Psychological Functioning as a Moderator of the MAC Approach to Performance Enhancement

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The purpose of the present study was to investigate the impact of subclinical psychological difficulties, as assessed by the Multilevel Classification System for Sport Psychology (MCS-SP; Gardner & Moore, 2004b, 2006), on the efficacy of the Mindfulness-Acceptance-Commitment (MAC; Gardner & Moore, 2004a, 2007) performance enhancement intervention. Thirteen collegiate field hockey and volleyball athletes participated in a 7-week MAC protocol, and their results were compared to those of a control group of 7 same-sport athletes. Nonparametric analysis of the data offers additional support for MAC as a strategy for enhancing the athletic performance of collegiate athletes and suggests the importance of the accurate assessment of subclinical psychological difficulties to ensure the successful application of sport psychology interventions. In essence, these results suggest that the presence or absence of subclinical psychological difficulties may serve as a moderating factor in performance enhancement efforts.

Keywords: Mindfulness, MAC, acceptance, sport, subclinical, MCS-SP

Historically, the field of sport psychology has sought to understand the internal mechanisms that allow athletes and other performers to attain an ideal performance state. Research has focused on mental preparation strategies, content of thought, visual images, and personality variables that are necessary for the development of optimal athletic performance (Hardy, Jones, & Gould, 1996). Traditional interventions in the form of mental skills training have been aimed at improving athletic performance through enhanced self-regulation and have been strongly influenced by Meichenbaum’s (1977) skills-based approach to cognitive-behavioral treatment.

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In this traditional model, typically referred to as psychological skills training (PST), athletes are taught to utilize skills such as goal setting, imagery, arousal control, self-talk, and precompetitive routines as methods of enhancing the self-regulatory process, with the hopes of ultimately creating an ideal performance state.

PST approaches revolve around the assumption that negative internal processes are directly related to negative athletic performance outcomes. As such, a decline in negative emotions and physical states and an increase in positive cognitions and confidence levels are assumed to result in the ideal state required for optimal performance (Hardy et al., 1996). Accordingly, these interventions attempt to reduce, control, or eliminate negative internal experiences, such as anxiety, and facilitate increased confidence and positive thinking (Gould, Eklund, & Jackson, 1992; Gould, Weiss, & Weinberg, 1981; Orlick & Partington, 1988).

In contrast to traditional psychological skills training procedures focusing on the control of internal processes as the vehicle by which athletic performance can be enhanced, contemporary models of the self-regulation process of human performance have taken hold (Barlow, Raffa, & Cohen, 2002; Gardner & Moore, 2003). These models suggest that ideal performance results from metacognitive attention to external cues, contingencies, and behavioral options involved in the performance task as well as minimal attention to self-judgment, external or internal threat, and worry about the possible outcome of the performance.

This type of task-focused, in-the-moment ideal performance state is consistent with Gardner and Moore’s intervention known as the mindfulness-acceptance-commitment (MAC) approach to athletic performance enhancement (2004a, 2007), as well as other mindfulness- and acceptance-oriented approaches such as mindfulness-based cognitive therapy (MBCT; Segal, Williams, & Teasdale, 2002) and acceptance and commitment therapy (ACT; Hayes, Stosahl, & Wilson, 1999).

The MAC protocol includes several separate components that are combined into an intervention package different from traditional psychological skills training interventions (see Gardner & Moore, 2007, for the manualized protocol). The psychoeducational process of MAC involves a discussion of the self-regulatory process, as well as the experiences the athletes have had with their personal performances. Building on this educational component, the athletes are introduced to mindfulness as a concept and to understand its relationship to athletic performance. They are taught mindfulness meditative techniques to increase their awareness and acceptance of internal states and nonjudging, in-the-moment attention. These techniques also develop the capacity to “notice” without the need to control or eliminate negative or unpleasant thoughts and/or emotions. Through the use of mindfulness and acceptance, athletes are helped to focus on enhancing their commitment to personal values. As such, they learn to make choices and engage in actions that promote such values, rather than focusing on specific achievement-related criteria. Finally, athletes learn to integrate mindfulness, acceptance, and commitment into their daily lives and to utilize the techniques in both athletic practice and training situations (while typically integrating it into all aspects of their lives, as well). During this final stage, athletes will be assisted with obstacles or resistance that will most likely occur while trying to incorporate a new way of participating within their athletic environment.
Levels of Psychological Functioning

While athletes are often presented as psychologically healthy and without diagnosis of psychiatric conditions, they are, in fact, not at all immune to psychological distress and dysfunction. To date, there have been no direct intervention studies that assess the presence or absence of subclinical levels of psychological functioning, often manifesting as excessive worry, rumination, and/or extreme perfectionism, to name but a few. This is despite the suggestion that these subclinical characteristics may have a substantial impact on athlete well-being and athletic performance and intervention efficacy data (Gardner & Moore, 2006). As such, there remains a question as to the impact of pretreatment level of psychological health and well-being on the MAC intervention or any other form of psychological intervention for performance enhancement. Yet in order to evaluate the impact of level of psychological functioning on a performance enhancement intervention, a system to categorize and classify athletes with respect to the level of psychological functioning must first be considered in order to truly understand the needs of the athlete-client. One such classification system is the multilevel classification system for sport psychology (MCS-SP; Gardner & Moore, 2004b).

Multilevel Classification System for Sport Psychology (MCS-SP)

With a desire to categorize and classify levels of psychological functioning in athlete populations, Gardner and Moore (2004b) developed a classification system that can be applied to sport psychology consultations, termed the multilevel classification system for sport psychology (MCS-SP). The MCS-SP categories not only provide a system to understand the specific needs of the athlete, but also allow for a more comprehensive understanding of the athlete’s overall psychological functioning.

The MCS-SP categories provide a systematic way to understand the psychological functioning and specific needs of athletes seen by sport psychology professionals. The MCS-SP proposes four basic categories, which in turn describe the full range of psychological needs and functioning seen in athletes (Gardner & Moore, 2004b). The first level, performance development (PD), pertains to the athlete whose main desire is to improve performance, and who does not exhibit significant developmental, behavioral, interpersonal, or other psychological difficulties that could affect performance. Rather, enhancing existing, well-functioning psychological skills will likely serve to improve the athlete’s performance. Within the PD category, there are two distinctive subcategories: (a) PD-I, which includes athletes for whom improved mental skills will add to the ongoing development of physical skills and (b) PD-II, which consists of athletes who have developed their physical skills to their maximum potential and can utilize skills to enhance or maintain optimal physical performance (this classification is often seen among professional athletes).

The second MCS-SP category, performance dysfunction (Pdy), characterizes those athletes whose performance has been slowed or delayed and whose overall psychological functioning as been reduced to some degree (Gardner & Moore, 2004b). These athletes may benefit not only from performance enhancement, but also psychological interventions to improve their interpersonal and behavioral
functioning. There are two subclassifications within the Pdy category: (a) Pdy-I, which exemplifies those athletes who are negatively and subclinically affected by life events within developmental, interpersonal, or transitional realms, events that not only lead to performance dysfunction but also inhibit the athletes’ abilities to live their lives effectively and (b) Pdy-II, which refers to cases where underlying subclinical characteristics and personality variables result in dysfunction in general life or performance environments. Pdy cases do not warrant clinical diagnoses. Instead, they represent subclinical issues and dysfunction that negatively affect functioning in one or more life domains.

The third classification within MCS-SP is referred to as performance impairment (PI), which includes athletes with distinct and diagnosable clinical issues or disorders (Gardner & Moore, 2004b). Clinical issues can span the entire spectrum, ranging from eating disorders to mood disorders to substance abuse difficulties, which severely impair overall functioning. Psychological treatment and, at times, psychotropic medications are the primary interventions of choice for these conditions. The PI category also includes two sublevels: (a) PI-I, which includes athletes with clinical disorders that significantly impair overall life functioning such as depression and social anxiety disorder; and (b) PI-II, which includes those exhibiting behavioral dysfunction (such as anger or substance abuse problems) which has affected overall life functioning and has often resulted in performance-limiting consequences such as suspension from athletic competition. Consequences related to the PI-II classification may include legal issues, judicial actions, or team suspension and dismissal.

The final level of classification in the MCS-SP is performance termination (PT), which includes athletes whose primary concerns are related to career termination (Gardner & Moore, 2004b). Whether termination is due to voluntary or involuntary circumstances, psychological reactions can range from normative to extreme grieving processes, and psychological treatment is typically the intervention of choice. PT also includes two sublevels: (a) PT-I, which refers to athletes whose termination was voluntary or expected, including cases of retirement or free choice and (b) PT-II, which refers to cases of unexpected or sudden career termination, such as athletes facing career-ending injury. Reactions among those who experience voluntary or anticipated retirement may include grieving processes similar to those who have lost a loved one, such as anger, sadness, and acceptance of the loss. Psychological symptoms among those facing unexpected termination, however, may be more severe, resembling those of delayed or extreme grief, post-traumatic stress disorder, or acute stress reactions. Since these reactions are likely to be more intense than those of athletes in the PT-I sublevel, they often require more significant treatment interventions.

For a more detailed description of the MCS-SP, readers are referred to Gardner and Moore, 2006.

**Purpose**

Given the aforementioned absence of empirical research to date examining the impact of preintervention level of psychological functioning on the efficacy of performance enhancement efforts, the present study investigated the degree to which the original MAC performance enhancement intervention differentially enhances
the athletic performance of collegiate athletes across the most common MCS-SP classifications: PD and Pdy.

Method

Participants
Participants included 20 volunteers from a Division I NCAA athletic department of a mid-sized university in the northeastern United States. Participants volunteered for this study after receiving a presentation on performance enhancement techniques from a member of the university’s sport psychology program. All participants were female, 11 were volleyball players, and 9 were field hockey players. Overall entrance into the study was based on participants’ interest in engaging in a performance enhancement intervention. Thirteen participants were assigned to the MAC training group (experimental condition; 9 volleyball and 4 field hockey athletes), and 7 participants were assigned to a control group receiving no intervention (2 volleyball and 5 field hockey athletes). The MAC group consisted of 64% sophomores, 18% juniors, and 18% freshman. The control group consisted of 57% sophomores, 29% seniors, and 14% freshman. Prior to receiving the intervention, the experimental group was classified according to the MSC-SP. Classification was done through a structured interview assessing each participant’s goals of participation in performance enhancement, as well as the barriers preventing her from reaching her ideal performance state. Six participants (55%) were classified as PD-II, and five (45%) were classified as Pdy-II (the remaining two participants developed injuries, as described below). No PI or PT participants were noted and thus no participants meeting criteria for those classifications were involved in the study.

Prior to participation in the study, all members of both the field hockey and volleyball teams had participated in sport psychology presentations, which occurred as part of the sport psychology program’s participation with the athletic department. Participants received no compensation for involvement in the study. All participants gave informed consent prior to participation in the study, which was approved by the university’s institutional review board.

Two members of the experimental group were excluded from the study because of injury. This exclusion occurred because the athletes were not able to participate in an athletic environment, which is a fundamental aspect of the intervention protocol. In addition, one member of the control group failed to return the mediating psychological variables assessment package. This participant’s data was used, which created an incomplete data set of unbalanced scores when comparing participants’ on the mediating psychological variables.

Clinicians
Two 4th-year doctoral students in clinical psychology with a concentration in sport psychology provided the MAC training to the athletes. These students had been assigned to work with teams through their sport psychology externship with the university’s athletic department, and had already built rapport with the athletic teams and members. The clinicians were trained to deliver the MAC protocol by the first author of the MAC protocol, and they were familiar with the MAC’s theoretical
constructs. Both clinicians were supervised on delivering the MAC protocol with athletes as part of their externship, both prior to participation in this study and throughout the course of the study. They followed a manualized version of the MAC protocol, which provides a detailed description of the intervention strategies and goals for each session. Descriptions of the manual for this particular investigation are available upon request from the first author.

**Procedure**

Two subgroups were conducted using the MAC protocol. One subgroup consisted of the nine volleyball players, while the other subgroup consisted of the four field hockey players. The groups met on different days and times, depending on the practice schedule of the team and the participants. The groups were conducted once per week, with the exception of the university’s holiday break. The duration of each session was 30 to 60 minutes, with the average session lasting approximately 40 minutes. Attendance in the experimental groups was very high, as only two participants missed one session each, suggesting that the treatment was fully delivered to the participants.

**Measures**

**Coaches’ Ratings of Performance.** The coach of each participant was asked to complete a measure rating the player’s performance on a scale ranging from 1 to 10. Additionally, coaches rated athletes on variables that may potentially mediate performance improvements, including concentration, strength, competitiveness, motivation, quickness, fitness, endurance, mechanics, aggressiveness, and agility. This measure was used to assess athletic performance and related variables because athletic statistical measures do not necessarily accurately or completely reflect a player’s actual athletic performance. Furthermore, a coach’s rating may be the most crucial performance outcome for an athlete, as the coach has a clear impact on the athlete’s career, as well as responsibility for putting the athlete in performance situations. The coaches were not blind to the group in which their athletes participated. They were, however, blind to the MCS-SP classification level of the participants and to the specific intervention that was employed.

**Metacognitions Questionnaire.** The Metacognitions Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997) is a 5-section, 65-item self-report questionnaire, which assesses positive and negative beliefs regarding worry and intrusive thoughts, as well as metacognitive ability. MCQ subscales have shown adequate reliability and validity (Anthony, Orsillo, & Roemer, 2001; Wells, 2002). The five subscales include (a) MCQ1, positive beliefs about worry; (b) MCQ2, negative beliefs about worry (as characterized by uncontrollability and danger); (c) MCQ3, low cognitive confidence; (d) MCQ4, negative beliefs about thoughts (as in the need for control); and (e) MCQ5, cognitive self-consciousness.

**Generalized Anxiety Disorder Scale.** The Generalized Anxiety Disorder Scale (GADS; Wells, 1997) is a 5-section, 30-item self-report measure, which assesses the degree to which individuals avoid situations, attempt to control their worries, and believe in their thoughts. Some items on this measure were altered to pertain
to athletic situations. The GADS has demonstrated adequate reliability and validity. Its five subscales include (a) Gads1, distress of thoughts and emotions; (b) Gads2, effort to control thoughts and emotions; (c) Gads3, efforts to cope with thoughts and emotions; (d) Gads4, avoidance to prevent worry; and (e) Gads5, believability of thoughts.

Results

Because of the small sample size, parametric statistical comparisons between control group and experimental group were not conducted. Rather, individual scores, means between groups, and correlations were noted and compared to determine trends and differences between groups.

Initially, the experimental group was compared to the nonrandomized control group to examine differences on performance variables. Comparison of initial mean scores of coaches’ ratings of performance suggested a small performance increase for the MAC compared to the control group. Analysis of each participant revealed a trend for athletes in the MAC group to increase their performance when compared to the control group. Specifically, 37% of the MAC participants increased their performance compared to 14% of the control group. When negative impact of performance was evaluated over the course of the long season that involves ebbs and flows, only 27% of the MAC group experienced a decline in coach ratings of performance compared to 71% of the control group. The mean amount of performance-ratings change was 2% for the MAC group compared to -6.9% for the control group.

In order to assess the impact of MAC on athletes with or without subclinical issues, participants were then grouped by MCS-SP classification, which had been determined prior to initiating the MAC training. Specifically, participants classified as PD were compared to participants classified as Pdy and to controls. A comparison of means suggests an increase in ratings of performance for the PD group, while the performance ratings for the Pdy and control groups remained stable or decreased. On ratings of performance, 67% of the PD group improved, while 0% of the Pdy group and 14% of the control group improved. In addition, negative performance impact was evaluated, indicating that 17% of participants in the PD category, 40% of participants in the Pdy category, and 71% of control group participants experienced a decrease in their performance ratings. The amount of performance-ratings increase also was compared across groups. Participants in the PD category increased their performance ratings by an average of 14%, while those in Pdy category experienced a decrease in performance ratings by an average of 8%, and those in the control group experienced a decrease in performance ratings by an average of 6%.

Comparison on psychological variables thought to mediate performance change revealed a small actual difference between the classification groups. Before the intervention, those in the PD category tended to show lower levels of effort to control their thoughts and emotions ($M = 3.5, SD = 2.1$), as measured on the MCQ, as compared to the Pdy group ($M = 6.0, SD = 1.0$). In addition, participants in the PD group demonstrated lower levels of effort to cope with these experiences ($M = 32.2, SD = 7.1$), as measured on the GADS, than those in the Pdy group ($M$
= 49.4, SD = 17.1) as well as lower levels of believability of their thoughts (M = 523.3, SD = 81.9), as measured on the GADS, than those in the Pdy group (M = 632.0, SD = 106.2). After the intervention, however, there were no differences in efforts to control thoughts between PD (M = 5.8, SD = 1.5) and Pdy (M = 5.0, SD = 2.1) groups; however, the PD group indicated a decrease in avoidance in order to prevent worry (M = 11.2, SD = 4.6).

Regarding beliefs about worry and metacognitive ability, as measured by the GADS, the PD group showed lower levels regarding belief about uncontrollability and danger of thoughts (M = 33.2, SD = 6.3) than the Pdy group (M = 40.8, SD = 13.3) prior to intervention. In addition, the PD group demonstrated lower levels of cognitive competence and cognitive self-consciousness (M = 17.8, SD = 8.3) than the Pdy group (M = 25.8, SD = 7.9) prior to intervention. Postintervention, the PD group continued to report lower levels of beliefs regarding the uncontrollability and danger of thoughts (M = 32.8, SD = 2.9) as compared to the Pdy group (M = 38.8, SD = 10.9).

**Discussion**

This study was designed as an open trial of the mindfulness-acceptance-commitment (MAC) intervention for performance enhancement, in relation to athletes’ MCS-SP classification. To date, there have been several studies suggesting the efficacy of MAC and related interventions for performance enhancement (Bernier, Thienot, Codron, & Fournier, 2009; De Petrillo, Kaufman, Glass, & Arnkoff, 2009; Gooding & Gardner, 2009; Kaufman, Glass, & Arnkoff, 2009; Moore, 2009; Schwanhausser, 2009). The comparison between the MAC treatment group and the control group in this study further suggests that a treatment effect may in fact occur from this intervention, as evidenced by greater increases in the coaches’ ratings of athletic performance, and smaller decreases in performance over the course of a long season when compared to a no-intervention control group. This finding adds to the evidence suggesting that the MAC is be a viable performance enhancement technique for use with collegiate athletes.

Possibly of greatest importance, and central to the basic purpose of this study, the results suggest that MCS-SP classification (suggestive of differential psychological levels of functioning) may be a moderating variable impacting athletic performance. When this sample of collegiate athletes is viewed as a homogeneous population (removing MCS-SP classification), there appear to be minimal performance enhancement benefits. For example, when combining all of the participants who received the MAC, the participants experienced a 3.2% increase in their performance, which on the surface suggests minimal “real world” applicability. This finding is significant, since it appears that when viewing all athletes who are seeking performance enhancement as a single group, it is nearly impossible to determine if an intervention is actually efficacious. This strongly highlights the limitations of studying athletes as a homogeneous population. The efficacy of sport psychology interventions, however, has typically been measured with the assumption that athletes presenting for performance enhancement are equal in psychological wellness (Vealey, 1994). To draw a parallel, sport psychology’s research methodology in this regard may have been measuring the equivalent of testing a treatment for depres-
sion by combining people who are and are not depressed and drawing conclusions based upon this unreasonable combination. Yet as evidenced by the differences between PD and Pdy groups in this intervention, measuring athletes as equal in their psychological distress drastically weakens the data for a given intervention.

When the efficacy of MAC is viewed in the context of preintervention MCS-SP classification levels, more substantial treatment effects become apparent. Specifically, it adds additional support that the MAC approach is an effective intervention for enhancing the performance of athletes who have minimal psychological barriers (PD). The fact that 67% of the PD subjects improved their coach’s ratings of athletic performance suggests that the MAC is a functional protocol for this particular class of athletes, indicating that this version of the intervention is useful for athletes who are not experiencing psychological barriers negatively impacting performance (a modified version of the MAC protocol has been developed for athletes represented by the Pdy classification; see Gardner & Moore, 2007); however, of importance, the MAC version that was utilized here had little impact on the athletes who experienced subclinical levels of psychological distress (Pdy). This indicates that the format of the MAC approach that directly addresses Pdy concerns is necessary in order to enhance performance among athletes who are classified as Pdy. The more clinically relevant version of the MAC protocol (Gardner & Moore, 2007) is said to target dispositional or problematic characteristics such as worry and perfectionism, and secondarily focuses on enhanced self-regulation, even in the absence of clear and diagnosable psychological difficulties. It is also possible that subjects who are classified as Pdy would benefit from traditional cognitive-behavioral clinical interventions aimed at regulating emotions independent of athletics. This is, however, an open empirical question that requires further investigation. Athletes classified as Pdy present with symptoms that interfere with performance, even if these symptoms do not reach diagnosable levels. For these Pdy athletes, the data from this study suggest that the intervention of choice will first target the psychological factors (i.e., worry, perfectionism) and subsequently target enhanced athletic performance (Gardner & Moore, 2007).

When assessing possible mechanisms of change of the MAC approach, there was also evidence of a differential impact based upon MCS-SP classification. In the PD group, efforts to cope with (as opposed to tolerate/accept) thoughts and emotions decreased from pre to posttest, as did avoidance of worry. In addition, the PD group demonstrated lower levels of these constructs in comparison to the Pdy group. Consistent with MAC theory, this suggests that optimally performing athletes may be more focused on engaging in behaviors that are consistent with how they want to act, rather than focusing on the thoughts and emotions that divert their focus from the task at hand.

Participants in the PD group also endorsed fewer beliefs about the uncontrollability and danger of thoughts. This finding is consistent with the premise that PD clients manifest higher levels of psychological functioning. These findings are also consistent with the MAC model in which the ability to be aware of one’s thoughts, view thoughts as passing events, and defuse thoughts from one’s behaviors is posited to be related to increases in athletic performance (Gardner & Moore, 2007). Mechanisms of change should be further investigated to enhance our understanding of which factors contribute to an increase or decrease in athletic performance.

In future research, the MCS-SP should be employed to study the impact that various sport psychology interventions have on a heterogeneous population. This
should be utilized with both new approaches to performance enhancement, as well as the traditional psychological skills training interventions that are used, to determine which interventions are specified for which classification of athletes.

There are a number of limitations to this study. The sample size was too small for parametric analysis, and thus, differences between groups were not statistically evaluated. Furthermore, the subjects were not randomized into experimental and control groups, which creates the possibility that the groups were in some way inherently different prior to the employment of the MAC intervention. Additionally, coaches were not blind to the groups in which the subjects participated. These factors may account for some of the differences that occurred between groups, but it does not dismiss the findings that occurred within groups. In sport psychology consultation settings, the athletes generally have the control or option of whether to participate in an intervention or not, which suggests that self-selection may be a standard characteristic of an athletic population.

Finally, the first author of this paper was one of the two clinicians who delivered the MAC in this study. This creates the possibility of allegiance effects influencing results, although there were no noticeable differences between the results of the two clinicians. Regardless, it is important that future research attempts to utilize a blind procedure.

**Conclusion**

The findings of this study provide additional evidence for the application of the mindfulness-acceptance-commitment (MAC) approach to performance enhancement with a non-clinical athlete population, and support recent findings in other domains using mindfulness and acceptance-based procedures (Bond & Bunce, 2000; Carson, Carson, Gil, & Baucom, 2004; Gardner & Moore, 2007). Most importantly, this study provides evidence to suggest that athletes should be seen as a heterogeneous population when considering psychological needs and that subclinical psychological phenomenon can have a deleterious impact on both performance and performance enhancement efforts if not noticed and addressed.

**References**


