting meditation while she had music in the background which helped her feel more relaxed and able to engage in the practice. In week 2 when she continued her practice with the sitting meditation and began the body scan exercise, she made note that she was able to better focus on her breath as an anchor, and able to practice the sitting meditation for longer. Progressing to the final weeks of her logging, reflecting on her mindful yoga practice Lisa said "I noticed myself holding my breath more than normal; [I] felt flexible and relaxed at the end of practice." With her continuing sitting meditation practice she said that she felt more at peace and focused on the breath and mentioned that she used the sitting meditation practice prior to a pre-season softball tournament in that she played in in order to feel "prepped". Lisa also liked using the walking meditation during her softball game where she could experience the exercise in her softball cleats. Lisa's sport meditation practice also had improvements in her abilities to focus and implement mindfulness into her sport. "I have been focusing on the little details and visualizing a lot more... I have noticed a lot more of other things I normally would not have paid attention to. I have been trying to implement this in my game more. I like feeling the repetition." Lisa also noted how her practice was improving and the outcomes she was experiencing: "I found this meditation getting easier as the week progressed." Her sitting

meditation also showed improvements, as she noted having better attentional focus and less distractions occur. She also appeared to connect with the walking meditation exercise: "This is my favorite. I always enjoy this meditation because I find my mind and body get the most out of it; I have used this multiple times during the game. I also like the feeling this meditation gives me."

Post intervention performance log. Lisa completed the post intervention log entry about 2.5 weeks post intervention. In the interview she spoke about how often she had consistently been practicing during the follow-up period each week. "I know a couple weeks it was 3-5.... I would at least try to get 3 in, knowing my busy schedule." According to her log, directly prior to her game she engaged in both sitting meditation and walking meditation to help her prepare for her performance. Lisa rated the pressure of this game as being 9 out of 10. She further explained why she rated the pressure of that game to be so high compared to usual: "I was feeling stressed, overwhelmed, and pressure to perform because I wanted to do well. Plus I could be pulled from the game and taken out." Lisa rated her anxiety level that day an 8 out of 10, which she indicated to be primarily debilitative towards her performance, "I tried to stay positive when things were uncontrollable. I can only control how I play and act. I thought I could have played better than what I showed."

She explained, "I felt like I was able to stay focused but not as well as I could have. I had a lot of thoughts running through my head because I knew it was a big game… I tried to focus on my breathing to get me through it." When she reflected on how she performed and the thoughts that were in her head afterwards, she said "I thought to myself that the training wasn't working because I know I could have done better but there were glimpses in the game where I had success. So I just had to stay positive."

Case #2 James (pseudonym)

The presentation of the second athlete (James) was similar to the first athlete with both qualitative and quantitative data being presented.

Trait anxiety. On the SAS baseline measure, James's score of 69 placed him in the 75th to 100th percentile range. His trait anxiety demonstrated a decreasing trend with his score dropping 25 points (30%) down to a score of 44 (see Figure 1) at the follow-up which placed him in the 25th and 50th percentile range (see Table 2). Individual subscales decreased from pre to post intervention with worry continuing to decrease from post to follow-up (see Figure 3). James' worry score decreased 43% from baseline to follow-up which was the most considerable drop compared to the other two subscales. Somatic anxiety decreased 11 points,

from 33 to 22 at the post intervention demonstrating a 30.6% decrease, and increased slightly at the follow-up. James reflected about his current anxiety levels in competition, “My anxiety levels this year compared to last year are just tremendously lower” He also reflected on a particular track meet where he felt a higher amount of pressure, but unlike before, he viewed his anxiety level as being beneficial: “I started out really bad…my first five throws were all under…On the last throw I really felt I was pretty anxious…I just really wanted to get it and I couldn't…the anxiety worked in my favor…I slowed down and kind of grounded myself and then I PRed.” When asked about how he incorporated mindfulness into this particular situation he said that he focused on using the diaphragmatic breathing to help anchor him right before he threw. “I just focused on my breathing…I almost kind of felt like I was breathing out the tension.”

Anxiety direction. James’s anxiety direction scores both showed considerable increases from baseline to post intervention, with cognitive anxiety directional levels remaining consistent and demonstrated an increasing trend from baseline to the follow-up. Cognitive anxiety increased 6 points (22.3%) going from -3 to +3 showing that James switched his view of cognitive anxiety from debilitative to facilitative (see Figure 5). Interestingly, James expressed how he now separated feelings of nervousness and anxiety in his mind, and how his perceptions of nervousness had improved to being more positive. When asked to expand on this perception change, James explained " I kind of relate nervousness to just caring about what you're about to do …Whereas I see anxiety as more of worrying about failing." He also expanded on this idea by saying:

> Nervousness is more like the butterflies and anxiety is kind of a mind thing like a mental block holding you back more…you don't want to do as much because the more you do, the more you feel like you are going to not succeed…Nervousness triggers adrenaline I feel like, and anxiety doesn't.

James’s somatic anxiety direction remained facilitative throughout the study, increasing 22% with a 6 point improvement however his somatic score varied slightly as it decreased down at the follow-up measure. Overall, James’s results show that he viewed somatic anxiety as more facilitative towards his performance than cognitive anxiety, although at baseline he only viewed somatic anxiety to be helpful towards his performance, and at the follow-up he changed to seeing both as helpful (see Figure 5). James expressed that “I think it’s a mind thing…I used to think that if I didn't perform well I was letting my coach down, I was letting my parents down, all these people and I just don't really feel that anymore…you do well or you don't do well."

Coping. James's coping differential scores remained positive throughout the entire course of the study, however the differential score dropped 7 points (22%) from the baseline measure to the follow-up (see Figure 6). James's baseline score of +12 placed him in the 75^{th}-100^{th} percentile range (see Table 2) and in his initial interview he commented on how his coping had been influencing his performance and emotional well-being "I definitely get butterflies before every single meet, I've just kind of learned to deal with it…I was really going for it, and I ended up totally flopping and didn't even jump close to what I wanted to and what I've done before and, it kind of hurt me and upset me a lot." At the follow-up, James had a score of +5 which dropped him to the 50^{th}-75^{th} percentile range. The greatest drop in his differential score occurred between the baseline and post intervention measure, with his score remaining the same at the follow-up. Approach coping levels showed consistency and a decreasing trend while avoidance coping showed an increasing trend over the three testing phases. James's level of avoidance coping, increased 12.5% from baseline to follow-up whereas his use of approach coping increased 5% (see Figure 8). He was asked how his coping score was reflected in his performance. He said "I would say mostly it would be my confidence in like practice and in the meets… I still feel the pressure but it's just easier to deal with now. "

Self-consciousness. James's self-consciousness scores showed a 6% drop over the course of the study (see Figure 9). James's score on the SCS at baseline was 68, which put him in the 75^{th} to 100^{th} percentile range. In the initial interview he commented on how he would typically internalize his anxiety related thoughts and how it would detract from his sport during a competition. "Sometimes I doubt myself...I'm about to jump and I start thinking about little things that I can do and I'm like no I can't do this right now. Or I'll just start having conflicting thoughts in my head." He continued by talking about how competing around others used to lead to additional feelings of being self-conscious, however recently in one of his track meets he noticed a change: "Every time there was someone better than me I would have to make them think I'm as good as they are, but I wasn't really concerned with that this time." James's self-consciousness score dropped 5 points down to 63 at the follow-up which continued to place him in the 75^{th} to 100^{th} percentile range (see Table 2). Results from the subscales show that both public and private self-consciousness levels remained consistently stable, showing very little variability throughout the study while social anxiety decreased 21% (see Figure 11).

Sport mindfulness. James's mindfulness score on the MIS increased 19% from his baseline score (4.1) to his follow-up score (5.2) (see Figure 15). The awareness and

refocusing subscale levels both had an increasing trend throughout the intervention, however the non-judgmental subscale had the most notable change. The non-judgmental subscale increased 39 % from baseline to post intervention and remained high at the follow-up (see Figure 17). James described how his sport performance had been impacted by his mindfulness training:

> Sometimes coach will tell you, you need to work on this and don't forget this, like *right* [emphasis added] before you throw, and that's a lot to take in and I feel like just kind of slowing everything down and being mindful about it and saying, focus on these cues and nothing else matters right now."

James also noted how the concept of awareness played a central role in his current thoughts and performance. "Be[ing] aware of where you are and what you're doing…that's helped the most, just calm my mind and not try to do too much at once. " James also described how his attentional focus and ability to stay focused on task relevant cues has improved. He noted:

> I felt like there was so much going through my head then …I was thinking about all the other events… I feel like now it's so much easier to focus on your cues in javelin, there's nothing going on right now, it's just this, and you're in this moment and you can't do anything about anything else right now so, might as well just focus 100% of my attention on this.

State mindfulness. James's levels of state mindfulness showed some variability and inconsistency throughout the intervention phase (see Figure 12). During the six training sessions, his highest score of 47 was during session 3, where the participants were introduced to the mindful yoga. His lowest scores of 41 were during sessions 1 and 2 where he was introduced to sitting meditation, the mindful eating, and the body scan. From session 3 to session 6 his state mindfulness scores slowly declined but still remained higher than the first two sessions. After the intervention his scores demonstrated an increasing trend with a 13.2% increase from the last training session to the follow-up measurement.

James's curiosity subscale score was highest in sessions 1 and 3 declined for the remainder of the mindfulness training sessions. At session 5 up through the follow-up however, there was an increasing trend (25%). His decentering subscale scores followed a general trend of consistent increase throughout the study with a 32% increase from session 1 to the follow-up (see Figure 14). James commented on his progress with his abilities and

efficiency with becoming more mindful in the moment. He stated, “I definitely think it's easier… [when] we first started it was kind of hard to grasp the concept…now as long as I recognize that I’m just kind of thinking ahead of myself and just, stop and say hang on, I’m here and now.” He also used an example of how he has been able to better catch his mind wandering and bring it back to the present. “Don't worry about it right now…mindfulness training has helped me in the moment like that… controlling the controllables.”

Interestingly, James also talked about how he actually struggled to use mindfulness in low pressure situations, yet it was helping him the most in high pressure situations. For example he said:

> I think the lower the pressure its almost hard to focus, if it’s a high pressure situation usually I can…[It’s] easy for me to zone in and focus on what I needed to do but in lower pressure situations it’s - you're not as worried about what you're doing as you are about what's going on around you really… so in lower pressure situations it's a little harder to be mindful and focus on what you're doing.

When asked if he believed that continuing mindfulness practice throughout his college career would help with this he said “I definitely think with more practice it would be easier to do it on cue whenever you wanted no matter the amount of pressure or distractions around you.”

Mindfulness practice log. Over the course of the 6 week program, James completed 23 of the 30 homework sessions that were assigned, with an overall completion rate of 76.6%. His completion rate increased over the course of the program, with 83% completion of the final two weeks. James’s home mindfulness practice also increased gradually each week, peaking at 85 minutes in the final week (see Table 6). James’s total practice time over the course of the program was 325 minutes. During the first week of home mindfulness practice, James noted how it was difficult to practice on his own: "It wasn't as easy as the first time with the group. I didn't feel as comfortable doing it on my own, so I was more preoccupied and more distracted." However, he noticed it began to get easier by the end of the week and he was already able to apply more awareness and acceptance to an unfortunate situation, as he noted "I hurt my ankle so I was angry at the beginning, but the longer I meditated, the more calm I felt." By the end of the program, after James had been practicing the sport meditation, he noted how it had been helping him with his javelin performance saying it "Really helped me concentrate and feel things (good and bad) that I hadn't felt before.”

Post intervention performance log. James indicated that he was currently practicing mindfulness exercises 3-4 times a week. James had completed the log entry for a competition that occurred one week after the intervention program concluded. During the week leading up to his competition, James practiced mindfulness four times and practiced walking and sport meditation directly prior to competing. His perceived pressure for that particular competition he rated as 5 out of 10, and although he did not rate the pressure of this track meet to be particularly high, he added, "The only real pressure I felt was what I put on myself to throw a certain distance or beat people who I knew I could beat. Also, I was a little anxious because I knew this would be one of the last competitions to prove myself before MACs." To expand on this he said, "Just adding the 'Championships' immediately added a little bit more pressure…that was like my first *big* meet…beforehand I was walking the track just, trying to get my mind focused and get myself to relax, and that helped a lot."

The anxiety he experienced was rated only at a 3 out of 10, which James commented on: "I felt anxious and nervous, but I always see that kind of anxiety or nervousness before competition because if you don't get a little nervous, then how much do you care about what you are about to do?" Most notably, he also indicated that the anxiety he did experience was primarily viewed as being facilitative towards his performance. "I felt nervous still, but it was not overbearing so that it would hurt my performance. I did not start the competition well, however I took the time to calm myself down and set an anchor on my penultimate step." He additionally said "The sport specific mindfulness just really helped me focus on my cues…I threw a PR on my last throw."

James also mentioned that his confidence during the game was high, even though he had stumbling points. "I felt confident going into the competition, and then as the competition went on, my confidence grew as I told myself 'you know how to do this, just trust yourself.'" When James reflected on what thoughts he had after his event finished he said "I definitely felt great after getting a PR after the competition. I felt excited, but relieved that I had accomplished my goal for the day and scored points for the team."

Participants' Evaluation of the MSPE Program

The results from the follow-up interview which explored the participants' 'experiences and perceptions of the MSPE program are divided into six sections: (a) accountability, (b) connectedness and group size, (c) mindfulness exercises, (d) time and duration of program, (e) independent practice, and (f) overall perceptions of the MSPE

experience. A general summary of the participants' feedback is given, along with specific comments pertaining to each theme.

Accountability. The mindfulness practice log served as a reminder to practice, and both participants said that it helped as a liability for keeping up with the homework sessions throughout the MSPE program. Lisa stated that "It was helpful because it reminded me I have to practice and write down my thoughts…I had to do something, you know if I didn't have that log I probably wouldn't have practiced." The log books also encouraged self-reflection of the home mindfulness practice. Both participants found particular use in the comments section to write down thoughts and feelings concerning the day's practice, regarding their struggles and/or successes for that day. One comment that James made was that "I think it might help …looking back two weeks and looking back a month just to see what I was thinking about…almost like a journal." Lisa continued to use this note taking method after the intervention because she saw it as helpful in keeping her on track with trying to practice multiple times a week. Along with the log books and homework practice, James also mentioned that participating in a group rather than alone also added to this feeling of accountability that kept him on track with the home practice: "The more people there are doing it I think the more accountable you would be outside of the meetings."

Connectedness and group size. Both of the participants enjoyed going through the MSPE training in a small group setting with their teammates. In terms of learning mindfulness with only a handful of athletes Lisa explained "Especially for this training I think it's a little more intimate." Lisa expanded on this by giving specific comments regarding her feelings of connectedness and being able to relate with teammates. She stated "I liked how we met in a small group and heard the differences between all of us and what was helping [and] what wasn't. It was neat to hear what the other girls are thinking about while they're playing." James also discussed the idea of connectedness with his teammates. He believed that with more people there could be an abundance of useful input, and the more one could learn about applying mindfulness towards yourself and your sport. He explained "You see how much people around you [are] trying to focus on one goal and…also trying to do their own thing, I feel like it would be easier to focus and try to learn yourself."

However, both participants explained that with too many athletes together, the atmosphere of the training session would most likely change. Lisa commented "If it's a big group I think it might get too much, too complicated, too much...chaos in a sense…Because everyone is going have different thoughts and everyone's going to be trying to work on sharing everything." Both participants believed that a reasonable number of participants for

the mindfulness training should be between 6-8 people in order for an individual to experience the positive benefits of connectedness and sharing with their teammates, without the process being too overwhelming or chaotic with the discussion and training times.

Mindfulness exercises. The overall perception of the mindfulness exercises that were used in the program was positive. Lisa stated “[I] liked the different exercises and knowing what can help us during the sport or during a game." The eating meditation was believed to have been a great way to introduce mindfulness because it was simple and effective at presenting a new concept and the way that mindfulness can change a simple, everyday experience. Lisa also commented on the sitting meditation and her overall experience with that throughout the intervention: "Knowing and just feeling what's going through my body... I didn't mind that because it's a new way to think about things and it's a new training."

James also commented about some of the specific exercises: "I wasn't a big fan of the body scan...it was good whenever you were here to walk us through it but when I was on my own I found it hard to take it so slowly and I would get impatient.” He also commented "I liked the yoga and the sport specific meditation has helped a lot, and the sitting meditation is just easy to do anytime, anywhere." An additional comment that James made regarding the home practice was that the use of an audio tape or a video would have helped him with the mindfulness exercises, especially the body scan, when doing the home practice. Both participants found it difficult at times to stay within the time frame or to keep a good pace throughout the body scan and yoga without having a guide. Both Lisa and James said that during the training sessions they enjoyed exercises like the body scan and yoga, however the first few times they practiced it on their own they found it difficult to connect with the exercise and be mindful.

Both participants would have preferred that the mindful yoga exercise be placed after the walking meditation rather than being introduced before. The transition between the exercises leading up to the sport specific meditation felt less connected and the participants believed that the progression would have flowed better if they had learned the walking first. Lisa specified that “I think the transition just felt, awkward… I think it would’ve been nice to do a sitting, to standing or walking, and then the yoga and then the sport just because the movements…just felt like ok, now I'm just jumping into my sport." James added "Doing the yoga before the walking meditation made the walking meditation seem really easy." James explained that the level of challenge and mind-body connection may have felt stronger if the order between yoga and walking would have been reversed.

Time and duration of program. Lisa and James both struggled at certain points with finding adequate time to practice mindfulness skills throughout the program with their busy schedules as student athletes. Both participants recognized that the mindfulness training schedule is beneficial because in order to see performance results there must be consistency and commitment with practicing any new type of skill. An athlete's practice, weight training, and game schedule are not something within their control, which was noted through the participants' comments. Meeting for training sessions and practicing skills at home was hard because as James noted, "What I struggled with too is finding the time to do it…But I know it has to be regimented because otherwise the practice and the results aren't going to eventually come." The total amount of time that the program ran for, as well as the frequency of training sessions was also discussed. Lisa said "If it was longer I think it would be more beneficial...the total time...because I know we met once a week and I know we were supposed to reflect on that week but even if we had one more session during the week just to practice or go through thoughts." However, Lisa also noted that having an additional training session each week would be beneficial if the program stayed at six weeks, although James believed once a week training sessions were sufficient.

Lisa said she would have preferred going through the intervention during the off season versus the pre-season, as she would have had more time to learn the concepts of mindfulness, practice, and apply it towards her sport. "I think that would be more beneficial because you'd be practicing all through the fall so then you could apply it in the spring... I think that would help a lot." She added, "The short amount of time I'm like oh (sigh) man it's not working, I want to see the results right now happen, but I know its takes time and takes practice." James also talked about the ease of use with certain exercises based on the amount of time they required. He said "I think the sitting meditation is the most convenient, it only takes about ten minutes…and it's the easiest to fit in as oppose to the yoga where you have to have space and 25-30 minutes of time."

Independent practice. In the final MSPE training session, the curriculum concludes with a section that discusses tips for continued mindfulness practice. Athletes are encouraged to continue their personal practice after the intervention is completed, and this section aims to help participants identify strategies that may help them keep up with regular dedicated practice. Suggestions include making space, a commitment, and time for practice, as well as personalizing one's practice by choosing exercises that the individual finds to be enjoyable and can connect with the most. Lisa and James were asked about how effective this concluding section was and how it helped tie in with the mindfulness practice they have done

in their own between the conclusion of the program and the follow-up interview. Lisa remarked, "I liked the walking meditation the best, so that one was mainly my go to…The yoga, wasn't really my...favorite. I used some of the poses…I choose the ones that I thought were helping my body, and my mind at the same time." When asked to go more in depth about how she personalized her mindful yoga practice, Lisa explained that she identified which poses she felt helped her achieve a mindful state the best, and utilized those specific exercises into her practice which helped her when she had limited time."

Participants were also asked to go into detail about how often and to what extent they used and currently use the sport specific meditation practice, as this exercise is the most unique and customized exercise in the program. James said, "The sport specific is pretty easy to do when your coach is off doing something…whenever it's just me by myself picking with the jav[elin], it's easy to do that, and it fits in pretty well." Lisa added "Even when I'm in the on-deck circle for hitting like I'm feeling my swing, I'm feeling what I'm doing. Even closing my eyes for a swing I'm still doing that." The program curriculum states that "Mindfulness skills can be developed through formal practice exercises, but every moment of our lives presents an opportunity for informal practice." The authors also encourage the participant(s) to "Seize every chance to build awareness of your body, to notice your judgments of bodily sensations, and to experience the freedom that comes with accepting whatever is happening in any given moment."

Participants were asked about their preferences of formal versus informal mindfulness practice. Formal was defined as practice which involved setting aside a specific period of time to engage in a mindfulness exercises, and informal was described as mindfulness practice which is incorporated in daily routines and activities (Carmody & Baer, 2008). James said that a good portion of his practice is informal, especially working on the breath and sport specific meditation. Lisa commented that she found informal practice to be more helpful in terms of practice and easier to fit into her schedule as a student athlete better:

> I have done the sitting meditation where it is formal, just because I'm taking 5 to 10 minute break that, is nice to have. I'd say most of my practice has been informal just because of the busy schedule…I'll catch myself thinking about other things and I'm like oh wait mindfulness, come back to it- kind of training my brain to focus on the task at hand.

Each participant was also asked about how they have been able to fit in mindfulness training into their schedule as student athletes. Lisa commented “It's been a little tough (laughs), especially within season, and, you know MAC and practices but, I've tried to find time and try to put it in my schedule and make time for it because...I know it'll help me in the long run.”

Overall perceptions of MSPE experience. As a senior, Lisa said "I think I would have liked it freshman year because, then I could've implemented it throughout my years [at college]... I think it would have helped." Hearing about previous success with others from this program and mindfulness helped keep her motivated to learn and apply mindfulness. Lisa stated "Knowing that it's worked for others before me, so I know if I keep doing it I'm doing something right. I think that's been the biggest thing is knowing people have had success doing this training." Final comments that Lisa made were that she thought the scripts were great and that the curriculum did a good job of discussing the concepts in a simple way, even though the concepts themselves held a lot of complexity.

Chapter Four

Discussion

One of the primary goals of this study was to better comprehend how the MSPE, a sport specific mindfulness intervention, would impact athletes who are susceptible to choking under pressure in sport by altering the interpretation and level of trait anxiety, trait self-consciousness, and coping styles. Choking is a complex process which involves an interfusion of perceptions and interpretations, interactions, emotional states as well as other potential influencing factors. A mixed methods approach provided insight into the phenomenon of choking and its impact on athletes, while also exploring how the MSPE, would impact changes in the CS criteria.

The results from both case studies support that the MSPE was successful in reducing levels of trait anxiety, trait self-consciousness, and altering the coping style differential score. Based on the SAS, SCS, and CSIA follow-up scores, both Lisa and James did not meet the CS criteria which had originally qualified them for participation in this study. Based on Mesagno and colleague's criteria (2008, 2009), to be identified as CS the participant must have all three inventory scores above the 50th percentile, with two of the scores placed in the top 25th percentile. The trait anxiety scores on the SAS for both Lisa and James were beneath the 50th percentile mark, which automatically dropped them below the criteria. Lisa's remaining scores on the CSIA and the SCS were both below the 75th percentile mark, with her CSIA score placing her directly on the 50th percentile mark. James' SCS score remained in the 75th-100th percentile range; however his remaining score on the CSIA was also below the 75th percentile mark, confirming that he was no longer CS.

An additional purpose of this study was to determine if the MSPE program would improve the participants' mindfulness levels, and how this would positively change the athlete's typical response to a high pressure competitive setting in sport. Below is a general discussion of how enhanced levels of sport mindfulness contributed to the participants' sport performance and experiences under pressure in the variables measured in this study, as well as the observed methodological shortcomings, dilemmas, and questions which still remain unclear or unanswered.

Influence of Mindfulness on Coping

The results from the CSIA have shown that although the positive differential score decreased for both participants, approach coping levels remained high. Approach coping includes active coping, acceptance, and cognitive reinterpretation (see Stowell, Kiecolt-Glaser, & Glaser, 2001). The participants are believed to have switched the type of approach

coping strategy they primarily used, from using more active coping to using more acceptance coping during pressure situations. Active coping is described as taking steps to remove or overcome a particular stressor by initiating direct action and/or increasing effort (Carver, Scheier, & Weintraub, 1989) whereas acceptance is about allowing the situation to occur and being open to accepting it. Acceptance is not only a style of coping, but is also a key component of mindfulness. The participants' increased levels of mindfulness on the MIS support this notion, as both participants showed the most improvement in the non-judgmental subscale, which is defined as holding an attitude of acceptance (Thienot et al., 2014). In the mindfulness model proposed by Gardner and Moore (2007), acceptance is one of the three central components of mindfulness, and represents the non-judgmental attitude an individual holds towards their thoughts, emotions, and body in the present moment. In essence holding an attitude of acceptance would mean the individual would give up their striving for control (Nakamura & Orth, 2005) and be able to accept their experience of disruptive stimuli without judging themselves. Acceptance is part of the primary appraisal of a stressor, and research has supported its negative linear relationship with anxiety (Garnesfski & Spinhoven, 2001), meaning that the more acceptance of a stressful situation one has, the less anxiety one will experience.

There has been debate over which type of coping styles are most prevalent in athletes who choke. The research supporting that chokers have a greater tendency to use approach coping have centered on the active coping and cognitive reinterpretation components rather than acceptance. The coping strategies include increasing physical effort (see Anshel, Porter, & Quek, 1998), attempting to change or control technique, and changing the way the athlete thinks (see Wang, 2002). In contrast, both participants also had increases levels of avoidance coping. Previous research has supported the notion that chokers engage in avoidance coping (Kristiansen, Roberts, & Abrahamsen, 2008; Jordet, 2009) such as Hill and colleagues (2010, 2015) who concluded that chokers used strategies such as rushing through their performance and denial, while clutch performance was associated with approach coping strategies.

A large body of research has supported a process orientated approach with coping, supporting the notion that coping is a dependent response which can change across situations, across the same situation over time, and across distinct phases of a given situation (Lazarus & Folkman, 1984; Anshel & Kaissidis, 1997; Gaudreau, Blondin & Lapiere, 2001). There has been continuing evidence showing that the use of both approach and avoidance coping strategies in conjunction with one another, may prove to be highly effective. Roth and Cohen (1986) suggested that coping is a dynamic process which can involve multiple types of

coping strategies at once, where specific aspects of a stressful situation may be avoided, and others are best approached. The authors note that "both modes of coping with stress would be operative, with the benefits of each realized and the costs of each minimized" (p. 818).

The participants may have used a strategy such as mental disengagement in conjunction with using acceptance as a coping strategy. Mental disengagement could have taken the form of focusing on an anchor such as the breath, body, or an external object in order to temporarily distract their mind from the pressure. The breath is not directly task orientated, yet it keeps the athlete present and keeps them from internalizing anxiety and ruminating their thoughts. For example, Lisa noted using both types of coping methods when the pressure was high. She would temporarily disengage from the pressure by focusing on her anchor, as noted in her performance log entry: "I had a lot of thoughts running through my head because I knew it was a big game. I tried to focus on my breathing to get me through it." She would also use acceptance in order to stay focused on the task at hand when she felt anxious: "I think I'm accepting it because I know my body is doing that…just focusing on each pitch."

The use of an anchor as a present moment awareness tool is taught continuously throughout the MSPE program, with the athletes learning how to use the breath and their body as a focusing/refocusing method. A disengagement coping strategy such as this may have been used alone or directly prior to using approach coping methods, when focusing on the task at hand could not easily be done. Although avoidance coping methods have been found to be maladaptive in the long term, one could argue that the use of this particular avoidance strategy may have been beneficial and temporarily used as a stepping stone towards a more adaptive response (e.g. acceptance).

Influence of Mindfulness on Anxiety

Lisa and James both experienced the greatest improvement in their trait anxiety levels. Both participants had decreased somatic anxiety levels, with James experiencing greater amounts of facilitative interpretations. Even though Lisa's somatic levels slightly increased from the post measure to the follow-up and her interpretation remained debilitative, her score had notable improvements showing a continuing trend towards a facilitative direction. Lisa and James experienced similar drops in their levels of cognitive anxiety (worry) and had exceptional improvements in their interpretations. Lisa's cognitive anxiety directional score paralleled her somatic anxiety directional score; remaining debilitative but had a change in trend direction that went more towards a more facilitative interpretation of her anxiety. James's interpretation of his cognitive anxiety switched from debilitative to

facilitative. These findings support one of the study's primary hypotheses, which predicted that the MSPE program would influence directional anxiety changes.

In addition, both Lisa and James had decreases in the attentional disruption subscale on the SAS, which can be linked to the improvements in their MIS mindfulness scores. Attentional control incorporates the ability to focus attention, avoid distraction and switch attentional focus (Walsh, Balint, Smolira SJ, Fredericksen, & Madsen, 2009). Higher attentional control also predicts stronger levels of mindfulness (Walsh et al., 2009) as mindfulness requires a strong attentional present moment focus as well as the ability to switch the direction of focus due to stimuli in the environment (Bishop et al., 2004). Both participants had increased scores on the MIS refocusing subscale, thus it appears that there was a negative correlating trend between attentional disruption scores on the SAS and refocusing scores on the MIS resulting in enhanced attentional focus for both participants.

Influence of Mindfulness on Self-Consciousness

Although both of the participants did not meet the CS criteria, their scores on the SCS resulted in the smallest amount of change from baseline to follow-up and were in the highest percentile rank compared to the other CS measures. One explanation is that a high score on the SCS may represent drastically different meanings when comparing the pre and post intervention status of the athlete. At baseline, a higher self-consciousness score may have suggested that the athlete internalized their thoughts, overanalyzed their sport performance, experienced self-doubts, and would allow their focus to anchor on irrelevant cues. The athlete may have commonly experienced decrements in their performance because they were judging themselves and not *accepting* their thoughts or circumstances. The participants' baseline mindfulness scores were low, specifically in the decentering subscale on the TMS for James, and the MIS refocusing subscales for both participants, indicating that in general they may not have had a strong awareness of their thoughts prior to the intervention.

The mindfulness training may have helped the participants become more aware of how many and what type of thoughts they were having as well as what actions they would take in regards to those thoughts. Follow-up scores on the MIS and TMS showed improvements in the athletes' abilities to become more aware and less judgmental. James only experienced a 6% drop in his SCS score, with the vast majority of improvement coming from his social anxiety subscale, however his state mindfulness score improved, with the decentering subscale score improving 32%. The authors of the TMS describe decentering as the "awareness of one's experience with some distance and disidentification rather than being carried away by one's thoughts and feelings and is conceptually" (Lau et al., 2006, p.1452).

James's MIS mindfulness scores also improved, with the non-judgmental subscale increasing 39%, suggesting that James had become better in his attentional awareness and ability to withhold from judging his thoughts.

Several items on the SCS use language that may have been unintentionally perceived as pertaining to mindful awareness rather than true self-consciousness, which may have also influenced the scores. Several items from the private self-consciousness subscale could have possibly misrepresented the true progress of the participants based on interpretation of items using words such as "aware, alert, and attentive". Questions such as "generally, I'm not very aware of myself" (reversed scored), and "I'm generally attentive to my inner feelings" may have been interpreted as questioning the athlete's ability to be mindful in a sense, rather than their tendency to internalize and become self-conscious. The concept of awareness and bringing attention to your thoughts is one of the very first aspects of mindfulness that the MSPE program teaches, which may explain why both participants continued to score high on these particular items. Research by Bishop and colleagues (2004) has proposed that mindfulness is distinct from other forms of self-focused attention like anxiety related rumination and preoccupation which lead to exacerbated states of distress, rather than reducing the stress as mindfulness has been shown to do. Mindfulness has further been defined by a style of self-focused, uninvolved attention which uses openness and acceptance (Lau et al, 2006), and thus appears to be related more to intentional states of self-reflectiveness rather than an involuntary state of rumination (Trapnell & Campbell, 1999) and self-consciousness (Buss, 1980).

Many of the other items from SCS represent an effect which is felt by the athlete, or a process which occurs as an experience or state of mind (e.g. examining, dwelling) to which both participants experienced decreased scores. Although these items may have reflected a reduction in actual self-conscious tendencies, the increased scores on the misinterpreted questions may have prevented the total SCS score from decreasing as much as it could have. A higher score on the SCS paired with a higher MIS score can therefore suggest a greater ability of awareness, rather than susceptibility to overanalyzing and internalizing self-focused thoughts which would then in turn lead to choking.

State Mindfulness Measures

The TMS was distributed and completed following the completion of each mindfulness training session, as previously done with MSPE studies (see De Petrillo, Kaufman, Glass, & Arnkoff, 2009). This study utilized the TMS to track state mindfulness

levels after the intervention was completed; tracking the participants during competition and for a typical formal mindfulness practice away from the intervention's controlled training session environment. The purpose was to determine how mindful the participants were becoming with their independent practice, and how effective they were at being mindful when they competed under pressure. Although the data collected was limited, the mindfulness scores showed interesting results. James continued to show improvements after the intervention in both competition and home practice, while Lisa reported lower levels at her competition, yet demonstrated a higher score with her home mindfulness practice. This indicates that some athletes may potentially benefit from structured mindfulness practice for a longer period of time before their competitive season in order to feel better prepared to use their mindfulness skills once they have become better mastered. As softball players play multiple positions, Lisa may have had less time to formally practice her mindful sport meditation for each position before her competitive season, compared to James who only practiced with one specific skill.

Logbooks

The use of the logbooks proved to be a useful tool in demonstrating the progress, struggles, and successes that both participants had in cultivating their mindfulness skills throughout the intervention and in a competitive setting. The mindfulness practice logs kept the participants accountable for their home practice, which both participants mentioned was an important factor in keeping them committed to the training. The performance log helped demonstrate how mindfulness practice was naturally integrated into the athletes' pre-game preparation, and how mindfulness was used during a pressurized competition to stay focused and handle anxiety. The log also functioned as a self-report tool indicating perceived pressures, anxiety levels, and anxiety interpretation, which supplemented the SAS and DM-CSAI-2 scores. The results from the performance log may additionally help explain why TMS scores differed greatly between Lisa and James.

Evaluation of the Mindfulness Program

Both participants described the structure of the MSPE as helpful in keeping them accountable and consistent with their mindfulness practice. Relatedness and connectedness with group members was mentioned as an important aspect which kept them motivated to keep up with their home practice and help them feel more comfortable going through the training. Small group sizes were viewed as beneficial towards discussion times, space, and connectedness. All of the mindfulness exercises were seen as effective and enjoyable to the athletes, with some notable preferences towards the sitting, walking, and sport specific

meditation, while yoga and the body scan were seen as more difficult to practice independently both during and after the intervention. The use of video and/or audio files for home practice was discussed as a tool which would be useful for the participants for their home practice, especially during the early stages of the intervention.

Time constraints and travelling during the season were noted as key factors in determining which exercises were used and how they were practiced (formal versus informal). Although the MSPE focuses on introducing additional amounts of movement each week, the participants may have had an inclination towards viewing the training process in terms of challenge and physical difficulty instead. This would explain why both participants said they would have preferred to have learned the walking meditation before the mindful yoga, as the walking meditation's level of difficulty, both mentally and physically, was viewed as being too easy following the yoga. The perceived challenge is therefore noted as a factor which may influence the participants' experience leading up to their sport specific meditation, along with their state mindfulness during the intervention.

Implications

Reducing the incidence of choking may save many professional careers in sport, and help younger athletes maintain participation in sport for longer periods of time. Hill and colleagues (2009, 2010) offer support to this idea, as their interviews with athletes who were chronic chokers made clear that choking not only had temporary consequences, but long term ones as well. Many athletes were considering dropping their sport altogether due to the intense anxiety and lack of satisfaction and enjoyment they took from competition solely because of their choking episodes (Hill et al., 2010). Reducing the risk of choking in sport may also transfer to the reduction of choking in other areas of life as well. Numerous studies have demonstrated that choking is not unique to sport alone, and may impact performances in academics such as on tests and exams (Beilock, 2010).

The MSPE demonstrated promising outcomes as being an effective strategy to help reduce athletes' susceptibility towards choking under pressure. This study's qualitative and quantitative data both showed improvements in the participants' trait measures, interpretations of anxiety, and how they handled stressful competitive situations. Mindfulness interventions that incorporate sport specific content such as the MSPE may therefore be an ideal option for targeting the underlying factors that contribute to choking, and may serve as a preventative tool.

The results from the current study suggest that sport specific mindfulness interventions may be a viable option for coaches to use should their athlete(s) struggle with

performance decrements related to anxiety, self-consciousness, and coping style. Coaches may also consider mindfulness training to help change anxiety direction if their athlete views anxiety as extremely debilitative towards performance. Mindfulness serves as a useful tool to enhance attentional awareness and manages stress in pressure situations, and its implementation into a mental skills training program is encouraged. The ability of mindfulness training to enhance an athlete's ability to become more aware, non-judgmental and accepting in the present moment may also complement the use of mental skills such as self-talk and imagery for future performance enhancement for athletes once they have had success in reducing their CS levels.

Strengths and Limitations

As research on mindfulness interventions in the field of sport psychology is limited, the use of a follow-up was vital for demonstrating the continuing effects that mindfulness training had on subjective measures. The follow-up also served as an important tool in gaining rich feedback from participants through the interviews and performance logs. Although the follow-up period was brief, it demonstrated how trait sport mindfulness levels continued to improve, and promising signs of the longer term impact that mindfulness levels had on anxiety, self-consciousness, and coping styles. Additional follow-ups should also be considered to see how mindfulness training can reduce choking over the long run. The current study was limited to only 5-6 weeks post intervention. Further studies are encouraged to investigate how the CS criteria, anxiety direction, mindfulness measures, and mindfulness practice may change in a follow-up of 6-12 months. Since mindfulness, like many mental skills, is something that takes time to develop and master, a longer follow-up may be beneficial to see more sustainable and consistent results. One limitation was the timing of the follow-up measures and interview in this study, as they coincided with the end of the semester for the participants. As student-athletes, the participants may have experienced outside factors that could have influenced their scores and/or responses in the interviews, such as final exams and the upcoming end of the season championship tournaments.

Future Directions

Further research should utilize quantitative methods to see how mindfulness could help prevent choking in controlled pressure environments that have classically been used to induce choking in the past. Examples of such research includes various pressure induced choking experiments with basketball free throws and soccer penalty kicks (Wang, Marchant, Morris, & Gibbs, 2004; Reeves, Tenenbaum, & Lidor, 2007). These quantitative studies could also measure state mindfulness and state anxiety under these controlled experiments

using reliable scales such as the TMS (Lau et al., 2006) and the DM-CSAI-2 (Martens, Burton, Vealey, Bump, & Smith, 1990) alongside performance measures.

The participants' evaluation of the MSPE program provided quality feedback that can be used in the future for tailoring the intervention towards athletes' needs and satisfaction. Further studies are encouraged to use methods such as social validation which may be particularly important because it determines the participants' overall satisfaction and helps connect the effects of the intervention to that of a social context (see Page & Thelwell, 2013; Storey & Horner, 1991). Part of this procedure includes analyzing the social importance of the goals of the intervention, which has been connected to both program adherence and the perceived importance of changes in the targeted variables (Bandura, 1986; Godin, Valois, & Lepage, 1993). Page and Thelwell (2013) have stated that "social validation is fundamental to understanding, evaluating, and documenting the impact that interventions have on clients and participants performance" (p. 63).The use of social validation procedures in sport and exercise psychology literature has also become more prevalent within the last few decades alongside the promoted use of single-case designs (see Dunn, 1994; Hrycaiko & Martin, 1996) and should be used in further investigation of mindfulness interventions in sport.

Further investigation is warranted to determine how this program would benefit athletes in a variety of other sports, including both individual and team sports, as the impact of social support from teammates in a mindfulness intervention program is currently unknown. Researchers would be advised to study the differences between several sport mindfulness based programs of various lengths to see if a longer intervention or one that contained greater training frequency would impact athletes to a different degree. Future studies should also consider using a control group and random assignment with this type of brief mindfulness intervention in order to compare the effects of CS participants receiving the mindfulness training and those who do not.

As attention is a central component of any type of meditation, this is the first aspect of the mindfulness training that participants seemed to have struggled with the most. Meditation, even when relatively short in length, may be quite difficult for athlete who is new to the idea of both mindfulness and meditation. Beginners commonly believe that they feel more distracted in the early stages of training, and might believe that they are unable to really be mindful. They may show signs of frustration, impatience, and may even become discouraged in their progress and abilities to attain a state of being mindful while they practice. Therefore, researchers and practitioners need to be aware that the early stages of mindfulness training may benefit from additional support and tools to help maintain

motivation and program adherence. In an extensive one year mindfulness intervention conducted by Meland, Fonne, Wagstaff, and Pensgaard (2015), one-on-one sessions, inspirational texts and emails, and guided mindfulness training soundtracks were offered to encourage home practice and reinforce motivation. Future studies using both long and brief mindfulness interventions may benefit from these additions. Furthermore, although both of the participants made improvements in their practice times over the course of the program, James and Lisa only completed between 63-65% of the assigned homework practice. While this completion rate is impressive given the amount of work and commitment each participant gave alongside other aspects of the study, future studies may want to use adherence and motivation tools such as the ones described above to help increase the practice times and completion rate throughout the program.

An important aspect to discuss is that the participants may have engaged in more cognitive based coping strategies rather than behavioral, which this study argues as potentially being more important in terms of preventing choking, rather than focusing on approach vs avoidance, or emotion vs problem focused coping categorizing alone. Approach and avoidance coping strategies contain both problem and emotion focused coping components which can be further broken down into cognitive and behavior processes, which have very different outcomes. This study suggests that more adaptive cognitive coping strategies, as described by Garnesfski & Spinhoven (2001) and measured on the Cognitive Emotion Regulation Questionnaire (CERQ; Garnesfski & Spinhoven, 2001) would be more useful as part of the coping response under stress to prevent choking, as the authors have linked these strategies (which include acceptance) with fewer reported anxiety symptoms (2001). The use of an inventory such as the CERQ would help to better understand the coping responses of CS athletes from an alternative point of view. Future research on choking and mindfulness should consider this inventory as the CSIA may limit the full representation of coping strategies that chokers may engage in, therefore limiting a deeper understanding of this important stress response in sport.

The appropriateness of using the SCS with athletes in a mindfulness intervention is therefore called into question. Although it serves as a useful tool for CS criteria, an alternative questionnaire may be warranted when working with athletes who are engaging in mindfulness training. Self-consciousness is generally regarded as an unfavorable aspect for an athlete within sport psychology literature, where lower scores are considered ideal in most instances. The SCS however, appears to have components which pertain more to a state of awareness and general attention as well as components that pertain to internal experiences

and processes which arise from the dwelling and judging aspect that can occur for some individuals when they notice their thoughts. As mindfulness has shown, simply because you notice your thoughts does not mean that they will stick in your mind and lead to ruminating, analyzing, and distraction. As an alternative to the SCS, future sport mindfulness researchers may consider using an awareness or attentional questionnaire alongside a judgement scale which might better represent self-consciousness and mindfulness based study.

Conclusions

This study demonstrated that a sport specific intervention such as the MSPE is a viable option as an intervention for CS athletes in sport. The 6 week program has shown that short mindfulness interventions that are tailored towards sport are able to show notable changes on trait measures and anxiety interpretations that influence stress appraisals and may influence choking under pressure. The MSPE, although evaluated in part through participant feedback in the interviews, should undergo further evaluation to gain a better overall understanding of its perceived effectiveness and appropriateness for CS athletes. These case studies serve as a preliminary attempt in demonstrating the role that mindfulness training has in sport, and the value that both qualitative and quantitative approaches have in uncovering valuable information to better understand the complexity of the choking process and the athletes who experience it.

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Table 1.

Time and Frequency of Quantitative and Qualitative Measures

	Baseline	Intervention	Post Intervention	Follow-up
Quantitative Measures	SAS SCS CSIA DM-CSAI-2 MIS	TMS	SAS SCS CSIA DM-CSAI-2 MIS TMS	SAS SCS CSIA DM-CSAI-2 MIS TMS
Qualitative Measures	In-depth Interview	Mindfulness Practice Log	Sport Performance Log	In-depth Interview

Note: Sport Anxiety Scale (SAS); Self-Consciousness Scale (SCS); Coping Style Inventory for Athletes (CSIA); Directional Modification of the Competitive State Anxiety Inventory-2 (DM-CSAI-2); Mindfulness Inventory for Sport (MIS); Toronto Mindfulness Scale (TMS).

Table 2.

Choking Susceptibility Criteria Descriptives

Participant	Baseline vs. Follow-up	SAS Score	SCS Score	CSIA Score	Met CS Criteria
Lisa	Baseline	62**	70***	8***	YES
	Follow-up	51*	60**	2**	NO
James	Baseline	69***	68***	12***	YES
	Follow-up	44*	63***	5**	NO

Note: Percentiles based off of original sample group; n=8

* = 25^{th} – 50^{th} percentile range

** = 50^{th} – 75^{th} percentile range

*** = 75^{th} – 100^{th} percentile range

Table 3

Quantitative Results for Lisa

Inventory	Baseline Score	Post-Intervention Score	Follow-Up Score
SAS	62	50	51
SCS	70	64	60
CSIA	8	3	2
DM-CSAI-2 -Somatic	-17	-15	-8
-Cognitive	-17	-15	-9
MIS	3.73	4.27	4.20

Note: Negative values on the DM-CSAI-2 represent a debilitative anxiety directional score; Table excludes state mindfulness scores.

Table 4

Quantitative Results for James

Inventory	Baseline Score	Post-Intervention Score	Follow-Up Score
SAS	69	44	44
SCS	68	64	63
CSIA	12	5	5
DM-CSAI-2 -Somatic	1	7	5
-Cognitive	-3	1	3
MIS	4.10	4.87	5.20

Note: Negative values on the DM-CSAI-2 represent a debilitative anxiety directional score and positive values represent a facilitative directional score; Table excludes state mindfulness scores

Table 5

Summary of Interview and Logbook Data

Reported Themes	
Anxiety reduction	-I'm more relaxed -I don't feel as tense -I'm not as worried
Anxiety directional changes	-I was turning around my perception during the training - I feel like nervousness is good
Self-consciousness reduction	-I'm not as worried about what others are thinking -Helped me realize that getting mad was hindering my performance; just let it go and focus on the now and get ready
Coping with pressure	-Thinking about all those things and having the tools to try and pull me out when things are going bad -The breath in a sense, is coping with pressure
Increased focus	-I feel like I'm more focused than I was before -I did not have as much of a problem losing focus and having my mind wander as I used to - I think it's easier to get in the zone
Being more mindful	- Helped me acknowledge my body and my thoughts - I notice when my mind wanders and thinking about what I have to do next -I started to pay close attention to my body and the details

Table 6.

Participant Weekly Practice Frequencies and Completion Rates

Practice Week	Week 1	Week 2	Week 3	Week 4	Week 5
MSPE Prescribed Time (min)	~60	~80	~130	~140	~105
Lisa- Actual Time (min)	27.5	48	80	88	90
Sessions Completed (Rate)*	4 (66%)	4 (66%)	5 (83%)	6 (100%)	6 (100%)
James Actual Time (min)	35	52	73	80	85
Sessions Completed (Rate)*	4 (66%)	5 (83%)	4 (66%)	5 (83%)	5 (83%)

**Note:* Participants may have met the frequency requirements and may have practiced exercises under the prescribed time.

Figure 1. Trait anxiety levels for both participants from the SAS.

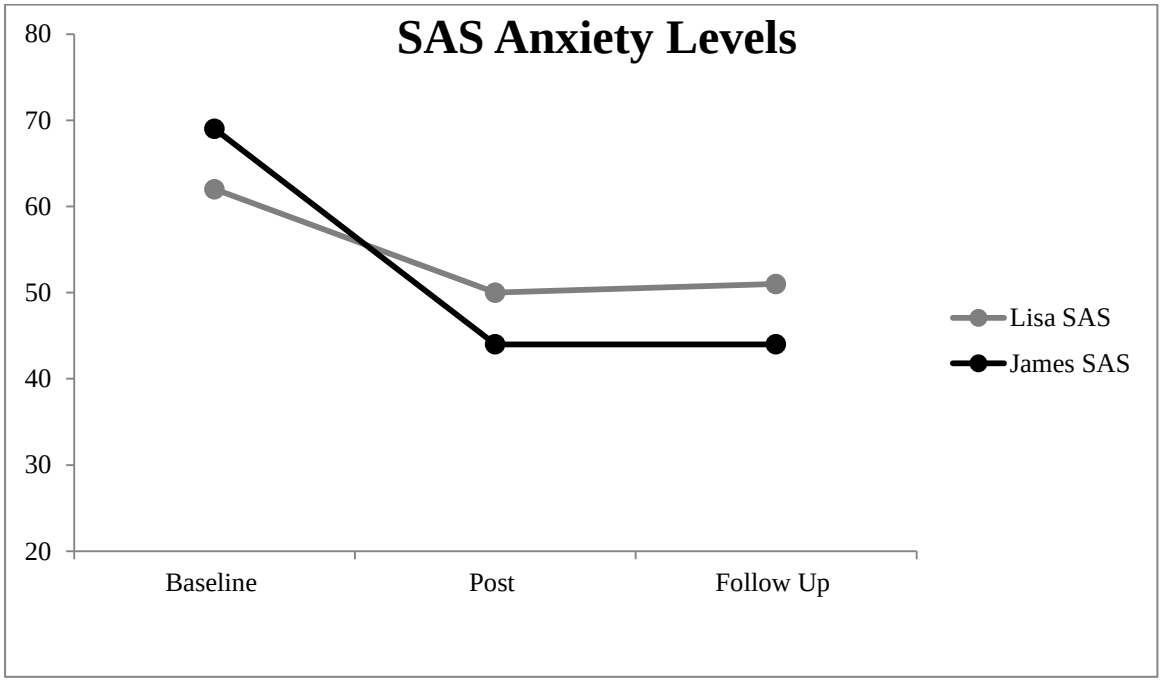


Figure 2. Trait anxiety subscales measures from the SAS for Lisa.

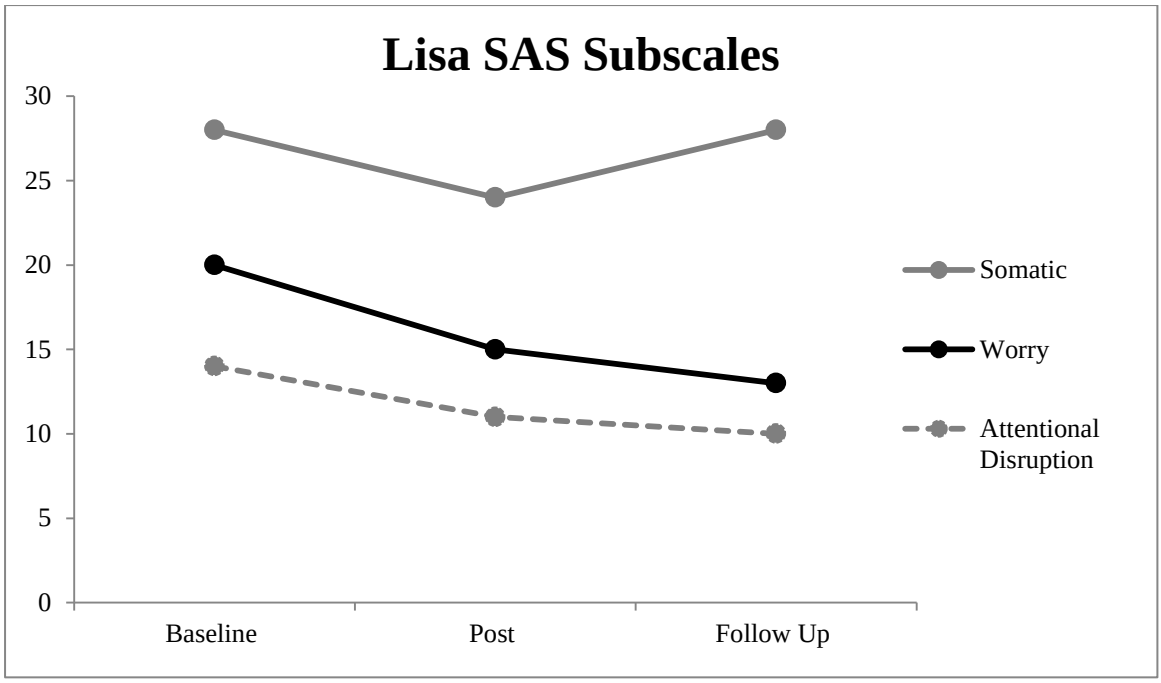


Figure 3. Trait anxiety subscales measures from the SAS for James.

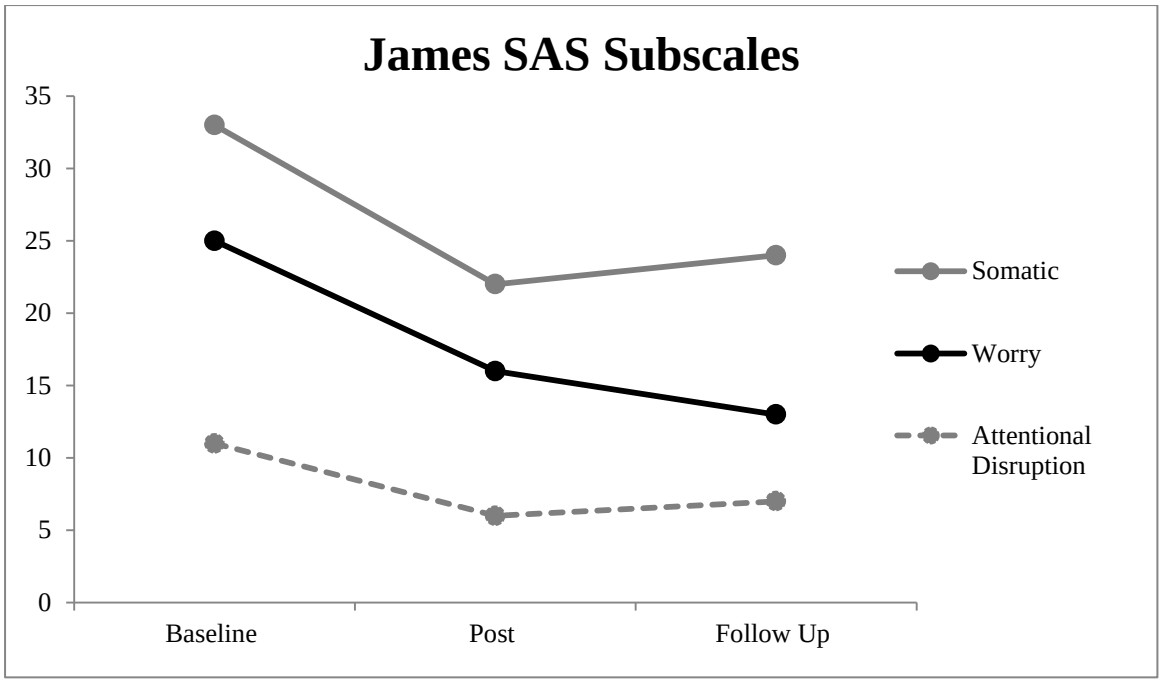


Figure 4. Results for Lisa from the DM-CSAI-2.

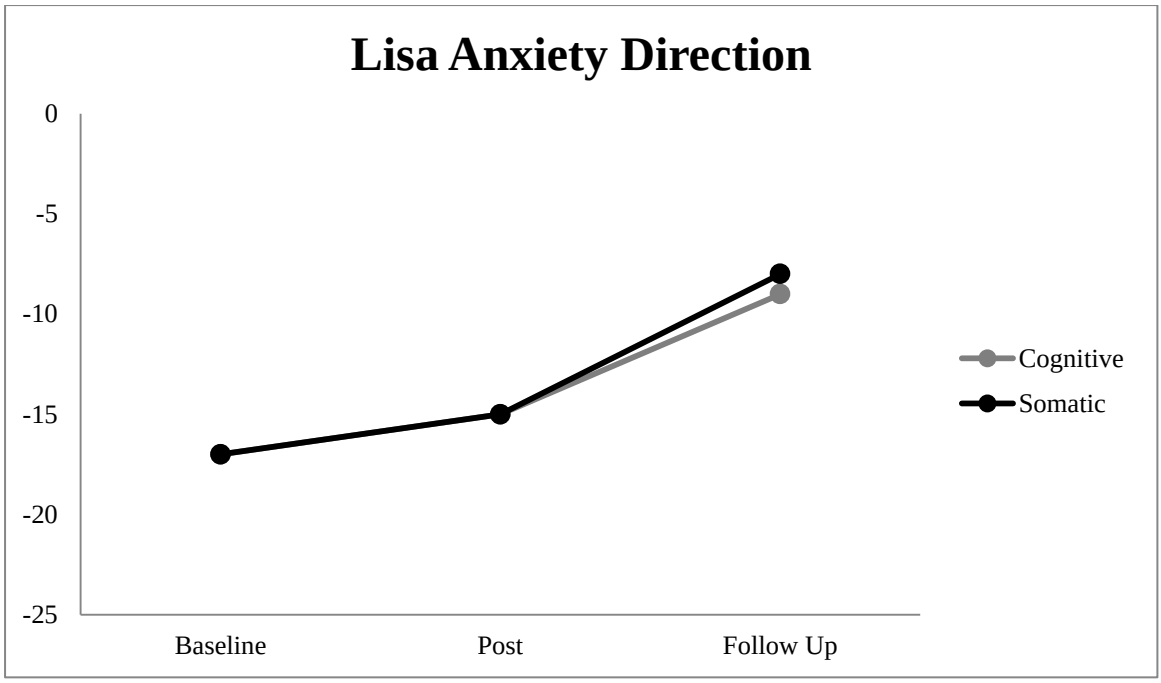


Figure 5. Results for James from the DM-CSAI-2.

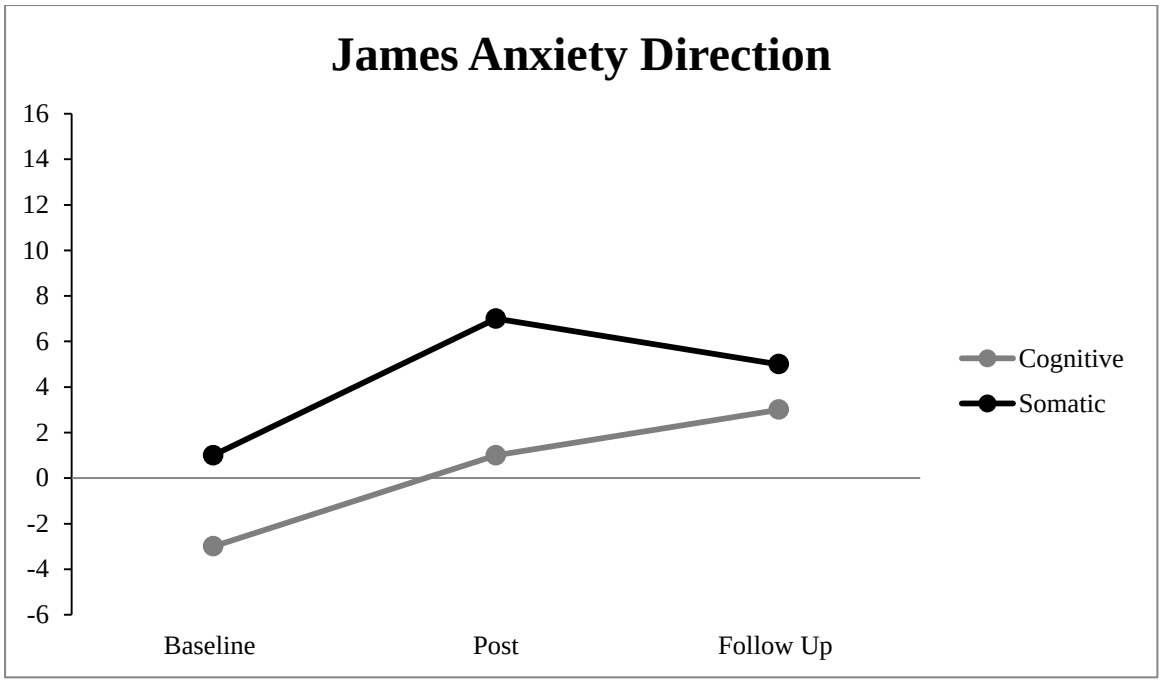


Figure 6. Participants' coping scores from the CSIA.

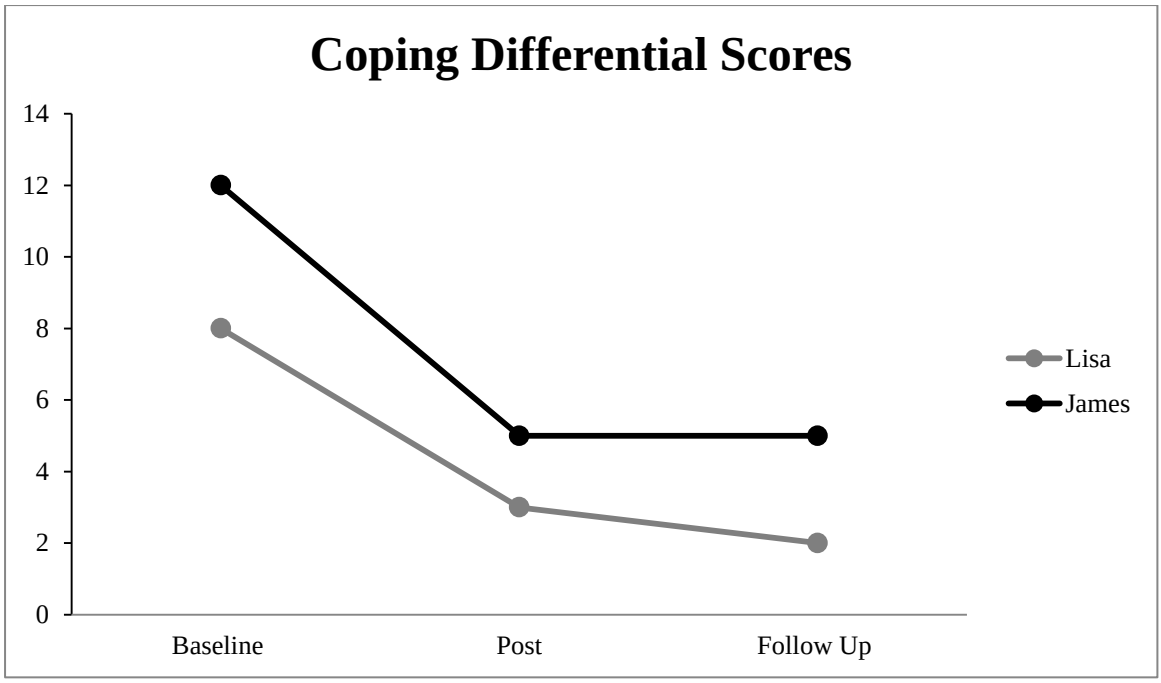


Figure 7. Individual coping style scores for Lisa.

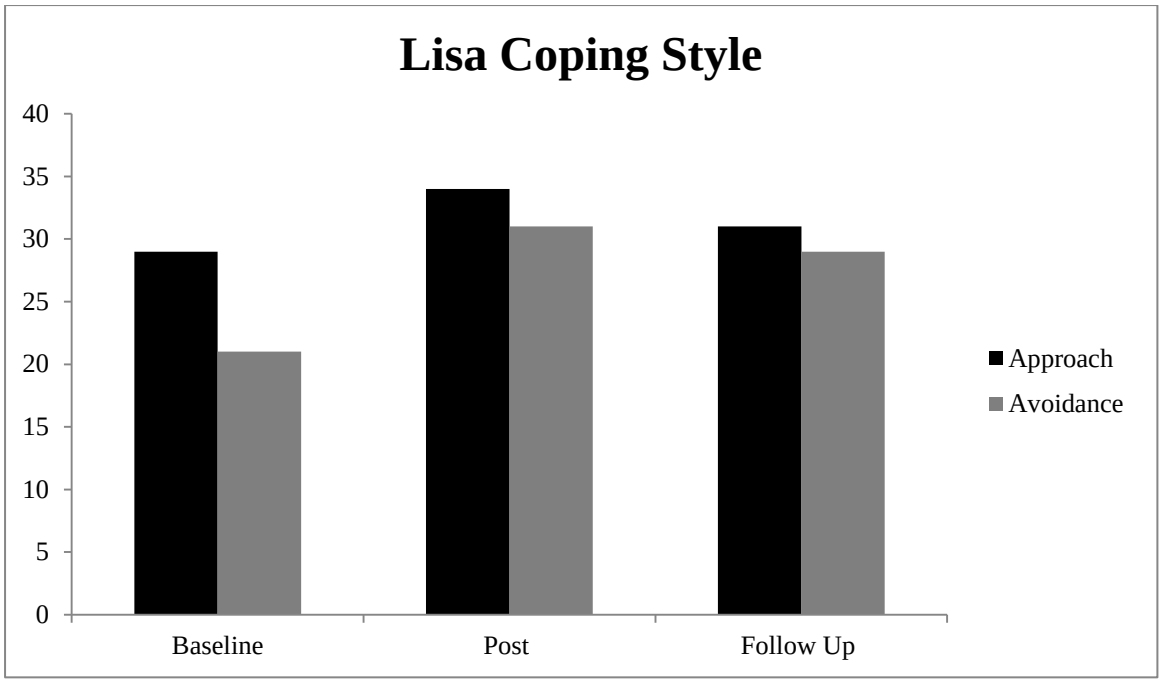


Figure 8. Individual coping style scores for James.

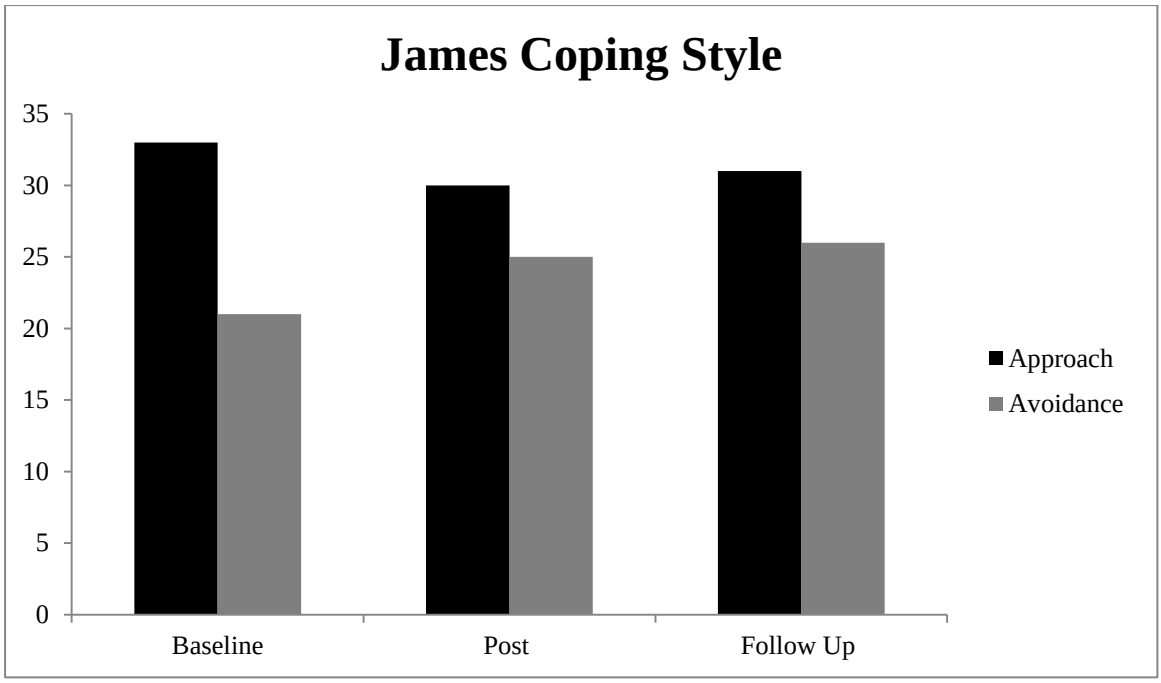


Figure 9. Participants' self-consciousness scores from the SCS inventory.

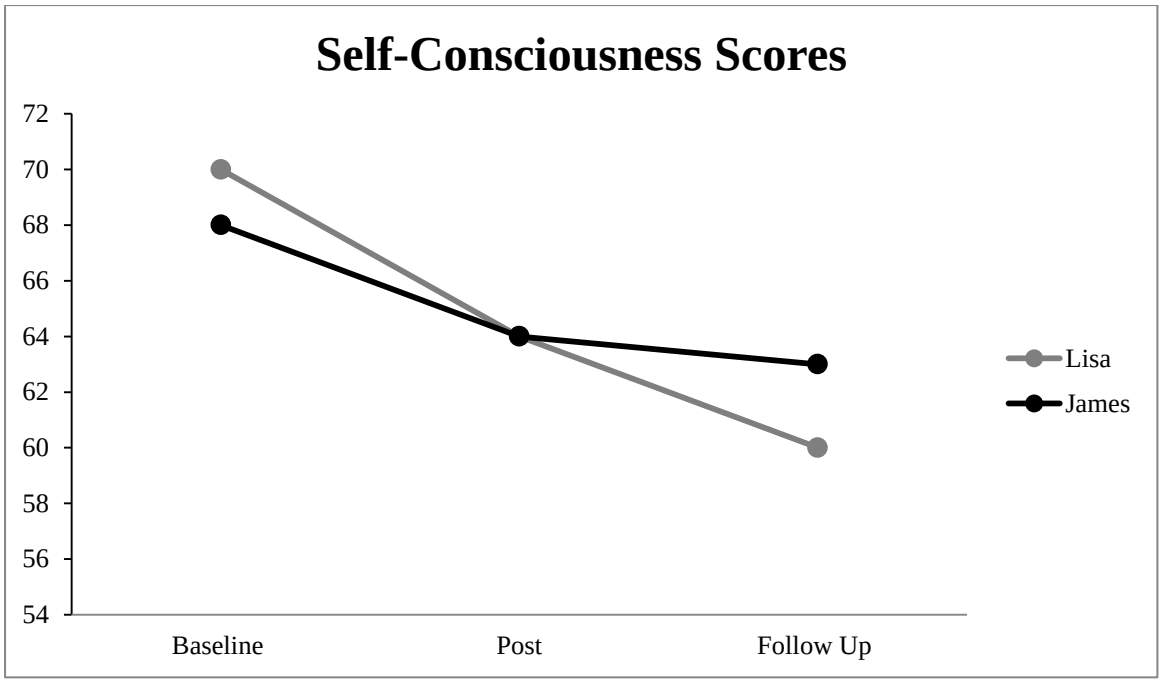


Figure 10. SCS subscale scores for Lisa.

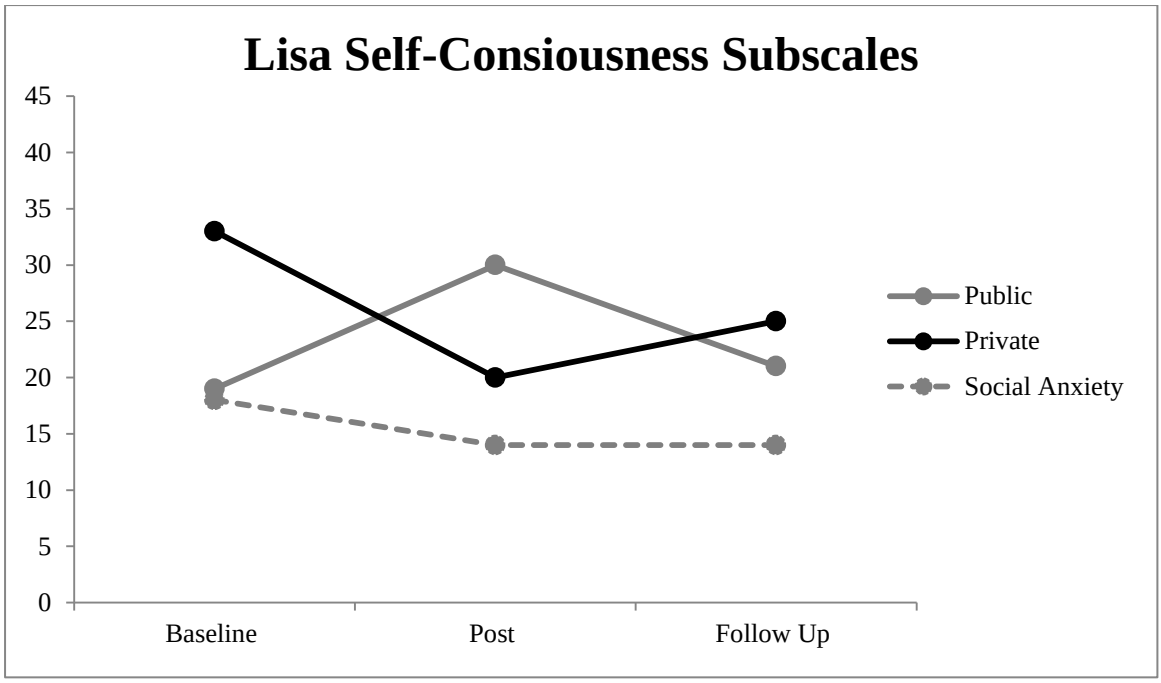


Figure 11. SCS subscale scores for James.

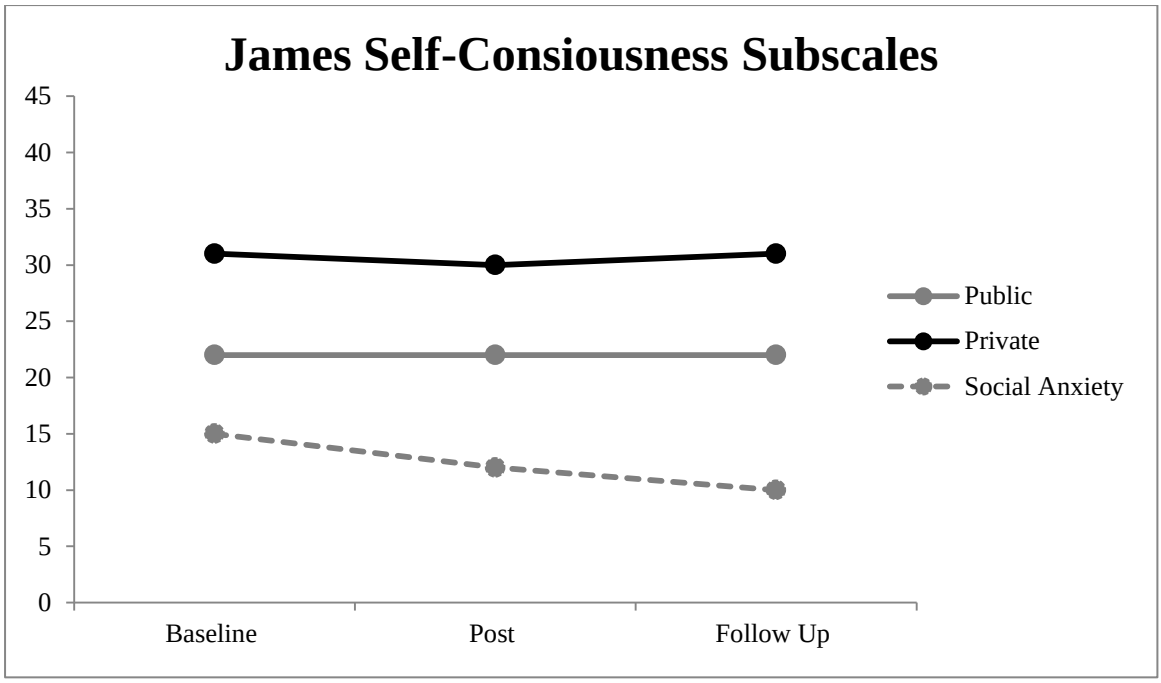


Figure 12. State mindfulness scores from the TMS for both participants.

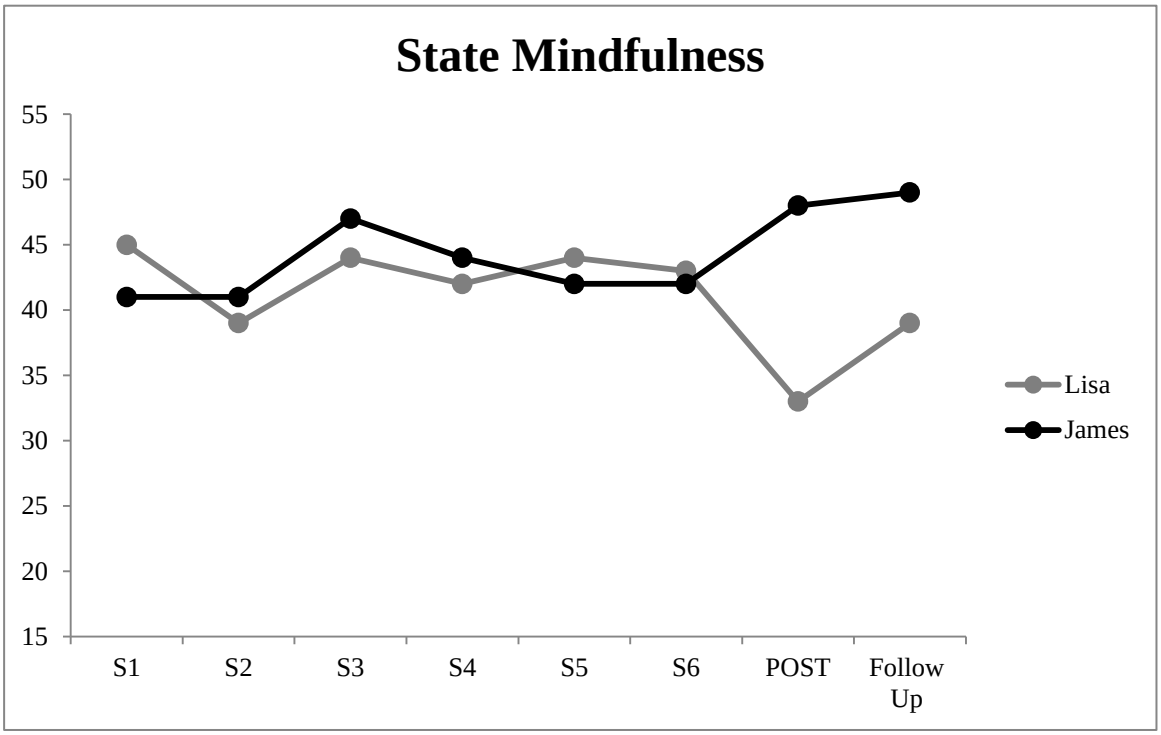


Figure 13. TMS subscale scores for Lisa.

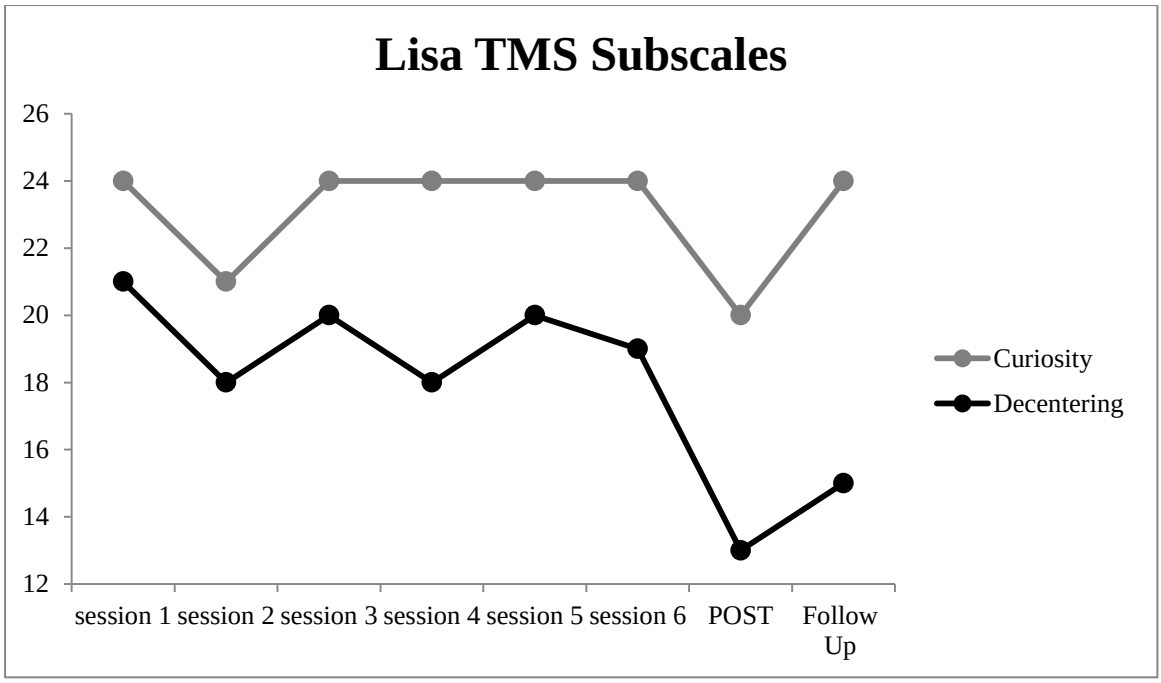


Figure 14. TMS subscale scores for James.

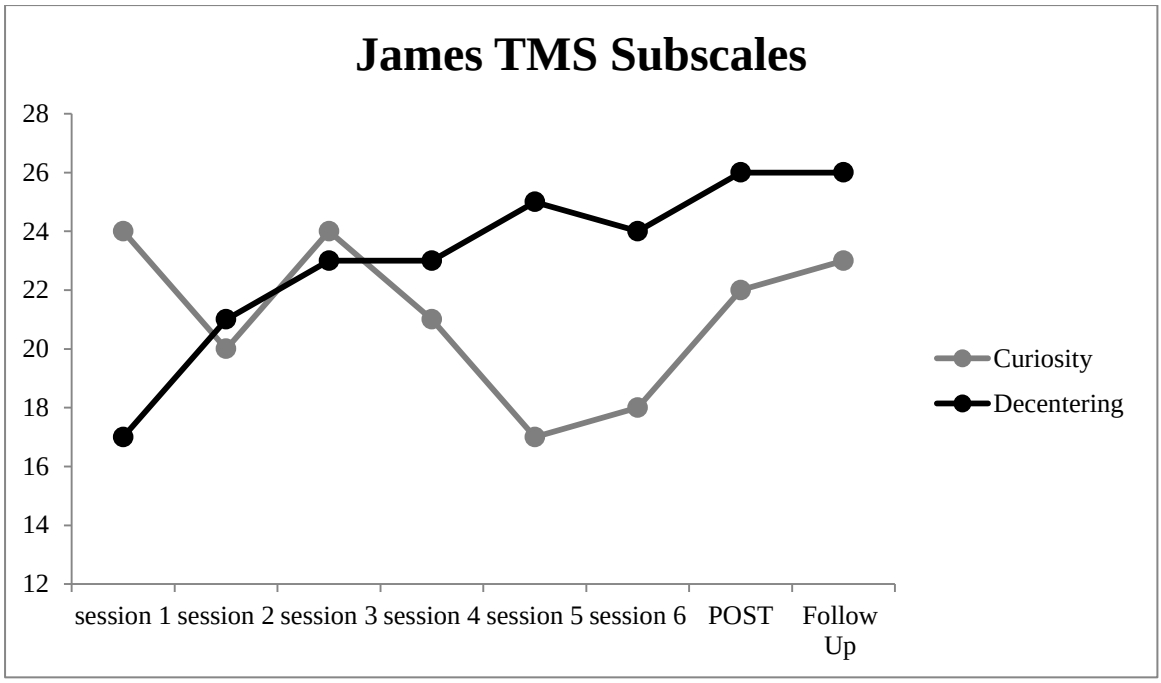


Figure 15. Sport mindfulness scores from the MIS for both participants.

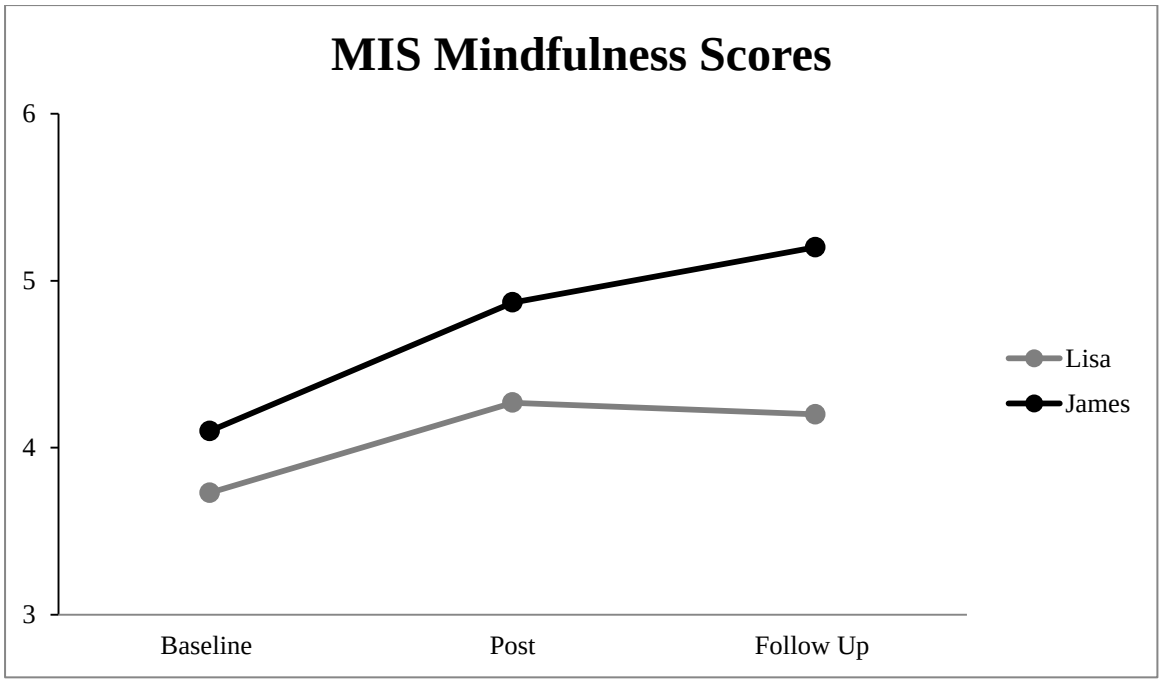


Figure 16. MIS subscale scores for Lisa.

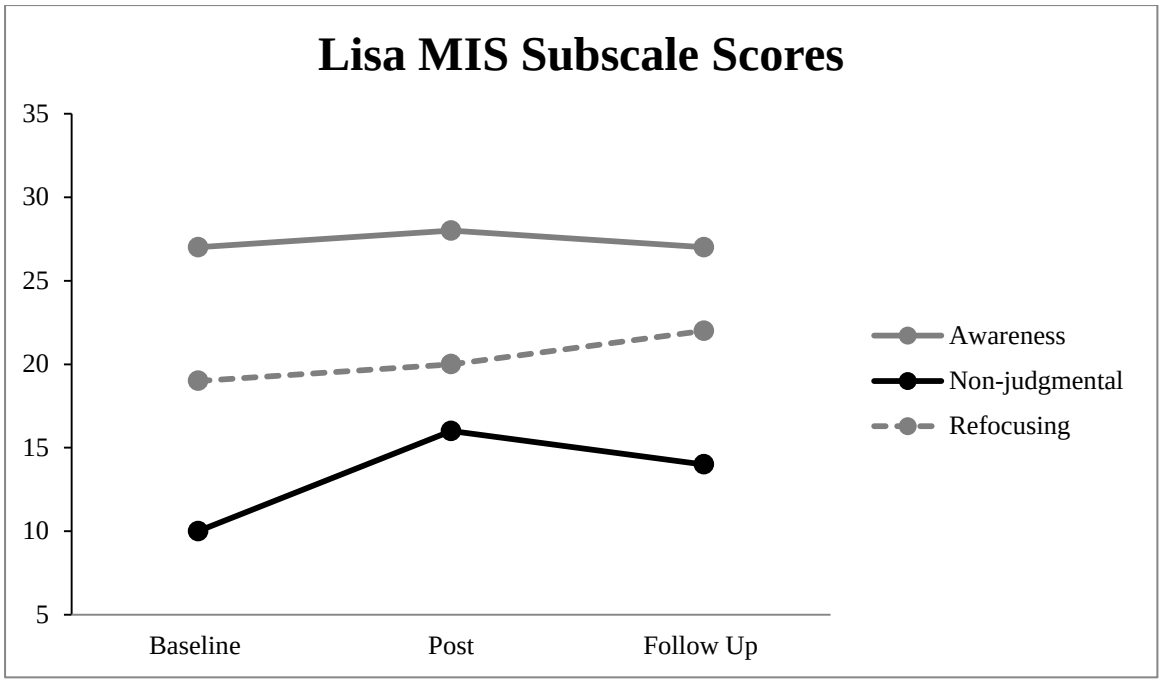


Figure 17. MIS subscale scores for James.

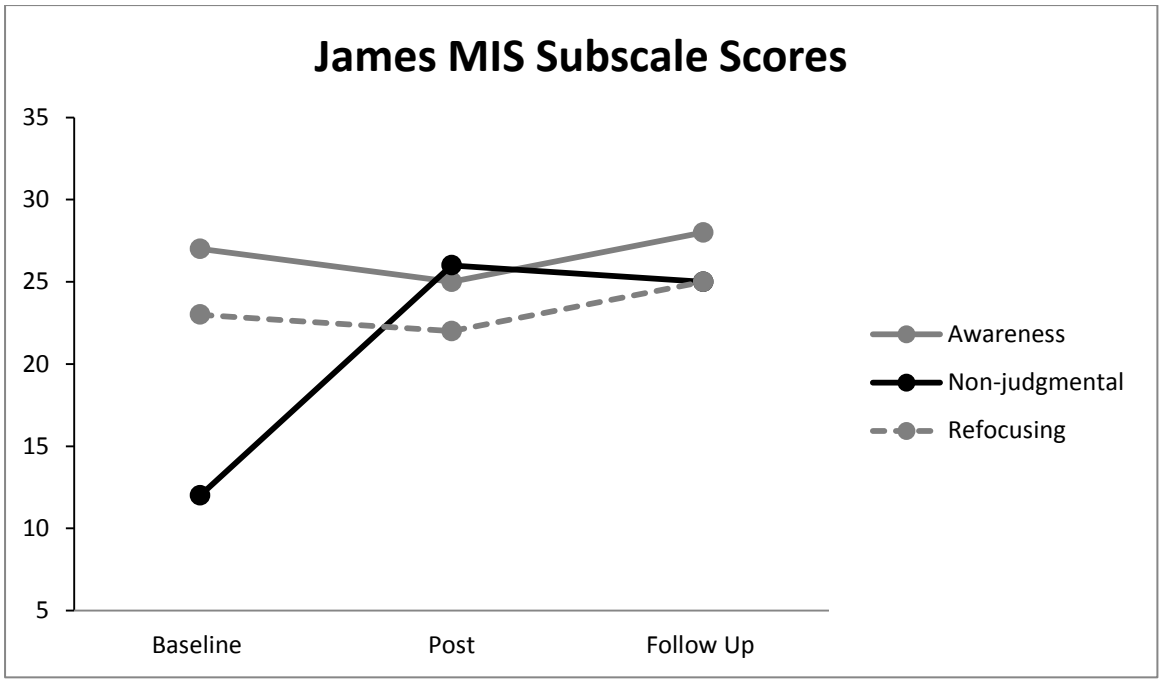


Figure 18. Participant co-occurring word cloud summary.

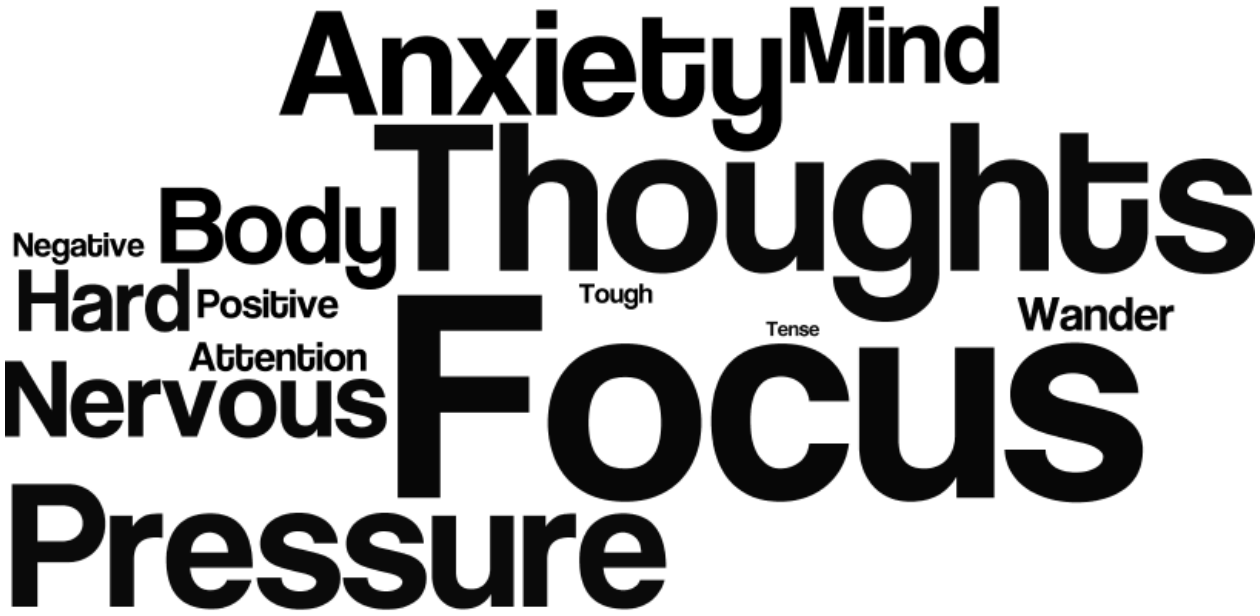


Figure 19. Word cloud for Lisa's interviews.

Figure 20. Word cloud for James's interviews.

Appendix A

MSPE 6-Week Protocol (© 2013) Outline

I. Session 1 (approximately 90 min)

A. Orientation and rationale

1. Concept of the workshop

2. Rationale for the workshop

3. Important definitions associated with mindfulness training

4. Review of key mental factors in the sport of focus

B. Group introductions

C. Candy Exercise and discussion (20 min)

D. Introductory Sitting Meditation with a focus on the breath (10 min) and discussion

E. Discussion of home practice for the week, which includes:

1. Sitting Meditation practice 6 times for 10 min each before Session 2

F. Session 1 summary and discussion

II. Session 2 (approximately 90 min)

A. Discussion of home practice

B. Discussion of applications of meditation training to the sport of focus

C. Body Scan Meditation (30 min) and discussion

D. Sitting Meditation with a focus on the breath (10 min) and discussion

E. Discussion of home practice for the week, which includes:

1. Body Scan practice 1 time for 30 min before Session 3

2. Sitting Meditation practice 5 times for 10 min each before Session 3

F. Session 2 summary and discussion

III. Session 3 (approximately 90 min)

A. Discussion of home practice

B. Mindful Yoga practice (40 min) and discussion

C. Sitting Meditation with a focus on breath, and body (15 min) and discussion

D. Discussion of home practice for the week, which includes:

1. Body Scan practice 1 time for 30 min before Session 4

2. Mindful Yoga practice 1 time for 40 min before Session 4

3. Sitting Meditation practice 4 times for 15 min before Session 4

E. Session 3 summary and discussion

IV. Session 4 (approximately 90 min)

A. Discussion of home practice

B. Mindful Yoga practice (40 min) and discussion

C. Walking Meditation (10 min) and discussion

D. Brief sitting meditation with a focus on diaphragmatic breathing (3 min)

E. Discussion of home practice for the week, which includes:

1. Body Scan practice 1 time for 30 min before Session 5

2. Mindful Yoga practice 2 times for 40 min before Session 5

3. Walking Meditation practice 3 times for 10 min before Session 5

F. Session 4 summary and discussion

V. Session 5 (approximately 90 min)

A. Discussion of home practice

B. Sitting Meditation with a focus on breath, body, and sound (23 min) and discussion

C. Walking Meditation (10 min) and discussion

D. Sport-Specific Meditation (13 min) and discussion

E. Brief sitting meditation with a focus on diaphragmatic breathing (3 min)

F. Discussion of home practice for the week, which includes:

1. Sitting Meditation Practice 3 times for 23 min before Session 6

2. Walking Meditation practice 1 time for 10 min before Session 6

3. Sport-Specific Meditation practice 2 times for 13 min before Session 6

G. Session 5 summary and discussion

VI. Session 6 (approximately 90 min)

A. Discussion of home practice

B. Sport-Specific Meditation (13 min) and discussion

C. Body Scan practice (30 min) and discussion

D. Brief sitting meditation with a focus on diaphragmatic breathing (3 min)

E. Workshop conclusion and discussion of continued practice

1. Review strategies for continued practice

2. Discussion of continued home practice, which includes:

a. Mindfulness practice 6 times per week for 30 min per day

*Adapted from MSPE protocol created by Kaufman, Glass, & Arnkoff, 2009

Appendix B

Informed Consent Forms

Initial Consent Form:

Dear participant,

I am inviting you to participate in my graduate thesis project. This study involves taking a series of questionnaires. The questionnaires are paper and pencil, and you should be able to complete the testing within 20-30 minutes. Your name will not be associated with your questionnaires at any point and will remain confidential for the purpose of this study. You may be contacted at a later date and asked to participate in the second part of the study. Your name and contact details are being collected solely for the purpose of future communication should you be chosen to participate in the remainder of the study. If you are not contacted, your personal information will be destroyed so that there is no record. The data used in this study will be stored in a secure location. Your participation is voluntary, with no compensation of any kind, and you may withdraw from the study at any time. You have the right to refuse to take part and/or refrain from answering any questions that you do not feel comfortable with or wish to answer. Your refusal to take part will not in any way impact your current or future relations with Miami University or your athletic participation. You will also not be asked to do anything that exposes you to risks beyond those of everyday life.

The primary purpose of these questionnaires is to help identify your coping style, your levels of self-consciousness, and your sport related anxiety levels.

You will be provided with a copy of this consent form for you to keep record of.
Further questions or concerns about this project are encouraged before committing to participating. Please contact me at (253) 797-8954, husseyjk@miamioh.edu or you may alternatively contact my advisor, Dr. Robert Weinberg at weinber@miamioh.edu **. If you have any questions or concerns about the rights of research subjects, you may contact the Research Compliance Office at Miami University at either (513) 529-3600 orhumansubjects@miamioh.edu.**

* * * *

I agree to participate in the questionnaire testing for the study on performance anxiety and mindfulness. I declare that I am not under the age of 18 and I understand that my participation is purely voluntary and that my name will not be associated with the information I provide.

Participant's Name: _____

Participant's Signature:_____

Date : _____

Second Consent Form

Dear participant:

I am inviting you to participate in my graduate research project. This study involves taking a series of questionnaires, and requires you to participate in a 6 week mindfulness intervention program that involves weekly sessions, home practice, and keeping a logbook. The study also includes two interviews. If you are willing to do so, I will interview you regarding your athletic performance. I will also interview you at the end of the study about your experiences with mindfulness and about the scores from your questionnaire testing. Your name will not be associated with your questionnaire and interview responses in any way, and will remain anonymous throughout the entire study, ensuring confidentiality. The data used in this study will be stored in a secure location. Your participation is voluntary, with no compensation of any kind, and you may withdraw from the intervention at any time. You have the right to refuse to take part in any sessions or refrain from answering any questions that you do not feel comfortable with or wish to answer. Your refusal to take part will not in any way impact your current or future relations with Miami University or your athletic participation. You will also not be asked to do anything that exposes you to risks beyond those of everyday life.

The primary purpose of this study is to explore how mindfulness can potentially impact performance anxiety. The secondary purpose of this study is to better understand the athlete's interpretation of their anxiety and the role that mindfulness may play in this interpretation style. As a Division I athlete, I would greatly appreciate your involvement in this study to help me better understand the impact that choking under pressure can have, and how this intervention might help to aid in future athletic performances with those who struggle with competitive pressure.

You will be provided with a copy of this consent form for you to keep record of.
Further questions or concerns about this project are encouraged before committing to participating. Please contact me at (253) 797-8954, husseyjk@miamioh.edu or you may alternatively contact my advisor, Dr. Robert Weinberg at weinber@miamioh.edu. **If you have any questions or concerns about the rights of research subjects, you may contact the Research Compliance Office at Miami University at either (513) 529-3600 orhumansubjects@miamioh.edu.**

* * * *

I agree to participate in the study on mindfulness and choking under pressure in sport. I declare that I am not under the age of 18 and I understand that my participation is purely voluntary and that my name will not be associated with the information I provide.

Participant's Name: _____
Participant's Signature _____

Date _____

Appendix C

Demographic Information Sheet

Sex: F M

Race: _____

Age: _____

Year in School: Freshman Sophomore Junior Senior

Current Sport:_____

Number of years that you have competed in your given sport:_____

Highest level of competition (e.g. state, nationals, etc.): _____

Scholarship athlete? YES NO

Have you had any previous experience with sport psychology training? If so, please explain:

Have you had any previous experience with mindfulness training? If so, please explain:

Appendix D

Initial Interview Guide

Description of a performance failure: when an athlete is competing under high amounts of pressure, is highly motivated to succeed, and finds they are unable to cope with the demands of the situation, leading to a significant drop in performance that they rarely are able to recover from.

1. Given this description, please describe a time(s) in the past that you have experienced this during a game or competition.

Appendix E

Follow-up Interview Guide

1. In the last month, how many times per week have you practiced the mindfulness exercises that you learned during the intervention program?
    - Which skills did you practice the most?

2. Give me a general summary of how you believe your sport performance has changed (if at all) from the skills you learned from the mindfulness intervention.

3. How do you believe your experience with mindfulness training has been impacting your ability to cope with pressure during competition?

    - What are some coping methods that you use?

4. Your score on (address each questionnaire separately) reflects that your levels of (*anxiety, self-consciousness, coping, mindfulness*) have gone (*up or down*). In what ways do you believe that your performance is reflected by these scores?-Do you agree with the score?

    -Give some examples of why you believe this…

5. During your recent competition(s), have you been able to stay more focused on task relevant cues rather than engaging in self-focus?

6. Prior to competing, have you noticed any changes in your thoughts or behavior regarding your performance?

7. Do you still feel anxious during high pressure moments in a game?

    - If so, do you view this anxiety to be facilitative or detrimental towards performance?

    -Do you feel distracted at all by any anxiety related thoughts? If so, then to what degree?

8. Have you noticed any changes in the way in which you experience anxiety? (In the mind versus in the body)

9. How has practicing mindfulness impacted your life outside of sport? (In terms of well-being)

10. Which mindfulness techniques do you find the most useful in helping you handle high pressure situations during a game?

11. Your state mindfulness scores have progressively (increased, decreased, or remained the same). In what ways have you noticed changes in your ability to become mindful in a particular moment?

12. How efficient do you believe you are in becoming mindful while you compete?

13. Your score on the Mindfulness Inventory for Sport (MIS) suggests that your levels of mindfulness have (increased or decreased). Do you feel like you have become more mindful in your sport since your training in mindfulness skills?

14. How to you view mindfulness practice in terms of fitting it in with your schedule as a student-athlete?

15. In what ways do you struggle to use mindfulness or find that it does not help with your attention, stress, and anxiety during competition?

- Do you feel like this is due to the limited amount of time you have spent practicing mindfulness?

- Do you believe that with further practice and commitment to mindfulness training, that these issues can be handled better?

Appendix F

Mindfulness Practice Log Sample Entry Page

Date: _____

Did you practice today? Yes No

Mindfulness Skill (i.e. sitting meditation):_____

Amount of time practiced (minutes) _____

Comments:

Appendix G

Instructions for Sport Performance Log

Dear participant,

Now that the MSPE training program is over, I would like for you to practice applying the mindfulness skills that you have learned in a competitive setting. In the following month, please choose one competition that you can track and complete sport performance log. Following the competition, please complete the TMS so that your state mindfulness levels can be measured and tracked.

In your logbook, I would like a general idea of how you felt while you competed, if you believed you experienced any performance failures, and how you also used various mindfulness techniques. Write any and all thoughts, perceptions, beliefs, personal interpretations, and observations. To help guide you, please include the following in your entry:

1. Did you feel like you were able to stay focused and/or refocus on the skills you were performing?

2. Were you feeling stressed, overwhelmed, and/ or pressure to perform well? If so, why?

3. Did you experience anxiety (physically or mentally) prior to, during, or immediately following the game/event?

4. What aspects of the mindfulness training helped you at any point leading up to or during your game/event?

5. How confident did you feel overall?

6. What thoughts went through your head after the game/event were over?

Appendix H

Sport Performance Log Sample Entry Page

Date of Competition: _____

Events/Game that you competed in_____

Did you complete the TMS after you competed? Yes No

How many times in the week leading up to the competition did you engage in mindfulness practice?

_____

Did you practice any mindfulness skills directly prior to competition? Yes No

If YES: Which mindfulness exercises did you engage in?

_____

_____

On a scale of 1-10 with 1 meaning *none* and 10 meaning *very high*:

How much pressure did you feel in general during this competition? 1 2 3 4 5 6 7 8 9 10

How much anxiety did you feel during this competition? 1 2 3 4 5 6 7 8 9 10

In general, the anxiety you experienced was seen as:

A. Facilitative (helpful towards your performance)
B. Debilitative (not helpful towards your performance)
C. A mix of both
D. Neither- I did not feel anxious at all when I competed

Please use the following space to reflect on this competition experience:

Appendix I

Home Mindfulness Practice Outline

Weeks 1-2

- Sitting Meditation: Practice 10 min, at least once a day for 6 days
- Total time: ~60 min

Weeks 2-3

- Sitting Meditation: Practice 5 times for 10 min each
- Body Scan: Practice 1 time for 30 min
- Total time: ~80 min

Weeks 3-4

- Body Scan: Practice 1 time for 30 min
- Sitting Meditation: Practice 4 times for 15 min
- Mindful Yoga: Practice 1 time for 40 min
- Total time: ~130 min

Weeks 4-5

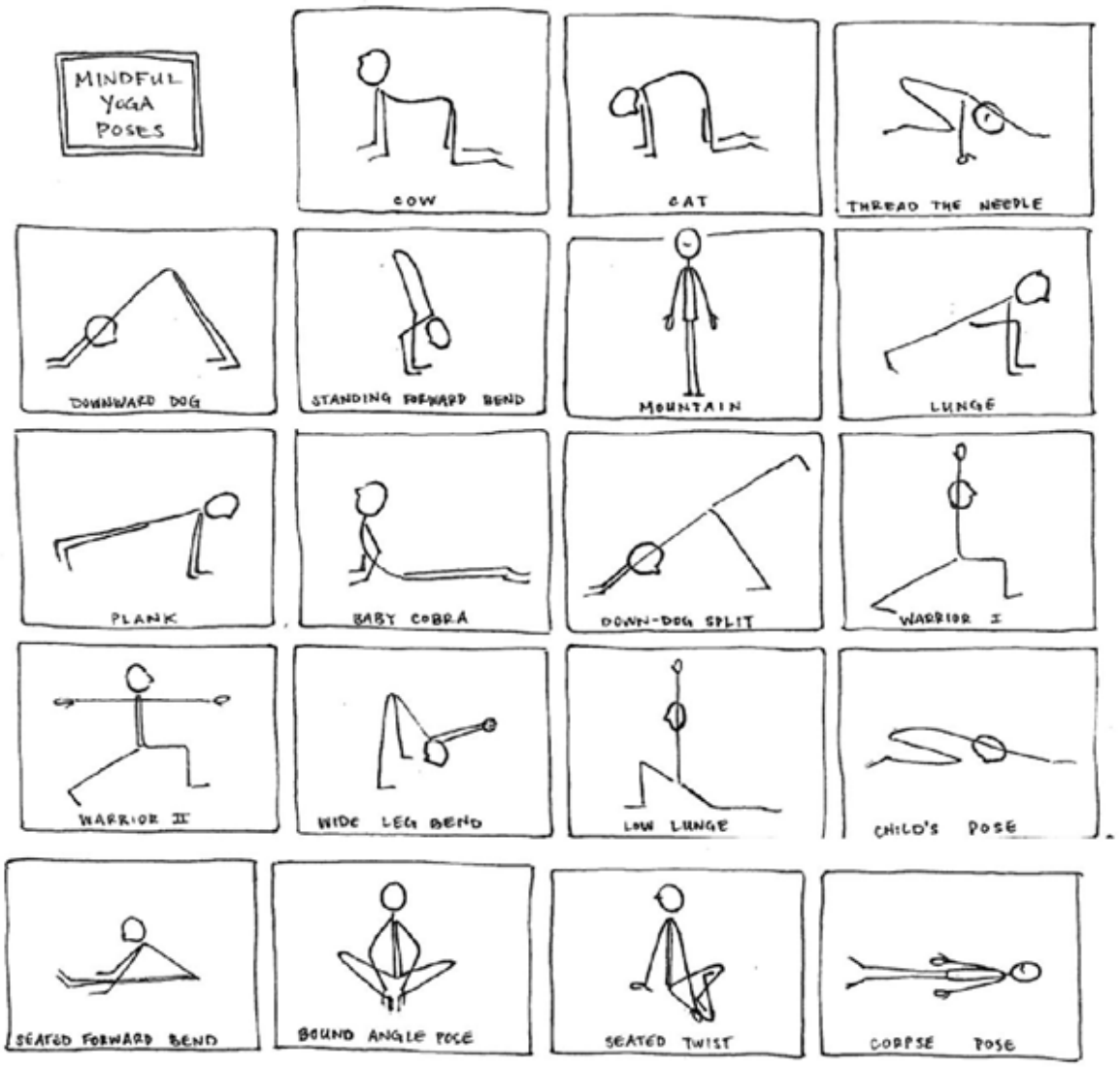
- Body Scan: Practice 1 time for 30 min
- Mindful Yoga: Practice 2 times for 40 min
- Sport-Specific Meditation: Practice 3 times for 10 min
- Total time: ~140 min

Weeks 5-6

- Sitting Meditation Practice 3 times for 23 min
- Sport-Specific Meditation practice 2 times for 13 min
- Walking Meditation practice 1 time for 10 min
- Total time: ~105 min

Appendix J

Mindful Yoga Practice Poses



Appendix K

Initial Contact Script

Hi, my name is Jenna Hussey and I am currently a graduate student at Miami University in the Kinesiology and Health Department. I am currently working on my thesis project which addresses competitive anxiety and mindfulness in sport. I am interested in softball players and sprinters in track and field which is why I have reached out to you in regards to my study.

I am contacting you to see if you are interested in this topic and willing to participate in my research study. If so, your involvement would be participating in a series of questionnaires, and possibly in a mindfulness intervention program along with two interviews. The research project will begin in the last week of January 2015 and if you are chosen to take part in the mindfulness training program, it will be for 6 weeks and include weekly training sessions. You will also be asked to take up in a follow-up which will occur approximately 5-6 weeks after the conclusion of the training program.

Thank you for your time, and please let me know if you have any questions or concerns regarding the interview.

Jenna Hussey
Graduate Assistant
Kinesiology and Health
Miami University
(253) 797-8954
husseyjk@miamioh.edu

Appendix L

Reminder Slip

Dear participant,

Thank you for participating in the MSPE program. At this point, you are being given a new log (see instructions in packet) along with a copy of the Toronto Mindfulness Scale which you have previously completed in the program. Please follow the instructions on the sheet provided and document one competition or game in the next month. In approximately 4 weeks from now (insert date), you will be contacted via phone or email to set up a date and time for your final interview and questionnaire completion. Before arriving for your testing, please return this packet with the completed log entries and questionnaires.

Please make sure that you mark your calendar and try to respond promptly as it is much appreciated. If there is any reason that you cannot complete the follow-up activities and/or meet for your final testing and interview, please contact me as soon as possible.

Thank you again for participating,

Jenna Hussey
Graduate Assistant
Department of Kinesiology and Health
Miami University
(253) 797-8954
husseyjk@miamioh.edu

Appendix M

Debriefing Script

Dear participant,

Thank you for your participation and commitment to my research project. I would like to inform you about the true purpose of my study. The goal of my research was to investigate how mindfulness may impact the factors that are most strongly associated with performance decrements while competing under pressure. Your initial scores on the questionnaires that addressed coping style, self-consciousness, and anxiety levels have previously been used to identify individuals who may be susceptible to performance struggles under pressure in sport. Since you met the criteria, I selected you to participate in the mindfulness intervention. I was interested in seeing how this particular mindfulness intervention program would help to reduce levels and change the interpretation of anxiety, effect coping styles, and reduce levels of self-consciousness. This is why you took the same questionnaires both before and after your participation in the mindfulness training, and why I interviewed you about competing under pressure, how you would cope, where your attentional focus was, and how you experienced anxiety.

The reason for using some deception and describing this project as a performance anxiety study was because if athletes knew that they were being selected because of their struggles with competing under pressure, they may have chosen not to participate, with the fear that they would be represented in a negative way. This study was very important in helping to identify a possible solution and/or help aid athletes who struggle with performance failures and competing under pressure. The results from this study will help guide future research in the field of mindfulness and also the research on performance under pressure. The positive outcomes from this may help to enhance athlete's well-being and compete to their full potential. The results from this study concluded that the MSPE program helped enhance mindfulness levels which in turn reduced levels of self-consciousness and anxiety and facilitated adaptive coping styles and positive interpretations of anxiety.

If you are concerned or uncomfortable in any way as a result of completing any of the questionnaires or answering any of the questions from the interviews then please let me know. Your participation was greatly appreciated, and all of your information will be kept confidential.

If you have any questions or concerns, please contact me at husseyjk@miamioh.edu. If you experience any distress after the completion of this study, you are encouraged to contact:

Miami University Student Counseling Service
195 Health Services Center
Oxford, OH 45056
513-529-4634
studentcounseling@MiamiOH.edu

Thank you,

Jenna Hussey

Appendix N

MSPE Program Evaluation Questions

1. In general were you satisfied with the program?

    - What did you like and/or didn't like about it?

2. What did you think about the homework practice and logbooks? How were they useful or not useful?

3. Was the timing of the program (pre-season) appropriate?

-If not, when would be an ideal time to go through the program?

4. How did you like the size of the group we had? Is this anything that you think an entire team could do together? What would be an ideal size in your opinion?

5. What is your opinion on the exercises that were used in the program?

6. How did you like the order that the exercises were introduced in? Would you prefer to have changed it in any way?

7. How useful were the discussion sections in each training session?

8. Did the script effectively describe and teach mindfulness concepts in ways that were easy to understand and apply to your sport and real life situations?

9. What are your thoughts about how the program was structured? (6 week program with once a week meetings)

10. Did learning mindfulness in a sport specific context help with your performance and understanding of what mindfulness is?