A pre-shot routine enables athletes to focus on well rehearsed cues (Schmidt & Pepper, 1998). Pre-shot routines are commonly discussed in golf literature as well as in consultation. Research on routines is scattered; a consistent line of inquiry has not studied all three components of a pre-shot routine (e.g, cognitive, behavioral, and relaxation). Studies have begun to suggest that elite players create their own routines (Cohn, Rotella, & Lloyd, 1990); and thus routines may be particularly beneficial for youth sport performers. Lastly, the literature is still missing studies that employ sound methodological designs, comprehensive interventions teaching adequate mental skills that form a pre-shot routine and social validation of the protocol and results with youth participants.

The purpose of this study was to examine the potential efficacy of a pre-shot routine on improving competitive youth golf putting and approach shot performance. The research question was will learning the psychological components (e.g. cognitive cues, behavioral focusing strategies, and relaxation) of a pre-shot routine improve approach shot and putting performance of competitive youth golfers? There were two aims that addressed this research question. The first aim was to determine the impact of learning the mental skills components of a pre-shot routine on the total number of approach shots and putts in tournaments during the competitive season. The hypothesis was that learning a pre-shot routine would result in participants becoming more consistent and/or improved sport performance (e.g, decreasing total number of approach

shots and putts per round). The second aim was to examine the potential impact of learning the pre-shot routine on competitive performance from the participants' perspectives and involved them in evaluating the intervention and its impact on their competitive performance.

Three youth high school golfers participated in a 10 week program to learn 3 mental skills (i.e, cue words, deep breathing, & behavioral focusing strategy) that would form a pre-shot routine. Participants' competition and practice scorecards were collected, and the total number of strokes per round were graphed and examined for performance improvements. Also, participants completed self-report surveys after each tournament round that asked them to indicate their perceived ability to focus on each hole and whether they adhered to their pre-shot routines. Lastly, participants completed interviews after learning each skill and at the end of the program to evaluate the overall intervention protocol.

Performance improvements were observed for 2 participants putting and approach shot performance. Participants found the intervention to be helpful and agreed that their performances (i.e, ball striking, overall performance, iron, wood, & sand shots) improved. Practical implications for sport psychology consultants and future directions were forwarded.

CONSIDERING INTERVENTION EFFICACY: THE EFFECT OF A PRE-SHOT

ROUTINE ON COMPETITIVE YOUTH GOLF PERFORMANCE

By

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APPROVAL PAGE

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CHAPTER I

INTRODUCTION

As a field, sport and exercise psychology (SEP) has made significant advances in the last 30 years. We have established professional status as is evidenced by, the appearance of professional journals (e.g. Journal of Applied Sport Psychology (JASP), The Sport Psychologist (TSP), and International Journal of Sport Psychology (IJSP), professional organizations, Association of Applied Sport Psychology (AASP), and International Society of Sport Psychology (ISSP)), and conferences are held each year both in the United States as well as internationally. Division 47, of the American Psychological Association (APA) Sport and Exercise Division was established in 1986. Practitioners are applying these psychological principles with athletic teams, individual athletes, exercise participants, in the realm of athletic rehabilitation, and even in business arenas (Marten, Vause, & Schwartzman, 2005). AASP developed certified consultant criteria in 1990 to guide practitioners in minimal course work and practical requirements to provide direct services to the community.

Sport Psychology Consultants provide mental skills training (MST) interventions to enhance mental skills and to facilitate performance (Vealey, 1988). These programs often include confidence building, goal setting, relaxation techniques, and attention/concentration training (Williams, 2006). Most MST interventions are geared

toward elite sport performers, who have honed the physical skills necessary to perform at the highest level in their sport. Thus members of the field believe that the primary difference between athletes who are successful and those who are not is mental toughness (Hackfort, Duda, & Lidor, 2005).

Research focusing on the efficacy of interventions on competitive sport performance as a dependent measure is sparse; there is little empirical support for the efficacy of these interventions. Two review articles have been written concerning the existing research on intervention efficacy regarding limitations of what little has been done and suggesting future directions for more research on intervention efficacy (Greenspan & Felz, 1989; Martin, Vause, & Schwartzman, 2005).

Greenspan and Feltz (1989) reviewed studies that examined the effect of behavioral techniques, cognitive restructuring, and relaxation interventions on performance. They concluded that while these studies found support for the use of MST, the body of research is limited by a lack of sound methodology and future research should consider the following: Using single-subject design (SSD) inquiry in guiding early phases of experimental investigations prior to moving to group comparisons, collecting multiple baseline measures, creating an intervention manual to provide adequate procedural detail to allow researchers and practitioners the ability to replicate findings, and publishing interventions that do not find performance improvements as opposed to only considering performance improvements as meaningful. Lastly, Greenspan and Feltz (1989) suggested that researchers should use social validation to

evaluate their interventions. Social validation is the process of incorporating participants to evaluate the protocol goals, methods, and results of the intervention (Martens & Hrycaiko, 1983), which usually takes the form of interviewing the participants. Practitioners tailor interventions to individuals' unique needs, and including that feedback in the process of evaluating intervention efficacy will significantly contribute to understanding intervention effects in competitive sport. These data can triangulate findings (i.e, confirm performance improvements), further explain why performance improvements may or may not have been found, improve consultation for future clients, and offer guidance in planning future investigations of intervention efficacy.

Martin, Vause, and Schwartzman (2005) re-evaluated the studies reviewed by Greenspan and Feltz (1989) and further narrowed their review. They only included 19 studies in their review based upon the following criteria: that athletes were competing on a regular basis as opposed to being volunteers or simply participants in an activity course at a university, the athlete performed during competitions, athletic performance was directly measured as opposed to being observed, and experimental design of SSD or group comparisons was employed. They concluded that, while there are many studies that have considered the impact of mental skills training on performance, many studies lacked: sound methodological design, integrity checks, social validation, and few looked at the impact of mental skills on competitive sport performance. They suggested that future research should: consider groups with similar performance problems, employ Single-Subject Design (SSD) in future investigations as group design can be difficult to conduct when considering a competitive population that is in season at the time of the

study, socially validate their findings, and include the participants in the evaluation process of the intervention. Therefore, it is unfortunate that 16 years later this review concluded similar results as the prior review. Specifically, the existing body of literature on intervention efficacy remains limited, and existing studies often have methodological shortcomings (SSD has not been widely used, lack of social validation, and integrity check).

Several specific skills have been investigated and found to improve performance. For example, the use of goal setting (Weinberg, Stitcher, & Richardson, 1994), imagery (Hamilton & Fremow, 1985), and feedback, behavioral checklists and modeling have resulted in performance improvements (Komaki & Barnett, 1977). Komaki and Barnett (1977) found that contingent feedback, behavioral checklists, and modeling improved the execution of offensive backfield plays among youth football players. Hamiliton and Fremow (1985) found imagery training and self-instruction to improve free-throw statistics of three male collegiate basketball players. Weinberg, Stitcher, and Richardson (1994) found that goal setting improved performance of a men's Division III lacrosse team. Another study, by Brunellle, Janelle, and Tennant (1999) found that PST interventions reduced the frequency of anger experienced during soccer matches. This is considered an indirect link to improving sport performance. In other words, if MST interventions improve psycho-social factors such as reduction of anxiety and improved confidence, then improved sport performance should also occur. Weinberg and Gould (2003) cited that MST interventions have shown indirect links such as improved

emotional and behavioral outcomes of athletes, where a reduction of anxiety, enhanced concentration, and improved confidence are assumed to benefit sport performance.

While there is some foundation for intervention efficacy, limitations remain regarding designs used, populations examined, as well as a lack of social validation or integrity checks. There are several gaps in intervention efficacy research such as: practitioners teach a multitude of skills (e.g, goal setting, attention/focus training, confidence building, imagery training, relaxation techniques, motivational techniques, performance routines etc.). Therefore, it is necessary to consider the efficacy of each and every skill taught on the competitive sport performance of populations ranging from youth to elite sport performers as they enlist our services with the goal of optimal performance. Moreover, even fewer studies have examined the potential or the impact of MST interventions with youth athletes. If practitioners are offering MST services to populations from youth to elite sport, with exercise performers, and even outside of sport within business, it is imperative that the efficacy of these MST interventions be examined, replicated, and socially validated. Lastly, the design of a study considering intervention efficacy must allow for individual comparisons in an applied setting, collect multiple baseline measure to ensure accuracy of the results, and employ integrity checks to evaluate the overall validity of the intervention. Unfortunately, the literature to date is limited in each of these areas.

Rationale for Study

The intervention in this study considers the effect of learning a performance routine on competitive youth golf performance. Specifically, youth golfers will learn the mental components of a pre-shot routine. Routines are thoughts and behaviors that are automatically integrated into our day (Hackfort, Duda, & Lidor, 2005). Routines have been conceptualized in three ways: Pre-performance, between-performance, and post-performance routines (Taylor & Wilson, 2005). Performance routines are thought to assist athletes in preparation, help them refocus, even reflect after performances, and the routines allow athletes to feel in control of their performance (Taylor & Wilson, 2005). Research on performance routines suggests that elite athletes adhere to their routines more consistently than non-elite athletes (Cohn, Rotella, & Lloyd, 1990; Jackson, 2001; Thomas & Nelson, 2005) but learning occurs through trial and error. Participants reported that they adapted their routines in practice based on what seemed to work instead of learning them through a systematic MST intervention. One study found that players made more free-throws when consistently implementing a pre-shot routine (Wrisberg & Pien, 1992). Similarly, Crews and Boutcher (1986) found that more successful golfers were more consistent in the execution of their routines and took more time in between their shots. To date, only one study of routines socially validated their findings. Cohn, Rotella, and Lloyd (1990) focused more on the technical aspects of golf such as the decision making aspects of a shot and commitment to club selection. While immediate performance improvements were not found in this study, the participants reported the routine as helpful.

A pre-shot routine enables athletes to focus on well rehearsed cues (Schmidt & Pepper, 1998). Pre-shot routines are commonly discussed in golf literature as well as in consultation. Boutcher and Crews (1987) looked at pre-shot routines on putting performance and ball striking variability through group comparisons of females and male volunteers. They found improvement in putting performance for the females and less variability in ball striking among both males and females.

Again the research on routines is scattered; a consistent line of inquiry has not studied all three components of a pre-shot routine (e.g, cognitive, behavioral, and relaxation). Studies have begun to suggest that elite players create their own routines (Cohn, Rotella, & Lloyd, 1990); and these routines may be particularly beneficial for youth sport performers. Lastly, the literature is still missing studies that employ sound methodological designs, comprehensive interventions teaching adequate mental skills that form a pre-shot routine, and social validation of the protocol and results.

The type of sport and motor tasks involved in the target sport will affect whether implementing a routine will be helpful. Sport environments can be classified as open or closed. Open environments are ones where the sports have a faster pace and athletes' responses are not easily predictable. For example, a guard in basketball may know that they need to set a screen to open up a shot for a teammate or quickly get open for a pass. On the other hand, a closed sport, such as golf, is one that exhibits more predictability or self-paced skills such as golf (Singer, 2000). Self-paced tasks allow the athlete to determine their speed, timing, and form of motor responses, and an athlete's actions are

signaled by external signals. Researchers have been able to examine routines in closed

sports. (Poulton, 1957; Schmidt & Wrisberg, 2004; Tenenbaum & Lidor, 2005). For

example, golfers have up to three minutes to make decisions regarding a shot. Golf

requires several self-paced tasks to be executed effectively to play a successful round,

thus making this environment appropriate and feasible for the study of pre-shot routines.

Therefore, in a stable semi-predictable environment an athlete would have ample time to

execute a pre-performance routine.   Thus golf is an ideal sport and setting to stuthe effect

of performance routines through SSD inquiry.

Next, as previously discussed, the design of a MST intervention is critical in

determining the potential impact on sport performance (Greenspan & Feltz, 1989;

Martens, Vause, & Schwartzman, 2005). SSD inquiry is appropriate to investigate

intervention efficacy because it can be utilized in an applied setting such as golf

(Kennedy, 2005). Group comparisons are extremely difficult to use when studying

competitive sport (Greenspan & Feltz, 1989). Whereas, collecting multiple baseline

measures and comparing the individual differences between small numbers of

participants in a SSD is more feasible and less disruptive of a sport environment.

The sample considered in a SSD study is critical. MST interventions often focus

on elite sport performers (Williams, 2006).   It is valuable to consider youth sport

performers and intervention efficacy because the effects of learning may be more visible

within a youth population;meaning youth performers may have not already established

routines through trial and error reported by elite performers (Cohn, 1990). Also, youth

sport performance, or non-elite athletes, remains unstudied (Williams, 2006). Gaining access to youth sport performers is feasible more so than elite sport performers. Lastly, if practitioners are offering MST services in youth sport, it is critical to consider this population and the potential impact and differences between studying volunteers, recreational sport, and elite sport performers (Williams, 2006).

Learning and adhering to a pre-shot routine is a skill of interest that many golfers inquire about and request assistance within consultation. It is the researcher's experience that the ability to focus on appropriate attentional cues while remaining in the present can be a challenge for youth (e.g, high school) and collegiate golfers.

In sum, there is lack of research examining the efficacy of MST programs for improving competitive sport performance (Martin, Vause, & Schwartzman, 2005). Sport psychology consultants are using MST with competitive athletes with the assumption that results found with students and recreational athletes apply to competitive sport. This is problematic both for practical concerns (e.g. how do we know a technique is working?) and ethical concerns (e.g. could this be harmful to clients?) It is important to begin to investigate the efficacy of these programs both experimentally (Hardy, Jones, & Gould, 1996) and socially (Martin, Vause, & Schwartzman, 2005). The use of Single-Subject Design (SSD) investigates a small number of subjects through an experimental design often in their natural environment (e.g. sport or a classroom) and offers the potential to test interventions in real world settings (Hackfort, Duda, & Lidor, 2005; Kenndy, 2005).

Problem Statement

The findings of these studies (Hamilton & Fremow, 1985; Komaki & Barnett, 1977) are important and make a contribution to the field of interventions in sport, but the *problem* is that without more empirical support that MST interventions directly improve competitive sport performance, and without a more represented sample of the skills practitioners teach, with populations other than volunteers or elite sport performers such as youth sport, and without studies that employ the SSD, practitioners generalize and apply existing findings to competitive sport performers (Greenspan & Feltz, 1989) without appropriate empirical support, and generalizing these findings to athletes in youth competition is problematic.

Purpose Statement

The purpose of this study was to examine the efficacy of a pre-shot routine on improving competitive youth golf putting and approach shot performance. The *research question* is: does learning the psychological components (cognitive cues, behavioral focusing strategies, and relaxation) of a pre-shot routine improve approach shot and putting performance of competitive youth golfers? There are two aims that will address this research question. The first aim is to determine the impact of learning the mental skills components of a pre-shot routine on the total number of approach shots and putts in tournaments during the competitive season. The hypothesis is that learning a pre-shot routine will result in improved sport performance (decreased total number of approach shots and putts per round). The second aim is to examine the impact of learning the pre-

shot routine on competitive performance from the participants' perspectives by involving

them in evaluating the intervention.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this project was to determine the efficacy of a pre-shot routine on improving competitive youth golf performance. I also examined the participants' experiences and included them in evaluating the intervention. This chapter reviews the existing literature looking at intervention efficacy and supporting literature for MST interventions. Two reviews, Greenspan and Feltz (1985) and Marten et al., (2005) of existing literature on the relationship between teaching MST and improved sport performance will be discussed in detail. Next, performance routines will be defined, and the supporting literature for mental components (e.g, attention/focus and relaxation) will be reviewed. Specifically, the framework and guiding theories in the area of attention and concentration, and relaxation techniques will be reviewed. Golf is an ideal sport environment in which to consider the efficacy of learning mental skills; consequently, the existing literature on golf and routines is discussed. Lastly, the literature on MST interventions in youth sport is reviewed to highlight the unique context and considerations for MST with this population.

Empirical Support for MST: Two Key Reviews

Greenspan and Feltz (1989) reviewed the experimental studies in sport and

exercise psychology that demonstrated sound methodology, and this review included 19

studies. Martin et al (2005) reanalyzed those studies and only focused on the studies that

included a dependent measure of competitive sport performance to experimentally

evaluate the efficacy of the MST interventions. While both reviews concluded that little

has been done in the way of experimental research in sport and exercise psychology,

several of their observations can help guide future research.

First, Greenspan and Feltz (1989) reviewed studies that conducted interventions

with competitive athletes and provided a review. The selected 19 studies were classified

by the following criteria: studies that employed relaxation techniques, behavioral

techniques, and cognitive restructuring techniques. The number of sessions held to teach

the mental skills ranged from 1 to as many as 50, and the studies employed multiple

differing designs (e.g, SSD, group comparisons, control groups, and pre-post). The

majority of the studies investigated the MST intervention with collegiate athletes. None

looked at the impact of MST on competitive youth sport performance. They concluded

that in general education based relaxation and cognitive restructuring techniques

improved performance. While these studies found support for the use of MST, the body

of research is limited by a lack of sound methodology and future research should consider

the following: utilizing single-subject design (SSD) inquiry in guiding early phases of

experimental investigations prior to moving to group comparisons, multiple baseline

measures should be collected, an intervention manual should be created to provide

adequate procedural detail to allow researchers and practitioners the ability to replicate

findings, and interventions that do not find performance improvements should be

published as opposed to only considering performance improvements as meaningful.

Lastly, Greenspan and Feltz (1989) suggested that researchers should use social

validation to evaluate their interventions. Social validation is the process of

incorporating participants to evaluate the protocol goals, methods, and results of the

intervention (Martens & Hrycaiko, 1983) which usually takes the form of interviewing

the participants. Practitioners tailor interventions to individuals' unique needs, and

including that feedback in the process of evaluating intervention efficacy will

significantly contribute to understanding intervention effects in competitive sport. This

data can triangulate findings, further explain why performance improvements may or

may not have been found, improve consultation for future clients, and offer guidance in

planning future investigations of intervention efficacy.

Next, Martin, Vause, and Schwartzman (2005) re-evaluated the studies reviewed

by Greenspan and Feltz (1989). They also included 19 studies in their review based upon

the following criteria: that athletes were competing on a regular basis as opposed to

being volunteers or simply participants in an activity course at a university, the athlete

performed during competitions, athletic performance was directly measured as opposed

to being observed, and experimental design of SSD or group comparisons was employed.

The mental skills that were included in these studies ranged from goal setting, relaxation,

behavioral modeling and feedback, and self-instructional cuing scripts. Of the studies

that found improvements, it is disappointing to note that the studies did not clearly report

whether an improvement was experienced for all participants or just a percentage of

them. Of the improvements experienced as a result of the MST interventions, the mean

change in performance ranged from 2% to 80%. They concluded that, while there are

many studies that have considered the impact of mental skills training on performance,

many studies lacked: sound methodological design, integrity checks, a lack of social

validation, and few looked at the impact of mental skills on competitive sport

performance. They suggested future research should: consider groups with similar

performance problems, SSD should be employed in future investigations as group design

can be difficult to conduct when considering a competitive population that is in season at

the time of the study, more studies should socially validate their findings, and include the

participants in the evaluation process of the intervention. Therefore, it is unfortunate that

16 years later this review concluded similar results as the prior review because the

existing body of literature on intervention efficacy is limited, and the existing studies

often have methodological shortcomings. Of the studies considering intervention

efficacy, there are three that were reviewed that reported positive change in competitive

performance. These were deemed a good foundation for this line of research. These

studies are reviewed below.

   First, Komaki and Barnett (1977) examined behavioral checklists, modeling, and

contingent feedback on play execution of the offensive backfield on a youth football

team. A multiple-baseline SSD approach was used. Measures were collected to

determine the effectiveness of the intervention on the performance of three offensive backfield plays. This study concluded a 70 percent mean improvement over baseline for execution of offensive plays across all 5 subjects. This study would have been stronger had it included three additional components: procedural check, integrity check, and social validation (Martin, Vause, & Schwartzman, 2005). A strength of this study was that the researchers collected multiple baseline measures which is critical in determining that the results are due to the intervention in SSD inquiry. This study could have been improved by a procedural reliability check that examines the extent to which the intervention was carried out as intended. Multiple observers would observe and evaluate whether the intervention characteristics matched what was described. An integrity check is similar to a procedural reliability check without a reliability score. Lastly, Martens et al suggested that this study could have been improved had they involved the participants and socially validating the intervention protocol.

Next, Hamilton and Fremouw (1985) investigated the effectiveness of imagery, relaxation training, and self-instruction on the free-throw statistics of three male collegiate basketball players. This study also included a multiple baseline measure across subjects design . As the integrity check, the participants reconstructed their thoughts while watching videotapes of their performance. Independent observers agreed on whether these statements were positive, negative, or interfering. Performance improvements were observed for all three participants and a 73% performance improvement in free-throw shooting was observed. However, this study did not include a social validation component either to include the participants in evaluating the goals,

procedures, and outcomes of the study. They did include an integrity check when evaluating the effects of cognitive-behavioral training on free-throw performance. An integrity check determines the extent to which the intervention was administered as planned.

Next, another study cited by Martens, et al., (2005) examined the effect of goal setting on lacrosse performance was among 24 members of an NCAA Division III men's team. A treatment group comparisons design was utilized by comparing a treatment group to a control group, and game statistics were evaluated. Specifically, two defensive and two offensive game statistics were measured. This study found an 80% mean improvement over the control group. However, it was not reported if an improvement was experienced for all participants (Weinberg, Stitcher, & Richardson 1994). A treatment integrity check was administered preseason, midseason, and post season to determine goal commitment, realistic nature of goals, goal difficulty, goal acceptance, and effort.

While the intervention research is sparse, these studies offered sound and diverse methodology. They investigated a variety of skills (e.g., behavioral feedback and modeling, self-talk, and imagery) on the performance of athletic skills (e.g., plays in football and free-throws in basketball), and used different methods of experimentally assessing the efficacy of their interventions. In addition, the performance outcomes of each study are encouraging because competitive performance improvements were observed. The investigators collected multiple forms of data (e.g., questionnaire data,

diaries, interviews, and follow-up data). Sound methodology is critically important to the validity of the research findings. This has been a limitation in early sport psychology investigations (Gill, 2001, Greenspan & Feltz, 1989, & Martin, Vause, & Swartzman, 2005). These studies met the inclusion criteria in Marten, Vause, and Swartzman's (2005) review because they investigated competitive populations.

Investigating the perceived effectiveness of an intervention from the participant's perspective is social validation, which is not a method commonly employed (Martens & Hrycaiko, 1983). Because there is little statistical evidence to validate our interventions, it would be helpful to continue to engage in qualitative inquiry in conjunction with SSD (Martin & Hrycaiko, 1983). Moreover, the extent of our effectiveness as practitioners is often related to how well we build rapport with our clients. How better to help us learn to individualize our interventions than to solicit the perspective of the participant in evaluating our programs?

In summary, the existing body of research considering intervention efficacy is limited for several reasons. The limitations of these studies include a lack of procedural detail about the interventions, a lack of social validation, and no consistent line of inquiry building theory. A detailed description of each intervention would be helpful for practitioners and researchers to replicate efficacious findings. The efficacy of an intervention is not as substantially significant if it cannot be replicated. Also, these studies have not socially validated their interventions as previously suggested by Martin and Hrycaiko (1983). The skills investigated have not been a comprehensive

representation of the wide range of mental skills that practitioners teach, nor have they investigated a wide range of populations starting with youth sport performers and ranging to elite. Unfortunately, the current research has focused on collegiate athletes and contrived settings that may not accurately represent or simulate the competitive environment in which sports are played (Martens & Hrycaiko, 1983). Lastly, these investigations are somewhat scattered as opposed to consistently engaging in qualitative, SSD, and group comparisons to build upon previous findings. For example, it would be helpful to have multiple studies looking at the effect of performance routines with similar population (i.e. youth sport) to replicate previous findings and then begin to compare interventions to clinically determine the most efficacious protocols for competitive youth golf performance.

<div align="center">Performance Routines</div>

In MST interventions, multiple skills are often combined into a performance routine to aid in preparation, refocusing, and reflecting after performing. For example, in refocusing routines athletes may combine thought stopping, a technique to immediately interrupt a thought pattern, and centering, a technique to direct one's focus back to their center to clear their mind after a mistake. In addition, interventions often involve teaching an athlete multiple skills to improve specific topics such as focus and attention. Researchers have found that elite performers consistently adhere to routines (observable behaviors) more so than non-elite (Thomas & Nelson, 2005), and they develop their routines through trial and error (Cohn, 1991; Jackson, 2001). Therefore, if practitioners

typically develop a program and teach multiple skills often consisting of some form of routine (e.g., pre-performance, refocusing, and post-performance), and athletes are developing them through trial and error, then evaluating the potential impact of learning routines on competitive performance would be beneficial to research and practice.

Routines Defined and Supporting Literature

Routines are thoughts and behaviors that are automatically integrated into our day (Hackfort, Duda, & Lidor, 2005). The ability to perform consistently is the foundation of optimal performance. In fact, consistency, or lack thereof is one of the most common topics faced in consultation. Athletes often mention, "I will play well on the front nine until I make a mistake. I need to be more consistent." Performance routines are meant to ensure that the positive influences of performance are supported, (e.g. task-relevant cues and a complete breath) and the negative influences of performance are minimized (e.g. task-irrelevant cues and self-doubt or fear).

A pre-shot routine enables athletes to focus on well rehearsed cues instead of negative thoughts or self-doubt (Schmidt & Pepper, 1998). The psychological skills that will be included in this intervention protocol are: learning cognitive cues (e.g. trust), behavioral focusing strategies (e.g. taking extra waggles to refocus), and relaxation (e.g., deep breathing) to learn a pre-shot routine.

Routines are typically behaviors that are easily observed. For example, in Major League Baseball, Nomar Garciapara exhibits multiple hand motions securing his batting gloves before stepping into the batter's box. Gary Sheffield vigorously wiggles his bat

while waiting for each pitch. Because these behaviors are easily observable, athletes make the assumption that it is important to have a pre-performance routine. However, we cannot observe what these elite athletes are thinking as part of their routines to assist them in remaining focused on the task at hand. Therefore, behavioral routines are common among athletes, and it is equally as important to teach them appropriate psychological routines to assist them in remaining focused and present (Taylor & Wilson, 2005).

Routines have been conceptualized in three ways: Pre-performance, between-performance, and post-performance routines. Pre-performance routines enable athlete to prepare for competition by consistently implementing the same strategies and by minimizing distractions such as environmental distractions at a new course (e.g., level of difficulty of course). Between-performance routines (i.e. refocusing routines or pre-shot routines) can be utilized in sports with a series of period breaks (such as golf or baseball), and they enable athletes to remain consistent throughout a performance. Post-competition routines allow for time to reflect on one's performance, evaluate performance, consider lessons learned, and plan for future training (Taylor & Wilson, 2005).

Routines are often referred to as rituals or superstitions among athletes and coaches. The difference between the two is critical for athletes to understand. Rituals or superstitions are rigid and inflexible ceremonial acts. For example, athletes may believe that they have a lucky pair of socks and when worn in a game the team wins. Therefore,

the athlete may conclude that if she/he washes the socks before a game, the team will lose. This example illustrates the external locus of control of rituals; that is athletes assign the outcome of the performance to something outside of themselves, and thus assume no control or responsibility over the performance. Performance routines ensure that athletes are consistent in their performance, and the positive influences are maximized such as remaining relaxed or making decisions in the present before each play (Taylor & Wilson, 2005). Lastly, athletes have control of their performance routines and this internal locus of control gives them responsibility over their performance as opposed to leaving it up to chance.

Routines combine physical, technical, and psychological strategies to enhance performance. For example, a well developed pre-shot routine may include extra practice swings (physical), looking at the slope of the hole prior to choosing a club (technical), and repeating see it, feel it, trust it (psychological) prior to execution. Pre-performance routines may include a physical warm-up (e.g., putting, chipping, and hitting a driver) and mastery imagery (e.g., seeing the trajectory of the ball flight and it landing on the green within four feet of the hole) to prepare for a round of golf. A between-competition or refocusing routine may include extra golf swings accompanied by positive self-talk or mantras to regain attentional control. Once athletes see the benefits of performance routines, they continue to implement them because their energy can be better used to train competitively. Taylor and Wilson (2005) further suggest that emotion is an important component of a routine that will aid in the ability to optimally initiate tasks.

Attentional control theory can explain how performance routines benefit athletic performance. A pre-shot routine enables athletes to focus on well rehearsed cues instead of negative thoughts or self-doubt (Schmidt & Pepper, 1998). The demands of elite, competitive, sport environments can place great burden on athletes' attentional capabilities. Athletes enter a performance thinking of their last performance (often negative) in a similar environment. If they are not prepared, the new environment can be filled with irrelevant external cues or distractions. Attentional-control theory (Boutcher, 1990) contends that the value of performance routines is that they aid athletes in maintaining focus and filtering out distractions. This theory suggests that if athletes are focused on their performance routines, they are less susceptible to internal or external distractions.

Boutcher (1990) goes further to suggest the importance of cue words and breathing as a part of performance routines. Cue words have a stabilizing effect on performance (Boutcher, 1990). Cue words are tools that athletes use to focus on task-relevant stimuli. For example, a golfer may use cue words such as "smooth" or "trust." These are both important effects of putting well. They direct the attention to a desired outcome as opposed to mechanical or critically thinking in the middle of a round. Because deep breathing is a relaxation strategy that can be quickly implemented and is beneficial for relaxing the body, it can be incorporated into performance routines in an attempt to enhance the effect of increased physical awareness, reduced intensity, and improved focus.

Routines can also help distract athletes from the high expectations they have for their performances. These high expectations often translate into anxiety when athletes have not developed the necessary attentional skills to focus on task-relevant cues to perform well. For example, golfers often talk about the perceived expectations of their coaches and parents. When they enter a round of golf thinking about past performances, those thoughts can translate into fear and doubt and interfere with optimal performance. Routines can help reduce the effect of expectations on performance by creating feelings of familiarity and comfort because the athletes have practiced the components of the routine prior to competition and even simulated competition situations in practice. Routines also help to keep the athlete's mind off of the stressful components of performing (attentional control theory). Lastly, a performance routine enables the athlete to feel more in control of their performance.

It is unfortunate that while descriptive studies have found that routines are commonly used among elite athletes (Cohn, 1990, Jackson, 2001, & Singer, 2003) there have been few investigations that support the role of performance routines in enhancing sport performance. The studies that have been conducted either observed the overt behaviors in the players' natural environment or attempted to determine the impact of the routine on performance (Thomas & Nelson, 2005). Investigators have found through self-report that athletes have developed routines intuitively (Cohn, 1991; Jackson, 2001); they consistently execute behaviors that they learn through trial and error that help them remain consistent in self-paced tasks (e.g., putting in golf and free-throws in basketball). One observational study conducted by Wrisberg and Pien (1992) found a negative

relationship between the time interval of basketball players routines and their percentage of free throws made. They concluded that the players that made more free throws were more consistent in implementing their routines prior to execution.

In summary, the utilization of routines by elite athletes has been observed (Cohn, 1990, Jackson, 2001, & Singer, 2003), and the attentional control theory suggests that performance routines may be a technique that can heighten the ability to focus on task-relevant cues, filter out distractions, and move toward optimal performance in sport (Boutcher, 1990). Boutcher (1990) further suggests that the importance of cue words and relaxation are both important parts of performance routines. This theory served as a framework that guided the skill selection of the current intervention protocol that taught youth golfers a pre-shot routine through learning cue words, relaxation, and a behavioral focusing strategy.

Attention and Focus

At any given moment our attention can be drawn to many sources of information: images through vision, aromas, peripheral noise, and pressure applied to our skin (Murphy, 2005). How do we decipher what is important information and what should be filtered out? These questions are often pondered by sport psychologists and coaches. This project considers the effect of a pre-shot routine through the framework of attentional control and remaining present as necessary outcomes to improving performance. Thus, it is important to consider existing attentional theories and strategies when creating the cognitive phase of the intervention protocol. This section reviews the

theories on attention and concentration from cognitive, sociological, and psychophysiological perspectives. An integrated framework proposed by Horn (1992) will be discussed to guide future research and practice as it relates to information processing. Lastly, activities to teach attention and focusing skills relevant to the current project are also discussed.

Attention, focus, and concentration have a multitude of definitions. Attention/concentration, or cognitive control, is a complex process that is critical in achieving peak performance (Murphy, 2005). Attention is conceptualized as the ability to switch focus form one source of information to another and the amount of information that can be processed at one time (Horn, 1992). Murphy (2005) defined attention as alertness, including concerns with the development and both short and long term maintenance of optimal sensitivity and readiness for responding. Moran (1996) has defined concentration by exploring its relationship with attention and sport performance. He defined concentration as, "the capacity to exert mental effort on a task while ignoring distractions." He further suggested that attention and concentration can be used interchangeably. Jackson and Csikszentmihalyi (1999) state that, "flow is about focus." They defined focus as an essential component of sport performance which athletes are totally absorbed in the activity in which they are engaged. They suggest that focus is essential to competitive success because it is the "director" of athletes' efforts. That is, whatever cues a golfer chooses or is in a habit of focusing on will receive her/his efforts. If a golfer dwells on the outcome and focuses primarily on adding up what is needed to stay even or under par, performance worry is likely to result. Conversely, if a golfer is

able to remain present and focused on what is necessary to perform on each hole (e.g. distance, hazards, etc.) the efforts will be directed toward making sound decisions that are task specific and optimal performance is more likely to be the result. This optimal effort enables athletes to attend to relevant cues, filter out distractions, and plan strategies to maximize their performance. The term focus will be used when considering theory, research, and practice in this area and throughout the remainder of this project.

Our understanding of focus has evolved from the collaboration of many fields including psychology, physiology, sensation, perception, and sport science (Hardy, Jones, & Gould, 1996). While researchers Boutcher (1990) and Nideffer (1976a) suggest that focus is a vital aspect of athletic performance, the research in sport is underdeveloped (Hardy, Jones, & Gould, 1996). The most relevant to this project are the information processing models of focus and attention when considering how to teach youth golfers how to focus on task relevant cues and filter out other stimuli in hopes that ultimately the focusing strategies learned will one day become automatic and systematically incorporated into their golf game.

Information-Processing Models

Information-processing models provide a framework for examining the characteristics of three interactive processes: selective attention, capacity, and alertness (Abernathy et al, 2007). Selective attention refers to the process of information (internal or external) entering the information processing system, and other information being ignored. Golfers often report that after their approach shot, they begin to think about

what they have to shoot on the green for even par or birdie-if they bogied the previous

hole. This would be an example of internal information selectively distracting from other

information that is more salient to optimally perform (e.g. distance, lie, and weather

conditions). An athlete may choose whether to focus inwardly (e.g. physiological cues)

or outwardly (e.g. environmental cues) or on a range of cues. Thus this selection process

is multifaceted and integral to sport success.

Selective attention plays a key role in the process of learning new athletic skills

and skill improvement (Horn, 1992; Murphy, 2005). A novice golfer would selectively

focus his attention on the process of his swing and some attention on the distance and

difficulty of the hole. A more experienced golfer has honed this skill, executes without

thought or automatically, and pays more attention to strategically placing the ball on the

fairway. Therefore, as skills become well learned, more attention can selectively be paid

to the environment. This is important when working with golfers who have a tendency to

become mechanical in their thinking when they are not performing well. For example,

the participant in the pilot project stated, "When I am not playing well, I become

mechanical. I mean I analyze everything about my shot to try and figure out what is

wrong" (See Appendix J).

From this example we can glean the difference between controlled processing and

automatic processing. Controlled processing is used to process novel or inconsistent

information. This type of processing may be dominant in the early stages of learning

(Shiffrin, 1976). It is slow, capacity-limited, and controlled by the individual. In sport

this type of processing is necessary for decision making such as club selection and target on the green. This type of processing can be problematic when a skilled player tries to slow the swing and control what the body does in a fluid motion or automatically. In contrast, automatic processing is responsible for the execution of well-learned skills, is efficient, effortless, and not under conscious thought. The difference is that automatic processing requires little effort, attention, or awareness, while controlled processing requires effort when making decisions regarding club selection, placement of hazards, and distance, but when it is time to swing the club this skill needs to be executed automatically to yield desirable scores.

The next aspect of attention that is related to information processing and performance is attentional capacity. This refers to controlled processing and the fact that it is limited to the amount of information that one can process at a time (Murphy, 2005). Thus, performing multiple tasks or focusing on more than one source of information may result in decreased performance. An example of this would be a high school golfer trying to listen to instruction from his father and coach at the same time.

The extent to which theorists believe that attentional capacity is fixed has evolved to consider an undifferentiated view of capacity. Fixed-capacity theorists (e.g. Broadbent, 1958 & Norman, 1969) believe that attentional capacity is fixed despite the activity. In other words, they view one's attention to be limited to the amount of stimuli that can be processed at a given time. In contrast, theories of undifferentiated capacity view focus and attention as a resource that can be pooled from various processing

operations (Kahneman, 1973). This is a more flexible view of attention and suggests that attentional capacity can change with the difficulty of each task. Next, multiple resource theory (Wickens, 1984) is a more recent extension of this flexible view of capacity. Theorists propose that attention consists of pools of resources, each with its own capacity. This theory of parallel processing suggests that one can process multiple stimuli depending upon the tasks involved, task difficulty, and structural considerations. Critics of these more flexible theories argue that in attention training and practicing psychological principles, it would be cumbersome to teach an athlete to divide their focus between multiple stimuli simultaneously (Hirst, 1986). Therefore, parallel-processing offers a multifaceted approach to considering the capacity of focus and attention but complicates both the process of teaching attentional training and the evaluation of the training program.

The third aspect of attention related to performance within the information-processing framework is the effect of alertness and arousal on the breadth of the attentional field. It is hypothesized that, as arousal increases beyond a certain point, performance will begin to suffer (Murphy, 2005). This is thought to be a reduction in the range of one's cue utilization as arousal increases. For example, as a golfer walks out to the first tee box, he may recall other tournaments where he was unable to start off well, his arousal level increases, as does muscle tension in his upper body. This increased arousal and subsequent effects from arousal inhibit his attention to necessary cues such as the water hazards to the left, judging the distance to the green, and the wind. Landers (1980, 1981) examined the effects of emotional arousal on the visual field of athletes

during performance. Several studies have supported this and indicated that in stressful

situations, performance on a visual task decreases the ability to respond to peripheral

stimuli (Bacon, 1974; Hockey, 1970; Murphy, 2005; Wachtel, 1967). This means that as

emotions increase (or stimuli is perceived as stressful or threatening) the ability to

process or sensitivity to certain cues in an athlete's periphery are lost, attentional

narrowing occurs; this leads to controlled, conscious processing, inefficiencies in

attentional allocation, and distraction by irrelevant cues (Murphy, 2005).   In open,

contact sports this can be dangerous. If a quarterback does not see a lineman coming

from his left, by not acting quick enough, the hit could be a career ending injury as

opposed to processing information quickly enough to get rid of the football.

Boutcher (2009) reviewed the research from various perspectives (social

psychological, psychophysiological, and individual differences) in an attempt to better

understand the relationship between focus and performance. The research on information

processing has established two types of processing: controlled and automatic processing.

Controlled processing requires effort and is slower; while automatic processing is

effortless and more efficient.   In working with athletes to create a MST program to

improve focus, the goal is for them to eventually operate automatically to attend

primarily to task-relevant cues and be able to filter out distractions effectively. Boutcher

(2009) outlines the three theories that guide how information processing occurs and

synthesized the information in an integrated model to teach focusing strategies.

Information processing theorists concluded that both controlled and automatic processing

are necessary at certain times in sport. Social-psychological perspectives focus on the

situation specific, task-relevant cues necessary in the environment to perform well. If an

athlete is operating from controlled processing and if task-irrelevant information enters

the information-processing system, disruption to attention/focus occurs.

Psychophysiological perspectives consider the effect physiologically of focus and

attention. Lastly, considering the unique individual differences between athletes allows a

practitioner to consider a player's attentional strengths and weaknesses along with the

attentional demands of the sport to possibly predict performance.

Social-Psychological Theories

Social-psychological theorists consider the environment and how it can help or

inhibit an athlete's ability to focus. They hypothesize that in these situations performance

will be negatively affected. If a golfer focuses on hoping to "not" miss the fairway, it is

probably that they will miss the fairway. This irrelevant stimuli is *performance worry

(*Murphy, 2005*).* Sarason (1972) and Wine (1971) suggested that performance worry is

an emotional state that serves as a distraction to performers and thus reinforces the

negative effect anxiety can have on performance. Thus, this research on distraction is

relevant to sport performance situations. It would make sense that in highly competitive

situations, self-defeating thoughts can negatively affect performance. In contrast, in non-

stimulating, low-arousal environments (e.g. playing 36 holes of golf) may result in

missing important task-related cues out of boredom from being on a golf course for eight

hours.

Social psychologists further suggest that inappropriate attentional focus disrupts automatic execution of skills and thus is an inefficient use of attention. When a golfer recognizes the importance of skill execution, an attempt to consciously monitor or control that process of performance is made. The participant in the pilot project indicated that when he was not playing well, his natural tendency was to slow down skills that are normally executed automatically and look for errors. When athletes' psychological skills are not well developed, they attempt to control an aspect of their performance, often a physical skill, which is typically under automatic processing. Consciousness or controlled processing does not contain the muscle memory or coordination essential for effective performance. Thus attempting to interrupt this automatic processing often leads to degradation of performance (Horn, 1992).

Sport Psychophysiological Theories

The third perspective on controlled versus uncontrolled information processing is offered by sport psychophysiologists. They have studied attention by monitoring cortical and autonomic responses during athletic performance. Hatfield, Landers, and Ray (1984) studied the left and right-brain alpha EEG activity of elite rifle shooters while they were performing a series of mental tasks. They found seconds before pulling the trigger shooters experienced more alpha brain wave activity in their left hemisphere than their right. Then right before pulling the trigger electrocortical lateralization occurred toward right-hemispheric dominance. The researchers concluded that elite marksman may possess such a high degree of attentional focus that they can effectively reduce conscious

control or mental activities of the left hemisphere, thus reducing cognitions unnecessary to performance of the task.

Individual Differences

Lastly, individual differences in the attentional style of athletes may affect sport performance. The variations between attentional styles and the effect on sport performance have formed the majority of the theoretical focus in sport psychology. Nideffer (1976b) used the initial concepts developed by Wachtel (1967), and Bacon (1974) whom suggest that the attentional demands of any sport will vary along two dimensions: width (broad-narrow) and direction (internal-external) creating a quadrant of attentional types. The *broad-external* focus requires the ability to attend to a wide range of cues in the environment (Nideffer, 1990). For example, as golfers step up to the ball they must consider several things in the environment such as hazards, out-of-bounds markers, and course conditions (Williams, 2006). A *broad-internal* requires focus on a variety of player strengths and weaknesses when determining strategy. It is this style that enables athletes to strategize and make decisions (Nideffer, 1990). This style is particularly salient to coaches. Once golfers have taken into account the environmental factors they switch to a broad-internal focus to plan the shot (Williams, 2006). A *narrow-external* focus would be appropriate for activities that require attention to narrow aspects of the environment, such as one or two cues outside of themselves that are essential for performance (Nideffer, 1990). This style requires athletes to filter out irrelevant internal and external cues. For example, a golfer aims straight up a hill for the

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flag on the green; this would require a narrow-external focus. Lastly, a *narrow-internal* focus is most applicable for strategizing or focusing on cognitive cues. Using visualization to rehearse controlling butterflies and putting the approach shot on the fairway would be an example of a narrow-internal focus. Sports that require mental rehearsal in their performances utilize a narrow-internal focus.

Nideffer (1976b) suggests that athletes need to be able to recognize the demands of the environment and efficiently shift their focus to the appropriate style. Therefore, performance may be impaired if an athlete utilizes an inappropriate style that is not compatible with the style the environment demands. For example, if a golfer needs to select a club on a hole that is a longer distance (narrow-external), but he instead focuses his attention on what the spectators are thinking of him and their comparison of him to his match opponent who is one under par (broad-external). This would be an inappropriate attentional style and performance decrements are likely to follow.

In the past, these individual differences, with respect to focus strengths and weaknesses, have been assessed through questionnaires. This process is thought to be able to predict future performance. To date no evidence supports this claim. Also, because of the nature of automatic processing, the validity of assessing attentional style by retrospective recall is questionable. Thus, when investigating attentional processes, researchers should consider interviews and thought sampling techniques as close to the performance in question as possible (Williams, 2006).

While these three perspectives (i.e. social psychological, sport psychophysiological, and individual difference) offer differing perspectives; they focus on different outcomes of focus (e.g. deceleration of heart rate versus environmental influences and distractions), they each overlap and offer guidance when working with athletes when considering the focus/performance relationship. Focus should be viewed as a multifaceted process that can be assessed through questionnaires, thought sampling, observation analysis, performance, and psychophysiological measures. Other factors to consider in this focus/performance relationship are individual differences, environmental factors, and changes in the performer's level of arousal. Horn (1992) proposes an integrated model of all three perspectives. The model proposes potential interactions between all three perspectives. For example, disposition (e.g. high trait anxious individuals), and the environmental factors (e.g. spectators) will affect the level of arousal experienced by an athlete. During a task performance this arousal could be channeled into controlled processing, automatic processing, or a combination of the two. The appropriateness of the type of processing needed would be determined by the task. An optimal attentional state would then be achieved if the individual reached the exact balance of processing needed to be successful on the task. Disruption or an imbalance could possibly occur if internal or external factors cause the individual to reach a level of arousal that would cause an imbalance in processing of the task.

In summary, Horn (1992) concludes that the empirical research that has been conducted in the area of focus and performance has not been guided by a unifying model. Consequently, techniques to improve athletes' attention have been through trial and error.

More specifically, Horn (1992) recommends that approaches such at SSD inquiry should be adopted to investigate the integrated framework proposed to draw further conclusions regarding this focus/performance relationship.

Attention/Focus Training

The first recommendation to assist athletes in improving their ability to effectively focus is guided by the Boutcher's (1990) framework. As it stands, the field of sport and exercise psychology needs considerably more research on the suitability and efficacy of these proposed techniques (Horn, 1992). The first step is to assess the individual's attentional strengths and weaknesses. This can be done via thought sampling techniques, questionnaires, interviews, performance tests, or observation analysis. Nideffer (1976a) recommends that athletes need to match the attentional demands of their sport with the appropriate attentional style. For example, golf requires, primarily, a combination of narrow-internal and narrow-external styles, and thus golfers with a focus that reflect these styles will likely yield optimal performance. Thus, it would make sense to assess the athlete's attentional strengths and weaknesses and compare those to the demands of the sport environment prior to beginning treatment phases to better prepare the research practitioner in effectively implementing the intervention. In this project, if a golfer's thoughts fit primarily into a broad-external style with little shifting toward narrow-internal and narrow-external, then they may have difficulty systematically implementing a pre-shot routine due to an inability to filter out environmental distractions. These details will be salient in the researcher's ability to implement an

effective intervention. An athlete's strengths and weaknesses should be assessed and the attentional program should be tailored based on the athletes' needs and the demands of the sport.

Once athletes have an increased awareness of their focusing style and the demands of the environment, consultants can help develop a program to maximize their focus strengths and optimize their sport's challenges (Taylor & Wilson, 2005). One of the most important skills is the ability to shift attention to the demands of the environment. When athletes are able to make adjustments based on what the environment requires they are likely to perform well. If the competitive situation has demands that are different from the athlete's natural style, performance concerns may arise. The ability to shift focus is a skill that can be mastered using various techniques.

Another strategy to help athletes' ability to focus is learning and systematically practicing key words. Key words are tools that can be practiced to focus more effectively in practice and competition (Loehr, 1994). Key words are verbal or cognitive cues that remind athletes what to focus on. They can relate to any area of performance such as technique, tactics, physiology, thoughts, emotions, behavior, and conditions. The value of key words is that when athletes lose focus they can use key words to remind themselves of task-relevant cues and regain focus. For example, golfers who have a tendency to become mechanical (i.e. over analyzing shot mechanics) after making a mistake can benefit from a key word such as trust. Simply stated, trust can deter a golfer from thinking about body movements and consequently increase the likelihood that they

process automatically instead of remaining in a state of controlled processing after skills are well learned.

There are three ways that key words can be implemented: at the beginning of competition, consistently to remain focused, or to regain focus. First, athletes can use key words at the beginning of competition in preparation for the event to remain focused on performance-relevant cues. Next, key words can be used throughout competition constantly to remain in a focused state to perform effectively. Lastly, key words can be used to regain focus once lost.

Another strategy offered by Williams (2006) that can assist athletes in focusing on the process of performance instead of outcome, is the assisting of athletes in implementing process cues into their routines. The inherent nature of golf sets players up to focus on the outcome or score because they keep their own scorecards in golf. When players make a mistake or bogie a hole, they have a tendency to dwell on the mistake, doubt their skills, focus on holes to come to make up for the mistake, and they often become mechanical in their play or highly critical of their performance. As previously discussed, this focus shifts an athlete's attention more toward controlled processing which can result in poor performance. A mistake affects one's confidence and breeds feelings of doubt in athletic ability. The next tendency is a consequence of frustration; it is to try and take control. This only creates internal distractions. Athletes must challenge their own thoughts and focus on the process, taking their focus off of the outcome; as it is a series of performance processes that yield the outcome, not one

mistake or error. Often this process focuses on creating a rhythm or the emotional or physical feeling of rhythm. For example, there is a specific feeling that golfers describe when they trust their swing. They are free of worry and feel confident. The researcher has worked with youth golfers who use key words as process cues such as, "smooth" or "trust" before they putt. Then as their confidence builds, they can begin to focus on the outcome to motivate themselves. Process cues are similar to verbal cues and simply offer more detail when teaching athletes this focusing strategy.

In helping athletes focus on the process cues Wulf (2003) and colleagues have an interesting line of research suggesting it may be more beneficial to promote focusing on the effect or impact of an action instead of the actual action itself (Murphy, 2005). As previously discussed, performance suffers when athletes consciously control actions that should be automated. For example, athletes often learn to focus on the process of their swing, focusing on the angle of their elbow and swinging from low to high. This thought process, while process oriented, may interfere with performance after the golf swing is well learned and practiced. It is at this time that the focus needs to shift away from swing mechanics. Wulf (2003) and colleagues suggest that it is beneficial to focus on the effect or impact of the action. Therefore, a golfer could allocate focus to the motion of the club as opposed to the angle of their elbow. This is less likely to interfere with automated motor behaviors or to allow automatic processing of those skills while focusing on a task relevant cue at the same time.

Attention and focus is one of many mental skills that will indirectly affect competitive performance. Boutcher's (1990) attentional control theory or framework served as a *lens* to look through and consider competitive performance. Each of the three theories are equally important when considering an athlete's ability to focus and perform. The social perspective or the context of the sport environment can affect how a golfer reacts to environmental stimuli physically, and individual difference accounts for the unique makeup of each athlete and how they differ when considering their ability to focus and optimally perform. Futhermore, cue words and relaxation were mentioned as important factors in a pre-shot routine. Wulf (2003) went further to suggest that when teaching cue words, athletes should focus on the desired effect of the skill so as not to interrupt the automatic processing or skill execution. Relaxation is the next key factor suggested to be included when teaching pre-shot routines, and the existing body of literature on relaxation theory and suggested skills is outlined in the next section.

Relaxation

In Boutcher's (1990) integrative model of focus/performance relationship, the arousal relationship to focus and attention was discussed with respect to arousal increasing and performance suffering. Therefore, relaxation is important when creating a pre-shot routine to enable youth golfers to focus and optimally perform. Sports competition occurs in highly stressful and demanding environments. The ability to manage one's reaction to these pressures is crucial for optimal performance, and high levels can be detrimental to motor learning, performance, and participation in

competition (Gould, Greenleaf, & Krane, 2002). Top level performers practice a variety

of psychological skills to manage the pressures of elite sport. One of the most prominent

skills is relaxation (Hardy, Jones, & Gould, 1996). Several studies have cited the

importance of managing anxiety and even using it to their advantage (Jones et al., 1994;

Mahoney & Avener, 1977; Orlick & Partington, 1988). These studies even note that this

is one difference between the elite and non-elite. Athletes are subject to many stressors:

psychological, social, and, environmental. It is the perception of these stressors that is

responsible for magnifying stress (Lazarus, 1966).

Jones and Hardy (1990a) conducted a series of interviews with elite performers

and relaxation was a strategy mentioned as a key factor to elite performance. It was also

apparent in this study that these performers developed these skills through trial and error

as opposed to a systematic psychological skills training program. The skills they

employed to make relaxation possible included breathing, counting, and imagery.

Respondents reported that they developed these skills through trying various methods

until they found something that worked. One participant reported that she had used

relaxation techniques all the time, but they were not deliberate or a specific part of her

daily practice. In other words, she did not have a performance routine or a systematic set

of behaviors to remain relaxed. It was not until she went to a university that she learned

she had been practicing a psychological skill. A sport psychology consultant (SPC) can

aid in this process and can teach athletes how these skills can become automatic.

Selecting a specific relaxation technique can be more difficult than simply trial and error selection. The literature divides relaxation techniques into "physical" or "mental" relaxation techniques (Hardy, Jones, & Gould, 1996). It is suggested that a SPC should help athletes match the relaxation technique to the anxiety symptom experienced: cognitive anxiety or somatic anxiety (Davidson & Schwartz, 1976; Liebert & Morris, 1967). This is known as the *matching hypothesis*. Morris et al. (1981) defined cognitive anxiety as "the cognitive concerns about oneself, the situation at hand and potential consequences." (p. 541) Morris et al. (1981) go on to define somatic anxiety as, "one's perception of the physiological-affective elements of the anxiety experience, that is, indications of autonomic arousal and unpleasant feeling states such as nervousness and tension." (p.541) For example, if a golfer reports racing thoughts prior to teeing off, thought stopping may help reduce some of these symptoms. Or if the athlete reports tension in their shoulders at the beginning of a round, deep breathing or progressive muscle relaxation (PMR) may be recommended by a SPC.

Progressive Muscle Relaxation

PMR is the most common physical or somatic relaxation technique used in sport. The techniques that are taught in sport today are all a variation of Jacobson's (1938) PMR. This technique teaches athletes to focus their attention on various muscle groups in the body. They are taught to recognize tension throughout the body and to quickly release that tension by practicing a series of tensing and releasing of these muscle groups starting at the feet and working up to the head. This process has been modified to include

a different version of PMR. For example, differential PMR is a partial relaxation, enhancing partial relaxation of the muscles used in sport and creating greater self-awareness of the degree of bodily tension experienced (Rotella, 1985). It is the goal of relaxation training for the athlete to be able to identify tension in the muscle groups necessary for optimal performance, and to practice reducing this tension in practice and in competition. However, while teaching PMR, an intervention can be time consuming. When combining a relaxation technique with other psychological skills into a routine and assessing competitive performance, it would be difficult to teach and evaluate with multiple other skills.

Another modified version of Jacobson's (1938) PMR is Ost's (1988) applied relaxation technique. The goal of this technique is to be able to relax in 20-30 seconds. Ost's applied relaxation technique involves several phases. The first phase involves a 15-minute PMR session practiced twice a day in which muscle groups are tensed and released. Next, the athlete moves onto a release only phase that lasts between 5 and 7 minutes. The duration of each phase is reduced to 2-3 minutes with the use of a self-instruction cue word of "relax". The duration is reduced until only a few seconds is required to relax the muscle groups and can be practiced in specific sport situations.

Research in sport psychology has focused mainly on PMR and employing case studies and group designs. Nideffer and Deckner (1970) investigated PMR with a shot putter's performance using case study design. Kukla (1976) found a reduction in state anxiety of high school baseball players and improved batting performance compared to a

control as a result of PMR. Research in physical relaxation has found a reduction in state anxiety, but the findings have not always found an improvement of performance and have been inconsistent (Hardy, Jones, & Gould, 1996).

Deep Breathing

A more practical technique to teach and aid in the relaxation experience is to teach athletes the importance of the complete breath and the benefits of diaphragmatic breathing (Williams, 2006). Proper breathing comes from the diaphragm, the thin muscle that separates the lung and abdomen cavity. When practicing diaphragmatic breathing, a consultant should instruct the athlete to place one hand on their chest and the other hand on their abdomen. During inhalation the abdomen should be pushed out, and the chest should remain still. During a deep breath, the chest and shoulders will raise slightly. When an athlete perceives a stressor as threatening, a stress response is created, and breathing patterns become more rapid and shallow. When teaching this technique to an athlete, it is important to ask them to pay close attention to make sure the exhalation is slow and complete and to focus on all of the tension leaving the body. A quick drill that can be implemented to remind athletes of the importance of the complete breath is to give them an activity such as taking a complete breath every time the phone rings.

Next, the benefits of a cognitive relaxation technique, transcendental meditation, have been well documented. Transcendental meditation involves athletes finding a comfortable position; closing their eyes, relaxing their muscles, and repeating a "mantra" or key word such as relax (Benson, 1975; Benson & Proctor, 1984). The benefits of this

technique are dependent upon the consultant's ability to assist the athlete in implementing it in competition (Hardy, Jones, & Gould, 1996). Many physiological benefits have been associated with this technique: reduced oxygen consumption, decreased respiration, slower heart rate, lower blood pressure, and decreased responsivity of the sympathetic nervous system (Berger, 1994; Feuerstein et al., 1986).

Jones (1993) modified transcendental meditation and Ost's (1988) applied relaxation training with a world-ranked racquet sport player. Jones substituted the PMR of Ost's technique with a meditative relaxation technique. The process involved learning transcendental meditation and reducing the number of phases of Ost's model to a 20-minute session. Once learned, the athlete practiced relaxing once or twice a week but not on competition days. Next, the technique was modified to 5-minutes and still not applied on competition days. Finally, the technique was shortened to a few seconds and only involved a few deep breaths and repetitive mantra that could be used immediately prior to and during performance to regain attentional control and composure (Jones, 1993).

In competitive environments, athletes will likely be faced with some result or interaction of both cognitive and somatic anxiety. Hardy, Jones, and Gould (1996) suggest that, as opposed to looking at stress/anxiety as an either or approach, consultants should teach a multimodal stress management model to enable performers to deal with multiple types of anxiety simultaneously. While there are a number of multimodal stress management packages available that have been applied to sport, Burton (1990) argued that two fulfill the requirement of alleviating both cognitive and somatic anxiety, and that

both provide systematic strategies of coping procedures under simulated stressful conditions. The two models are stress inoculation training (Meichenbaum, 1975) and cognitive affective stress management (Smith, R.E., 1980). Both models include relaxation training and other psychological skills such as imagery and positive self-talk.

As mentioned earlier, the effectiveness of a MST program is often the consultant's ability to build rapport, effectively teach the skill, and help that athlete incorporate it systematically into practice and eventually competition. Willliams and Harris (1998) offer several suggestions to increase the effectiveness of teaching relaxation techniques. First, the consultant should expose the athlete to multiple techniques and convince them of the benefits of practicing such techniques. It is also important to be proficient in teaching multiple techniques to meet the differing needs and interests of their athletes. When teaching relaxation, it is beneficial to first explain the relationship between tension, stress, and attentional control (i.e. tendency to focus on irrelevant stimuli) with the athlete. Then the consultant should help the athlete increase self-awareness of their breathing patterns by asking him/her to sit up against a wall, put one hand on their abdomen, and draw their attention to their breath. An athlete's own self-regulatory skills (e.g., ability to reduce anxiety or coping strategies) can be utilized as a starting point. Anderson (2000) recommends working on one's voice to deliver relaxation instruction in a soothing and hypnotic tone. Lastly, the consultant should ask the athlete to reflect and to bring information regarding their breathing to their next competition.

In summary, athletes identify relaxation as a desired outcome for sport performance and they often learn effective strategies through trial and error. There are also studies to show that athletes benefit from systematic relaxation training with a SPC (Jones, 1993). Further research in the area of relaxation training should focus on 6 areas: 1.) the specific effects of relaxation training, 2.) the processes that underlie those beneficial effects, 3.) the inability to infer causal relationships between relaxation and performance (Greenspan and Feltz, 1989), 4.) the infrequent use of manipulation checks, 5) the failure to asses long-term benefits of relaxation via retention tests (Gould & Uldry, 1994), and lastly 6.) the effects of relaxation on mediating variables such as mastery and self-efficacy.

Teaching Performance Routines

It is recommended that the attentional aspect (e.g. instruction of where to direct focus), of teaching performance routines in self-paced tasks, should be taught to assist performers in choosing relevant cues that are external versus internal (Wulf & McNevin, 2003). This paradigm has been widely studied by Wulf and colleagues. In predictable sport environments such as golf, performers have the ability to choose relevant attentional cues in an attempt to optimally perform. The internal/external paradigm investigates whether an internal focus such as their body (e.g. thinking about position of the elbow) versus an external focus is beneficial when executing. An external focus would be the effect, an athlete aims for, as opposed to actually focusing on, the motor task and interrupting automatic execution. An example of an external focus would be a

focal point on the fairway. This is important in creating the cognitive portion of the

intervention protocol because, while participants create their own cue words, the

researcher needs to be mindful that performance benefits are more likely to occur with an

external focus than an internal focus when skills are well learned.

<div align="center">MST with Competitive Youth Sport Performers</div>

It is important to consider theoretical and empirical support for intervention

research with youth sport performers, and there are practical considerations for

developing an intervention with this population. It has been pointed out that the majority

of the evidence in sport and exercise psychology has been generated with non-elite

athletes and recreational sport participants (Martin, Vause, & Schwartzman, 2005;

Whelan, Mahony, & Meyers, 1991). Whelan, Mahony, and Meyers (1991) suggest this is

primarily due to pragmatics:

> Low to moderate skill level subjects are more likely to be available, and are often
> more willing to participate than the limited population of elite athletes. In
> contrast to these elite athletes, volunteer participants from physical education
> courses or groups of recreational athletes allow the researcher great experimental
> flexibility and control . (p. 309)

In addition, there is a lack of studies examining MST with children and

adolescents (Williams, 2006; Wrisberg & Anshel, 1989). The majority of studies

considering performance routines were with elite performers assuming that the motor

skills were well-learned (Lidor, 2007). Since the early eighties, MST has been advocated

for children involved in sport by Danish, Petitpas and Hale (1992), Gould (1983), Smoll

(1984), Vealey (1988), and Weiss (1991). An estimated 62% of children between the

ages of 5-14 years are involved in organized sport. Gould (1983) argues that children will learn MST with ease as they learn and develop physical skills in sport.   Moreover, Vealey (1988) followed up Gould's claim by arguing that children are at a better place to learn MST because they have not yet internalized the dysfunctional responses to competition such as perfectionism. MST can positively impact children's moral development through sport performance because of the positive paradigm by which we teach self-regulatory skills to enhance confidence, remain focused, and goal directed. MST can also enhance learning in youth sports, make sport more meaningful, and enhance their enjoyment (Hackfort, Duda, & Lidor, 2005).

It is important to clarify the terms *youth sport* and *children* in sport. The term *youth athletes* usually includes both children ages 7-12 years and adolescents ages 13-17 years. While there is a paucity of research investigating MST in youth sport, anecdotal evidence (Hackfort, Duda, & Lidor, 2005) suggests that it can be beneficial to enhancing youth sport experiences.   Recruitment in this project will target competitive high school golfer ages 15-17; therefore, labeling them youth sport performers is consistent with the literature (Gould, 1983).

Most of the experimental studies have collapsed the age groups and involved both children and adolescents within the same study (Hackfort, Duda, & Lidor, 2005). One study examined two self-talk interventions on improving performance of figure skaters (ages ranged from 12-17 years M=13.4) (Palmer, 1992). The first group was asked to select key words to help correct specific elements of each figure they were practicing, use the key words during the session and as they walked through the figures when not on the

rink. The second intervention required the skaters to list key words to help them

concentrate on specific elements of each figure, and to trace the figure on paper while

saying the key words out loud. The study found that only the second intervention was an

effective strategy. This study was limited by using a pre-post design and did not provide

session by session information of the participants and procedures.

Ming and Martin (1996) corrected these limitations by adopting a SSD to examine

the self-talk package for improving performance of figure skaters. They formed two

groups, one of pre-novice and the other of novice-level competitive figure skaters aged

11 to 13 years. The self-talk program consisted of watching video footage of national-

level figure skaters using key words while performing, developing key words to aid

focus, and doing "off-ice walkouts" of compulsory figures. The investigators utilized

objective behavioral observations and confirmed that the participants used the self-talk

and that it did improve their performance during practices. A strength of this study is a

self-report follow-up a year later that found the skaters still using self-talk during

practices.

In addition to research studies, there is anecdotal evidence to suggest that PST

will benefit youth sport performers. Hackfort, Duda, Lidor (2005) suggest that anecdotal

support for forming PST programs for youth sport are as important as experimental

studies because there is such a lack of research with youth sport performers in general.

Gould (1983) first recommends building a "core" set of strategies to help determine what

psychological skills are needed, what characteristics of mental toughness are needed, and

to determine strategies or a game plan to proceed. Gould (1983) suggests that the skills

in the program must be developmentally appropriate:

> To be effective, the objectives and strategies identified for developing
> psychological skills must be appropriate for the developmental level of the
> athlete. It is essential that the developmental level of the athlete be considered
> since children of varying ages have been found to vastly differ in their ability to
> attend, comprehend, and retain information. (p.9)

A strength of the current study is that the researcher has built a rapport with this

team a year prior to the beginning of the project and has thus created a supportive

environment for MST. As suggested by Gould (1983), the coaching staff is supportive of

the project and is collaborating with the researcher to meet the needs of the athletes. In

addition, in the researcher's experience, the ability to focus on task relevant cues in golf

is a challenge of youth golfers as their sport has breaks in between each hole and a round

of golf can last up four or five hours. In addition, learning a pre-shot routine and

maintaining a relaxed state of mind and body has been of interest by the clients.

Therefore, this project not only addresses a lack of empirical support for MST in youth

sport, but it was also formed through consulting experiences in the target sport.

In forming a MST program for youth sport performers, Orlick and MacCaffrey

(1991) outline guidelines similar to Gould's (1983) program suggestions. They

recommend a flexible, individualized approach. They deem it important to spend time

with the athlete in advance prior to beginning consultation to build rapport and trust.

This foundation is where the consultant and athlete co-determine their needs, design a

program, and have ongoing open communication and provide feedback. Orlick &

MacCaffey (1991) recommend an environment where the parents are in support of MST and where the intervention takes a positive approach and the skills are developmentally accessible based on the age of the athlete.

Hackford, Duda, and Lidor (2005) offer insight in the direction that youth sport research should take in the future. First, existing research collapses age ranges and includes children of all ages in experimental studies and disregards the possible developmental differences (Gould, 1983; Orlick & MacCaffrey, 1991; Weiss, 1991). This assumes that all strategies are appropriate for all developmental stages. Secondly, there is a clear need for more experimental research in youth sport as our field currently draws from few that employed sound methodology and supplement our guidelines in creating a MST program for youth with anecdotal evidence. Lastly, with experimental research in its infancy, Hackfort, Duda, and Lidor (2005) recommend SSD inquiry to investigate MST with youth sports. A shortcoming of the design is its lack of external validity, but group comparisons can mask the potentially important, individual difference factors that early studies neglect to consider.

The focus of this study is to assist youth golfers in learning and systematically incorporating a pre-shot or between-performance routine for mental preparation. Self-awareness is a key part of optimal performance because athletes need to be aware of their own motivation, confidence, intensity, focus, and emotions before and during each training. Implementing a pre-shot can serve as a tool for youth golfers to mentally prepare for these critical factors, simulate tournament play at practice, and again enable

them to maintain attentional control. Therefore, this project looks at the effect of learning a pre-shot routine through the framework of enhancing players' ability to focus and to consider the benefit to performance.

<div align="center">Empirical Support for Routines in Golf</div>

Overall, the existing literature on performance routines is limited both in design and sample restriction because it is recommended that focusing strategies and relaxation are critical components to a performance routine (Boutcher, 1990), yet there is little empirical support to support this claim. Next, much of the existing literature is on performance routines is observational (Taylor, 2005) or compares an elite population to novice golfers (Cohn, 1990). This is problematic again because there is little support across performance levels, starting with competitive youth sport that supports the efficacy of the MST interventions that practitioners teach.

There are several different types of routines an athlete can use to prepare themselves for competition, and a performance routine is a focusing tool that will enable athletes to remain in control, focused, and to execute skills automatically. Performance routines have received little attention in literature, and yet practitioners teach a variety of performance routines (e.g. pre-performance, refocusing, and post-performance) to competitive athletes without supporting evidence that they improve performance. Performance routines are often used to enhance the ability to focus and remain in the present. Also, relaxation is an important component of a routine as it helps the athlete to remain at an optimal level of arousal prior to skill execution. Lastly, much of the

research has focused on elite performers and neglected to look at intervention efficacy with youth athletes (Williams, 2006). Therefore, the literature on MST with youth sport performers is reviewed and considered when creating the intervention protocol.

The type of sport and motor tasks involved in the target sport will affect whether implementing a routine will be helpful. Sport environments can be classified as open or closed. Open environments are ones where the sports have a faster pace and athletes' responses are not easily predictable. For example, a guard in basketball may know that he/she needs to set a screen to open up a shot for a teammate or quickly get open for a pass. On the other hand, a closed sport is one that exhibits more predictability or self-paced skills such as golf. Self-paced tasks allow the athlete to determine their speed, timing, and form of motor responses, and an athlete's actions are signal by external signals. Closed sports with environments that are stable and predictable have been used to examine routines (Taylor & Wilson, 2005). For example, golfers have up to three minutes to make decisions regarding a shot. Golf requires several self-paced tasks to be executed effectively to play a successful round, and thus making this environment appropriate and more feasible to study pre-shot routines. Therefore, in a stable semi-predictable environment an athlete would have ample time to execute a pre-performance routine. Because golf is an environment feasible for the study of MST interventions, several articles have been published considering the MST and performance.

The studies below provide a foundation for the need for and potential efficacy of performance routines (Boutcher & Crews, 1987; Boutcher & Zinsser, 1990; Cohn,

Rotella, & Lloyd, 1990; Beauchamp, Halliwell, Fournier, & Koestner, 1996; Bell, Skinner, & Fisher, 2009). Athletes are creating routines through trial and error and are not always systematically consistent in their utilization. It is beneficial to observe how elite performers use performance routines, but few studies have experimentally manipulated sport performers' routines in an attempt to examine the impact on performance. Three of the studies have been conducted and concluded positive findings on the routines' effect on performance in golf (Boutcher & Crews, 1987; Boutcher & Zinsser, 1990; Cohn, Rotella, & Lloyd, 1990).

The earliest of these studies was a group means comparison design looking at the effect of a pre-shot routine on putting performance (Boutcher & Crews, 1987). Four groups were created (male routine, female routine, male control, and female control). The male routine and female routine groups were trained on how to implement a pre-shot routine with specific cues and actions. The focusing cues were self-determined by the participants and aimed to help them focus on different parts of the skills. The behavioral components were number of practice strokes and verbal cues to initiate the putting task. They found that only the female routine group improved putting performance, but both the male routine group and female routine group increased their time between striking the ball and variability in the task. While this study experimentally examined the effect of routines, it was not conducted with competitive athletes. The participants were students enrolled in an introductory golf course in a university.

Another observational study looked at pre-shot routines among elite and beginning golfers on six 4-feet and six 12-feet putts (Boutcher & Zinsser, 1990). This study collected physiological measures of cardiac and respiratory rates as well as descriptive data about the nature of the golfers' pre-shot routines. They found significant differences between the elite and beginning golfers which were attributed to consistent routines. The elite golfers had longer, more complicated and consistent routines. The beginners were less consistent with their overt behaviors such as waggles and number of glances at the hole. Next, the elite golfers recorded significantly slower heart rates compared with the beginners immediately before, during, and after the 12-foot putt's ball strike and more time between shots. The elite reported that they had single external and internal cues as opposed to several analytical thoughts that the beginners reported. It was concluded that this finding was due to the elite golfers' tendency to use nonanalytical attentional focus.

Cohn, Rotella, and Lloyd (1990) looked at pre-shot routine adherence and performance of elite collegiate golfers. This study used multiple baseline SSD appropriate for applied research in exploratory phases of research. Treatment phases were staggered and introduced at different times. Their purpose was to develop more concise and systematic cognitive and behavioral routines prior to full swings. The components of the routine that were stressed consisted of: aligning the target, good posture, and consistent ball position. The cognitive components consisted of: strong decision making, commitment to club selection, type of shot played, and position of the target. This study found that adherence to the routine improved, but immediate

performance improvements were not found. However, the participants in this study

reported that the intervention had a positive effect on their shooting and putting

performance.   A strength of this study was staggering the start of each intervention

phase. Keeping participants at baseline while others received a treatment phase (and

experience performance change) can allow researchers to attribute performance change to

the intervention as opposed to practice effects (Kennedy, 2005).

The next experimental study was a 14-week cognitive behavioral experimental

design training program on motivation, preparation, and putting performance of junior

college students in an introductory golf course (Beauchamp, Halliwell, Fournier, &

Koestner, 1996). The students were assigned to one of three groups: 1) a group to

simply teach and practice golf putting, 2) an individual assessment phase that introduced

self-regulation, stress management, and concentration. 3) a motivation phase consisting

of goal setting for preperformance routines for golf putting. The final phase enabled

participants to integrate the skills learned. The control group received no instruction golf,

psychological skills, or otherwise. This study found that the intervention group reported

higher intrinsic motivation, were more consistent with the routines they formed, and had

better putting performance.

Lastly, Bell, Skinner, and Fisher (2009) considered the effect of solution-focused,

guided imagery on putting yips of three experienced golfers. An across subjects

multiple-baseline, single-subject design was used to evaluate the effects of this

intervention on putting yips. Observers were trained to record the number of yips across

three phases (baseline, treatment, and maintenance) with at least five tournament rounds in each phase. Each participant showed an immediate improvement in yips following the initial intervention phase and exhibited no yips on puts within 5 feet. The maintenance phases further suggested the intervention was a success as the improvement was still present after three weeks. A strength of this study is the design because a SSD was employed to consider intervention efficacy. Limitations were that they did not socially validate the intervention by including the participant's in the evaluation process, nor did they collect data on the impact of the imagery intervention on competitive golf performance.

Several useful conclusions can be deduced from these studies. First, it has been observed that elite athletes are more consistent with implementing their pre-performance routines and consistently take longer in between shots (Boutcher & Zinsser, 1990). Next, pre-shot routines have been shown to improve putting performance among students enrolled in an introductory golf class compared to a control group (Beauchamp, Halliwell, Fournier, & Koestner, 1996). Lastly, Cohn, Rotella, and Lloyd (1990) attempted to socially validate their study, and participants reported that, while they did not find performance improvements, they did feel that the routines were helpful. However, there were several limitations in these studies as well. First, the early studies were observational, and while it is important to make a case for the need to study routines (in that they are widely used), an observational design only allows for overt behaviors or the tactical components of a pre-shot routine and does not offer information regarding the psychological components of the performers' routines. Next, the experimental study by

Beauchamp, Halliwell, Fournier, and Koestner, (1996) found performance improvements, but this was demonstrated with participants in introductory golf students not competitive athletes. Therefore, the sample studies were restricted and did not include a wide range of competitive levels in sport which is needed. Moreover, there are ethical concerns with a group comparison design that offers PST interventions to individuals with evidence that these skills improve behavioral and emotional outcomes (Weinberg & Gould, 2003)while withholding these skills from other participants. Lastly, Cohn, Rotella, and Lloyd (1990) socially validated their study but the intervention phases focused more on the technical aspects of golf such (e.g, decision making and commitment to club selection) as opposed to the efficacy of commonly taught psychological skills (e.g, imagery, goal setting, or self-talk). Therefore, future research should investigate the mental or psychological aspect of pre-shot routines, with a SSD design, and consider competitive athlete populations such as youth sport that has been excluded from the existing research.

In summary, there are several limitations in the existing literature on intervention efficacy, and this is problematic because practitioners are applying MST with varying populations without adequate support that they improve competitive sport performance. Specifically, performance routines have been observed as being used by elite golfers (Cohn, 1990; Jackson, 2001, & Singer, 2003), but Williams (2006) states that youth athletes have not been adequately studied. Boutcher (1990) suggested an attentional control model which explains that performance routines can benefit athletes through improving their ability to focus on task-relevant cues. She suggests that cue words and

relaxation skills should be included when teaching performance routines. Therefore, the current study sought to address the methodological limitations cited (Greenspan & Feltz, 1989; Martin, Vause, & Swartzman, 2005), include youth golfers, and utilize the attentional control model as a framework to teach cue words, relaxation skills, and behavioral focusing strategies to assist participants in learning a pre-shot routine.

CHAPTER III

METHODS

Currently, there is little research on the impact of psychological skills

interventions on improving competitive sport performance, and even less is known

regarding interventions with competitive youth sport participants. Due to the small

amount of research in this area and the fact that sport psychology consultation takes place

on the golf course, the applied nature of this project incorporated a Single-Subject Design

(*SSD*) experiment to analyze performance change as a result of the intervention

(Kennedy, 2005). It was appropriate to begin this investigation with SSD inquiry which

allows for a critical analysis of individual effects (Kennedy, 2005; Hackfort, Duda, and

Lidor, 2005) in an applied setting such as sport. When teaching youth athletes multiple

psychological skills, the researcher was present to observe practice and tournaments, and

thus drew upon her reflections of interactions with participants as they implemented these

new skills. Therefore, this study involved mixed-methods, including SSD with

performance data (i.e. scorecards), and social validation with participants evaluating the

intervention via semi-structured interviews. The intervention tested the hypothesis that a

pre-shot routine would positively impact high school golfers' competitive putting and

approach shot performance in two ways. First, performance improvements were

analyzed through visual inspection of performance graphs and calculating a mean baseline reduction (MBLR). It was hypothesized that implementing a pre-shot routine before each shot would improve competitive putting and approach shot performance through reducing the total number of both approach shots and putts. Second, the perceived impact was addressed through post-phase interviews after learning each skill and through a final interview once the program was complete.

<center>The Investigator</center>

In a study involving qualitative inquiry such as the semi-structured interviews in this study, the investigator truly becomes a part of the study and the interpretive process (Creswell, 1998). When the investigator spent a considerable amount of time with the participants and observed their practice and competitive performance, it could have become difficult to remain objective. In this study, she observed improvements that are difficult to quantify. For example, during one tournament it rained and the temperature was 40 degrees. The opposing teams quit and the varsity team won by default after showing determination and perseverance to perform well in less than ideal weather conditions. These subtle improvements are often difficult to quantify. While the goal of scientific inquiry is to search for knowledge, subjectivity is brought to each study simply by the research paradigm that guides the investigation, and the researcher's experiences working with athletes and interest in the project. The investigator needed to be aware of her own biases, be able to clarify them in the beginning, and be able to monitor her behaviors, perceptions, and interpretations throughout the project (Creswell, 1998).

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During my third year as a Sport Psychology Consultant in training, I had the opportunity to work with a successful collegiate golf team that had previous exposure to sport psychology services. The coach required them to meet with me once and proceed on an as-needed basis thereafter. The number one golfer sat down in the consulting room and appeared very confident and relaxed. We spent some time getting to know one another. I was interested in why he had not utilized the sport psychology services the year before and asked him what would motivate him to give consultation a chance. He responded, "Show me it works!" When I probed further, he stated that he wanted me to show him it would help improve his performance. In other words, he wanted a concrete outcome such as shaving strokes off his average. It would have been helpful in that meeting to have had some empirical evidence to cite the benefits of Mental Skills Training (*MST*) interventions on improving competitive golf performance. More specifically, if I could have cited a study that found golfers improved putting performance by a certain percentage due to learning and implementing psychological skills, this client may have considered MST.

I have five years experience consulting with sport performers and believes in the need for and benefit of MST. I was, and still am an athlete who can attest to the psycho/social and performance benefits experienced after I learned and incorporated MST into my own athletic training for marathons. In addition, my experience working with collegiate athletes, and receiving favorable evaluations from athletes who reported that their mental training programs contributed to their improvement could have clouded my perspective in analyzing the data for this project. Specifically, it was important that I

did not look for improvements if they were not present. It was important I remain open to the possibility that the program may not improve the participants' performances. If this had happened, the participants' feedback would still have been helpful in evaluating the program and considering future research goals in intervention efficacy. I needed to remain as objective as possible so as not to falsely conclude perceived benefits. This is one reason for incorporating an external collaborator to assist with the data analysis of this project as well as a strategy to manage this process.   In addition, I discussed session notes with the individual who supervises my consulting. One way to do this was to audio record session notes after each practice and then reflect on all of the information the participants provided. If they offer information that is constructive or offer negative feedback regarding the intervention, this could be just as helpful in the formative evaluation as it can be instrumental in future programs with youth golfers. I practiced the same self-regulatory skills I teach clients. For example, during the interviews I focused on using process cues such as asking: Have they answered the question?   I also used thought stopping in an attempt to keep from processing or analyzing the interview before it is complete and thus staying present with each participant.

Participants

The original goal was to recruit five eligible female, high school golfers between 14-18 years of age to participate in this study. Inclusion criteria for this study were that participants (1) be enrolled in a local high school (freshman through senior year), (2) be a member of the varsity golf team, and (3) not have an established pre-shot

routine (i.e., systematic cognitive and behavioral strategies to aid in focusing before each shot). If they reported cognitive (e.g, self-talk, focus, or refocus cues) and behavioral (e.g, diaphragmatic breathing, systematic relaxation, or imagery) techniques, they were considered to have an existing routine and were excluded. If participants had reported using only one of the previously mentioned skills, they were not excluded. For example, if they reported taking a deep breath before each shot they could still participate in the program. However, if more than one psychological strategy was present than they were considered to have a pre-existing routine and thus excluded.

The number of participants was chosen based on the size of the competitive team and the amount of time the researcher needed with each participant to ensure the intervention protocol was effectively implemented. Junior varsity golfers were not chosen to participate in the study because they did not play in enough competitive tournaments for three phases of data collection to be completed. Furthermore, the researcher needed adequate time with each participant to meet after practice weekly, observe practice and tournaments with each player, and reflect on each case after the meetings. Therefore, five participants would provide sufficient data in the case that attrition occurs, there remains enough data to do a meaningful analysis and test the hypotheses. Thus, the goal was to recruit 5 eligible female high school golfers.

SSD allows an experiment to take place in the natural environment such as sport, even if four of the five participants dropped out of the study a meaningful analysis

would be possible with one participant taking the form of a case analysis (Kennedy, 2005). For a SSD study, five participants would enable the researcher to individualize their routines (i.e, make changes necessary for the routine to be effective), compare/contrast findings between participants, and be present at practice with the participants (Taylor & Wilson, 2005). This is a time consuming process for the investigator and more than five participants would have been difficult to provide equal exposure and feedback to the participants to ensure consistency in implementing the protocol.

Measures

The measures were created based on the existing body of literature on pre-shot routines and a suggested framework for guiding teaching routines in an attempt to better control focus (Boutcher, 1990), and on the researcher's experience working with golfers. Both quantitative and qualitative measures were collected in this study. Four sources of quantitative data were used: Competition and practice performance scorecards, mental skills scorecards, and adherence logs. Performance scorecards were the cards that golfers kept during each tournament round that record the total number of shots on each hole, including both approach shot and putts. Approach shots are the number of shots it takes a golfer to reach the green, and putts are the total number of shots on the green it takes the golfer to get the ball in each hole. The competition scorecards were completed during competitive high school golf rounds against neighboring schools in their district. The varsity team practiced on a local public golf course. All scorecards were collected at the

end of the season.   The mental skills scorecards were created to determine how well

participants learned the cognitive, behavioral, and relaxation skills taught in the

intervention and were also collected at the end of the competitive season (See Appendix

I). The adherence log was created as a manipulation check to ask participants to check

whether they executed their routine on each hole (See Appendix H).

Two sources of qualitative data were collected: Thought sampling data and

interview data.   The thought sampling technique was designed to gather information on

each participant regarding their thought process before, during, and after each shot (See

Appendix D).   Lastly, the interview protocols addressed aim 2 and served to create a

profile for each participant (e.g, pre-intervention interview) and to socially validate the

intervention after each phase of learning the mental skills and post intervention.

Quantitative Measures

Performance Scorecards in Practice and Competition

To measure performance change for each participant, practice and competitive

scorecards were collected at the end of the competitive season. Practice and competitive

scorecards were collected across approximately 19 to 21 tournament rounds.

Performance scorecards were collected (e.g, both total number of approach shots and

total number of putts per round) for every tournament played prior to beginning the

program to establish a baseline of performance for each participant. The practice

scorecards were provided by the participants, and the coach provided the competitive

scorecards at the end of the season for the competitive tournament rounds for each

participant. Approach shots were measured by recording the total number of approach

shots per round via the scorecard, and the putts were measured by recording the total

number of putts per round via the scorecard.

Mental Skill Scorecards

The mental skills scorecard measured how well the participants learned the skills

taught in each phase. Specifically, the card enabled them to record, on a likert scale,

from 1-5 how well they were able to: focus/refocus, control their thoughts, remain

physically and cognitively relaxed, remain emotionally in control, execute their routine

automatically, and feel in control. Participation in the MST program alone will not

improve performance; it is critical that the participants systematically practice and use the

skills acquired, and the intervention likely affected the participants ability to control their

thoughts, feel a greater control over attention, use their behavioral routine with intention

to refocus, and more consistently control their arousal levels or remain relaxed.

Participants completed a scorecard for each practice and tournament round played. These

data were collected via the mental skills scorecards at the end of the season and returned

between and scorecards.

Adherence Logs and Perceived Focus Logs

The last quantitative data source, the adherence and perceived focus logs, were

also collected at the end of the season. This data source asked participants to report

whether they adhered to their pre-shot routine prior to each shot and whether they were

able to focus on each hole and served as a manipulation check. This provided insight into

how often the participants practiced/utilized the skills taught in the intervention. Participants were asked to simply check "yes" or "no", if they adhered to their routine and were able to focus on each hole during the tournament.

Qualitative Measures

Thought Sampling

Before teaching focusing strategies and psychological skills, it was important to assess the participants' strengths and weaknesses (Nideffer, 1976a). In addition to the pre-intervention interview and observations, thought sampling offered further insight into the individual difference and focusing abilities of each participant. This technique was collected after the pre-intervention interviews were completed and prior to introducing the first skill (cognitive skill building). The researcher walked the course with each participant and requested that they say every detail pertaining to the shot out loud. Because golf requires a broad-external focus and then a shift toward a narrow-external focus, it was important to determine if the participants' individual tendencies were compatible with the attentional demands of golf. The researcher carried a digital voice recorder and collected the data while observing the participants playing three holes of golf. This technique further ensured that each participant did not have an established pre-shot routine and met the inclusion criterion. See appendix D for the thought sampling worksheet that was completed prior to collecting baseline measures.

Interviews

Participant interviews were used to create a profile for each participant (e.g, pre-intervention interview) and to socially validate the intervention (e.g, a semi-structured interview in between phases and a final interview). The pre-intervention interview collected objective information about each player, subjective evaluation of strengths and weaknesses with regard to focus and attention and were collected prior to beginning the intervention (See Appendix C). This began the process of building rapport (Williams, 2006) and creating a profile for each participant. Eccles' (1983) value-expectancy model was used as a framework to guide this interview. Components throughout the golfer's youth experiences were considered and summarized into a profile that gave the researcher an initial look at what the player valued, what motivated her, how she interpreted her early experiences, and what she hoped to accomplish as a result of her sport participation. This was an important component to implementing an effective intervention protocol. This profile was salient in understanding the participant's journey through their season. For example, if they noted a weakness in golf such as that they stress out easily and have trouble refocusing, then this would have been critical in interpreting their performance data and would be imperative for the researcher to know going into the cognitive cue phase. Also, it is something that the researcher can refer back to in the interviews after learning cognitive cues, behavioral awareness, and relaxation phases of the intervention and question participants whether their routine affected these factors.

A post-phase interview was conducted within one week of completing each phase of the intervention. The interview focused on the experience of the participant and provided data from the participants to use in formally evaluating the phase recently completed. The following questions were considered, and participant responses were audiotaped, and transcribed verbatim:

1.) Can we start by you telling me a little bit about what this was like for you during this phase?

2.) What was it like the first time you had to practice something brand new?

3.) How has it been practicing what you learned this week?

4.) Talk to me about your thoughts during our last workshop where you learned_____ (cognitive, behavioral, or relaxation) part of this study?

5.) What have you liked about practicing this skill?

6.) How about any things you didn't like about practicing it?

7.) Let's talk about any differences you have noticed in practice this week?

    a.) What was the effect of learning cue words?

    b.) What was the effect of learning the diaphragmatic breathing?

8.) Now what about possible differences in any tournaments you've played this week?

    a.) Why do you think that is?

    b.) Tell me more about that?

    c.) What's it like for you?

    d.) How does it feel?

e.) How have you been playing?

The final interview after completing the intervention differed slightly in that there were several questions that asked the participant to evaluate the intervention goals, procedures, and outcomes. The interview protocol listed above was adjusted slightly depending upon the unique information learned about each participant in the initial interview. For example, if a participant mentioned stress or performance anxiety, the research would have touched on this during the interview that follows the relaxation phase of the intervention. The final interview took place at the end of the participants' competitive season and included the following questions:

1.) So far we have talked specifically after each phase of the intervention. Can you reflect a little bit about how this whole process has gone for you?

2.) What was it like for you to participate in this study during your season compared to previous seasons?

3.) Can you talk a little bit about any changes that have taken place this season?

   a. How about your ability to handle your emotions?

   b. How about how you dealt with stress during the season?

   c. Can you talk about your ability to focus this season?

   d. And what about your ability to refocus after a mistake or distraction?

4.) The overall goal of this project was to look at whether learning and practicing a pre-shot routine would help your performance in tournaments. Can you talk about what you think about that goal?

5.) You participated in three phases to learn the skills to form a routine, can you give me your opinion on those different phases?

6.) The results after I analyzed your performance data were _____. What are your reactions to these findings?

7.) What recommendations can you make to improve this program for other youth golfers?

    a.) What other suggestions do you have to help me improve working with youth golfers as a consultant?

8.) Is there anything else that you would like to tell me about what this process was like for you?

9.) Is there anything else you would like to discuss about how it did or did not help your performance?

10.) Is there anything else in general that you would like to add?

Intervention Protocol

Establishing Baseline

The pre-intervention assessments consisted of a pre-intervention interview and thought sampling technique to assess the participants' strengths and weaknesses in terms of focus and attention in order to create a profile for each participant. Also, it was at this time that baseline performance measures (i.e, practice and competition scorecards) were collected from the coach via performance scorecards for all of the tournaments played prior to beginning the program. Baseline measures were graphed and visually inspected

to establish a stable pattern of behavior to compare the behavior change across phases. Each phase of the intervention lasted approximately an hour for a total of six hours for each participant.

Phase 1: Cognitive Skill Building

The first phase of the intervention was the cognitive phase during which each participant learned the importance of thought control, focus, and the potential for distraction when thoughts are mechanical, evaluative (of the process while executing) as opposed to automatic execution, or doubtful (Horn, 1992; Murphy, 2005; & Taylor & Wilson, 2005) (See Appendix E). A cue word worksheet was created to use during the education process of this stage. During this phase the researcher taught the importance of this skill, helped them become more aware of their current cognitive patterns, and created a systematic use of cue words. This process took place in the clubhouse of the golf course prior to beginning practice where we immediately moved to the course and practiced the new skill.

The importance of information processing and automaticity of skill execution were both also introduced. The participants were introduced to cue words through a worksheet. The researcher emphasized creating cue words that reflect the effect desired as opposed to the process of a shot because focusing on the process can inhibit the participant's motor execution (Wulf, 2003). For example, the participant's cue words could reflect desired emotional outcome such as "trust" or "patience." These cue words inhibit fear and doubt from slipping into player's thought process prior to their swing,

and it keeps them from over analyzing their shots. The researcher has observed both

situations with many golfers. To standardize the researcher's approach with each

participant she reviewed the pre-intervention interview results for anything important that

needed to be discussed with the participant during each phase. For example, if a

participant had reported that she stressed out easily and her thoughts raced, then the

utilization of cue words or having a specific cue word for this potential situation may

have increased the likelihood that her routine would have been effective.

Phase 2: Behavioral Skill Building

Next, the behavioral component of the pre-shot routine asked participants to

become aware of the behaviors executed prior to each shot and to consider how these

behaviors could be used intentionally as a focusing tool. Both the script for this session

and worksheet template are provided in Appendix F. This phase served more as an

awareness tool than truly teaching a new skill. It is the researcher's experience that most

athletes already have some sort of behavioral routine because behaviors can be

observed/identified in professional athletes on television. However, implementing their

routine with intention to focus or clearing the mind before each swing is a different task.

During this phase participants were asked to discuss what they do before each shot, and

what part of that process they wish to use as their behavioral cue. This phase took place

in the coach's classroom after practice.

Phase 3: Relaxation

Next, the relaxation phase of the program taught the importance of relaxation being incorporated into their pre-shot routine. Specifically, deep breathing was taught, and guidance was provided in incorporating relaxation into the participants' pre-shot routines. The script and worksheet for this session are provided in Appendix G. Learning the importance of deep breathing can serve several purposes. It can clear the mind, oxygenate the muscles, and keep a golfer at their optimal pace as they approach each shot. This phase of the intervention was not taught on the golf course; rather it took place at one of the participants' houses to ensure a quiet relaxing environment for teaching the skill. The participants learned the basics of diaphragmatic breathing, walked through an exercise to understand the physical indicators of shallow versus deep breathing, and a worksheet was supplied for their use.

The intervention phases were cumulative. This means that with each new skill learned, a portion of the workshop was allocated to discussing how the participant planned to incorporate the new skill into their own pre-shot routine. That is, after the new focusing technique was introduced the researcher collaborated with the participant to determine how it best fit into her routine. For example, one participant may choose to start with a deep breath prior to her cue words, and another participant may choose multiple cue words and finish the routine with a deep breath prior to playing the shot. Participants were encouraged to practice the skills learned together (e.g., cue words and

behavioral cues before learning the deep breathing). Thus, the routine was developed as they learned these psychological skills as opposed to a stop/start introduction of skills.

Post- Phase Interviews

The post-phase interviews provided information from each participant to socially validate the intervention.   Interview data was collected after each phase with the purpose of identifying any adjustments necessary as the intervention progressed in an attempt to ensure effectiveness for the participants as well as to evaluate each specific skill (See page 57). For example, if the first participant reported that the worksheet used to teach them to control their self-talk and implement cue words/phrases was difficult to understand, adjustments could have been made for that participant as well as the remaining four participants to ensure maximum benefit on part of the participants. Kennedy (2005) contends that this flexibility is a benefit of using SSD in applied research. He does, however, suggest that a detailed log of any changes to the program be documented by the researcher to ensure internal validity of the outcomes. Next, participants were asked to consider what they liked and disliked about each new skill and any potential changes to practice or tournament performance after learning each new skill.

Final Interview

The final interview also asked participants to socially validate the overall program (See page 58). This differed from the between-skill interviews that asked them to evaluate each skill. This protocol asked the participants to reflect on the entire program

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and to evaluate the program goals, procedures, and outcomes of the intervention (Martens, 1983). Table 1 displays the original order of data collection in the intervention protocol.

Adjustments made to Intervention Protocol

Initially, the program was designed to take place by teaching the participants each skill individually. However, the program did not begin until the participants' had completed half of their tournaments. Therefore, one of the changes to the program protocol was to teach the MST in group sessions as opposed to individually. All participants started the program at the same time as opposed to staggering the start of each phase. In addition, the participants communicated a need for relaxation training at different times. To ensure that the needs of the participants were met, the researcher reversed the cognitive and relaxation phases. This is further discussed in the discussion section (pg. 168). Table 1 displays the revised intervention protocol.

Planned Protocol	Adjusted Protocol
Step 1. Collect Baseline Measures	Step 1. No Changes
Conduct Pre-Intervention Interviews	Step 2. Josephina-Relaxation
Collect Thought Sampling Data	Mervil & Barbara Cognitive
Step 2. P1 Relaxation Phase	Post-Phase Interviews
Post-Phase Interview	Step 3. Josephina Cognitive
P2 & P3 Remain at Baseline	Mervil & Barbara Relaxation
Step 3. P1 Behavioral	Post-Phase Interviews
P2 Cognitive	Step 4. All 3 as a group Behavioral
Post-Phase Interviews	Post-Phase Interviews
Step 4. P1 Relaxation	Step 5. Final Interviews
P2 Behavioral	
P3 Cognitive	
Post-Phase Interviews	
Step 5. P2 Relaxation	
P3 Behavioral	
Post-Phase Interviews	
Step 6. P3 Relaxation	
Step 7. Final Interviews	

Table 1. Adjusted Intervention Protocol and Organization of Data Collection

Originally, five participants were recruited to participate in this program. Two participants decided not to continue after the first workshop. These two individuals were seniors and had additional responsibilities (e.g, SATs and college applications) aside from their extracurricular participation in golf. This made it difficult to commit to the additional time to meet the student researcher required on weekends to fulfill the program requirements. Therefore, these two girls were allowed to attend the group workshops to learn each skill, but were not required to meet on weekends, complete the MS scorecard, or interviews. Ethically, there was no reason to not offer the educational skill building to the two that decided not to complete the study.

Design

The current study utilized a mixed methods (i.e., qualitative and quantitative data), single-subject design (i.e., repeated acquisition) across 3 phases. The reversibility of behavior was not in question with learning processes such as teaching mental skills. A repeated acquisition design permitted the analysis of skill acquisition under different learning conditions (Kennedy, 2005). This design allowed for (1) the use of multiple equivalent learning tasks, (2) when acquisition could be studied from one skill to another, and (3) under at least two experimental conditions. A repeated acquisition design was chosen because it is difficult, and undesirable to reverse the effects of learning (Kennedy, 2005). Therefore, a return to baseline trend was not desired, nor expected with this program.

Data Analysis

Will a pre-shot routine improve high school golfers' competitive putting and approach shot performance? This research question was answered in two aims. The first aim considered the quantitative data, and analyzed participants' scores through visually inspecting performance on graphs and calculating MBLR for potential performance changes. It was hypothesized that once the skills were systematically practiced, the participants' ability to focus would improve resulting in putting and approach shots declining with a gradual negative slope which would indicate performance improved.

The second aim of this study was to socially validate the intervention by incorporating the participants' evaluation of perceived impact of the program on performance through qualitative interviews.

Aim 1: Performance Data Analysis

The total number of approach shots and putts per round were graphed and visually inspected for performance changes. The results of an SSD experiment are determined by comparing the observed data to the expected trend as a result of the chosen design (Kennedy, 2005). It was expected that a gradual decline in the trend of the data with a negative slope would result. This was determined via visual inspection of the performance graphs by both the researcher and the external collaborator. They inspected the graphs independently, and then reviewed them together to ensure that an agreement was reached. The level and trend (slope and magnitude) of the data were examined. Level refers to the average or mean of the data within a condition or phase. Trend was

determined by the positive or negative slope and magnitude (low, moderate, or high) of

the data. Lastly, the variability of the data between phases determined change in

performance.   After the participants' pre-shot routines were practiced and consistently

implemented, the researcher expected the performance scores (both approach shot and

putting performance) to decline with a negative slope to a lower magnitude or variability.

A repeated-acquisition design study considers the variable nature of learning.

Performance by nature is variable, and many factors affect performance (Murphy, 2005).

Therefore, once a relatively stable baseline is observed and phase 1 began, data may

continue to fluctuate slightly. Hrycaiko and Martin (1996) outline five criteria for

visually inspecting data changes:

1.) Baseline performance is stable or in a direction opposite to that predicted by

the program.

2.) The effect is replicated within and across participants.

3.) Fewer overlapping data points exist between the baseline and program points.

4.) Effects occur temporally close to the beginning of the program, and

5.) A larger effect size exists in the program period as compared to the baseline.

Hrycaiko and Martin (1996) make a case that visual inspection should not be

considered

reliable unless an external collaborator is trained to visually inspect the graphed data with

the researcher. The researcher trained the collaborator to inspect the graphs by first

defining level and trend. Then the collaborator walked through some example graphs to

become familiar with this process. Lastly, the collaborator and researcher first inspected the performance graphs independently and then met to compare assessments.

Next, the impact of change in performance was calculated by computing a mean change in baseline reduction (MBLR) (Hrycaiko & Martin, 1996). Another way to define MBLR is as a quantitative measure of performance change following treatment. This statistic was calculated by subtracting the treatment mean from the baseline mean, dividing by the baseline mean, and multiplying by 100. For example, if P1's baseline mean was 42 strokes after 5 rounds, and his treatment mean is 40 strokes after 5 rounds, the MBLR would be 42-40/42*100= 4.76% performance change. Lundervold and Bourland (1988) used the MBLR to examine the effectiveness of treatments of aggression, self-injury, and property destruction. They recommend that investigators have at least five data points in each phase of a study to properly use this technique.

Mental Skills Scorecard Data Analysis

The mental skills scorecards were used to calculate the mean score per round for each of the 7 constructs; focus, ability to refocus, relaxation, emotional control, cognitive control, feeling in control, and automaticity to determine what the participants learned through the intervention. The mean scores were graphed along with the performance data and visually inspected for changes in each of the 7 constructs. Similarly to the performance data, it was expected that while the participants learn and hone these new skills, skill execution will vary until they have been systematically practiced. Indeed, it is expected that improvements in mental skills are the key to improved performance. Then,

improvements in mental skills were expected to be clearer and stronger than the performance improvements. It was expected that a gradual positive trend in the data would result indicating these psychological factors improved. MBLR will also be calculated for the mental skills scorecards and analyzed as described in the section above.

Adherence Data Analysis

Lastly, the adherence and perceived ability to focus logs were used to calculate a measure of adherence to the routine and percent focused. For example, if a participant played 9 holes of golf and was able to implement his routine 7 out of those 9 holes, the percentage of adherence would be 78% (7/9). This was important when assessing performance change and the overall effectiveness of the program because assessing adherence was a manipulation check to ensure that participants were utilizing their newly learned skills.

Aim 2: Social Validation

Pre-Intervention Interview Data Analysis

The thought sampling data was analyzed to (1) ensure that the participants met the inclusion criteria and did not have a pre-shot routine, (2) determine the attentional strengths and weaknesses of the participants prior to the intervention, and (3) assist the researcher in teaching the skills to each participant. Their thoughts were placed into a grid as recommended by Nideffer (1976a) along two dimensions: width (broad-narrow) and direction (internal-external). As previously discussed, golf requires the majority of

the player's focus to shift between broad-external when considering the course conditions and layout of each hole to narrow-external as they plan their shot and choose their club. If the player's thoughts are along these two quadrants, they will be considered compatible with the attentional requirements of the game and thus be evidence of strong focusing potential. If their thoughts are not primarily in these quadrants, the researcher will have more detail to aid in individualizing the intervention phases and thus increase the likelihood of the program success. The external collaborator checked the reliability of the researcher's analysis of the thought sampling.

The pre-intervention interviews were critically important in aiding the researcher to simply get to know each participant and begin creating a profile. Building rapport and establishing trust with participants affects how successful a consultant will be in helping athletes implement and make adjusts to the program (Williams, 2006). The pre-interview protocol was then adapted from the researcher's intake interview; this is an adaptation of Eccles (1983) value-expectancy model. This model allows the consultant/researcher to glance into the athlete's early sport experiences, to see how they were introduced into sport, by whom, and to see what those early experiences meant to them. Next, motivation for playing golf was considered. Learning a golfer's motivation will foreshadow how much effort she will put forth in practice and possibly the intervention. For example, if a participant discloses that she plays to have fun and be around her friends, she may practice with less intensity than her counterparts. Another player may mention that she strives for excellence and hopes to play at the collegiate level. In the researcher's experience, this player will most likely work hard in practice, comply with

the requirements of this study, and be open to feedback. A profile was created for each player, and the researcher made note of specific things that will be important to visit throughout the three phases when teaching the new skills. This enabled her to provide individualized examples that will be salient to each participant and increase the likelihood that the routine will be effective.

When considering qualitative data, it was important to look critically at the data while still allowing the themes and meaning to emerge from the data. This was a process that required good listening skills and reflection after each interview. The investigator was on the golf course daily with the participants and at every tournament within driving distance. This ensured that she was a part of the process, was present to make observations, and it enabled her to utilize the participants' feedback in summarizing their interviews into a case summary for each participant. She digitally recorded session notes after each intervention phase, practice, tournament, and even salient conversations with the participants and then further reflected on this information.

Post-Intervention Interview Data Analysis

The post-phase and final interviews were analyzed similarly. The second aim of this study was to socially validate the intervention by investigating the participants' perceived efficacy of the program through interview data. Richards (2005) outlines a process that is helpful with data analysis. First, a description of the intervention and goals of the study were described. This provided a context in which the intervention took place and details necessary to comprehend this process. Data were categorically

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aggregated by extracting issue-relevant topics from each transcript. Then, direct interpretation was employed to critically consider the meaning of the categories. Lastly, natural generalization is the process of telling a story of what people can learn from this meaning. Richards (2005) describes a lens as an analogy. The investigator zooms in on the data to remove topics, words, and/or quotes that represent issue-relevant topics (categorical aggregation). Then the investigator zooms back out and allows themes to emerge from these categories. Lastly, meaning is assigned by connecting these themes with possible causes and relationships among each participant and between participants. It was expected that participants will perceive the intervention to have been beneficial and that they will provide feedback too which will guide future research and practice in performance routines.

<center>Procedures</center>

Prior to this study, the Institutional Review Board (IRB) at a south eastern university approved the intervention protocol necessary to begin research with human subjects.

After the team roster had been formed, the researcher discussed the details of the study with the youth golfers (N=5) at the clubhouse of the practice course. At this time inclusion criteria was outlined, and the golfers were asked to volunteer, if they were interested and met those criteria. Those 5 student athletes who were interested and met the criteria were sent home with the parental consent form for parents to review and allowing adequate time to contact the researcher and discuss any questions or concerns

(See Appendix A). Once that form had been signed and returned to the coach, the

researcher conducted a meeting with the participants whom expressed interest in the

project and she then obtained informed consent from the student athletes (See Appendix

B). The meeting highlighted that the intervention teaches a psychological skills

development approach to enhancing performance. Those who volunteered and signed the

consent form received a copy. The others who did not volunteer would still benefit from

the workshops conducted separate from the study.   At this time those five were asked to

list what they do specifically prior to each shot. It was expected that each would name

strategies that are useful in assessing the distance, lie, hazards, and club selection of each

hole. This is part of the strategy that they have been coached to do prior to each shot. If

they listed self-talk or cognitive strategies or relaxation techniques such as visualization

or diaphragmatic breathing, they were excluded from the study as they would not fit the

inclusion criteria.

The next step was to conduct the pre-intervention interview. A specific time with

each player was scheduled. This interview assisted the researcher in simply getting to

know the players, their strengths, weaknesses and preconceived notions about

consultation. It also gave her some insight into the things that she may need to be aware

of as the season progresses. Because performance is variable by nature, there are other

things that affect players' performances. For example, the researcher has had clients tell

her that when the semester is in full swing they tend to stress out easily and withdraw

from friends and family. If participants in the study had similar experiences, the

researcher would have asked questions regarding coping and stress management during

the interviews to monitor possible extraneous influences on performance. Therefore, the interview protocol could be adjusted after completing the pre-intervention interview. See Appendix C for the pre-intervention interview protocol. Immediately after the interview, the researcher and participant moved to the practice golf course to collect the thought sampling data. The participant was instructed to play as usual but to verbalize each thought out loud. Specifically, they were asked to say each thought prior to, during, and after each shot. These data were digitally recorded, and the researcher took notes on each hole. See Appendix D for the thought sampling worksheet.

Next, the researcher collected the baseline performance measures for the project. Both performance (total approach shots and putts per round) and the mental skills scorecards were collected for five practices and five tournaments as baseline measures. Then the participants were randomly assigned to stagger the start of the intervention phases. Multiple baseline measures (i.e., approach shots and putts) were collected prior to beginning the program for practice records and at least five tournaments. Five tournaments were chosen because five data collection points was collected after each phase (cognitive control, behavioral awareness, and relaxation) of the intervention. The intervention phases were introduced to each participant with a staggered start. After the first participant (to be determined by lottery) completed the baseline phase, she began phase 1. (i.e. Cognitive control) while the other four participants remained at baseline. After participant one completed phase 1, completed the post-phase interview, and performance change could be observed, participant two began phase 1. This process is recommended because if the other participants' performance scores remain stable at

baseline and participant one's score change or improve than the results can be attributed to the intervention (Kennedy, 2005).

Mental skills scorecards and adherence logs were collected at the end of the 10 week data collection. These logs required participants to record how well they were able to adhere to and implement their pre-shot routine (See Appendix H & I) and for them to note their ability to focus. This log asked them to check off whether they were able to implement their routine on each hole. The participants were instructed to check "yes" or "no" after each hole when they record their score card. Once the intervention was complete, and all quantitative data were collected, the final interview was conducted. Each participant had the opportunity to again evaluate the intervention. Questions regarding intervention goals, methods, and results were considered.

Data reduction and verification were ongoing processes throughout the data collection and analysis of this intervention. Kennedy (2005) suggests that with SSD this process starts when data collection begins and extends to after the intervention is complete. He further suggests that SSD allows for flexibility within the design if the researcher notices small changes need to be made to ensure benefit to the participants. For example, if P1 indicates that the worksheet for cue words is difficult to understand, minor changes can be made to benefit the remaining participants and minimize additional confusion.

Lastly, the final step of this intervention was to offer the intervention to the remaining youth golfers once the intervention was complete. There are ethical concerns

with withholding MST from sport performers who do not meet the inclusion criteria (Greenspan & Feltz, 1989). Therefore, even if they did not meet the requirements to be involved in the intervention, they would have still had the opportunity to learn the 3 skills. This step also took place in the clubhouse of the practice golf course, after the intervention was complete, and all data were collected.

Validating Data/Member Checks

Formative Evaluation

A formative evaluation of this intervention required several sources to evaluate the overall program integrity to ensure that the student researcher accurately and reliably implemented the protocol with each participant. First, the intervention worksheets and the process were reviewed and evaluated by both the head golf coach and external collaborator. Next, the researcher digitally audiotaped session notes after each intervention phase, practice, and tournament to assess and document the process and her ability to implement the overall program. An external collaborator reviewed each set of intervention phase session notes and considered whether the protocol was followed as proposed with each participant. Third, the pre-intervention interview provided info on the participant's early experiences in sport, their motivation for playing, and perceived strengths and weaknesses. This information aided in the researcher's ability to teach the participants attention and relaxation skills during the intervention and to provide context for interpreting the results. A post-intervention interview asked the participant to consider the overall objectives of the program, methods, their performance results, and

any insights for improving the program for future athletes (Martin & Hrycaiko, 1983; Martin, Vause, & Schwartzman, 2005).

Trustworthiness

To ensure a valid depiction of the participants' experiences, three of the methods suggested by Creswell (1998) were implemented: Procedural reliability check, clarifying researcher bias, and a member check of the interview transcripts. For the procedural reliability check, an external collaborator reviewed and evaluated the integrity of the program's implementation. The external collaborator was a recent graduate from the same program. He had completed his Master's degree and is currently working in private practice with the researcher. The collaborator reviewed session notes and examined the topics covered to ensure reliability across sessions and participants.

Next, clarifying researcher bias for the reader allowed the researcher's to locate her position in the study. The researcher attempted to locate herself with a balanced perspective. She has enough experience and expertise to conduct this study as the primary investigator. She has 100% of the hours (400) necessary for eligibility to apply as a certified consultant (CC-AASP) upon graduation. In addition, she has experience as the primary investigator of qualitative and quantitative research projects. Therefore, she was credible on psychological skills interventions as well as the methodology employed in this study. However, it was important to locate her subjectivity to ensure that she did not 'look' for perceived benefits on the part of the participant. Because she was so close to her work and believes in the potential impact on performance, it was critical that she

remain as objective as possible to the participants' responses. To do this she asked for

clarity of responses, summarized responses to ensure understanding, and asked for more

detail when conducting the between phase and final interviews with each participant.

This helped ensure that the experiences of the participants were accurately conveyed.

The researcher reviewed her concerns with her AASP certified supervisor in an attempt

to keep biases from clouding her perspective when interpreting the data for this research

protocol.

Lastly, a member check was performed to ensure that the participant's responses

were accurately represented. Once the final interview had been transcribed, the

transcriptions were handed back to the participants. The participants were given a week

to review the transcriptions for accuracy and to have the opportunity to change any of

their initial responses or provide clarification. This technique further included the

participants in the evaluation process as well as provided a member check of the

interview data.

CHAPTER IV

RESULTS

The purpose of this study was to investigate the potential benefits on putting and

approach shot performance from learning and consistently implementing a pre-shot

routine. It was hypothesized that implementing a pre-shot routine would improve both

approach shot and putting performance of female high school golfers. First, performance

data was collected, graphed, and analyzed for potential performance changes.

Performance improvements for approach shot and putting performance were found for 2

of the 3 participants through visual inspection of the performance graphs and through

calculating a mean baseline reduction score (*MBLR*). Second, a social validation

component was included asking participants to evaluate the perceived impact on putting

and approach shot performance through interviews. The social validation component

revealed the program to be beneficial for all 3 participants with relaxation as the most

helpful skill followed by the behavioral and cognitive components.

This section will present the findings for aim 1 (performance data) and 2

(interview data). An individual profile and analysis of each participant; Mervil, Barbara,

and Josephina will be provided. A profile summary is then provided for each participant.

The profile is followed by performance findings: performance graphs, MBLR,

adherence, and mental skills scorecard data to answer aim 1. Next, the interview findings

for each participant are provided to answer aim 2 followed by a participant summary. Finally, a complete summary of the findings across all three participants is offered.

Participants

The program took place over the course of 10 weeks of a high school golf season. Nineteen to twenty-one rounds of golf were collected to analyze potential performance changes. The three girls who did complete this study ranged in age from 14 to 17 years old. Two were seniors (Josephina and Barbara) and one was a freshman (Mervil). Josephina was the number one player on the varsity golf team. Barbara played the number four position followed by Mervil at number five. All three girls were right-handed golfers, and only Josephina planned to pursue playing golf in collegiate. She was accepted to the University of her choice on a golf scholarship.

Case Presentations

Participant 1: Mervil

Profile (Pre-Intervention Interview)

Participant 1 chose the pseudo name Mervil and will be referred to as Mervil through the remainder of this paper. She was a 14 year old, right handed, freshman who played the number 5 position on the varsity golf team. Mervil had played golf when she was little with her dad but had started playing competitively within the last two years. She had also played soccer and basketball. She tried out for the golf team in the seventh grade after taking golf clinics to improve her skills. She described her early motivation

for playing golf as, "playing for fun and to get exercise." Golf instructors encouraged

Mervil to continue pursuing golf at a competitive level because she had a good golf

swing, and this further motivated her because she felt that this was a sport in which she

could excel. Mervil described her motivation as having changed slightly from her

previous focus on having fun to, "At first I didn't care. Now I care and want to get better

for next year and the next year." Her shift in focus from having fun to continuing to

improve motivated her to expect to contribute to the team this season. Mervil's other

four teammates were seniors, and she wanted to feel as though she was contributing to

the team's overall performance and also to qualify to play in the state tournament.

Mervil described her strengths and weaknesses as a golfer in this interview. Her

main strength was her work ethic. She utilized practice time to the fullest, took golf

lessons on the weekends, and practiced with her father. It was observed that Mervil

prioritized her school responsibilities first, and then headed to the golf course every

weekend to get in extra practice time. She described her weaknesses to be her inability to

remain present; she experienced difficulty focusing when she was playing really well or

when she was playing poorly. She further discussed that she became frustrated with

herself when she did not perform well. This would affect her club selection, meaning,

she would not be confident in club selection following these situations. Lastly, Mervil

had a tendency to focus on the score further removing her attention from task-relevant

cues.

Next, Mervil described her optimal performance as well as her poor performances. When playing well, she would hit the ball solid and felt a similar level of relaxed as when she was in a practice environment. She specifically said that she did not feel this way in matches. When playing poorly she would focus on the score and get frustrated. Mervil had high expectations of performing her best at all times. This would result in getting angry during matches and causing a detriment to her performance. Lastly, she described that when she played poorly, she would feel fearful and doubt her skills. She would think about the worst case scenario that might happen on the upcoming shot. For example, she would fear that her tee shot would go into the woods or a creek.

Mervil described her focus on task-irrelevant cues (self-doubt, fear, and the score) leading the researcher to conclude that the planned program of learning cognitive, behavioral, and relaxation skills would benefit Mervil. She also had very high expectations for her performance as a freshman comparing her performance to that of returning seniors with more golf experience. This thought process often resulted in an inability of Mervil to manage her emotions, as she stated that she became frustrated with herself when not playing the way she expected. This process further distracted her from the technical aspects critical to performing well. Therefore, a MST program teaching Mervil focusing strategies was appropriate in an attempt to help her perform optimally.

Thought Sampling Data

Mervil's thought sampling data revealed three interesting observations about her golf game: she had no mental routine to prepare for each shot, she evaluated her shots at

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inappropriate times (e.g, before finishing the hole), and she did not have a consistent

technical routine (e.g, judging distance, lie, and rationale for club selection). First, it was

evident that Mervil met the inclusion criterion because she did not have a consistent

mental routine to ready herself prior to each shot. In addition, it was evident very quickly

that Mervil was evaluating her performance within seconds of striking the ball. She

would express frustration and disapproval of the shot as opposed to looking for her next

play. This is a strategy that her coach spoke of daily: to focus on what is controllable.

He suggested players look for a positive way to play each shot no matter where it landed.

Next, Mervil was not consistent with her technical routine for golf. She did not have a

routine for the order of her decision making and strategy for each hole. Therefore,

Mervil met the inclusion criteria. She did not have a consistent mental routine that

guided her golf game.

The order of the workshops was initially planned to teach cognitive, behavioral,

and relaxation skills. After completing the cognitive workshop and meeting with Mervil

at practice, it became clear that it was necessary to switch the order of the behavioral and

relaxation phases. Meaning the workshops were reordered to be: cognitive, relaxation,

and behavioral skills. Mervil was extremely shy and reserved, and at first it was difficult

to get her to communicate her needs. After the first scheduled practice after completing

the cognitive workshop, Mervil was more comfortable meeting individually. She

appeared more relaxed and communicated more than in a group setting. The cue words

she chose were relax, commit, and smooth. As suggested in the workshop these words

represented the effect she desired after each shot (Wolf, 2003). It appeared that there

may have been an interaction between the self-doubt and fearful thoughts Mervil was experiencing which resulted in muscle tension that affected her ball striking. During an interview she mentioned that she "tended to get tense and didn't hit good shots." This was most likely a function of her thought process and emphasis on the score. Therefore, it appeared that Mervil would benefit from learning the relaxation skill prior to the behavioral strategy. The researcher felt this may also make performance improvements more visible when analyzing her data.

Performance Data

Figures 1 illustrates Mervil's putting and approach shot performance. Upon examination of Mervil's performance graphs her putting performance did not appear to improve, but an improvement in approach shot performance was observed. The MBLR indicated a 1.41% improvement in putting performance and 15.21% improvement in approach shot performance.

Points 1 through 9 represent the baseline data or tournaments played prior to beginning the program. Her putting performance remained variable and difficult to visually inspect for performance changes. No clear trend (positive or negative) is present for Mervil's putting performance. At points 11, 14, and 21 performance appears to be lower than baseline representing temporary improvements, but again there is no clear trend. As previously stated Mervil had high expectations to perform well and contribute to the overall team performance. Once conference tournaments and regionals (points 15-18) began, Mervil's performance varied more. This spike is evident in both approach

shot and putting performance data. While the putting performace did not seem to reveal a

negative trend in her performance, the MBLR indicated a very small improvement of

1.41%. This means that her putting performance improved by one percent.
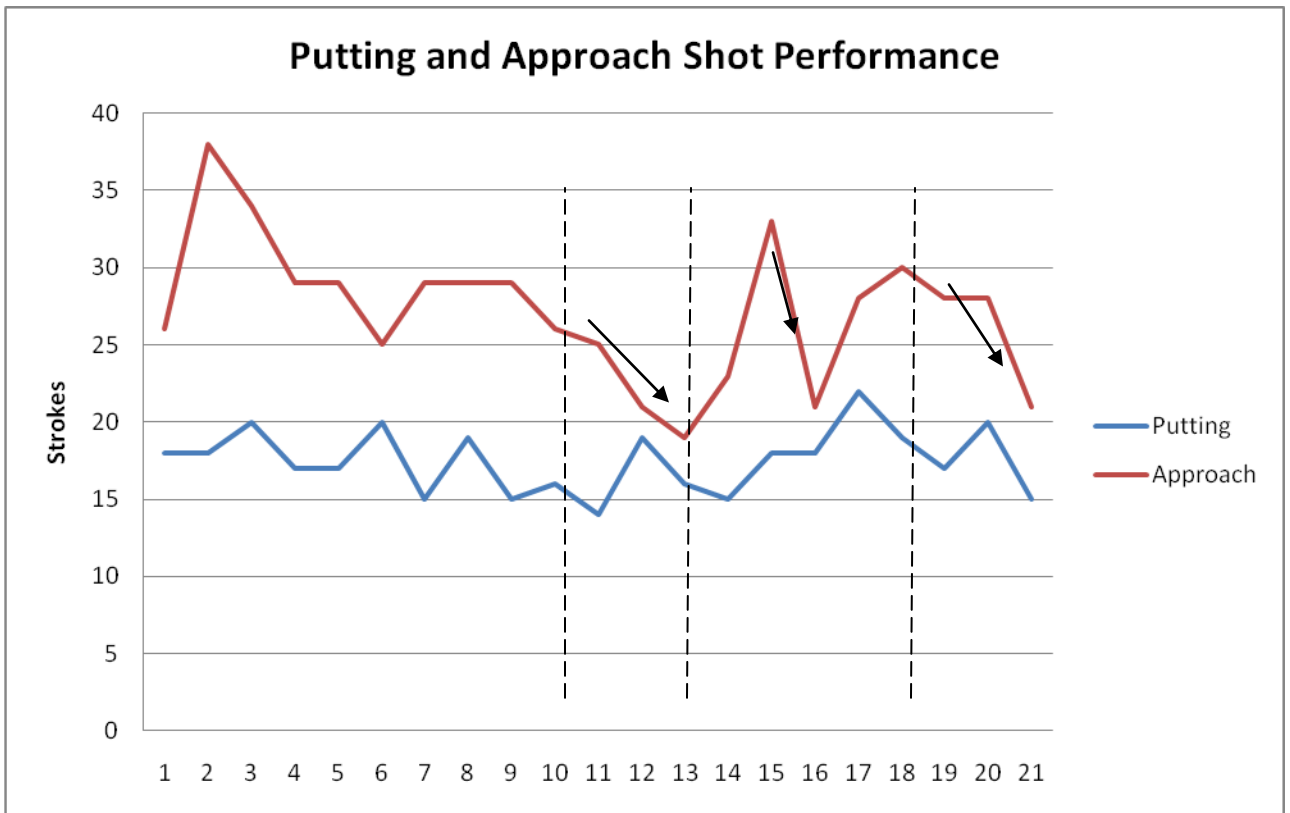
Note: Baseline data points 1-9; Cue words data points 10-12; Relaxation data points 13-18; and behavioral
focusing strategy data points 19-21. Trend lines were added to show the negative trend in Mervil's
approach shot performance compared to baseline.

Figure 1. Mervil's Putting and Approach Shot Performance

Approach shot performance is also moderately variable, but there is an immediate

improvement in performance experienced after the cue word workshop (points 10-12).

Once the intervention started there is a gradual negative trend in her approach shot

performance with moderate variability. Similar to Mervil's putting performance, during conference play and regionals, her performance varied more than previous tournaments, but an improvement in approach shot performance is visible. The MBLR revealed a 15.21% improvement in approach shot performance.

Adherence and Ability to Focus Data

Mervil reported 78% adherence to her routine. This was calculated by dividing the total number of holes that she reported having used her routine (77) by the number of holes played (99). In addition, she reported an ability to focus on 84% (83/99) of the holes played.

Mental Skills Scorecard Data

Each participant was asked to complete the mental skills scorecard for the 3 previous tournaments prior to beginning the first workshop in order to establish a baseline for each of the seven constructs. The MBLR calculations did not reveal any improvement for Mervil on the seven constructs. In the post-phase interviews she revealed that she felt her improvements. This will be discussed later in the interview analysis. Figure 2 represents the average for each of the constucts on the mental skills scorecard across Mervil's tournament season.

No positive trend in the graphs was observed for Mervil, suggesting no change in her ability to focus over the course of the program. Points one through three represent baseline ability to focus prior to the program. Similar to her performance data, there is

greater variability in her ability to focus during the conference and regional matches.

Therefore, visual inspection of the graphs (both for putting performance and mental skills

scorecard) is inconclusive, leaving the social validation component important in

evaluating the potential perceived impact on her ability to focus.   Table 2 represents the

descriptive data for Mervil's MS scorecards and competitive performance.
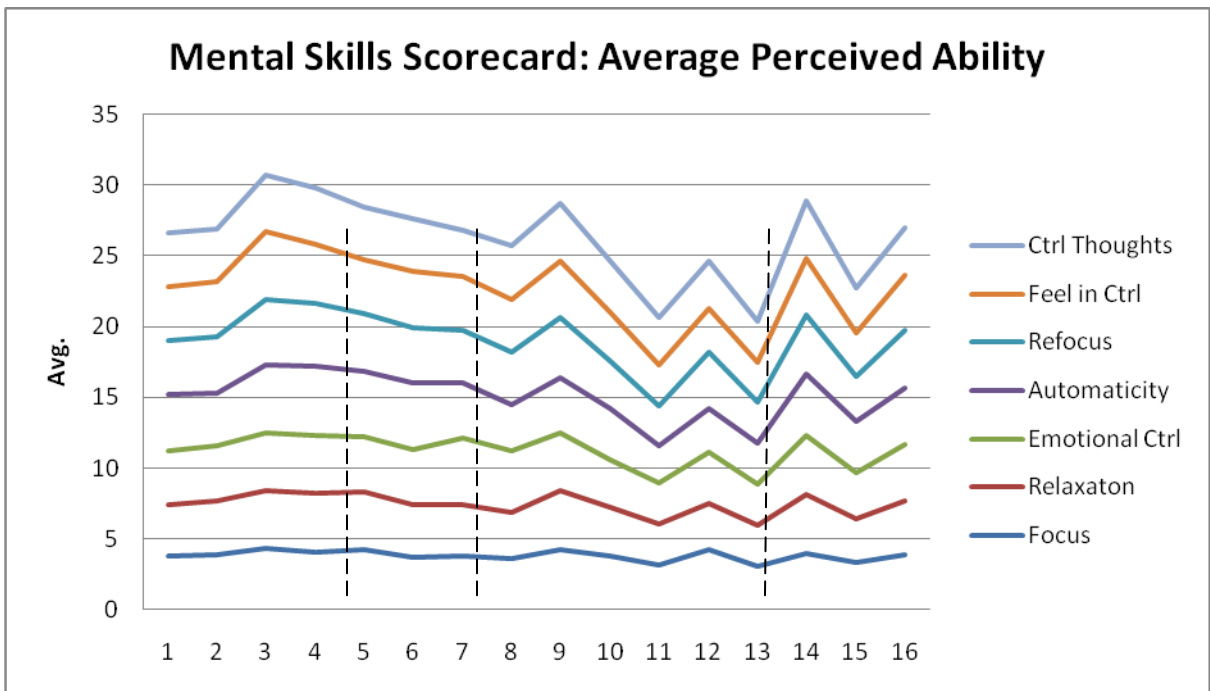
Data points 1-3 represent baseline ability to focus; 4-6 perceived ability to focus after learning cue words;
7-13 represent perceived ability to focus after learning relaxation training; and 14-16 represent perceived
ability to focus after learning a behavorial focusing strategy

Figure 2. Mervil's Mental Skills Scorecard

MBLR	Baseline			Intervention		
	Mean	SD	Min-Max	Mean	SD	Min-Max
Putting 1.41	17.67	1.87	15.00-20.00	17.42	2.35	14.00-22.000
Approach Shot 15.21	29.78	3.96	25.00-38.00	25.25	4.31	19.00-33.00
Focus 7.75	4.00	0.73	2.00-5.00	3.69	0.97	1.00-5.00
Refocus 10.71	4.11	0.75	2.00-5.00	3.67	1.00	1.00-5.00
Relaxation 6.56	3.81	0.89	1.00-5.00	3.56	1.05	1.00-5.00
Emotional Ctrl 5.85	3.93	0.73	2.00-5.00	3.70	1.02	1.00-5.00
Feel in Ctrl 9.60	3.96	0.71	2.00-5.00	3.58	0.97	1.00-5.00
Ctrl Thoughts 7.35	3.81	0.79	2.00-5.00	3.53	1.10	1.00-5.00
Automaticity	n/a	n/a	n/a	3.77	1.02	1.00-5.00

Note: MBLR is calculated by subtracting the intervention mean from the baseline mean, divided by the baseline mean, and multiplied by 100. Ability to automatically implement the participants' routines were only measured once the intervention began. Positive MBLR scores for performance and negative numbers on the MBLR for mental skills constructs indicate improvements.

Table 2. Mervil's Descriptive Statistics

After completing each skill a post-phase interview was conducted asking the participants to socially validate or evaluate the previously learned skill. Once the program was complete each participant was interviewed and asked to evaluate the entire program. The first skill Mervil learned was cognitive cue words. She chose, "Relax and Commit." Mervil's responses helped to clarify her data. She was asked what she liked and disliked about learning cue words, to discuss any differences she noticed in practice and tournament play, and to consider how she played overall after learning this skill.

Mervil felt that cue words were helpful in improving her ability to focus, refocus, and remain relaxed. While in her intial interview Mervil stated that she felt her ability to focus was not a problem, she noticed some specific changes after learning this skill. Before her focus was primarily on worrying about the score and potential worst case scenarios. She also noticed that when she was not playing well she second guessed her club selection. What she liked about learning cue words was that she felt a shift in her ability to focus, refocus, and remain relaxed. She responded that she was able to focus more and remain cognitively relaxed, "Not like tense or worried about what's going to happen." She did not like having to contribute in a group with her teammates during the group workshop, and she found it "weird" to incorporate the cue words into her technical routine. When asked about potential differences in practice and tournament rounds, Mervil recalled having a greater ability to refocus after a bad shot and remaining more emotionally in control. She stated,

It helped me refocus a little more, um, refocus after like I hit a bad shot or something. Like before I would still be thinking about that when I was hitting the next shot and I didn't as much, and I would think more about the shot I was hitting.

Lastly, Mervil felt that she played, "pretty well after learning cue words." She had not played enough practice rounds to reflect on practice performance but felt a difference in her ability to focus in the present which is a common challenge for golfers, and she felt that her tournament play had been good after learning this skill.

Once the researcher was able to build a little rapport with Mervil, she quickly opened up and indirectly asked for relaxation training. During one of the practice meetings she was forthcoming with more information regarding how much cognitive and somatic anxiety she experienced during tournament rounds. Therefore, she learned deep breathing second. Figure 4 illustrates what was reported on the mental skills scorecard after each tournament round about how relaxed Mervil felt during that round. It appears that she felt less relaxed after starting the program with an immediate negative trend that turns upward once she learned deep breathing. However, her interview revealed conflicting results. Again Mervil was asked what she liked, disliked about the deep breathing, and any differences that she noticed at practice and tournament play. She felt that deep breathing was, "easier to remember," to incorporate into her existing technical routine more so than the cue words. The only dislike that she reported was again the, "awkward feeling," when learning a new skill and trying to remember to practice it. Mervil liked that in her practice rounds she felt more relaxed and able to concentrate on her strategy for the next shot. This is a significant change from focusing on task-

irrelevant cues (internal fear and worry) to task-relevant cues (strategy). This means that Mervil was gaining more control over her ability to control her thoughts and even direct them to more task relevant cues. In practice she remembers that practicing the deep breathing, "Um I liked practicing it. It helped me to focus and then when I'm relaxed I hit the ball better." This indicates that an improved ability to focus and feel relaxed improved her ball striking. Lastly, after learning deep breathing the varsity team played tournaments in inclement weather (40 degrees and steady rain) and of increased importance. While Mervil's performance graph shows that this is where her performance started to become moderately variable and to worsen, she reported that she was able to refocus when struggling and immediately regain control, be present, and focus on the next hole. She interprets this to mean that she was playing better. She said, "Um, it helped me like refocus and stuff like at conference tournament I had a 10 on one hole and then I kinda like got it back together in the last like 5 holes. It helped when I'm physically relaxed then I mean when I'm tense I don't hit it well."

The final skill that Mervil learned was the behavioral skill. This phase asked the participants to consider behavioral techniques such as a practice swing or waggle that they may have already incorporated into their technical routine but that could be used specifically to complete the mental skills routine as a focusing technique. Mervil selected a final practice swing to complete her routine. She liked this skill because it was something that she could "do". She felt it was easier to incorporate into her routine. Similar to the cognitive and relaxation techniques, she noticed that when practicing this skill, she felt that she was more focused and able to relax when playing. Mervil played

four rounds of golf with her father at a local course. She reported that she played well, shooting in the low 40s each round.

Final Interview Data

The last interview that each participant completed asked them to evaluate the entire program, comparing the skills learned, the goals of the program, methods, and results. Mervil felt that the relaxation training was the most helpful because it was what she needed the most. She reported,

> Like the relaxation one helped more than the other ones. It helped. Um, I think it helped me like relax and stay focused more. 'Cause that was the one thing I had trouble with before and it helped me like calm down and focus. Um, like if I have one bad hole then I get frustrated and stuff and like I still kinda get frustrated but not as much. Um, like I get upset but I can control it better and faster.

In this quote Mervil explained that relaxation training was something that she felt she needed prior to participating in the program to aid in managing her emotions and frustrations when she was not playing well. She went on to discuss feeling better equipped to control her emotions and an increased ability to focus on the golf course. Mervil felt that the behavioral strategy was more helpful than learning cue words because it was something that she could "do". She chose "relax" and "commit" as her cue words. When reflecting on her progression through the study she realized that she felt relaxed and committed to her shots after learning deep breathing and implementing the practice swing as opposed to actually thinking/verbalizing those words. Therefore, Mervil's routine was reduced to deep breathing and a practice swing. When Mervil was asked to consider the overall goal of this program she stated that her participation brought her a

greater awareness of the importance of her mental game: "Um I think it was beneficial like I don't know if I realized how mental the game was until you started helping us."

In summary, Mervil's performance data showed improvement to her approach shot and putting performance with moderate variability, and initially it appeared that her ability to focus did not improve. The MBLR revealed a small improvement in approach shot and putting performance. The social validation component was valuable in interpreting her performance data. She felt as though she was able to better focus, remain relaxed, control her frustrations after making mistakes, and refocus quicker and gain control after a bad hole. In Mervil's initial interview she reported that her focus was primarily on the score, fear and doubt of her skills, and what might go wrong. After learning relaxation training she experienced an ability to control her focus on more task-relevant cues (e.g, the next hole). She was able to remain present, not focus as much on the score, shake her frustrations, and think about the upcoming hole. Therefore, for participant one, the hypothesis that learning a pre-shot routine would improve performance by improving her ability to focus was supported for her approach shot and putting performance. The social validation component revealed that Mervil did find that the pre-shot routine improved her ability to focus, ball striking, and her ability to remain relaxed and focus.

Participant 2: Barbara

Profile (Pre-Intervention Interview)

Participant two will be referred to as Barbara for the remainder of this paper. She was a 17 year old, right handed golfer, who played the number four position on the varsity team. Barbara started playing golf with family members at the age of 10. She attended a golf school and found that she had a natural ability for the sport. Barbara's youth sport experiences exposed her to a variety of sports, and sport was highly valued in her family. She played softball, soccer, and basketball before deciding to focus on golf. Her early youth sport experiences taught her the importance of teamwork. Barbara described her motives for golf as multifaceted and both intrinsic and extrinsic. Golf forces her to focus on one thing at a time, she likes that there are many aspects of a golf game to master; she showed promise in golf early on which she felt was critical to being a successful golfer, and she truly loves the sport. Barbara felt that her motivation for playing golf had changed slightly in that she was not really thinking about playing in college yet, and she wanted to do well for herself. Her goal for the season was to qualify to play in the state tournament that she had played in since she was a freshman.

Also, in this initial interview Barbara described her strengths and weaknesses as a golfer. She felt that she had a strong short game, played well 100 yards in, and she was able to remain present even after a bad shot or hole. She felt that her ability to focus depended upon how much sleep she got prior to playing a match. Barbara went on to describe several things that impeded her ability to focus. First, if she did not sleep

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enough the night prior to playing she would not have a strong focus. Next, there is a problem in high school golf where many players are learning as they play, whereas this team was comprised of veteran golfers. If Barbara was playing with a golfer who played slow, did not know golf etique/rules, or if people stopped and talk to their families in a round she would sometimes lose focus.

Barbara listed two main weaknesses in her golf game. She was not as strong with her driver on holes that were longer to the green. Barbara had also been battling taking too much time between her shots. This was primarily because she, "worried too much about how the swing felt or how well I was swinging the club." This was a great level of awareness with which to start the program and immediately gave the student researcher detail to help her guide Barbara in forming cue words.

Lastly, Barbara painted a picture of what it was like when performing optimally and when playing poorly. When she was playing well she described that she was able to manage her emotions. She did not get over confident or over excited. She also indicated that when she was playing well she was not focused on the score, she just played. Conversely, when playing poorly, Barbara would put too much pressure on herself to play which she described well as, "expecting too much out of myself." Therefore, when she was playing poorly she would do the exact opposite, she would shift her focus to the score and put pressure on herself to salvage the round. This is a common problem among golfers. They have a tendency to add up, or get ahead of themselves, and to calculate the score they need on the remaining holes to finish with a desired score.

Thought Sampling Data

Barbara was asked to verbalize everything that she was thinking for three consecutive holes of the practice course while the student researcher recorded her thoughts. Half of Barbara's focus was on narrow-external cues such as picking a target, assessing potential brake on the green, rechecking her line after her practice swing, and calculating the distance to the pin. These are the necessary task-relevant cues that a golfer should be attentive to when making sound decision and when planning their strategy on each hole. A mentally tough golfer's focus should then shift to a narrow-internal where they gauge internal cues (e.g, arousal level & confidence levels) to ready themselves to commit to their shot. The other half of the thoughts Barbara verbalized were primarily narrow-internal, but it was not a consistent routine to mentally prepare for each shot. For example, she took many practice swings. Those were coded as narrow-internal because it is one technique golfers use to prepare physically for shot execution. A couple of times Barbara spoke motivational cues such as "Dig" prior to her shot, but again, this was not consistent preparation. Lastly, one cue was coded as broad-external because she considered the entire green and the potential brake of the ball when planning her strategy. In summary, it was concluded that Barbara did not have a consistent mental routine that she followed thus meeting the inclusion criteria to participate in the program. Also, Barbara was very consistent in her technical golf routine that guided her decision making, but only executed a practice swing to ready herself for each shot.

Performance Data

Figure 3 displays Barbara's putting and approach shot performance. There is less variability in Barbara's performance (both putting and approach shot) once she started the program compared to her baseline data. The remainder of her putting performance has low variability with another negative trend in the data after completing the relaxation phase between points 14-16. The MBLR revealed an improvement in putting performance of 2.42%. Similarly, Barbara's approach shot performance appears more consistent after beginning the program. Her performance appears to exhibit low variability and more consistency than at baseline, but there is not a consistent trend, negative or positive, in the data. The MBLR revealed no performance improvement, as her approach shot performance worsened by -6.55%.

Adherence and Ability to Focus Data

Barbara utilized her routine on 94 out of 99 holes resulting in 95% adherence to her MS routine. Similarly, she reported that she was able to focus on 77 out of 99 holes played resulting in a 78% ability to focus.

Putting and Approach Shot Performance
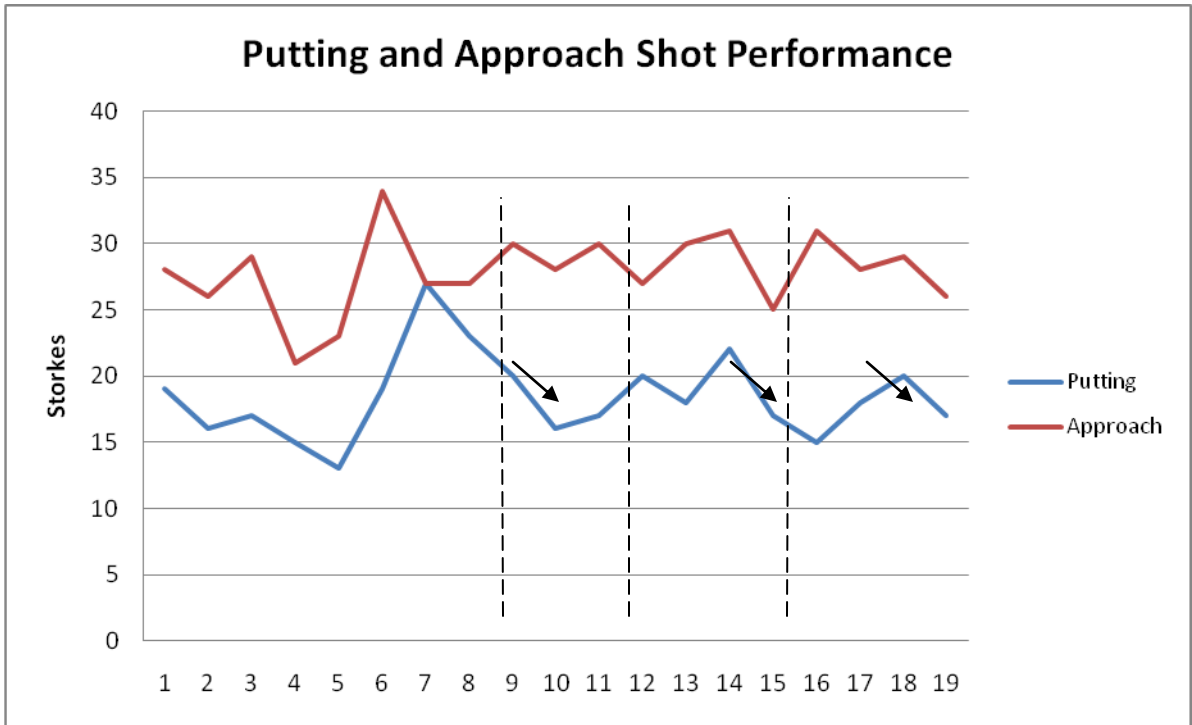
Note: Baseline data points 1-8; Cue words data points 9-11; Relaxation data points 12-15; and behavioral focusing strategy data points 16-19. Trend lines were added to show points of improvements in Barbara's putting performance where the data exhibits points of a negative slope or downward trend with lower variability than her baseline data.

Figure 3. Barbara's Putting and Approach Shot Performance

Mental Skills Scorecard Data

Barbara' s ability to focus, refocus, relax, remain relaxed, control her thoughts, feel in control, remain emotionally in control, and her ability to automatically implement her routine all improved. Figures 4 show a consistent positive trend in Barbara's perceived ability to focus, with low variablity, indicating improvement. MBLR calculations revealed an improvement for each of the seven contructs ranging from 13 to 18 percent improved ability to focus. Table 2 displays Barabara's descriptive statistics.

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Figure 4. Barbara's Mental Skills Scorecard
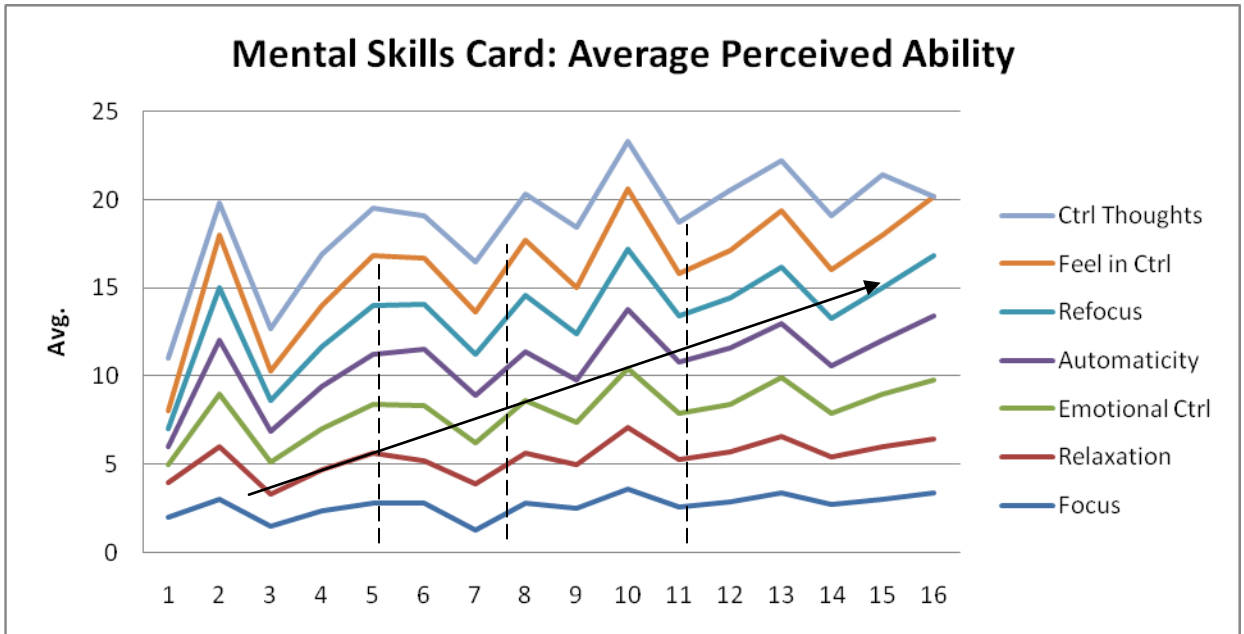
Data points 1-4 represent baseline ability to focus; 5-7 perceived ability to focus after learning cue words; 8-11 represent perceived ability to focus after learning relaxation training; and 12-15 represent perceived ability to focus after learning a behavorial focusing strategy

MBLR	Baseline			Intervention		
	Mean	SD	Min-Max	Mean	SD	Min-Max
Putting 2.42	18.63	4.53	13.00-27.00	18.18	2.09	15.00-23.000
Approach Shot 6.55	26.88	3.91	21.00-34.00	28.64	2.01	25.00-31.00 -
Focus 18.88	2.49	0.72	1.00-3.00	2.96	0.91	1.00-5.00 -
Refocus 17.60	2.50	0.70	1.00-3.00	2.94	0.89	1.00-5.00 -
Relaxation 14.74	2.51	0.69	1.00-3.00	2.88	0.91	1.00-5.00 -
Emotional Ctrl 13.28	2.56	0.65	1.00-3.00	2.90	0.92	1.00-5.00 -
Feel in Ctrl 15.20	2.50	0.70	1.00-3.00	2.88	0.95	1.00-5.00 -
Ctrl Thoughts 18.40	2.50	0.70	1.00-3.00	2.96	0.87	1.00-5.00 -
Automaticity	n/a	n/a	n/a	3.05	0.86	1.00-5.00

Note: MBLR is calculated by subtracting the intervention mean from the baseline mean, divided by the baseline mean, and multiplied by 100. Ability to automatically implement the participants' routines were only measured once the intervention began. Positive MBLR scores for performance and negative numbers on the MBLR for mental skills constructs indicate improvements.

Table 3. Barbara's Descriptive Statistics

Post-Phase Interview Data

During the first scheduled practice after learning cue words, Barbara mentioned that she worried that she gripped too tight on her clubs. This comes from her background in softball. As a golfer the ideal technique is the opposite. In the cue words workshop we discussed picking cue words that represented the desired effect of their golf swing. Barbara chose "soft hands" as her cue word.

Barbara reported that cue words improved her ability to focus, helped her wood, sand, and iron shots, and helped her to remain relaxed and to trust her shots. She liked the process of becoming more aware of what cues were most important to attend to and how to control this process. She also felt that it was important to form a mental routine and to do the same thing before each shot. She stated,

> I would really evaluate the way I was doing it like what needed to change I guess. How I was doing it that made it more difficult for me I guess. I guess it made me think when doing it it's really mental you can't just have thinking about random stuff because that will throw you off.

The only aspect of learning cue words that Barbara did not like was that it was awkward to incorporate and a distraction until well learned. She described this feeling as,

> Because like um when you finally gotten to the point that the cue words are a part of your routine I guess it's just second nature. In the beginning when you are thinking you have to think about doing those cue words it's kinda not a distraction but you know something that is taking your mind off the present.

Barbara noticed that her wood shots had improved after incorporating cue words into practice, but when she abandoned her new routine she saw a detriment to her short game performance because her focus has shifted to worry and doubt. She described this as,

> I would say that my putting has been very inconsistent I guess maybe I'm not really doing my cue words as well with my putting. I'm not trusting them. I'm not trusting the uh what I'm going to do. I'm worried about whether I'm going to hit it too hard or too soft.

She went into greater detail about the performance benefits in tournaments after learning cue words. Practicing cue words improved her sand shots, woods, and her approach shot performance through feeling more trust in these specific aspects of her golf game. She described these changes as,

> I think the cue words have definitely helped me in tournaments with sand shots because before I used to throughout my mind think this is a hard shot I can't hit this. Now it's just like trust you have it. Um, I guess I just trust myself more with sand shots. And then I'd say my drives are better because I trust those too. But basically, my woods are better. The soft hands helped me trust it.

Barbara's behavioral and relaxation phase were also reversed because when worrying about her grip she would tense her hands. She reported that she liked the fact that relaxation was a simple skill that she was exposed to when singing in the church choir, and it easily fit into her routine with the cue words. She reported that implementing deep breathing into her routine helped her to get into a zone and filter out distractions. She described this feeling as,

Um I guess I like hadn't related that type of breathing with relaxing in golf, but I guess I had had the pieces before but I hadn't put them together. At the meeting I was like oh yeah! Yeah that's what I should do! Um, I liked the fact that I could um it really did the breathing just helped me get in the zone. Everything is gone and you just go. It's like the world becomes one big golf course and no one else is there. It's like all my thoughts are gone and everyone else is like I don't have to pay attention to them.

The only dislike that Barbara communicated was that situations with added pressure, she felt it became harder to become relaxed.

When Barbara reflected on the impact that relaxation training had on her practice and tournament performance she found that it helped psychological and performance factors such as feeling at ease in practice and tournaments, ball striking, and iron shots. She found that the combination of her cue words and taking deep breaths to clear her mind gave her a feeling of being at ease or emotionally in control. Furthermore, she felt her iron shot had improved. At regionals she performed poorly on the front nine and was able to regain control and focus and play extremely well on the back nine.

Barbara chose regripping as her behavioral strategy to complete her pre-shot routine. She appropriately addressed this topic with the cue words "soft hands". She felt that regripping her golf club alleviated the worry of "going at the ball too hard." Barbara liked the behavioral component. She found it easier to implement but more difficult to choose a behavioral strategy, and this was somewhat frustrating. Barbara developed this interest in her ability to self-regulate or as she called it, "self evaluate." She continually talked about how important she felt it that she evaluate her mental game, consistently go through her routine prior to each shot, and to not leave her mental game up to chance.

This increased awareness was a reoccurring theme that she enjoyed as a result of her participation in this program.

Barbara was successful in decreasing her time between shots. She would take too much time between her shots doubting herself, her grip, and strategies. After incorporating her routine she stated,

> Um I'd say that when I wasn't regripping I'd stand over the ball too long. And that could just be me but I was standing over the ball too long and that caused I mean muscle memory from practice swinging was gone so it just I didn't hit very good shots. This is definitely the first round I did that. And then the second round it was better.

Final Interview Data

In the final interview Barbara felt that the goal of this program was beneficial because many golfers do not have a pre-shot routine to consistently prepare mentally. She was grateful for the opportunity to participate in this study because the result was that she was able to address two necessary issues: taking too much time in between her shots and gripping too hard on her golf clubs. She went on to say that the findings of the MS scorecard were accurate in that she felt more focused, and her performance with woods, irons, and sand shots improved. Specifically, at the state tournament she felt her pre-shot routine helped her hit her irons straighter.

Barbara also found relaxation to be the most helpful of the three skills. She maintained her ability to focus, refocus after a bad hole, play more quickly, and even regain control and focus in the present. She described this feeling as,

Um, I would say that I'm probably more focused. Um I think that it just the um not anything specific about my game but more mentally things don't hurt as bad. If I do something have a really bad hole I don't beat myself up as much or I get down. You know it doesn't stick with me as much you know? I think because with the whole relaxation thing it made everything go away. It's um I mean basically after a hole I told myself just forget about it and then that was it you know? I remember what I shot but I didn't remember how I felt. Well I remember it that's bad I remember how I felt but it wasn't like the rest of my life I will be mad about that hole.

The second most helpful skill was the behavioral strategy. Barbara found it the most difficult to decide what she wanted to incorporate into her routine, but once she chose to regrip it was beneficial and made sense because her cue words were soft hands. She worried about gripping her clubs too tight. Therefore, the cue word and behavioral strategy were similar and directed her attention to the desired outcome of a smooth swing.

In summary, the hypothesis was supported for Barbara's putting performance. No performance improvements were observed for Barbara's approach shot performance, instead a decrease in performance occurred. In her post-phase interviews Barbara continued to discuss specific improvements in her wood and iron shots after implementing her performance routine. More so than visually inspecting Barbara's performance graphs, a clear improvement in her ability to focus was observed as the average scores on her MS scorecard gradually improved throughout the remainder of her season.

Participant 3: Josephina

Profile (Pre-Intervention Interview)

The third and final participant in this study will be referred to as Josephina. Josephina was a 17-year-old, right handed senior and the number one player on the varsity golf team.   Josephina was a unique case from day one. Her coach approached the student researcher prior to meeting Josephina and provided some quick background as he felt that she had several psycho-social issues that affected her performance in the past. Josephina was self sufficient and lived on her own at the age of 17. She was responsible for the responsibilities of having her own apartment that she shared with an older sibling. This participant was exceptionally gifted and had played golf since she was very young. She broke 80 on the golf course before she was 10 years old. Her father is a prominent figure in the community, and unfortunately, she no longer has a relationship with him. The first day that the student researcher met Josephina, she found Josephina to be forthcoming with the issues she experienced the previous year. She had experienced several panic attacks during tournaments. She had a psychiatrist that prescribed her medication for her anxiety, but she did not want to seek counseling to discuss the childhood issues and the subsequent consequences to her performance. The student researcher found her to be very open, friendly, and she was intrigued that she wanted to talk about her past with someone she just met. The student researcher explained to her, and reiterated to the coach, the parameters of the program which were to teach the girls a pre-shot routine , and she also explained the areas of competency that she was trained to

consult. Counseling and psychological topics such as anxiety were not within that realm.

The student researcher asked Josephina why she was reluctant to seek counseling. She

responded, "I want to work with someone like you. This happens on the golf course, and

I want to work with someone who knows something about sports."

The student researcher immediately sought guidance from her supervisor who is a

certified sport psychology consultant. Together they decided that it would be important

to start Josephina with the relaxation phase of the intervention protocol. Furthermore, the

student researcher was present at every tournament within driving distance. She decided

that if Josephina were to experience a panic attack on the golf course, she would drop her

from the study and consult with her separately to supplement the program to best fit her

need of resolving performance anxiety. For example, the student researcher felt that

while the pre-shot routine may help her focus, the association that she had with golf and

her childhood elicited physiological responses that would need additional skill building

aside from what was to be offered in this intervention protocol.

The initial interview provided more insight into Josephina's youth sport

experiences and performance anxiety. When she was younger the time she spent with her

father involved golf, and the love and attention she was shown were somewhat a

consequence of her performing well. She would receive external rewards for her winning

or placing in tournaments. For example, during her initial interview she stated, "When I

played good he would buy me something cool like a new pet."   Josephina described

associating golf with her father, and it was difficult to separate the two.   Josephina is the

youngest of three children. One of her older brothers was described as the, "golden child" and her dad frequently played golf with him until Josephina showed a natural gift for the sport. "Then he dropped him and focused on me," she stated.

Josephina described athletics as being a big part of her childhood. Her brothers were athletic, and her father owns a golf course. Sports were something that she was always around. She began playing golf at the age of seven and showed promise right away. Her father redirected his focus to her and developing her skills. She described how at this stage in her youth, her father was her best friend, and the relationship they shared involved golf. While Josephina was experiencing the anxiety as a result of the lack of interaction with her father, she was able to translate these early experiences into a positive, meaningful motive for golf participation. She learned a lot about golf which had become a high priority in her life and something that defined her. At one point she qualified for the US Junior Golf Tournament and even gave some thought to pursuing golf as a career after college. Josephina had her childhood experiences in perspective and tried to focus on the positive, "I learned a lot from my dad. He was good at everything except family. It is what it is. At least I learned about golf."

Josephina described her motivation for playing golf as shifting from focusing on having fun when she was younger to wanting to prove her dad wrong because he expects her to quit. Her motivation for playing golf shifted toward more extrinsic reasons. She plays golf because she is a very competitive person and enjoys winning. She described this competitive nature even in practice rounds with friends, "It's fun to beat guys in their

20s who played golf in college." She further stated that she feels her dad expects her to quit golf. For this reason, she wanted to be accepted into college on a golf scholarship. She only had one school that she hoped to attend.

Josephina placed very high value on golf and set challenging goals for this golf season. Her identity was that of a golfer, and her social network consisted of her teammates and coaching staff. She stated, "Golf is everything. I would have less friends if I didn't play golf. I wouldn't have anything unique about my identity if I didn't play golf. It's who I am." Josephina's goal for this golf season was to win the state tournament as a team and place first individually.

Next, she described her strengths and weaknesses as a golfer. Josephina described her strengths as an ability to focus on the golf course, perseverance, an ability to manage her emotions, and she had a strong short game. First, she felt that she was able to focus well on the golf course and did not allow distractions to interfere while playing. Next, she was adamant that she would persevere and salvage a round if she made a mistake or had a bad hole. By this she meant that if she hit a bad shot, she was able to refocus and perform well on the next. She did not dwell on mistakes and or frustrations that often result in golfers losing control and having several bad holes or even a complete poor performance resulting from one or two mistakes. The third strength that Josephina described was her ability to manage her level of arousal. She described that she did not allow her "excitement level to get too high or too low." This ability to manage her emotions may contribute to her strong ability to control her focus. Lastly, Josephina

described her short game as a strength. In the student researcher's experience, this is common with golfers. If they struggle with their driver, or getting comfortable teeing off, they will typically be stronger on the green. This was the case with Josephina.

She discussed both performance and psychological weaknesses that she wanted to improve. First, Josephina talked about how inconsistent her performance had been recently. Her personal best was 69 and recently her performance had been very inconsistent. She felt very anxious in the tee box on the first hole. The anxiety manifested itself in both somatic and psychological symptoms. Josephina would feel a "funny feeling in her stomach like feeling hungry," while in the first tee box. The rounds in which she felt this way starting off tended to be performances with less consistency. In addition, at times she felt that she pushed herself too hard and over thought her game. She discussed that she would like to feel like she was playing for fun, feeling relaxed, and comfortable as opposed to always taking it so seriously like a job.   Lastly, Josephina discussed one cognitive process that impedes her performance, and that was thinking at the top of her swing. This means that she would over process or try to control the technical aspects of her swing and that she would interfere with the fluid swing necessary to hit the ball well.

Thought Sampling Data

Next, Josephina's thought sampling data revealed that she did in fact meet the inclusion criteria and did not have a consistent MS routine prior to participating in this program. Similar, to Mervil and Barbara, Josephina's thoughts were primarily narrow-

external and narrow-internal. The narrow-external thoughts were gauging distance to the pin and choosing a line to the pin. The narrow-internal thoughts were technical strategy such as club selection and how she planned to play each hole. Another strength found in Josephina's game was that she assessed the wind, a broad-external factor that has great influence on the ball flight. This is indicative of Josephina's skill level and experience.

Performance Data

Josephina's performance at baseline was in fact as inconsistent as she indicated in her initial interview. Due to the level of anxiety that she was experiencing in the previous seasons, the student researcher felt it necessary to reorder Josephina's phases to: relaxation, cognitive, and behavioral skill building. An improvement in her performance is evident upon visual inspection of Figure 5. The improvement is marked by a negative trend in the data with low variability once she completed the relaxation phase. From that point forward, her performance became very consistent. The MBLR did not reveal performance improvement for putting performance (-2.80%) as she indicated this was already a strength in her game. However, a 35.62 % improvement in her approach shot performance was experienced. After the first tournament played upon completing the relaxation workshop, Josephina told the student researcher that she could feel a big difference when integrating the deep breathing. She felt like, "her head was clear." This is evident more clearly in Figure 7.

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Putting and Approach Shot Performance
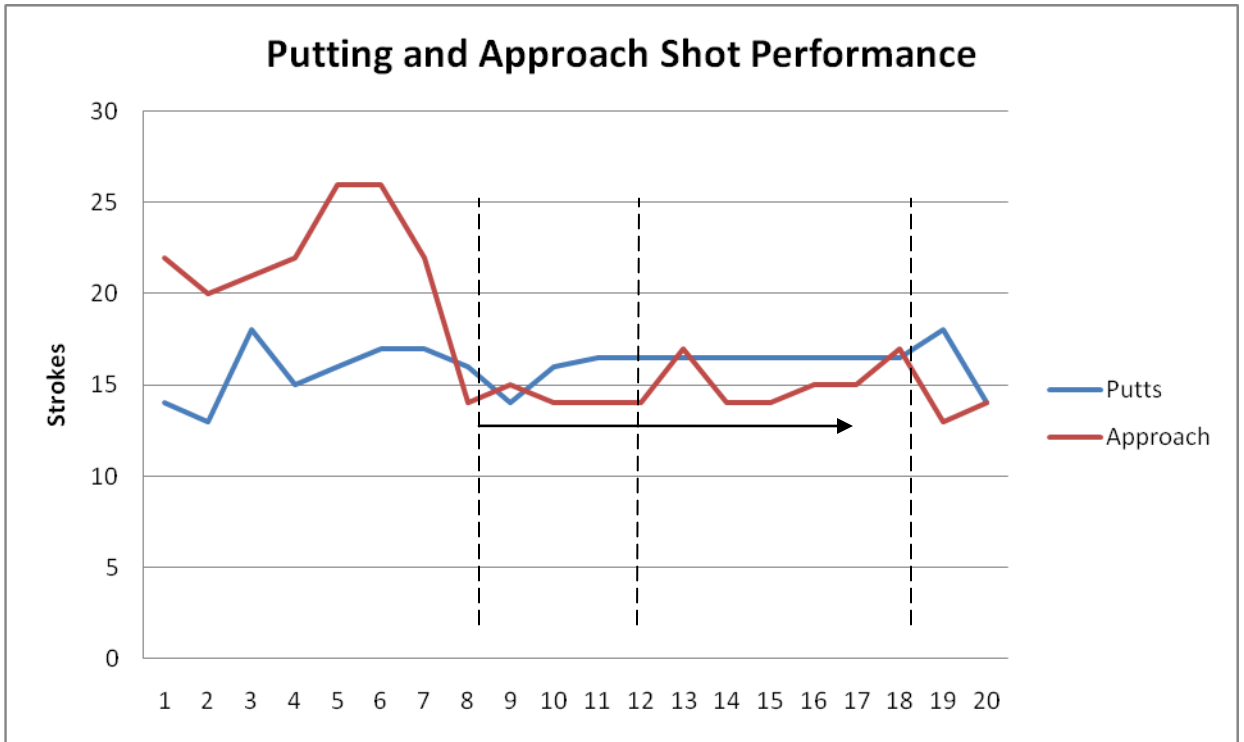
Baseline data points 1-7; Relaxation data points 8-11; Cue word data points 12-18; and behavioral focusing strategy data points 19-20. A trend line was added to show the consistency in Josephina's approach shot performance after beginning the program. There is an immediate change in her performance that remains consistent and is marked by low variability throughout the remainder of the season.

Figure 5. Josephina's Putting and Approach Shot Performance

Adherence and Ability to Focus Data

Josephina reported 74% adherence to her pre-shot routine. This was calculated by dividing the number of shots adhered (87) by the total number of shots (117). She reported a 62% ability to focus during her tournament rounds. This was calculated by dividing the number of shots that she reported being able to focus (73) by the total number of shots (117).

Mental Skills Scorecard Data

Josephina reported an improvement in ability to refocus, relax, remain emotionally in control, automatically implement her routine, and feel in control. This is evident by a gradual positive trend in the data indicating that the mean for each construct increased or improved. The MBLR calculation revealed improvements ranging from 22 to 45 percent. Josephina's ability to relax improved the most with a reported 45 percent. Figure 6 displays Josephina's mental skills scorecard data. Table 3 displays Josephina's descriptive statistics.
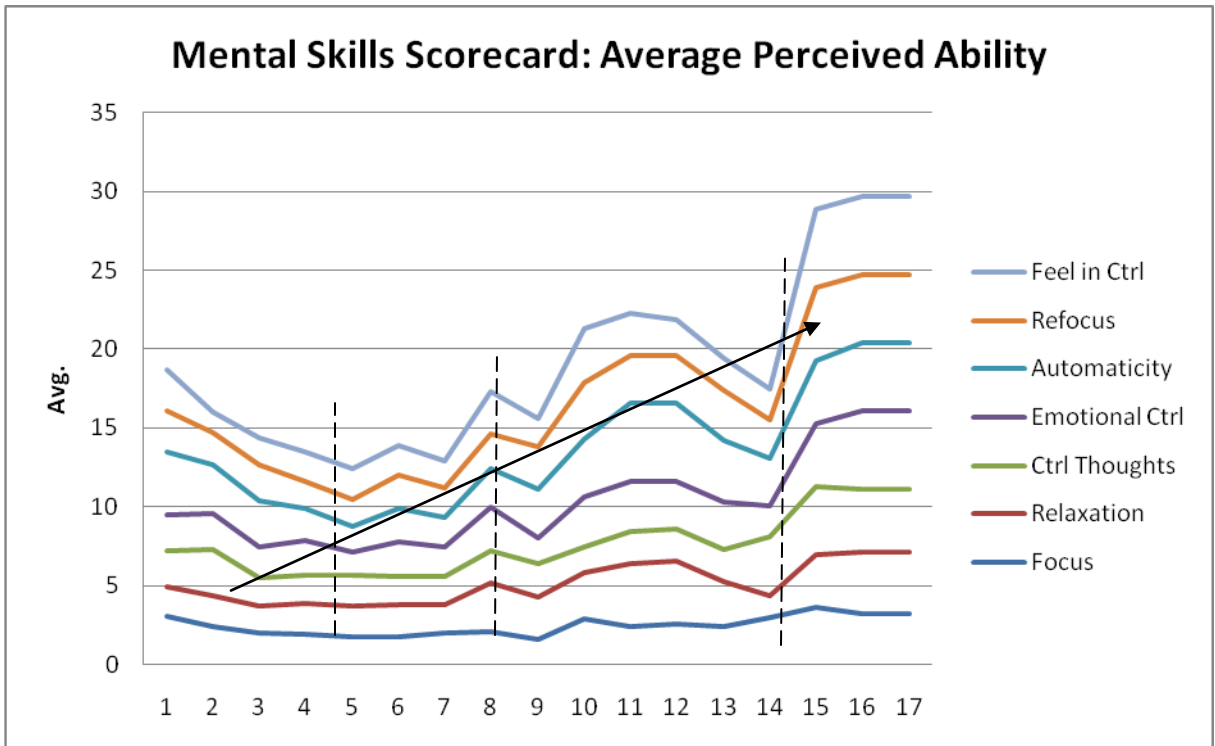
Note: Data points 1-3 represent baseline ability to focus; 4-7 perceived ability to focus after relaxation; 8-14 represent perceived ability to focus after learning cue words; and 15-16 represent perceived ability to focus after learning a behavorial focusing strategy. Also, a trend line was added to show the gradual positive trend in data indicating that Josephina's ability to focus improved over the course of the program.

Figure 6. Josephina's Mental Skills Scorecard

	Baseline			Intervention		
	Mean	SD	Min-Max	Mean	SD	Min-Max
MBLR						
Putting -2.80	15.71	1.80	13.00-18.00	16.15	1.07	14.00-18.00
Approach Shot 35.62	22.71	2.36	20.00-26.00	14.62	1.19	13.00-17.00
Focus 2.85	2.46	0.97	1.00-4.00	2.39	0.83	1.00-4.00
Refocus 21.30	2.30	0.67	1.00-3.00	2.79	1.11	1.00-5.00 -
Relaxation 45.26	1.90	0.83	1.00-3.00	2.76	1.12	1.00-5.00 -
Emotional Ctrl 22.27	2.20	0.83	1.00-4.00	2.69	1.13	1.00-5.00 -
Feel in Ctrl 41.62	1.85	0.72	1.00-4.00	2.62	1.31	1.00-5.00 -
Ctrl Thoughts 3.23	2.48	0.80	1.00-4.00	2.40	1.10	1.00-5.00
Automaticity	n/a	n/a	n/a	3.27	1.30	1.00-5.00

Note: MBLR is calculated by subtracting the intervention mean from the baseline mean, divided by the baseline mean, and multiplied by 100. Ability to automatically implement the participants' routines were only measured once the intervention began. Positive MBLR scores for performance and negative numbers on the MBLR for mental skills constructs indicate improvements.

Table 4. Josephina's Descriptive Statistics

Post-Phase Interview Data

Josephina's phases were reordered and she learned deep breathing first, followed by cue words, and behavioral strategies. During the relaxation interview Josephina liked that she felt present and that she felt a greater ability to control her emotions. She described this as, "Having an advantage over myself. I knew what I could do to help myself to play better." This is a theme that continued throughout her experience in the program, and she stated in the final interview that aside from performance improvement, a greater feeling of control was the biggest benefit to her.

Next, Josephina had not played a full practice round since learning the relaxation technique. She had hit balls on the driving range and did not use her breathing before each shot. She had, however, felt a difference while playing tournament rounds.

> Um when I do the breathing properly at the right time and my mindset is in the right place when I exhale everything else kinda falls off and I'm focused on that shot. Yeah, and when I didn't do it right but you can walk up to it with the feeling of I'm not centered not where I should be, and I'd step back and do it over. It feels kinda cool.

This description illustrates that Josephina felt more present when playing after incorporating deep breathing into her routine.

Next, Josephina learned the importance of cue words, and she chose "alright, just do it." She immediately felt more committed to each shot. She decided that she liked having a mental routine because she was more consistently doing the same thing before each shot.

> Like you'd try to do the same thing every time but if you don't have a specific word it is not going to be truly consistent. Like before I have the same pre-shot routine, like practice swings, but it was much more consistent. Like when you're lined up, and it's like a game face, like commitment.

The main thing that she did not enjoy about learning cue words was the difficulty in choosing a cue word. Next, Josephina noticed a difference in practice and tournament performances. She noticed that she felt more relaxed in practice when she was trying new strategies.

> I think a lot of this has to do with breathing and I don't know the new thought process. I wouldn't have been able to hit my driver at all at states, and like mentally I was able to slow it down. When I'm swinging normally that's ok because I'll hit it real far, but I had to slow it down consciously with my driver so set up to a shot being able to step back and say I'm not going to need to hit this 270 yards just relax and put it in the middle of the fairway, um and then with the rest of my shots staying committed and with the breathing and cue words like I said if you hit a bad shot and did everything you were supposed to do there is nothing you can do about that.

The last skill that Josephina learned was the importance of a behavioral strategy as a tool to focus, and she chose to integrate a waggle into her pre-shot routine. A waggle is pulling the club about a quarter of the way back and moving it back and forth. Golfers often do this to maintain muscle memory. This is a strategy that she used to keep loose and to maintain muscle memory, and this workshop prompted her to incorporate it back into her routine.

She liked this skill because of its familiarity, and she has had coaches in the past recommend implementing a behavioral strategy. She said, "Like it does help and is important. I remember a college coach when I was a kid saying that I really like that she

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does that. It's good to have your own individual type thing."   The only thing that

Josephina did not like about the behavioral focusing strategy was that it took a second to

get used to before it felt natural. Once she practiced it she said, "As soon as you see

results it just makes it worth it."

Lastly, Josephina did not have any full practices after incorporating her behavioral

strategy, but she did feel that her performance improved at the state tournament.

> I was more in control than I've ever felt and even the last day wasn't as good as I
> wanted but I could be competitive and like you know think about it as strategy
> and do my competitive thing, but at the same time stay calm and stick to my
> routing. So like even though shot in the 70s the whole time on the back nine I'm
> just trying to get birdies trying to get birdies the way that we did it and having
> something to calm me down with the techniques we used that kinda brought me
> back to center before I hit. So when your walking to your ball you are thinking
> about strategy and before you hit you can bring everything back to center.

In this quote Josephina described the performance improvement she experienced learning

her pre-shot routine and how in control she felt using her pre-shot routine. Not only was

she more in control, but she was able to focus on the present and to remain calm while

playing in a state tournament.

Final Interview Data

In the final interview, Josephina evaluated the overall goals, methods, and results

of this entire program. Josephina said that she was hesitant to participant in the

beginning because she knew that it would be helpful but hard work. When asked to

provide her thoughts on the overall goal of this project being to help her team perform

better and improve focus in tournaments, she simply stated, "Um I think you did it! Everyone can always use that you know? "

When considering the methods or skills taught in the workshops to guide them in forming a pre-shot routine, Josephina found the relaxation to be very helpful and what she needed. She was comfortable in discussing her feeling reluctant to try cue words at first. Then once trying them she found them to be beneficial in feeling committed to her shot. She said,

> When we first talked about cue words it was like I don't want any part of that I don't want to do that. The cue words helped a lot like when I was saying you say the cue word in my head it just tied it all together. Like the breathing is the final exhale the step into it is like because you are thinking about your breathing and you're just looking at the flag and like that's where it's going. You kinda like everything goes into autopilot.

Lastly, she felt that the behavioral strategy was, "gravy," meaning it completed the pre-shot routine.

Josephina's data showed improvements in performance. She further went on to describe her improvements as,

> Of course I think it improved. The numbers speak for themselves. But like I did feel like I was in control like no matter what any other player was doing or what was going on at home or anything that like I can do the routine, and I would be ok.

When asked to provide constructive feedback to improve this program for future practice, Josephina suggested taking the workshops and interviews to the golf course and to rename cue words. First, she felt that more face time on the golf course would have

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been beneficial, especially if she were a client as opposed to a research participant. She described that, while we met weekly, it was difficult to recall details without being in that environment. The interviews were conducted in a way that felt like the student researcher and participants were having a conversation because they were spending so much time together. Relaxation is the only part of this program that would not have been able to be taught initially on the golf course.

Next, Josephina suggested renaming cue words to a trigger or trigger word. She resisted learning cue words and felt like she "wanted nothing to do with that". Cue words reminded her of cue cards that actors read. She did not feel that it resembled anything athletic. Whereas a trigger would be more appropriate. Her cue words were "alright just do it", like pulling a "trigger". The last thing that she did in her routine was take a deep breath. Therefore, her pre-shot routine was like pulling a trigger. She felt clear, centered, and committed to her shot after having completed her routine.

In summary, the hypothesis was supported for Josephina's approach shot performance but no improvements were observed for her putting performance. Furthermore, her ability to focus improved similar to her approach shot performance. She perceived the pre-shot routine to improve her performance.

<div align="center">Summary of Findings across Participants</div>

Aim 1: Performance Findings

Table 4 summarizes the performance findings. Performance improvements were determined through visual inspection of the performance graphs and through calculating

the MBLR. The total number of shots per round were graphed for each participant across 19-21 rounds. Approach shot improvements were revealed for two of three participants ranging between 15% - 35%. When visually inspecting the participants' graphs, it was very difficult to determine change, due to the intervention, because of the variable nature of competitive performances. For example, Mervil's approach shot performance appeared to be creating a gradual negative trend indicating improvement until conference and regional matches were played with more pressure. Performance improvements were found for Mervil and Josephina's approach shot performance, and, both Mervil and Barbara experienced putting improvements ranging from 1-2%.

In summary, the hypothesis was supported for both approach shot and putting performances. All three participants reported adhering to their pre-shot routines. Two of three participants reported improvements on the mental skills scorecards. Furthermore, the performance improvements can be attributed to these improvements in perceived ability to focus and relax when utilizing a pre-shot routine.

	Mervil	Barbara	Josephina	Total
Putting Improvements	Yes	Yes	No	2/3
Approach Shot Improvments	Yes	No	Yes	2/3
MBLR Putting	1.41	2.42	-2.80	
MBLR Approach	15.21	-6.55	35.62	
Ability to Focus 233/315=74%	83/99=84%	77/99=78%	73/117=62%	
Adherence 258/315=82%	77/99=78%	94/99=95%	87/117=74%	

Note: $_1$MBLR was calculated by subtracting the intervention mean from the baseline mean divided by the baseline mean and multiplied by 100 (mb-mint/mb*100). $_2$Percent adherence and ability to focus was calculated by the number of strokes the participant reported adhering to or able to focus divided by the total number of strokes taken.

Table 5. Performance Findings

Aim 2: Social Validation

Next, the social validation data was critical to determine the participants'

perceived impact of the program on their performance. Because performance is variable,

especially with an open-outdoor sport such as golf, this data was helpful in finding subtle

improvements, explaining perceived causes of improvements, and clarifying the

performance graphs. The program was socially validated as having a positive impact by

all 3 participants. This mechanism of evaluating the impact of the pre-shot routine on

putting and approach shot performance provided greater detail about the nature of the

perceived improvements.

Summary Themes

When asking participants to evaluate each individual skill and its perceived impact, several themes continued to surface in their interviews. They perceived their pre-shot routines to improve their ability to focus or refocus after mistakes, an improved ability to remain relaxed, an increased feeling of shot commitment or trust to their swings, and feeling more in control, and a perceived benefit to performance. Figures 7-10 displays the initial and summary themes for the post-phase interviews for each of the three phases and final interviews. The following section will discuss the skills in order of their perceived benefit (i.e. relaxation training, behavioral strategy, and cognitive cue words) followed by the summary themes for the final interview.

Relaxation training was perceived to be the most beneficial skill learned. As previously stated each participant asked for relaxation training, the intervention phases were reordered to address the participants' needs, and thus it is no surprise that they perceived it to have the greatest impact on their performance. Relaxation training was found to improve participants' ability to relax, feel present when playing, and remain emotionally in control. Participants described relaxation training as having an impact on their ability to filter out distractions, focus on task-relevant cues, and even direct their attention toward the next shot. Relaxation training was critical for Josephina's continued participation in the study. After the first tournament following relaxation training Josephina said, "I can feel a difference when my head is clear when I do it." Mervil reported improved ball striking and ability to focus and refocus as a result of the

relaxation training. Barbara had exposure to relaxation training in choir and even basketball, but had never applied it to her golf game. She found specific improvements with her irons, woods, and sand shots. Josephina was experiencing performance anxiety at the beginning of most rounds. This resulted in internal distractions and worry about her performance. She found that she felt her head was "clear" after incorporating the relaxation technique. Ultimately, she felt that this program was helpful and attributed her performance in the state tournament to her new routine.

Mervil and Barbara found the behavioral strategy to be the second most helpful. Again participants perceived the behavioral strategy to improve their ability to focus, remain relaxed; it improved their shot commitment and trust, and they experienced a greater feeling of control. Mervil found that the relaxation technique coupled with the practice swing resulted in feeling more relaxed which was initially her cue word. She no longer felt that she needed the cue word. Her routine utilized two of the three skills. Both Mervil and Barbara found the behavioral technique to be the most difficult to determine personally, but beneficial. Josephina found the cue words to be the second most beneficial as she felt increased shot commitment/trust once she started practicing this skill. She concluded the behavioral technique (e.g, waggle) helped keep her loose, maintain muscle memory, and was "gravy" in her routine.

Lastly, the cognitive cue words were perceived to be the third most beneficial skill learned. Participants reported that learning cue words affected their ability to focus and refocus, remain relaxed, and improved their shot commitment and their ability to

trust their shots. Barbara reported that cue words helped her to better control her thoughts as opposed to "random thoughts" sneaking into her routine. She also reported that they specifically helped her wood and iron shots. Josephina went further to say that her cue words took the "guess work out of committing to her shots," and she felt she would not have hit her driver as well without implementing them into her pre-shot routine.

In the final interview, participants evaluated learning a pre-shot routine as a whole program and the intervention goals, methods, and results. All three participants reported their pre-shot routine to improve their ability to focus and improve their performance. Mervil continued to report an improvement in her ability to focus on each shot and even focus on the next hole as opposed to her previous tendency to dwell on mistakes and internal distractions of performance on previous holes. This is contrary to her performance and mental skills graphs that did not reveal any improvements. In the final interview Mervil discussed that she did not find the pre-shot routine as helpful in high pressure situations such as the regional tournaments. Barbara found her pre-shot routine to specifically improve her iron and wood shots. She also perceived a greater ability to focus. Lastly, Josephina perceived her pre-shot routine to directly affect her ability to perform well throughout the remainder of the season.

Participants agreed that the goal of this program was necessary and often a component that is left out in golf. They perceived the mental component as important and appreciated the opportunity to learn MST. Barbara specifically stated that many

golfers do not have pre-shot routines, and she felt they are an important part of a golfer's game. Josephina felt that any goal to improve performance is beneficial. Next, participants discussed the methods or strategies taught in an attempt to improve their performance. As previously stated, they perceived relaxation training to be the most needed skill and also the most beneficial. Next, they enjoyed the behavioral strategy because it was something they could "do". While they found it difficult to determine what strategy to use, they reported it to be helpful once implemented into their routine with the other two skills. Mervil reported that an extra practice swing kept her loose and further helped her stay relaxed. Barbara had struggled with a worry of gripping her clubs too tightly. Her strategy of adjusting her grip was an additional way to keep her hands "soft", and similarly, Josephina found that a waggle helped to maintain muscle memory and to keep her loose.

Lastly, the participants reflected on their performances and further discussed the effect that learning a pre-shot routine had on their performance. Mervil felt that the obvious result of her participation in this program was an improved ability to focus, remain relaxed, and she felt that she was more emotionally in control and "didn't get as upset." Barbara felt improvement with specific shots and clubs. She noticed an improvement in her sand shots with woods and in iron shots. Josephina felt an improvement in her ability to relax on the first hole. This was a dramatic improvement from reporting previous anxiety attacks in past seasons.

In summary, participants found learning a pre-shot routine to be a necessary part of their mental game. They reported that relaxation training had the greatest impact on their ability to focus, relax, and improve their performance. Furthermore, they perceived the program to have a positive impact on their performance.

Cue Words Initial Coding for all 3 Participants   Summary Themes

Mervil

| Helped me focus more |

| It helps me stay relaxed |

| I think it helped |

| Helped me refocus after bad shots |

Barbara

| Can't think of random thoughts |

| Helped wood and iron shots |

| I trust myself more with sand shots |

| Going to hurt by getting angry, helps to do things the same way |

Josephina

| Took the guess work out of committing to the shot |

| Wouldn't have hit driver as well at states, and like mentally I was able to slow it down |

| You are always more relaxed after practicing |

Improved Ability to Focus/Refocus

Improved ability to Relax

Increased Shot Commitment/Ability to Trust

Improved Performance

Figure 7. Qualitative Coding and Summary Themes for Cue Words

Relaxation Initial Themes   Summary Themes

Mervil

| Helped me relax and think about next shot |

| When I'm relaxed I hit the ball better |

| It helped me like refocus-like I kinda got it back together in the last 5 holes |

Barbara

| Helped me get in the zone like all my thoughts are gone |

| My irons are a lot better; hitting the ball was better |

Josephina

| I felt like I could collect myself |

| I felt like I had an advantage over myself |

| I'm in the right mindset and can focus on that shot |

Improved ability to Relax

More Present

Emotionally in control

Improved Performance

Figure 8. Qualitative Coding and Summary Themes for Relaxation

Behavioral Initial Themes   Summary Themes

Mervil

I guess it relaxed me and helped me focus

It helped me be a little bit more consistent

Barbara

Don't have to worry anymore just go

Helped me focus because I worry about my hands being too tight

When I wasn't regripping I'd stand over the ball too long

Josephina

Good to keep everything loose; keep that muscle memory

I was more in control than I've ever felt

It helped me calm down and brought me back to center

Improved ability to focus

Improve ability to relax

Improved Performance

Improved shot commitment and trust

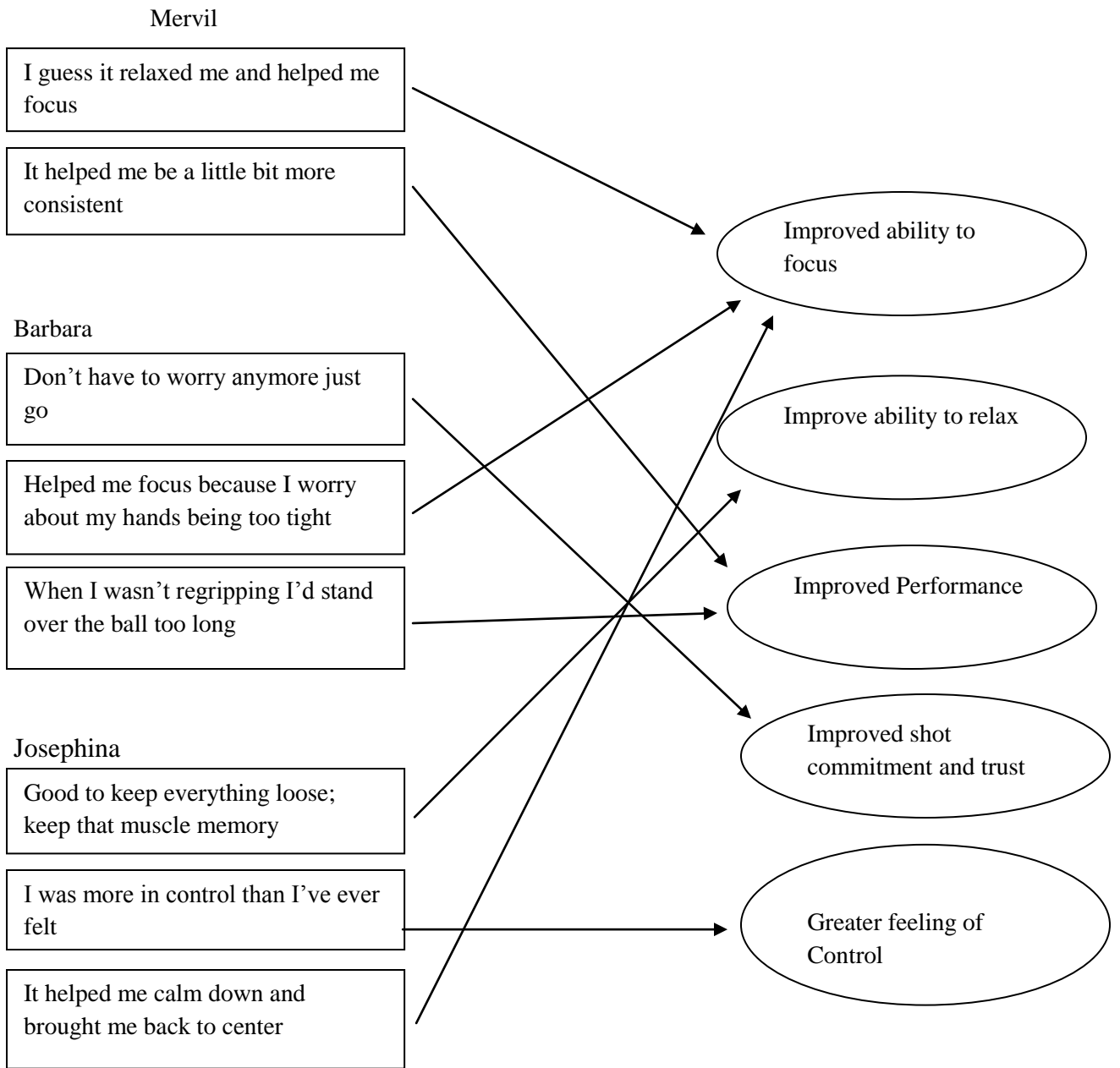Greater feeling of Control

Figure 9. Qualitative Coding and Summary Themes for the Behavioral Strategy

Final Interview Initial Themes   Summary Themes

Pre-Shot Routine

| I think it helped me relax and stay focused more |

| I would say I'm probably more focused like mentally things don't hurt as bad, things don't stick with me as much |

| The more I practiced my routine the more I became interested and played better |

Helpful
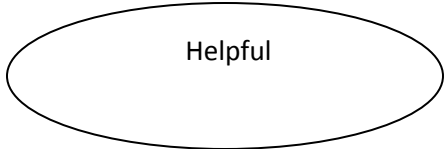
Goal

| I think it's really good because a lot of golfers don't have a pre-shot routine |

| Everyone can always use that |

Pre-Shot Routines are Needed in Golf
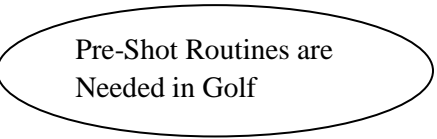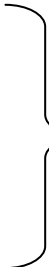
Methods

| The relaxation helped the most, I like behavioral better than cue words |

| The cue words were the hardest, but it became second nature. The behavioral was the 2nd hardest to figure out but was helpful to clear my mind |

| I needed relaxation, the cue words I didn't want any part of that, and the behavioral just tied it all together and kept me loose. |

Relaxation, Behavioral, Cue Words

Results

Relaxation helped, I could focus and relax more, and am not getting upset as easy

Woods and irons are definitely better

Of course I think it improved! The numbers speak for themselves.

⟶ Improved performance and/or ability to focus and relax
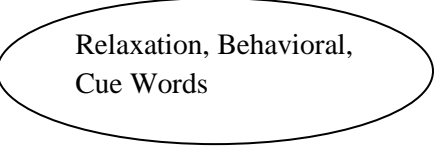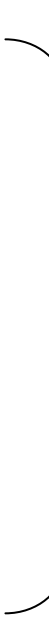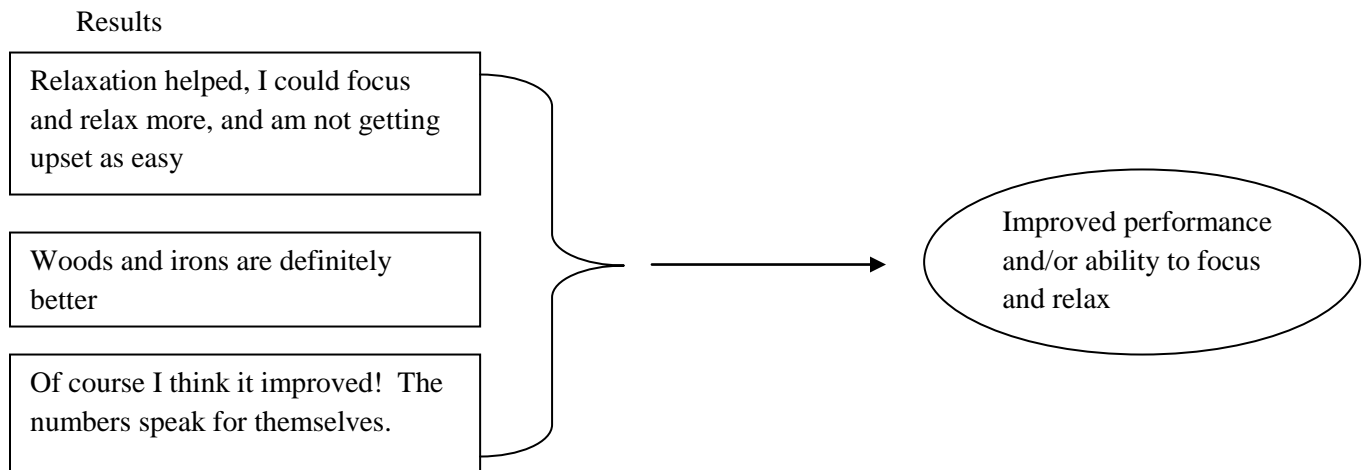
Figure 10. Coding and Summary Themes for the Final Interview

Trustworthiness

Reliability

Several steps were taken to ensure that the intervention protocol was consistently implemented with each participant and that the results were accurately analyzed. First, season notes were kept for each group workshop and individual meetings with the participants. These documents were reviewed by an external collaborator and a head coach and deemed reliable. While the student researcher met with Mervil for one more practice than the other participants, she still attempted to schedule practice time with Barbara and Josephina. As previously stated, this was difficult because the participants tended to practice at the same time on weekends due to their academic responsibilities.

In addition to season notes, an external collaborator reviewed the thought sampling analysis, visually inspected the performance graphs and interview transcripts

separate from the student researcher for validity of the data analysis. They agreed on 100% of the analysis of the performance graphs. Ninety-six percent agreement was reached on the thought sampling statements. On the statements that they did not agree upon, each provided their rationale, and an agreement was reached. He further suggested one modification to the summary themes for the cue word interview analysis. He felt that, while increased shot commitment was a logical summary theme, Josephina and Barbara continued to express an increased trust in their technical routine as a result of their cue words.

The head golf coach reviewed the worksheets used to teach each mental skill and deemed the protocol to be reliable as the intervention protocol was implemented consistently with each participant. While the order of the workshops was adjusted, some of the information necessary to make this decision was offered by the head coach. Prior to the student researcher meeting the golf team, he provided critical information regarding Josephina's anxiety and her history in golf from the time she started playing to her currently playing for this high school team. He asked that Josephina be made a priority, and the student researcher be "stuck to her side" at all times. Despite Josephina's needs differing from the other two participants, the protocol was still able to be implemented the same with all three participants.

In summary, the external collaborator and head coach determined that the researcher was consistent in implementing the intervention protocol with the three

participants. Agreement was reached on the analysis of the performance data, thought sampling and interview analysis.

Validity

Previous review articles considering intervention efficacy cited design limitations such as a lack of implementing manipulations checks or reliability checks, and a lack of incorporating a social validation component. This study attempted to address these limitations and incorporated these strategies into the protocol. A manipulation check is critical in determining whether findings can be attributed to the intervention. First, participants were asked to simply check whether they felt they were able to focus and if they adhered to their new pre-shot routine after every hole during a tournament. Participants reported equal to or greater than 75% adherence to their pre-shot routines.

Next, a member check was performed to ensure accuracy of the participants' interview responses. The interview transcripts were emailed back to each participant giving them the opportunity to make changes to their answers, clarify answers by providing greater detail, or recant any answers they no longer agreed with after further consideration. No changes were made by the participants. Josephina was the only participant to comment on her transcripts. She was unaware that she used the word, "like" so often when communicating.

The student researcher took two steps to ensure that she managed her potential

biases; reflecting on each season note and engaging in supervision with her AASP

certified Sport Psychology Consultant. Reflection is a process that needs to take place

outside of consultation with participants, and it allows the researcher time to reflect and

evaluate her overall ability to implement the protocol with each individual and consider

idiosyncrasies learned about each participant. Several things came from this process.

First, it became apparent in the first few weeks of the study that each participant was

communicating a need for relaxation. This was the reason for reordering the phases to

teach them relaxation prior to the behavioral strategy. In the initial interviews each

participant discussed internal and external distractions that were impeding optimal

performance, thus leading the student researcher to feel comfortable proceeding with the

intervention protocol as planned. In her experience, golfers often have unhealthy

cognitive processes that need to be reprogrammed to improve their performance. For

example, Mervil's constant focus on the score and self doubt was a hindrance to her

performance. When a golfer performs at a competitive level with this mentality, it can

take some time to help them feel comfortable incorporating healthier strategies. When a

rapport was built between the researcher and the participants, they began discussing their

interest and need for relaxation training. Mervil specifically talked about how tension

interfered with her ball striking. Barbara continually discussed her concern of gripping

her clubs too tight. Josephina was an obvious case of a need for relaxation training

because she had previously experienced anxiety attacks on the golf course. The student

researcher felt that she had to consider what was best for the participants and the overall goal of the study when making changes to the intervention protocol. She felt that if she reordered the phases to teach relaxation first, this would address the needs of the participants first and foremost. In reordering the phases, performance improvements may have been more clearly apparent as the participants' immediate needs were being met.

Next, this process of reflection and supervision was of the utmost importance when working with Josephina for ethical reasons. From the beginning it was critical to discuss Josephina's performance anxiety with a supervisor. She was reluctant to seek counseling and made it clear that she wanted to work with a consultant with specialized training in sport. The student researcher made the decision that if she were to have an anxiety attack on the golf course, she would then drop her from the study and proceed with consultation separately. Fortunately, Josephina found the deep breathing helpful and was able to complete the study.

Next, the student researcher was continually challenged while working with Josephina on different levels. First, Josephina sought reassurance from the student researcher similar to what her father had provided throughout her youth. In early meetings Josephina would repeatedly mention her skill level. After reflection and reviewing her initial interview notes, the student researcher came to the conclusion that Josephina had become accustomed to external reinforcement from her father. Unfortunately, this reinforcement was often the showing of love and affection when she performed well. When she qualified for a tournament or placed in a tournament, she

would receive attention from him. This became important in meeting with Josephina. The researcher made an attempt to give her time to discuss her successes.

This further translated into boundary issues that had to be managed by the student researcher when working with Josephina. The student researcher found similarities between her childhood, current personal growth processes, and what Josephina was experiencing. Josephina had a limited social support system and seemed at times to want to develop a friendship with the student researcher. This was challenging to manage building trust and rapport with Josephina but to not overstep the boundaries to discussions that were beyond the realm of this study. The student researcher offered to consult with Josephina probono after the completion of the study. Josephina needs to reflect on her motivation for her participation in golf, additional relaxation training to manage her anxiety, and further skill building to address the association with the golf course and her youth sport experiences.

Lastly, throughout this process the student researcher became somewhat distracted by the information she was learning which could benefit future research and practice. This was also discussed in supervision. She found it difficult to remain focused on the data collection and analysis and also designate time to reflect and process the many practical lessons that she felt were important to remember to report for future research and practice. While she felt she was able to implement the intervention protocol consistently, the reflection process of other findings relevant to this type of research

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became very interesting. She managed this through setting specific time aside to reflect

and journal specifically on this topic to be included in the discussion section.

CHAPTER V

DISCUSSION

The pre-shot routine program was designed to teach youth golfers three mental skills; cue words, deep breathing, and a behavioral focusing strategy in an attempt to improve their competitive golf performance. More specifically, participants' putting and approach shot performances were measured and examined for performance improvements. A social validation component was included to evaluate the effectiveness of the intervention protocol. Their interview responses were important in making adjustments to the intervention protocol to ensure maximum benefit, and to clarify performance changes. It was hypothesized that putting and approach shot performance would improve as a result of learning and consistently incorporating the pre-shot routine. This section will summarize the findings of this study, discuss the contributions and limitations, consider the practical implications for teaching pre-shot routines to youth golfers, and discuss the suggested future directions for intervention efficacy research.

Study Findings

The first aim, to investigate potential performance benefits after learning a pre-shot routine, was supported for both putting and approach shot performances. Small putting improvements were found for Mervil and Barbara. Approach shot improvements

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were found for both Mervil and Josephina. Josephina stated that her short game was one of her strengths, thus potentially leaving little room for improvement. The other two participants' performances varied more toward the end of the season when they were in conference, regional, and state tournaments making it difficult to detect changes in their performances. These extraneous pressures undoubtedly affected their performance and made the participants' evaluation of the program even more critical to evaluating the program as a whole. All three participants reported that the program was beneficial. They felt that learning the importance of their mental game, strategies to self-monitor what cues were consuming their focus, and having a systematic routine to follow became important to them.

The second aim, the social validation component, was critical to further explaining the performance findings, elaborating on the indirect relationships between the psychological impact of learning these new skills, their impact on performance, and ensuring that the student researcher could implement a successful program. The social validation revealed improvements ranging from performance improvements to improved psychological factors that are important to for optimal performance. However, each participant explained that it helped in different ways. For example, one participant reported an improved ability to focus and relax which resulted in better ball striking ability; whereas, another reported an improved ability to feel in control which resulted in shooting the lowest score of the entire season at the state tournament. The third participant gave very specific aspects of her golf game that improved after the intervention. She discussed improved performance with her irons, woods, and even

better sand shots at one tournament. She went on to describe an improved ability to focus similar to being in a zone and an ability to focus solely on the present shot. All three participants indicated that the relaxation skill was the most beneficial to improving their performance and that felt they needed relaxation training. Two participants felt that the behavioral strategy was the second most helpful strategy in that it enabled them to remain loose and maintain muscle memory prior to skill execution. One participant decided not to use her cue words any longer after learning relaxation. She felt that she achieved the desired effect of being relaxed and having a smooth swing, and thus no longer needed cues. Incorporating the post-phase interviews after learning each skill enabled participants to provide more detail in evaluating each skill as opposed to retrospectively asking them to reflect at the end of the intervention.

The findings of the current study provide empirical support for several theories previously discussed regarding the potential benefits of routines on competitive sport performance. First, Boutcher's (1990) attentional control theory suggests that performance routines aid athletes in maintaining focus and filtering out distractions. Attentional control theory proposed that three perspectives can influence an athlete's ability to filter out distractions and to attend to task-relevant cues while performing. The social-psychological perspective considers situation specific influences in a sport environment that may influence focus. The psychophysiological perspective suggests that physiology or arousal levels can have an impact on focus, and lastly, individual differences are the unique differences in attentional style of each athlete. Attentional control theory further suggested that cue words and breathing were the important

components of performance routines. Cue words are tools that athletes use to focus on task-relevant cues in their sport environment, and breathing is a critical strategy that can be quickly implemented to relax the body. Breathing can easily be incorporated into a performance routine to enhance the effect of increased physical awareness, to decrease intensity levels, and to improve focus. This theory served as a framework that informed creating the protocol in the current study. Both cue words and breathing were supported as improving ability to focus and ability to relax in the current study, thus providing empirical support for attentional control theory as an explanation for routines assisting athletes in maintaining focus while competing. Next, the current study also serves as evidence based research, or evidence that the skills practitioners teach in consultation are effective. These findings offer support that relaxation training, cue words, and behavioral focusing strategies can improve competitive sport performance and also improve perceived ability to focus.

Pre-shot routines are a common skill of interest among golfers, and there are only a few studies citing the performance benefits of pre-shot routines (Boutcher & Crews, 1987; Boutcher & Zinsser, 1990; Cohn, Rotella, & Lloyd, 1990; Beauchamp, Halliwell, Fournier, & Koestner, 1996; Bell, Skinner, & Fisher, 2009). The earliest study used a group mean comparison design to examine the effect of a pre-shot routine on putting performance with male and female students in an introductory golf course at a university (Boutcher & Crews, 1987). They found focusing cues and behavioral components to improve putting performance of the female group and increased the time between shots and reduced variability of ball striking of both male and female groups. The current

study is consistent with the finding of Boutcher and Crews (1987) that pre-shot routines improved putting performance for female golfers.

Boutcher and colleagues (1990) looked at the impact of pre-shot routines on elite and novice golfers on six 4-foot and six 12-foot putts through an observational design. Cardiac and respiratory measures as well as descriptive data about the nature of the golfer's pre-shot routines were collected, and significant differences between elite and novice golfers were found. They found elite golfers to have longer, more complicated, and consistent routines. The beginners were less consistent with their overt behaviors. Lastly, the elite golfers recorded significantly slower heart rates and had simpler cues than novice golfers. Similar to Boutcher and Zinsser's (1990) findings, the current study found that one participant, Mervil, was less consistent in implementation of her technical routine, and she was the least experienced golfer on the varsity team. Moreover, Barbara initially struggled with her pace and time between shots when playing in tournaments. However, this study (Boutcher et. al., 1990) was observational in design, and the current study taught and evaluated the impact of teaching a pre-shot routine as opposed to observing technical aspects of golfers' routines.

Cohn, Rotella, and Lloyd (1990) further explored the technical aspects of a pre-shot routine with elite collegiate golfers. They employed a multiple baseline SSD with staggered treatment phases. The components of the routine were: aligning the target, good posture, consistent ball position, strong decision making, commitment to club selection, type of shot played, and position to target. Cohn et. al. (1990) also measured

adherence to the pre-shot routine and performance. Similar to the current study, adherence to the routine was supported, but unlike the current study performance improvements were not found. This study did include a social validation component, and participants reported the program to be helpful.

Another study employed an experimental design teaching a cognitive behavioral program to junior college students in an introductory golf course and examined their motivation, preparation, and putting performance (Beauchamp, Halliwell, Fournier, & Koestner, 1996). Students were assigned to one of three treatment groups ranging from learning putting, a group that introduced stress management and concentration, or a motivation phase consisting of goal setting for pre-performance routines for putting. Improved putting performance and increased intrinsic motivation was found for the treatment group. This is consistent with the previous studies that support MST for putting performance. However, the current study strengthened this line of inquiry by utilizing a SSD advocated by researchers Greenspan and Feltz (1989) and Martin, Vause, and Schwartzman (2005) and incorporated a social validation component to the program suggested by Martens and Hrycaiko (1983).

In summary, there is support for pre-shot routines improving putting performance among college students in introductory golf courses and elite collegiate golfers. An observational study concluded that elite golfers are more consistent in implementing pre-shot routines and take more time between shots. The current study strengthens these findings by incorporating a multiple baseline SSD protocol with social validation. In

addition, youth golfers were recruited to participate in this study, and their competitive golf performance was measured.

Youth sport performers have been widely understudied within intervention efficacy research (Greenspan & Feltz, 1989; Martin, Vause, & Schwartzman, 2005; Williams, 2006). The majority of studies teaching MST programs have recruited elite athletes or volunteers in recreational sports or introductory physical education courses in universities (Williams, 2006). This is thought to be due to pragmatics and the difficulty recruiting athletes in season and to conducting a study while minimizing intrusion into the sport environment (Whelan, Mahoney, & Meyers, 1991).

Since 1980 MST has been advocated for children suggesting that they will learn MST with more ease as they learn and develop physical skills in sport (Gould, 1983; Vealey, 1988). In theory MST can enhance learning in youth sports, make sport more meaningful, and enhance their enjoyment (Hackford, Duda, & Lidor, 2005). Considering such positive implications for MST with youth athletes, it is unfortunate that so few studies have considered youth athletes as a target population. Two studies considered the effect of self-talk on figure skating performance of participants ages ranging from 11-17 (Palmer, 1992; Ming & Martin, 1996).

Palmer (1992) conducted a pre-post design and considered the impact of self-talk on figure skating performance with youth figure skaters. Participants were divided into two groups. In the first group participants were asked to select key words to help correct elements of each figure they were practicing, use key words during the session, and when

walking through the figure when not at the rink. In the second group, participants were required to list key words to help them concentrate and to trace the figure on paper while saying the cue words out loud. Only the second group was found to be an effective strategy.

Ming and Martin (1996) replicated this study with a SSD approach to examining the impact of self-talk on skating performance. They formed two groups: one of pre-novice and the other of novice-level competitive figure skaters aged 11-13 years old. Participants were shown video of national level figure skaters using key words. Participants were urged to develop their own key words to use while performing to aid in focusing and doing "off-ice workouts" of compulsory figures. Through objective behavioral observations they were able to confirm that the self-talk improved participants' performances in practice. Similar to Ming and Martin's study, the current findings offered additional support for cue words (or key words) to improve performance. The current program included youth athletes ranging from 14-17 and taught a self-talk strategy and cue words. Unlike Ming and Martin's study, the current study examined both practice and competitive sport performance among youth sport performers.

In summary, while there is little research considering competitive sport performance with youth sport performers, the current findings support the existing literature that pre-shot routines can improve putting performances, and the use of self-talk (i.e. cue words) with youth athletes. The current findings further supported this line of inquiry by adding the design suggested by reviews on intervention efficacy, considering

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competitive sport performance, and collecting self-report data from participants regarding adherence to the skill learned as opposed to observing the use of cue words, relaxation, and behavioral strategies. Also, social validation was included in this study to evaluate the program, and this study also provided detail from participants regarding the mechanisms responsible for performance change. For example, instead of only reporting performance improvements, competitive data were collected, and participants were also interviewed and asked about their performance changes. Mervil continually spoke of an improved ability to focus and relax contributing to improved ball striking ability. Barbara offered specific technical aspects of her game that improved, as well as a greatly improved focus that felt similar to being in the "zone". Lastly, Josephina's spoke of a greater control over herself and her game as a result of implementing the same pre-shot routine prior to each shot.

<div align="center">Strengths</div>

Manipulation Checks

This study attempted to address some of the limitations of the methodology cited by Greenspan and Feltz (1985) and Martin, Vause, and Schwartzman (2005). Manipulation checks, reliability checks, and socially validating the interventions were all incorporated in this study in an attempt to strengthen the validity and trustworthiness of the findings. The adherence log served as the manipulation check and assessed the percentage that participants reported utilizing their pre-shot routine in competition, allowing the results to be attributed to the intervention or skills learned as opposed to a

practice effect. The adherence log was completed during each round and provided an immediate measure of percent of adherence. The participants reported adhering to their pre-shot routines between 74 to 95% of the holes played for an average 82 % total adherence.

Reliability Check

A reliability check ensures that the intervention protocol was consistently implemented with each participant (Martin, Vause, & Swartzman, 2005). An external collaborator reviewed the session notes and evaluated whether the student research implemented the intervention protocol as planned and consistently with each participant. Moreover, in SSD research the data are analyzed through visual inspection of graphs, and it is critical to train someone independent from the project to assist with that process to ensure accuracy. The external collaborator also assisted with data analysis. As previously discussed, the researcher had to manage her own biases working so closely with each participant. Having an objective external collaborator removed from the project to collaborate with the analysis process strengthened the findings. In addition, the head golf coach reviewed the worksheets used to teach each skill. He found them easy to understand, concise, and interesting. He offered additional information above what was asked of him regarding the student researcher's ability to work with each participant. He stated,

> I want to thank Jennifer and commend her for her work with our student-athletes.
> She immediately developed positive rapport with them and took a genuine
> interest. With 3 of our 4 seniors recording personal bests on the first day of the
> NCHSAA State Tournament – the biggest stage they could play on – it is apparent

to me that Jennifer successfully reached these young women and mentally put them in a position where they could be their best.

Social Validation

The last portion of formally evaluating this intervention protocol involved the participants' reviews in both post-phase interviews and a final interview to evaluate learning their pre-shot routines. The social validation component recommended by Martens and Hrycaiko (1983) further explained performance when the performance graphs were difficult to detect changes, allowed the participants to discuss the specific changes they perceived as a result of learning the skills, reinforced, clarified, and added additional details that performance graphs did not offer. While performance improvements were found, it is equally as important and interesting to consider the specific improvements revealed from the post-phase interviews that can guide future SSD inquiries in intervention efficacy. This component can reinforce, clarify, or add additional details to the intervention findings. The participants in this study each found learning a pre-shot routine to be beneficial. They stated that the program was helpful to their performance even when a clear trend could not be found in the data. Participants' interviews also provided specific details regarding the aspects of their golf game that improved whereas their graphs only provided a one dimensional view of their performance. They offered details about the psychological benefits (e.g. improved ability to focus/refocus and improved shot commitment and trust) and technical aspects of their golf game they perceived to improve (e.g. improved shots with driver, woods, and irons).

Design

Choosing a SSD to investigate the efficacy of teaching youth golfers a pre-shot routine was an additional strength of this study. When investigating the process of learning psychological skills in youth golfers' natural environment, it is important to choose a design that offers the flexibility to adapt and to make adjustments to the intervention protocol if needed (Kennedy, 2005). The ability to adapt and make changes to the intervention protocol became critically important in this study because if adaptations were not made to the protocol, performance findings may not have been found. For example, Josephina clearly needed relaxation training, and the SSD allowed the student researcher to reorder the phases to address her specific needs. Her performance graphs indicate a clear improvement in approach shot performance immediately after the relaxation phase. This improvement may not have been as clearly observed or her performance may have varied more had the phases not been reordered to address her needs. The intervention protocol was further adapted to address the needs of the other two participants. They all needed relaxation training to address both psychological and somatic anxiety. It became apparent after the first workshop that the other 2 participants were experiencing similar concerns. Reordering the phases to adapt to the participants' needs may be one reason why performance improvements were found.

The flexibility offered by SSD to adapt a protocol, once in the applied setting such as golf, is similar to the process employed by sport psychology consultants. In

consultation, practitioners work with both athletic teams as well as with individual

athletes. When using MST, practitioners individualize a program to the needs of each

client. Essentially, this design allowed the student researcher to implement the

intervention protocol similarly to the process of working with clients in private practice.

This is salient because the goal of this project was to evaluate the effectiveness of MST.

It is imperative that when implementing a program of this nature there are procedures that

allow the researcher to build rapport, collect unique information that will allow the

program to be individualized, and adapt to the participants' needs to ensure maximum

potential benefit to the participants. The flexibility of this design enabled the student

researcher to assess the needs of the participants, make necessary adjustments to the order

in which skills were to be taught, and still consider the overall goal of the project.

Participants

Lastly, the body of research considering intervention efficacy is sparse and few

researchers have employed a sound methodology with youth participants (Martin, Vause,

& Swartzman, 2005; Whelan, Mahoney, & Meyers, 1991). As suggested by Meyers

(1991) the absence of youth sport performers in intervention efficacy research is due to

pragmatics, volunteer participants from physical education courses, and recreational

athletes have greater flexibility and are more easily recruited. Gould (1983) and Vealey

(1988) suggest that children or youth populations are at a better place to learn MST and

should be considered in future investigations of intervention efficacy. One of the

strengths of the current project is that a youth population was considered. While one was

highly skilled, the other two had fewer than five years experience in competitive golf.

Limitations

There are several limitations to the current study including: inability to stagger

the start of the intervention phases, inability to conduct individual skill sessions, lack of

external validity, only female participants from one team were recruited, and future

studies should attempt to control for the impact of the support offered by the researcher

could impact the results. While the flexibility offered by SSD to study athletes in their

natural environments is desirable and mentioned earlier as a strength, the adjustments

made to the protocol do affect the validity of the observed findings. Originally, the

phases were intended to be staggered, and participants would have started each phase at

different times. This would have enabled the student researcher to compare potential

performance changes across phases while other participants remained at baseline.

Instead, participants learned each phase in educational group workshops, and their

collective participation was at the same time for each phase. The participants' season

was approximately half over at the beginning of this study. If the researcher had

staggered each phase individually there would not have been enough competitive

tournaments to complete the data collection. After learning each skill, the researcher met

individually to practice with each participant to ensure that their skills were

individualized based on their needs and implemented into their technical golf routine.

These athletes were very close and worked extremely well as a group. They knew one

another's game and offered helpful suggestions to their teammates in the group workshops. While it was undesirable that the phases be taught in educational group workshops, this uniqueness would not have been obtained if the skills had been taught individually. However, Mervil stated that she did not enjoy talking in a group. When she brought this to the researcher's attention, she was not required to contribute in a group. The researcher reserved her questions for their practice time together. Mervil eventually became more comfortable working individually with the student researcher, but even when working individually, it took some time for her to be forthcoming with information that would allow the researcher to help her practice and make adjustments to her routine. This is a critical part of ensuring that a MST program is successful, and unfortunately, the educational workshops had to be conducted in a group as opposed to staggered individually. This will be discussed further in the suggestions for future research. These limitations made the manipulation check and social validation components even more critical to the conclusions of this study to be able to attribute the findings to be a result of learning a pre-shot routine.

One limitation of SSD is the inability to generalize observed findings beyond the study. SSD violates the assumptions of traditional group comparison designs that offer greater external validity because they often have fewer than 10 participants, and therefore the ability to generalize the findings are limited (Kennedy, 2005). While it is beneficial to cite what was observed as a result of teaching a pre-shot routine, the findings cannot be generalized beyond this sample of youth participants.

As previously mentioned, youth participants have been left out of intervention efficacy research. While studying this population is a strength of the study, only female golfers on one team were recruited. Again, this limits the generalizations that can be offered concerning potential benefits of pre-shot routines with youth golfers. SSD investigations are time consuming and challenging to implement due to the experience needed in the target sport to have a successful program. Future research projects should replicate the studies on intervention efficacy using SSD and varying populations, as well as group comparisons to offer greater external validity to provide more support for the effectiveness of MST.

Lastly, it is possible that the social support offered by the researcher may have impacted the results attributed to the MST learned by participants. Future studies could control for this by separating participants into two groups: MST group and no MST group. The first group could learn the skills as planned while the second group meets with the researcher to talk about golf in general. Once all of the data is collected and analyzed the control group should receive the same MST. This way there would be no ethical concern regarding withholding potentially beneficial training. Then the performance of the two groups could be compared to determine if the results can be attributed to the MST as opposed to having someone there that offers a supportive role.

Practical Implications when Teaching Routines

Developing pre-shot routines are often a topic of interest among golfers. The three participants in this study perceived the goal of this program to be important. They

viewed the mental game to be as important as physically practicing golf and enjoyed the

process of learning how to gain control over the attentional cues that were important for

optimal performance. Barbara and Josephina both offered practical suggestions for

improving this program to teach youth golfers a pre-shot routine. Barbara found the pre-

shot routine to be helpful in keeping her focused and performing well until she was faced

with high pressure situations. She described that it would have been helpful had she had

additional tools to release intense emotions and to refocus in higher pressure tournaments

such as conference, regional, and state matches. Therefore, we discussed the possibility

of teaching future golfers mild adjustments to their pre-shot routine to plan for additional

cue words or behavioral strategies that will produce this desired outcome. She described

needing something to, "release all the emotions." Both Barbara and Mervil reported that

they enjoyed the behavioral strategy because it was something they could, "do." Barbara

discussed keeping a stress ball in her pocket for these situations in previous seasons.

Practitioners should assist clients in increasing awareness of the context of these

situations. They should probe clients and consider the time of season (e.g. competing for

a starting position in the beginning vs. matches with perceived increased importance), if

they feel increased pressure, the nature of these competitions (e.g. course conditions), and

environmental stimuli (e.g. weather conditions or presence of spectators) that may all

contribute to perceived increase in pressure. The cognitive, physical, and performance

consequences of these perceptions should be discussed and a strategy/skill taught to

adjust their pre-shot routine. When moving to the intervention stage of consultation, the

practitioner can first focus on teaching the pre-shot routine. Once these skills are

practiced and well honed, they can add an additional step to ask the participant to slightly modify this routine and add additional cue words and/or behavioral strategies to match the cognitions and emotions associated with high pressure situations.

Josephina was resistant to learning cue words, until she felt an improvement in her trust and shot commitment, simply because of a connotation that the label cue words did not match an athletic environment. She suggested renaming them from cue words to a "trigger" or "trigger word". *Trigger* represented where the cue words were in her pre-shot routine and what they represented to her. The cue words were the last of the three skills in her routine, and she executed the planned shot following, "Alright, just do it." This information can be helpful when first meeting new clients and educating them about the importance of MST. This suggestion can increase "buy in" on the part of the clients and aid in a better connection between the client and consultant. Furthermore, practitioners can co-determine with their clients what these skills mean to them. For example, Josephina's cue words represented a final step or "pulling a trigger" in her routine. Barbara's cue words represented a desired outcome, or feeling she needed to execute her shots, of having relaxed hands. This means practitioners may be able to increase buy in, reduce the likelihood of early termination by participants, and even serve as a tool to address resistance by clients by simply discussing with clients how a skill can be used and what it could mean to them in relation to their consultation goals.

Lastly, when teaching a pre-shot routine to youth golfers, it is important to teach the skills in a sequence that will address the clients' needs for optimal benefit and

increased likelihood of finding performance changes. This sequence could be co-determined by asking the participants to order their interest or needs (i.e. relaxation, addressing worry or doubt, or keeping loose and maintaining muscle memory). All three participants found the skills taught to be beneficial, but the order of each skill should be determined in collaboration with the client. For example, in the pre-intervention interview, Mervil presented with a list of task-irrelevant cues that translated into performance worry. Therefore, the order that the protocol was initially planned seemed appropriate in that cognitive cue words would first match the challenges Mervil was facing in her mental game. After teaching Mervil cue words and meeting with her at practice, it became apparent that the result of the performance worry was a significant amount of tension that inhibited Mervil's ball striking. Therefore, she wanted to address this tension. Learning relaxation skills to alleviate her tension enabled Mervil to clear her mind (the cause of the muscle tension). Ultimately, she did not use the cue words. She felt that she was able to "trust and commit" her decisions as a result of her deep breathing and practice swing. For example, while golfers tend to be highly critical and analytic, they will ask for relaxation training. That should have been taught first. It is important to design the program around what the target population prioritizes and to be prepared to make any necessary adjustments.

In summary, the participants in this study offered several suggestions that will be meaningful when teaching routines in the future. When working with participants, it will be important to gather adequate detail about the golfer's personality and golf game to determine the order of skills in the routine. For example, a highly analytical golfer may

benefit from cue words but may find some resolve in tension (consequence of performance worry) by learning relaxation first. Next, golfers have a tendency to fall back into old habits when faced with highly stressful situations. These situations are the exact times that they need to adhere to a pre-shot routine. Helping golfers anticipate and prepare for these situations is important. Consultants can guide them in making small adjustments to their pre-shot routine for specific situations that are anxiety provoking and then simulate these situations at practice. Lastly, involving golfers in the entire process of the intervention phase is critical. If the client is integral to the process of creating the pre-shot routine, whether it be renaming the skills or determining the order of skills to utilize, it is going to be more meaningful and effective for them.

Future Research

At the 2007 Association of Applied Sport Psychology conference, Dr. Vealey gave the keynote speech on the future of sport psychology, and she emphasized movement toward a collaborative effort between research and practice (Vealey, 2007). As opposed to trying to do it all, practitioners and scientists can move toward collaborating to conduct future field studies to continue investigating intervention efficacy. Practically, it was very difficult and time consuming to implement a SSD protocol. Faculty members with teaching, mentoring, and research obligations may not have the time to devote that is necessary to implement a successful intervention protocol. This is where collaboration is needed when designing a project that is practical to carry out and one that will address a need that practitioners face in the field. This process of

collaboration can save researchers significant time and potentially increase the likelihood of finding performance improvements. The student researcher in the current project has 5 years consulting experience with golf and felt comfortable and prepared to address several common challenges within a golfer's mental game that are pervasive throughout golf. This experience enabled her to draw connections between the participants' pre-intervention interviews and to provide examples in the educational workshops. For example, Mervil discussed her performance worry and focus on the score. Following this interview, cue words initially seemed appropriate, and the student researcher clearly understood this phenomenon within golf and could more quickly move to learning more about Mervil, clarifying the origin of this thought process, and helping her to form appropriate cues to redirect her focus to task-relevant cues. A researcher without experience in the target sport will spend more time learning the sport culture, observing the sport, and this may interfere with the overall effectiveness of the intervention.

To draw insight into typical psychological challenges or themes that are pervasive throughout that sport, future studies that employ a SSD may enlist a practitioner to consult on the research team with experience working with the target population. This may save time in planning the SSD design, as the practitioner should be able to speak to common themes or psychological topics prevalent in that sport as well as assist the researchers in considering potential extraneous influences. This process may increase the likelihood of finding performance improvements. This collaborative effort may aid in the data analysis process as well. When a member of the research team has substantial past experience working with one sport, they will have a variety of experiences to draw upon

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when interpreting data. This experience may be valuable in assigning meaning to qualitative data.

Participant Recruitment

There are several considerations with planning future SSD studies including: participant recruitment, design selection, continued use of the thought sampling technique, and considerations for performance as a dependent measure. When working with student athletes in high school, the inclusion criteria may be critical in completing the program, reducing attrition, and its overall success. Researchers need to consider the level of involvement required for participants to learn mental skills. Barbara was the most eager, but also easiest participant to schedule practice time with because she had the fewest academic responsibilities as a freshman. The seniors were juggling more responsibilities (e.g, SATs and college applications). These additional factors may impede a participant's ability to follow through with their obligations in a study and increase the likelihood of attrition. One practical solution is to ask potential participants to list their extracurricular activities and academic obligations that may interfere with their participation the research project. Futhermore, even though participants receive a consent form outlining the time commitment, researchers can further explain what is necessary to complete the program and ask participants if they feel participation is realistic for them.

In addition, the scope of the project and how much time is needed with participants to ensure an effective protocol can be implemented should be considered

when determining the number of participants. Part of the success of the program is the researcher's ability to consistently implement and individualize the mental skills (Williams, 2006). For example, for a program that will teach imagery and simply measure performance change, it may be feasible to recruit 3-5 participants depending upon how many meetings are required of the participants. If the scope of the protocol will teach multiple skills and address challenges the athlete faces (in ability to relax when teeing off or refocusing after mistakes), more time may be required with each participant. Fewer participants may be more manageable to ensure that each receives adequate time and exposure to the researcher.

Design

Aside from SDD, qualitative studies employing a phenomenological design may further our understanding of the impact of MST on performance. As recommended by Martens and Hrycaiko (1983), a critical piece in evaluating intervention efficacy is participant involvement. Qualitative inquiry involves participants because they are interviewed and are offered the opportunity to discuss their perceptions of the process of learning mental skills. Researchers could do this through a phenomenological study that usually asks participants one question. Studies considering performance as a dependent measure could receive multiple answers regarding performance if participants were asked either of the following,

    1.) Can you tell me how learning cue words, relaxation, and a behavioral focusing strategy affected your performance? Or

2.) Can you speak about any changes you noticed in your mental game that you

think has affected your performance?

Future projects could also incorporate this design into another mixed method design inquiry. Performance data can still be collected, graphed, and visually inspected for performance improvements, but utilizing a phenomenological design would give participants the freedom to discuss both the indirect impact (e.g. psychological changes) and perceived improvements to their competitive performance.

As previously mentioned, one of the limitations of the current study is that, due to time constraints, the intervention phases were unable to be staggered individually. Because pre-shot routines were perceived by the participants as important, and Barbara reported they are often left out of the golf game of female golfers this protocol should be replicated as originally planned. The phases should be randomly staggered and participants should learn each skill individually. This is important for two reasons. First, previous review articles have cited the existing body of literature on intervention efficacy as limited in part because of methodology (Greenspan & Feltz,1985; Martin, Vause, & Schwartzman, 2005). It is important to engage in future inquiry and to plan intervention protocols with sound methodology to further find support for MST. Future studies should stagger the start of intervention phases and randomly assign participants to intervention phases to offer greater validity to the findings. Secondly, it would be interesting to see what other improvements would surface from a protocol that can individualize the phases aside from practice time with participants.

Performance as a DV

When considering competitive sport performance as a dependent measure, it is important to narrow the focus of the research questions to increase the potential of finding visible performance improvements. While performance improvements were found in the current study, the putting improvements were very small. Increasing the visibility of performance improvements can be done by choosing very specific aspects (e.g. short game or specific types of shots; chipping or bunker shots) of a golfer's game that need improvement, or narrow specific aspects within the sport to be considered the dependent variables. This will increase the potential that performance improvements will be observed through visual inspection. For example, Josephina had a very strong short game leaving little room for improvement in her putting performance. Whereas, Barbara experienced performance worry that she was gripping her irons and woods too tightly, and she experienced improvement with these clubs when utilizing cue words "soft hands," regripping her club, and finishing with a deep breath. This was a specific issue that she brought to the researcher that needed improvement from the beginning. In addition, when planning future intervention efficacy programs, researchers should consider either choosing less successful teams or novice teams such as a junior varsity team when planning participant recruitment. Lauer (2005) found that when teaching MST for aggression reduction the hockey team chosen was not overly aggressive to begin with and made this same recommendation. A future study could focus on the impact of a pre-shot routine on improving sand shots and recruit only participants with trouble in this specific aspect of their golf game. This is not to say that more skilled golfers would not

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benefit from MST, but for research purposes it is more difficult to visually detect performance improvements on graphs when participants are highly skilled. For populations that are more experienced, it is recommended to choose less skilled golfers or isolate aspects of the golfer's performance that need improvement as opposed to looking at overall performance.

Thought Sampling

Lastly, continued use of the thought sampling technique will be challenging but does provide an immediate assessment of participants thought processes, strengths, and weaknesses during practice rounds that may be used to more effectively apply a MST intervention. Meaning, thought sampling provides an immediate measure of the cognitive processes experienced by golfers on the course. Utilization of this technique can assess the attentional strengths and weaknesses of golfers prior to the start of a MST program. This technique can examine if golfers are attending to the appropriate attentional demands of golf, or if there are attending to internal/external distractions that are prohibiting optimal performance. Some golfers allow external distractions such as spectators to distract them from mental preparation. When teaching a MST program that aims to improve attention/concentration this is valuable information to have when implementing a research protocol. Similarly, other golfers have internal distractions such as premature evaluation of performance that will inhibit performance. An understanding of this unique information about each participant is critical to successfully implementing a research protocol. However, this data proved to be difficult to collect. The researcher's

digital voice recorder did not clearly capture what the participants were verbalizing. She did manually record each thought to ensure that the data could be analyzed for the purpose intended. It is recommended for future use of this technique that researchers consider asking participants to verbalize their thoughts immediately after each shot as they are walking to the next shot or ask participants to wear a microphone to more accurately record these data. This would allow the researcher to walk alongside the participant, clearly record the information in the present as opposed to asking that it be retrospectively provided, and it will keep the researcher from being intrusive in the sport environment.

Conclusions

In conclusion, the current study attempted to address the varying methodological shortcomings in existing intervention efficacy research. A program teaching multiple mental skills to form a pre-shot routine was taught. Performance improvements for two participants' approach shot and two participants putting performances were found, and the program was socially validated by all three participants. Future research in this area is necessary to begin building a case for the validity of MST to improve competitive sport performance. This in turn will help facilitate further establishing sport psychology consultation as a vital resource for sport performers to achieve optimal performance.

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APPENDIX A: PARENTAL CONSENT FORM

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

CONSENT FORM TO ACT AS A HUMAN PARTICIPANT: LONG FORM

Parental Consent Form

Project Title: <u>Youth Sport Performance Consulting</u>

Project Director: <u>Jennifer Ann Thomas, M.S.</u>

Parent/Guardian's Name: _____

Participant's Name: _____

DESCRIPTION AND EXPLANATION OF PURPOSE AND PROCEDURES:

The purpose of this study is to gather data on how effective sport psychology skills are in improving competitive sport performance. This study will teach your child skills to develop a pre-shot routine to be used at practice and tournaments. She will participate in 3 workshops to learn each skill, 4 interviews about his experience in the study, and I will collect their scorecards from practice and tournaments. She will be asked to complete two logs for each round of golf. One asks her to report how well she stuck to her routine, and the other asks him to rate how focused, relaxed, in control of her emotions, and present she felt during each round. Her participation will require an hour per workshop and at least 2 hours of practice a week for 12 weeks. I expect to see the golf scores improve as a result of using a pre-shot routine. At the end of this study I will interview her to discuss whether she thought the routine improved performance. The interviews will be audiotaped for research purposes.

POTENTIAL RISKS AND DISCOMFORTS:

Performance naturally varies, and when learning new skills it may take awhile for performance to improve. This could be frustrating. If necessary I am willing to offer her additional sport psychology services (e.g. performance anxiety and confidence building) to help alleviate deal these frustrations.

POTENTIAL BENEFITS:

As performance improves it is likely that your daughter will enjoy golf more. Overall, if golfers enjoy their sport more, they will be more likely to stay involved in sport longer.

The findings of this project could provide evidence that sport psychology skills improve competitive performance and could be beneficial to parents, golfers, and coaches.

By signing this consent form, you agree that you understand the procedures and any risks and benefits involved in this research. You are free to refuse to allow your child to participate or to withdraw your consent to participate in this research at any time without penalty or prejudice; participation is entirely voluntary. Your privacy will be protected because you will not be identified by name as a participant in this project. Your data will be stored in the Sport and Exercise Psychology Laboratory in a locked filing cabinet for three years.

The University of North Carolina at Greensboro Institutional Review Board, which ensures that research involving people follows federal regulations, has approved the research and this consent form. Questions regarding your rights as a participant in this project can be answered by calling Mr. Eric Allen at (336) 256-1482. Questions regarding the research itself will be answered by Jennifer Thomas by calling (540) 421-9596. Any new information that develops during the project will be provided to you if the information might affect your willingness to continue participation in the project.

By signing this form, you are affirming that you give your child permission to participate in the project described to you by Jennifer.

_____   _____

Parental/Guardian Signature   Date

_____   _____

Signature of person obtaining consent on

behalf of The University of North Carolina at Greensboro   Date

APPENDIX B: ASSENT FORM

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

ASSENT FORM TO ACT AS A HUMAN PARTICIPANT: LONG FORM

Project Title: Youth Sport Performance Consulting

Project Director: Jennifer Ann Thomas, M.S.

Participant's Name: _____

DESCRIPTION AND EXPLANATION OF PURPOSE AND
PROCEDURES:

The purpose of this study is to gather pilot data on how effective sport psychology skills are in improving competitive sport performance. This study will teach you skills to develop a pre-shot routine to be used at practice and tournaments. You will participate in 3 workshops to learn each skill, 4 interviews about your experience in the study, and I will collect your scorecards from practice and tournaments. You will be asked to complete two logs for each round of golf. One asks you to report how well you stuck to the routine, and the other asks you to rate how focused, relaxed, in control of your emotions, and present you felt during each round. Also, your parents will give me your scores from each tournament. Your participation will require an hour per workshop and at least 2 hours of practice a week for 12 weeks. I expect to see that your scores improve as a result of using this pre-shot routine. At the end of this study I will interview you to discuss whether you think the routine helped your performance. The interview will be audiotaped for research purposes.

POTENTIAL RISKS AND DISCOMFORTS:

Performance naturally varies, and when you learn new skills it may take awhile for your performance to show improvements. This could be frustrating. If necessary I am willing to offer additional sport psychology services (e.g. performance anxiety and confidence building) to help you deal with these frustrations.

POTENTIAL BENEFITS:

As your performance improves you will be likely to enjoy golf more. Overall, if golfers enjoy their sport more, they will be more likely to stay involved in sport longer. The

findings of this project could provide evidence that sport psychology skills improve competitive performance and could be beneficial to parents, golfers, and coaches.

By signing this consent form, you agree that you understand the procedures and any risks and benefits involved in this research. You are free to refuse to participate or to withdraw your consent to participate in this research at any time without penalty or prejudice; your participation is entirely voluntary. Your privacy will be protected because you will not be identified by name as a participant in this project. Your data will be stored in the Sport and Exercise Psychology Laboratory in a locked filing cabinet for three years.

The University of North Carolina at Greensboro Institutional Review Board, which ensures that research involving people follows federal regulations, has approved the research and this consent form. Questions regarding your rights as a participant in this project can be answered by calling Mr. Eric Allen at (336) 256-1482. Questions regarding the research itself will be answered by Jennifer Thomas by calling (540) 421-9596. Any new information that develops during the project will be provided to you if the information might affect your willingness to continue participation in the project.

_____   _____

Participant's Signature   Date

_____   _____

Signature of person obtaining consent on

behalf of The University of North Carolina at Greensboro   Date

APPENDIX C: PRE-INTERVENTION PROTOCOL

Pre-Program Interview Protocol

The Effect of Pre-shot Routine on Competitive Youth Golf Performance

Name: Date:

Hi_____, thank you for agreeing to do this interview today. This interview should take no longer than 30-45 minutes of your time.   Before we start, I want to let you know that I will take a few notes, and this interview will be recorded to ensure what you say is quoted correctly.

The purpose of this interview is for me to get to know you better. Please feel free to discuss anything you think is important. Also, it is important that you say whatever you are thinking. Please try not to give me the answers you think I want to hear or your parents or coaches might want you to say. What you say during this interview is confidential and only my research team will see my notes or listen to the tape. Your coach, teammates, or parents will not have access to this information, unless you want them to have it. So feel free to say whatever you like because there are no consequences for speaking your mind. And, remember, you the right to not answer any questions I ask or to stop this interview at anytime.

Ok, let's get started. Do you have any questions before I turn on the recorder?

Warm-up:

1.) Tell me a little bit about how you got involved in golf?

2.) Can you talk a little bit about what it meant to play sports in your family in general?

     a.) What did these early experiences mean to you?

Motivation:

3.) Why do you play golf?

4.) Has your motivation changed as you have entered into high school?

5.) How much value do you place on sport?

6.) What expectations of success do you have for yourself this season?

Performance Profile

7.) What are your strengths as a golfer?

8.) How about your ability to focus while on the golf course?

9.) What gets in the way of being able to focus?

10.)   What are your weaknesses as a golfer?

11.)   Can you talk about what it is like when you are playing really well?

12.)   Now what is going on when you are not playing well?

13.)   Your answers are going to help me be able to help you learn the skills during this program as best to my ability. Is there anything else you would like to add to any of your answers?

APPENDIX D: THOUGHT SAMPLING TECHNIQUE

Directions: The purpose of this activity is to take a sample of your thoughts while you play. It is important to say EVERYTHING out loud that you are thinking before, during, and after each shot today. This will make you more aware of your thought process before we get started with our program, and it will help me learn more about you.

Hole 1. Approach Shot

       Putt

Hole 2. Approach Shot

       Putt

Hole 3. Approach Shot

       Putt

Hole 4. Approach Shot

       Putt

Hole 5. Approach Shot

     Putt

Hole 6. Approach Shot

     Putt

Hole 7. Approach Shot

     Putt

Hole 8. Approach Shot

     Putt

Hole 9. Approach Shot

Putt

APPENDIX E: CUE WORD WORKSHEET

Positive Self-Talk and Cue Words for Youth Golf

In sport psychology we do research with elite athletes like Olympians because at such an elite level there aren't many differences between the athletes physically. There difference we have found through research is the difference between those who medal and who do not is mental toughness. For example, we know that elite athletes that are successful are more likely to think positive thoughts as opposed to negative thoughts, doubts, or fearful thoughts.

One way to practice self-talk that will help you maintain focus on what is important in your round of golf are cue words. Cue words are things you say out loud or think that remind you what to focus on before each shot. What are some of the things are important to focus on before you play your shot? As we had talked about before, when you are not happy with how you are playing you have a tendency to think or focus on a._____, b._____, and c_____.

Your cue words should not interrupt your ability to swing your club or make you think in the middle of your swing. There is some evidence that if your cue words are based on the effect of your shot, such as trust, smooth, or the angle of the club it will not disrupt your swing. See you need to be able to make decisions using information that is important, like where the hazards are, how you feel emotionally, and the distance of the hole, but then when it is time to make the play-you need not think. Just do it.

So to recap, a cue word or words are cues that help you focus on what is important. This is the first step in forming your pre-shot routine. Then once you have chosen your club and planned the shot, you say or think your cue word, and then make the play without thinking.

What are some possible cue words that you may use?_____
_____
_____

Why do these stand out to you?_____
_____
_____

It is important that you practice these cue words starting right away at practice. After you practice for a few days, I would like to know which ones you have chosen and why.

APPENDIX F: BEHAVIORAL FOCUSING WORKSHEET

Behavioral Focusing Techniques Script

Today we are to discuss another focusing technique, but we are going to focus on behaviors that can help you focus, stay in the present, and even refocus. It is common for athletes to have behavioral routines in part because while we are growing up and watching professional athletes, we can actually see their behaviors. For example, who is your favorite professional golfer? Can you describe what she/he does before his shots? These behaviors probably in some way serve as a routine for that player. We do know that professional golfers have routines, and they are consistent about implementing them.

So this activity is more of a tool to increase your awareness of what you are doing and we want it to become intentional and something that you incorporate before every shot.

Let's list what you do before each shot.

_____
_____
_____

Why do you do these things? When do you do them?

_____
_____
_____

Some athletes will do these things, such as regrip their club right before the play, or take an extra waggle to get mentally ready and focused before taking their shot. Therefore, the behavior itself is done with purpose to help the player focus. Does that make sense?

What behaviors do you want to implement with the cue words you practiced last week?

_____
_____
_____

After two workshops now, what does your pre-shot routine look like?

_____
_____
_____

APPENDIX G: RELAXATION WORKSHEET

Relaxation Technique: Deep Breathing

Today we are going to learn the third and final psychological skill to be incorporated into your routine, a relaxation technique. Let's start with an activity. Put your arms over your head and take a few deep breaths. Next, put your hand on your abdomen and take a few deep breaths. What differences did you notice? The first technique simulates how we breath when we are stressed, shallow and quickly. This affects how well your muscles receive oxygen and ultimately how well you play. We know that when athletes are relaxed they play better, and this is also a skill that the elite have cited using before and even during competitions.

The specific technique we are going to practice is diaphragmatic or deep breathing. Once you have learned this skill, you can effectively relax in just a few seconds. This is important within your routine because deep breathing can be considered a technique to clear your mind before your shot and then you can just hit the ball.

Ok, so sit back in and get in a comfortable position. We are going to take a series of deep breaths and then discuss how you feel afterwards. Before we begin, take note of how you feel now. Place your hand on your abdomen and take a deep breath through your nose and exhale through your mouth. Do this slowly allowing your abdomen to fill with air and exhale completely. You should visibly see your hand move as you inhale and exhale.

How do you feel now?

_____
_____
_____

Do you understand how this can be helpful to implement into your pre-shot routine?

Let's talk about where you think you could insert this technique into your routine.

_____
_____
_____

Lastly, I want to give you an activity to try. Why don't you commit to taking a deep breath just like we practiced everytime your cell phone rings? If you take this challenge you will find that eventually you will stop thinking about doing it, and it will be automatic without thinking about it that when your phone rings you take a deep breath.

We want your pre-shot routine to be the exact same way. Once you practice it consistently, you automatically go through it before each shot.

APPENDIX H: ADHERENCE LOG WORKSHEET

Adherence Log

Name: Date:

Directions: When you record your score on each hole please also check whether you were able to completely implement your pre-shot routine. After your round is over take a few minutes to make some comments.

1.) Yes [ ] No [ ]   10.) Yes [ ] No [ ]

2.) Yes [ ] No [ ]   11.) Yes [ ] No [ ]

3.) Yes [ ] No [ ]   12.) Yes [ ] No [ ]

4.) Yes [ ] No [ ]   13. Yes [ ] No [ ]

5.) Yes [ ] No [ ]   14.) Yes [ ] No [ ]

6.) Yes [ ] No [ ]   15.) Yes [ ] No [ ]

7.) Yes [ ] No [ ]   16.) Yes [ ] No [ ]

8.) Yes [ ] No [ ]   17.) Yes [ ] No [ ]

9.) Yes [ ] No [ ]   18.) Yes [ ] No [ ]

Comments

_____
_____
_____
_____
_____

APPENDIX I: MENTAL SKILLS SCORECARD

Mental Skills Scorecard

Name: Practice or Tournament

Date:

Directions: Indicate how much you agree with each statement from 1 (strongly disagree) to 5 (strongly agree) regarding each hole in your round.

1 2 3 4 5

Strongly Disagree   Strongly Agree

Focus

 I was able to focus on each shot.
1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

I felt I was able to focus on each shot and only that shot.
1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____
I was able to control my thoughts today.
1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

Relaxation

I was able to remain relaxed.

1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____
I was able to remain mentally relaxed.
1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

Overall Behavioral Routine

I felt emotionally in control when I executed my pre-shot routine.
1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

I stuck to my routine and did it automatically without thinking.

1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

I was able to refocus as a result of using my pre-shot routine when focus was lost.

1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

I felt in control on each shot.
1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

Adherence

I executed my pre-shot routine on each shot.
1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

I abandoned my pre-shot routine.

1._____ 2._____ 3._____ 4._____ 5._____ 6._____ 7._____ 8._____ 9._____

APPENDIX J: PILOT STUDY

Results

The purpose of this project was to examine the effect of learning and consistently implementing a pre-shot routine on competitive golf performance. Baseline measures were collected from five tournaments before the intervention began.

The cognitive workshop was introduced first. It was evident immediately that an informal session was needed prior to actually teaching the first skill to learn this golfer's strengths, weaknesses, and style of golf. Part of this applied project is teaching psychological skills, but the examples used and the way it was introduced could have been better individualized. For example, when the researcher sat down with the participant during the first workshop, she realized she knew virtually nothing about him. Therefore, one thing learned through the journaling process was that during the dissertation, a pre-intervention interview needs to take place to get to know the participant's psychological profile.

Performance Data

Visual inspection of the graph reveals gradual improvement of performance after the cognitive workshop more so than after the behavioral and relaxation workshops. To conclude that there this program was effective in improving the participant's performance, a gradual, possibly variable decrease in approach shot and putts would be expected. A gradual negative trend in the data was observed. This trend was observed for both approach shots and putting performance.

Approach Shot Performance

When considering the participant's approach shot performance, a stable baseline was observed after five rounds of golf. The first two rounds vary with a decline after the second round. The cognitive phase of the intervention began between points five and six with round six being his first round of golf practicing the cue statements, "See it, feel it, trust it," before each shot. There is a low magnitude to the data meaning little variability throughout the study with a negative slope. The Mean Baseline Reduction (MBLR) showed a 41.34 percent performance change. This was calculated by subtracting the treatment mean (38.6) from the baseline mean (65.8) and dividing that number by the baseline mean multiplied by 100. The tournament data reflected at data point 12 was higher than the other days, and the participant reported that he lost focus that day and abandoned his routine. The participant did not play in any tournaments between the behavioral workshop and the relaxation workshop. This means that the researcher was unable to collect any data with the participant solely practicing the cognitive and behavioral components. This was a shortcoming due to time constraints. The study got started a month later than planned and thus was limited by the number of tournaments that he played over the course of the summer.

Putting Performance

The putting performance varied more so than the approach shot performance. A stable baseline was observed after three competitive rounds, and two more rounds were collected to be parallel with the data collected for the approach shot performance.

Rounds four and five varied more than the previous three. After the cognitive workshop his performance varies for the next three tournaments and then levels off and is consistent. There is a slight decline or negative slope experienced. Therefore, there is a gradual negative slope with a moderate variability in the putting performance. The MBLR showed a 43.72 percent performance change. This was calculated by subtracting the treatment mean (17.07) from the baseline mean (30.33) and dividing by the baseline mean multiplied by 100.

At the last workshop he reported, "I feel like I am more consistent now. Before if I lost focus I wouldn't be able to regain it. Now I am more in control." This was great feedback because, in sport, consistency is desired and considered improvement. In planning this project the researcher conceptualized improvement as a decrease in total number of strokes or the overall score for each round. Success will be redefined for the dissertation project to include performance change becoming more consistent and/or decrease or negative slope. Therefore, even if a dramatic change in performance was not experienced, consistency is improvement. This is also something that clients regularly mention being of interest. Because of the variable nature of sport, it is surprising that there was not a greater fluctuation in his performance throughout the study.

Qualitative Data Analysis

Several things came out of the qualitative portion of this project. The first part questioned the participant about the experience of PST to better understand the project from the participant's perspective. He responded, "Different, never done anything like

it." When asked what it was like to learn the skills he responded, "Helpful, like um I guess I learned greater knowledge, don't know how to put it. I got a greater grasp of the whole aspect of golf. I have a greater understanding of golf in general."

He reported having a greater understanding of golf in general as a result of PST. This is an important finding because consultants discuss the importance of training the brain equally with physical training. It will be helpful to note, when introducing this project to high school golfers, that one participant walked away feeling a greater understanding of the sport overall having worked on the psychological aspects of golf.

Next, when evaluating the efficacy of implementing the pre-shot routine, the participant listed several perceived benefits to his performance. When asked how effective he felt the routine was on his practice and competitive performance he responded,

> It was good. Beneficial. I was more consistent I'd say. Kept my temper in check. I didn't get too fired up about everything. Yeah, like I'm practicing sometimes I'd get mad. If I stuck too it I'd calm myself down I wouldn't get too angry or anything. So if I hit a bad shot usually I'd step back and take a deep breath and go through the process, and it would prepare me.

He felt that he was able to implement the routine before an estimated 90 percent of his shots. The shots that he was not able to implement it were because he was rushing his shot and not able to regain control.

In summary, visual inspection of the competitive performance data shows a gradual negative trend in the data and thus improvement upon beginning the intervention. During the post intervention interview, the participant felt that the routine was beneficial

to improving his performance and additional factors such as maintaining emotional

control and focus.