EXPLORING THE ACQUISITION, USE, AND PERCEIVED EFFECTIVENESS OF SELECTED PSYCHOLOGICAL TECHNIQUES

by

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ABSTRACT

The purpose of this study was to examine factors relevant to the acquisition and practice phases of psychological skills training (PST). This study determined what psychological techniques athletes had been taught and how the techniques and methods were utilized over time. Another aim was to explore whether athletes perceived PST to be effective for enhancing their sport performance. Finally, this study examined if athletes used the techniques learned in PST in nonsport-related aspects of their lives.

Participants included 57 male \( (n = 21) \) and female \( (n = 36) \) National Collegiate Athletic Association (NCAA) Division I \( (n = 35) \) and professional \( (n = 22) \) athletes who had undergone PST in one or more of the following techniques: (a) imagery, (b) goal setting, (c) arousal regulation, (d) self-talk, and (e) attentional control. Participants were required to be currently competing and to have competed in at least one season since their initial PST.

Participants completed a 64-question survey that was developed for this study. Descriptive statistics provided evidence that arousal regulation and imagery were the most frequently taught techniques and that PST is perceived as being effective and useful for improving performance. Nearly every participant continued to use all of the techniques they had been taught to improve their performance both in and outside of sport. The amount of time spent utilizing psychological
techniques increased over time, and the techniques were used more before
competition than at any other time. A three-way analysis of variance was run to
determine if currently meeting with a sport psychology consultant (SPC) sport
level, or gender had an effect on the participants' current use of psychological
techniques. An additional two-way analysis of variance determined that males spent
significantly more time than females using psychological techniques and methods.
NCAA athletes used the techniques they were taught significantly less than
professional athletes. The majority of athletes preferred to meet with SPCs in an
individual setting. Females spent a higher percentage of their time in individual
sessions than males, and professionals spent a higher percentage of their time in
individual sessions compared with NCAA athletes. Overall, the results of this study
provided evidence that athletes continue to use the techniques and methods they
learned in PST long after their initial training in order to improve their athletic
performance.
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CHAPTER 1

INTRODUCTION

Athletics and the performing arts are an enormously large business with extreme amounts of money, endorsement deals, and accolades going to top performers. Athletes, coaches, and sport organizations are hiring sport psychology consultants (SPCs) in increasing numbers, hoping to improve their performance. This phenomenon is happening in response to the findings that elite athletes have superior psychological skills compared with nonelite athletes (Orlick & Partington, 1988). SPCs provide services and techniques to athletes at many levels that are purported to result in performance enhancement through the development of psychological skills (Anderson, Mahoney, Miles, & Robinson, 2002). While research provides evidence that the techniques taught to athletes by SPCs are effective for improving performance in the short term, little research has been conducted to determine if these improvements are maintained over time or if the techniques are even used by athletes in the weeks and months following their interactions with a SPC.

When working with athletes, psychological skills training (PST) is one of the most commonly employed techniques of performance enhancement used by SPCs (Murphy & Tammen, 1998). PST focuses on improving performance through the development of psychological skills by teaching techniques such as imagery,
goal setting, arousal regulation, attentional control, and self-talk. According to Gould, Murphy, Tammen, and May (1991), these five areas were rated the most important techniques used within a PST program for athletes to master.

**Psychological Skills Training Effectiveness**

In an outcome-based society, there is a high demand for research to provide evidence that intervention programs such as PST lead to better performance. Two basic approaches have been utilized by researchers to assess the effectiveness of PST programs: (a) objectively focused and (b) subjectively focused. Both approaches have provided evidence that PST is effective for improving performance. A large body of research has been conducted in order to assess the effectiveness of specific (one skill) psychological skill interventions (Hardy, Gammage, & Hall, 2001; Vealey & Greenleaf, 2006; Weinberg, Burton, Yukelson, & Weigand, 1993, 2000). In addition, a number of researchers have tested the influence of PST program interventions (more than one skill) on the outcome of athletes’ performances (Brewer & Shillinglaw, 1992; Daw & Burton, 1994). Comprehensive reviews and meta-analyses on these objectively measured studies have provided evidence that PST can be effective for improving performance in a variety of athletic populations (Greenspan & Feltz, 1989; Myers, Whelan, & Murphy, 1996; Vealey, 1994).

Subjective evaluation techniques using surveys and interviews have assessed athletes’ opinions and attitudes toward consultants and PST programs rather than strictly looking at performance statistics to determine effectiveness (Brewer &
Phases of Psychological Skills Training

The development of psychological skills occurs in three phases: (a) education, (b) acquisition, and (c) practice (Daw & Burton, 1994; Martens, 1987). In the education phase, athletes are taught how certain psychological skills can affect performance. During the acquisition phase, athletes work on developing new psychological skills with the guidance of a SPC until they become proficient in each skill. In the practice phase, athletes begin to use and incorporate the skills into “real-life” athletic settings. The overwhelming majority of research on psychological skills has examined the first two phases, whereas minimal research has addressed the effectiveness of the practice phase of psychological skill development.

Research related to the education and acquisition phases has indicated that a majority of consultants have included the techniques of imagery, goal setting, attentional control, and arousal regulation in their delivery of PST programs to athletes (Gould et al., 1991; Sullivan & Nashman, 1998). Depending on the situation, athletes typically undergo either individual or group workshops with the consultant where they are taught about and work to acquire each skill. The delivery of PST programs is variable in terms of the amount of time spent teaching skills.
and time between sessions. In a study by Grove, Norton, Van Raalte, and Brewer (1999), athletes met with their SPC once a week for 6 weeks. Each session lasted between 45 and 90 minutes. Brewer and Shillinglaw’s (1992) PST program required that athletes attend four 30- to 40-minute sessions over the course of 2 weeks. Gould et al. (1990) included four 1-hour workshops over the course of 1 week and also included an individual session with the SPC. All of the PST programs mentioned here limited each session to focusing on one technique.

Long-Term Use of Psychological Techniques

Fewer than 4% of the studies reviewed by Greenspan and Feltz (1989), Vealey (1994), and Myers et al. (1996) measured the long-term maintenance of psychological skills. Bull (1991) suggested that dropout rates from PST programs were high. Gould et al. (1990) provided evidence that psychological skill use drops off after 3 months. In addition, there is evidence from similar fields such as clinical psychology and exercise adherence that it may take up to 6 months of consistent practice to effectively gain psychological skills (Weinberg & Comar, 1994). In another study, Heishman and Bunker (1989) discovered that although 81% of athletes reported mental preparation techniques as very important, less than 44% frequently used mental preparation techniques. Therefore, although there exists convincing evidence that PST can be a useful method for improving performance, a belief in the importance of PST does not necessarily translate into use of these psychological methods.
Significance

A large number of professionals in the field of sport psychology have called for more research evaluating the effectiveness of PST programs for athletes (Dishman, 1983; Grove et al., 1999; Smith, 1989; Strean & Roberts, 1992; Vealey, 2007). Martens (1987) stated that athletes' reports of treatment gains are the only meaningful data for judging the effectiveness of PST interventions, suggesting that more subjectively focused research is necessary. Further, Vealey (1994) called for researchers to examine the effectiveness of different types and combinations of PST interventions. Little research has been conducted to address the practice phase in the development of psychological skills. Thus, there is little knowledge of how and if athletes are using the skills taught to them in PST.

Some researchers have argued that when evaluating the effectiveness of PST, it can be useful to examine the degree to which athletes are utilizing the taught techniques and methods on their own (Bull, 1991; Frey, Laguna, & Ravizza, 2003; Grove et al., 1999; Shambrook & Bull, 1995, 1996). The present study was designed to provide information about how psychological skills are used by collegiate and professional athletes in different sports who may have been taught different strategies from their various PST programs. In addition, this research provides important feedback about the specific psychological methods that athletes find useful within and outside their sport. This information is highly relevant to SPCs who work with college and professional athletic programs that support a variety of teams.
The majority of research examining the effectiveness of PST is more than 10 years old. In the past 10 years, the body of knowledge surrounding PST has increased, and more specialized programs have been developed and made available to athletes (Vealey, 2007). The present study provides an update and informs SPCs about any changes that may have occurred with regard to how psychological skills are taught and utilized today compared with previous decades.

**Statement of the Problem**

The purpose of this study was to examine factors relevant to the acquisition and practice phases of PST. Specifically, the present study determined what psychological techniques athletes have been taught, the amount of time they engaged in PST, and how the techniques and methods were utilized over time. Another aim was to explore whether athletes perceived PST to be effective for enhancing their performance. Finally, this study examined if athletes used the techniques taught in PST in nonsport-related aspects of their lives.

**Research Questions**

**Primary Research Questions With Hypotheses**

1. What techniques were the athletes most commonly taught in their PST programs? *Hypothesis*: Imagery and arousal regulation (relaxation) will be the most commonly taught psychological techniques (Brewer & Shillinglaw, 1992; Gould et al., 1990, 1991; Keller, 1995).
2. Which techniques do athletes continue to use? Do they currently use the techniques they were taught more or less often than they did during the acquisition phase? *Hypothesis:* Arousal regulation, goal setting, and imagery will be rated as the three most-used psychological techniques (Brewer & Shillinglaw, 1992; Gould et al., 1990, 1991; Keller, 1995; Orlick & Partington, 1988; Weinberg et al., 1993, 2000). Athletes will report using the techniques they were taught slightly less often than in the acquisition phase (Gould et al., 1990).

3. How often and when are athletes using these techniques? Do athletes use the techniques they were taught in PST outside of sport? *Hypothesis:* The utilization of psychological techniques will be higher in competition than practice (Frey et al., 2003; Salmon & Hall, 1994). Participants will report using imagery primarily before competition (Cumming & Hall, 2002). Athletes will report that they use the techniques they were taught by a SPC outside of sport because the skills they acquire from a SPC are “life skills” and not sport-specific skills (Danish, Petitpas, & Hale, 1992).

4. How effective are psychological techniques and methods perceived to be for improving performance? *Hypothesis:* Athletes will attribute performance improvements more to the use of arousal-regulation and imagery techniques than the other three techniques (Brewer &

5. Is there a difference in current psychological technique use between athletes who currently meet with a SPC and those who do not? 

*Hypothesis:* Use of psychological techniques will be higher in athletes who currently meet with a SPC compared with those who no longer meet but use will be highly variable among athletes (Bull, 1991; Gould et al., 1990; Heishman & Bunker, 1989).

6. Do athletes prefer to meet with SPCs individually or in a group setting? *Hypothesis:* Athletes will prefer to meet individually with SPCs (Gould et al., 1991).

**Exploratory Research Questions**

7. Which techniques do the athletes no longer use? Why did they stop using the techniques they were taught? How many years, months, and weeks did the athletes use the techniques they were taught before they stopped using them?

8. How were PST programs delivered to participants in this study? When do athletes meet with SPCs?
Delimitations

The following delimitations were recognized in the present study:

1. The findings of this study apply solely to National Collegiate Athletic Association (NCAA) Division I and professional athletes who compete in the sports represented by the participants in this study.

2. Athletes must have been trained by an Association for Applied Sport Psychology (AASP) certified consultant or someone with a minimum of a doctorate in psychology or exercise and sport science plus greater than 400 hours of experience consulting with athletes. The athletes were also required to have competed at least one season since participating in initial PST.

3. Participation was delimited to athletes who are currently competing at a NCAA Division I or professional level.

Limitations

The following limitations were recognized in the present study:

1. The results did not allow me to infer a cause-and-effect relationship between PST and improved performance outcome.

2. Many factors such as physical training, natural ability, tactics, technique, and coaching were not completely controlled and could have affected performance.
3. SPCs may not teach psychological methods in a similar fashion, which may have affected athletes' use of these methods.

4. In some instances, SPCs contributed athletes to this study, which may have biased the sample.

Assumptions

The following assumptions were recognized in the present study:

1. Consultants provided or delivered surveys to a complete list of the athletes with whom they work who met the inclusion criteria—not just those who they believed would give positive feedback.

2. Athletes answered all questions accurately and honestly.

Definitions of Terms

Arousal regulation is defined as “managing of various feeling states (e.g., arousal, anxiety, anger, excitement, fear, etc.) to achieve personally optimal physical and mental energy levels for performance” (Vealey, 2007, p. 290). Arousal-regulation methods included progressive muscle relaxation, breathing, focus on warmth and heaviness within the body, hypnosis, meditation, and “psyching-up.”

Attentional control is defined as “selection of the right stimuli to focus on, the ability to shift attention as the environment changes, and the ability to sustain attention/concentration on a given stimulus” (Gould & Damarjian, 1998, p. 94). Attentional control also indicates one’s ability to concentrate and focus with or
without distractions.

*Goal setting* is defined as setting a standard and trying to achieve that standard (Gould, 1998).

*Imagery* is defined as the mental creation or re-creation of sensory experiences in the mind (Vealey, 2007).

*Psychological methods* are defined as the specific strategies within each of the five techniques that are commonly taught in PST.

*Psychological skills training (PST)*, for the purpose of this study, is defined as a set of five techniques (i.e., goal setting, arousal regulation, attentional control, self-talk, and imagery) that can be used to enhance psychological skills that improve performance (Vealey, 2007).

*Self-talk* is defined as the verbal dialogue in which athletes interpret their feelings and perceptions, evaluate themselves, and give themselves instructions or reinforcement (Hackfort & Schwenkmezger, 1993). Examples of methods include thought stopping, reframing, changing the way one perceives a situation, and using cue words to elicit a positive response.
CHAPTER 2

REVIEW OF LITERATURE

This chapter begins by providing a brief background on the importance of PST for elite athletes. Next, the literature on the use and effectiveness of PST programs is discussed along with research that has specifically focused on imagery, attentional control, goal setting, self-talk, and arousal regulation. Alternative methods for evaluating the effectiveness of PST programs are also reviewed.

SPCs provide services and techniques to athletes that are purported to result in performance enhancement through the development of psychological skills (Anderson et al., 2002). Why do SPCs provide PST for athletes? The basic theory that drives the delivery of PST programs to athletes purports that athletes’ performances will improve if they are able to better their use of and control over certain psychological skills. Orlick and Partington (1988) found that elite athletes have superior psychological skills compared with nonelite athletes. A substantial body of research has provided evidence that elite athletes utilize techniques such as imagery, attentional control, goal setting, self-talk, and arousal regulation to help improve their performance (Durand-Bush & Salmela, 2002; Gould, Dieffenbach, & Moffett, 2002; Orlick & Partington).

A meta-analysis (Myers et al., 1996) and three published articles (Greenspan & Feltz, 1989; Vealey, 1994; Weinberg & Comar, 1994) provided
comprehensive reviews on the effectiveness of PST programs. Greenspan and Feltz examined the findings of 19 published studies on PST. They concluded that in most cases there was evidence that PST programs improved performance outcome. They were able to infer causality in 11 of these studies. Vealey reviewed 12 studies published in the area since the Greenspan and Feltz article. Vealey also found evidence that PST programs were effective for improving performance in 75% of the articles reviewed. Weinberg and Comar added 10 additional studies to Vealey’s review. Of these 10 studies, 90% reported significant improvement in performance, and causality was inferred in 60% of the cases.

The Myers et al. (1996) meta-analysis included the findings of 41 PST intervention studies and found a moderate to large overall effect size of .62. The authors of the meta-analysis did not address the issue of causality in their study. After compiling results from the 41 studies included in these three comprehensive reviews, 85% yielded positive performance results after the interventions, but causality could only be inferred in 44% of the studies. The interventions reviewed in these studies included imagery, attentional-control, goal-setting, self-talk, and arousal-regulation techniques. The results of these reviews provided empirical evidence supporting the efficacy of PST programs for improving performance in the short term (Weinberg & Comar, 1994). None of the studies that were analyzed in these reviews examined the maintenance of the treatment effects past 3 months. Little research has examined how much each of the five techniques has been used by athletes or when they are most effectively used.
Use and Effectiveness of Imagery Techniques

According to Vealey (2007), imagery is the mental creation or re-creation of sensory experiences in the mind. Imagery is the most studied technique of the five addressed in this study. Imagery has been cited as the psychological technique most frequently used by elite-level athletes and coaches (Bloom, Durand-Bush, & Salmela, 1997; Morris, Spittle, & Watt, 2005).

Research has provided evidence that imagery is effective for enhancing athletes’ performance on sport skills (Martin, Moritz, & Hall, 1999; Morris et al., 2005). Cumming, Hall, and Shambrook (2004) found that an imagery workshop was effective for increasing female high school basketball players’ use of imagery for up to 6 weeks. The participants in this study reported imagery to be a useful and effective tool for improving their performance.

Research indicates that during the practice phase athletes use imagery more just prior to competing and during the peak of the season than at any other time (Cumming & Hall, 2002). Salmon and Hall (1994) found that athletes use imagery more frequently for competition than practice.

Orlick and Partington (1988) studied 235 Canadian athletes who participated in the 1984 Olympic Games. All but 1% of the athletes reported using imagery techniques. On average, the athletes reported engaging in imagery 4 days per week for 12 minutes each time. Use of imagery increased as an athlete’s event drew closer. Some athletes reported using imagery for up to 3 hours on the day of their event.
Perhaps the most interesting finding from the large body of research performed on athletes' use of imagery is that successful elite athletes can be differentiated from nonelite athletes by the quantity and quality of imagery in which they engage (Cumming & Hall, 2002; Isaac, 1992; Salmon & Hall, 1994). Cumming and Hall found that provincial- and national-level athletes used imagery significantly more than regional-level athletes. In addition, the use of imagery was positively related to the amount of physical training in which an athlete was engaged. Salmon and Hall also found that elite soccer players use imagery more frequently than their nonelite counterparts. Isaac found that athletes who produced high-quality vivid imagery improved performance on a trampoline event significantly more than those who produced low-quality images.

Use and Effectiveness of Attentional-Control Techniques

Commonly taught attentional-control methods include attention shifting, refocusing, and routines. These techniques are taught to help athletes improve their ability to focus on the cues most relevant to their performance. Past studies have provided evidence that successful athletes focus more on task-relevant thoughts and are less likely to be distracted than their less-successful counterparts (Gould et al., 2002; Greenleaf, Gould, & Diffenbach, 2001; Jones, Hanton, & Connaughton, 2002; Orlick & Partington, 1988).

Gould et al. (2002) examined characteristics shared among Olympic champions and found that the ability to focus was one of the most commonly cited characteristics of these successful performers. Gould, Weiss, and Weinberg (1981)
found that successful wrestlers focused more intently on wrestling-related thoughts before and during competition than their less-successful counterparts.

According to Lidor and Singer (2003), nearly all skilled athletes who play in sports that contain brief and self-performed events such as serving in tennis and making free throws in basketball utilize a method of attentional control called a "preperformance routine." Lobmeyer and Wasserman (1986) found that after teaching athletes to follow a preperformance free-throw routine, athletes improved their shooting percentage by 7%. Crews and Boutcher (1986) performed an observational analysis of professional golfers and found that nearly all of them used a systematic preshot routine before every shot. The researchers did not control whether the golfers had been taught to use routines by a SPC or developed the habit on their own.

Use and Effectiveness of Goal Setting

The research findings on the effectiveness of goal setting for improving performance have been somewhat inconsistent; in fact, many studies have found no significant effect for goal-setting groups compared with control groups (Weinberg et al., 1993). In contrast, Kyllo and Landers (1995) performed a meta-analysis of 36 sport-oriented, goal-setting studies and found a moderate effect size of .34 to support the efficacy of goal setting for improving performance. This study also revealed a combination of both short- and long-term goals to be the most effective for improving performance. According to Orlick and Partington (1988), successful athletes have superior goal-setting skills compared with less-successful athletes.
Research has provided evidence that nearly all athletes engage in goal setting but rate it as only a moderately effective technique for improving performance (Burton, Weinberg, Yukelson, & Weigand, 1998; Weinberg, Burke, & Jackson, 1997). In contrast, Weinberg et al. (1993) and Weinberg et al. (2000) found that athletes rated goal setting as a moderately to highly effective technique. In addition, Tenenbaum, Weinberg, Pinchas, Elbaz, and Bar-Eli (1991) found goal setting to be superior to control groups in a study on sit-up performance. Boyce, Wayda, and Johnston (2001) found instructor- and individual-set goals to be superior for improving performance on tennis serves when compared with no goal setting and goals to “just do my best.” Durand-Bush and Salmela (2002) found that highly successful athletes set a combination of both short- and long-term goals. The somewhat inconsistent findings in goal-setting research may be due to the fact that goal setting by itself does not result in performance enhancement. In order to be effective, goals must be incorporated within a systematic PST program (Vealey, 2007).

Use and Effectiveness of Self-Talk

Self-talk is the verbal dialogue in which athletes interpret their feelings and perceptions, evaluate their feelings and perceptions, and give themselves instructions or reinforcement (Vealey, 2007). Similar to the findings on imagery, research has provided evidence that elite athletes use self-talk methods such as stopping thoughts, using cue words, and modifying perceptions in a more planned and consistent manner than their less-skilled counterparts (Hardy, Hall, & Hardy,
In the Durand-Bush and Salmela (2002) study, all athletes reported using self-talk to improve focus, confidence, and motivation. Self-talk was also used to overcome adverse situations and to increase positive thoughts. In addition, Hardy et al. (2001) interviewed 164 exercisers and found that 95% reported using self-talk.

Gould, Eklund, and Jackson (1993) found that 80% of U.S. Olympic wrestlers reported using self-talk strategies such as stopping thoughts, replacing thoughts, and thinking positively. In addition, self-talk was one of the two most frequently used coping strategies employed by U.S. national champion figure skaters (Gould, Finch, & Jackson, 1993).

Numerous studies have provided evidence that using positive self-talk improves an athlete’s skill acquisition and performance in sport (Hardy et al., 2001; Johnson, Hrycaiko, Johnson, & Halas, 2004). Johnson et al. taught self-talk techniques to 14-year-old soccer players and found that shooting performance improved after the intervention. Landin and Hebert (1999) taught a self-talk technique to collegiate tennis players and noted immediate performance improvements.

Negative self-talk, on the other hand, has been found to be detrimental to performance. Wrisberg and Anshel (1997) found that use of negative self-talk decreased performance on field hockey shots. In addition, Green and Flarity (1996) found that at similar workloads athletes using negative self-talk had higher heart rates and perceived exertion scores than athletes using positive self-talk.
Use and Effectiveness of Arousal-Regulation Techniques

Researchers have provided evidence that elite athletes use relaxation and energizing techniques such as progressive muscle relaxation, focus on breath, psyching-up, hypnosis, meditation, biofeedback, autogenic training, and yoga in order to manage their physical energy levels (Durand-Bush & Salmela, 2002; Gould, Eklund, & Jackson, 1993; Gould, Finch, & Jackson, 1993). Additional research has provided support that arousal-regulation strategies can be effectively used by athletes to lower arousal, anxiety, and stress levels (Gould & Udry, 1994).

Pates, Cummings, and Maynard (2002) conducted a study in which they taught relaxation and hypnosis techniques to collegiate basketball players. The researchers measured three-point shooting percentage preintervention and postintervention. The results indicated an increase in shooting percentage from pretest to posttest. Bar-Eli, Dreshman, Blumenstein, and Weinstein (2002) provided biofeedback training to young swimmers and saw significant performance improvements compared with control groups.

Lanning and Hisanga (1983) studied the effect of progressive relaxation techniques on anxiety and performance in high school volleyball players. A significant increase in performance accompanied by a significant decrease in anxiety were reported. Treatment effects for a follow-up assessment 2 weeks after the final PST session were not as strong as for those reported immediately after the arousal reduction intervention.
Psyching-up refers to a wide variety of strategies that can be used to increase energy and arousal levels. Psyching-up strategies are diverse and range from energizing and angry thoughts to pep talks or even sprinting to increase heart rate. Little research has been performed on the efficacy of psyching-up techniques in sport. The primary reason for the lack of research is that a majority of athletes struggle with problems of overarousal (Gould & Udry, 1994). Shelton and Mahoney (1978) investigated the effects of psyching-up strategies on motor performance and found that weight lifters who were instructed to “psych-up” showed a dramatic increase in performance compared with participants who did not psych-up. Weinberg, Gould, and Jackson (1980) also examined the effects of psyching-up on performance. The results indicated that psyching-up increased performance on a strength task more effectively than using imagery and attentional focus techniques. Caudill, Weinberg, and Jackson (1983) provided evidence that sprinters and hurdlers ran faster times when given an opportunity to psych-up 60 seconds prior to performance.

Gray, Haring, and Banks (1984) suggested that the type of activity being performed might moderate the effectiveness of arousal-regulation methods. An athlete would not want to be underaroused for a sport such as football that requires heightened levels of arousal. The football player in the study by Gray et al. experienced greater self-efficacy and imagery vividness after psyching-up than after using relaxation methods. In contrast, an athlete participating in a sport that requires control over fine motor movements such as rifle shooting would not want
to be overly aroused. Perhaps the researchers (Maynard & Cotton, 1993; Maynard, Hemmings, & Warwick-Evans, 1995) who found that reduced arousal levels did not lead to improvements in performance did not account for the type of activity being performed (Gould & Udry, 1994). According to Zaichkowsky and Baltzell (2001), "[The] arousal-performance relationship is primarily mediated by (a) task complexity, (b) skill level of the performer, and (c) personality differences" (p. 324). Because the majority of PST programs incorporate arousal regulation within a multicomponent PST approach, it is not easy to isolate the effectiveness of specific arousal-regulation techniques (Gould & Udry; Vealey, 2007). In assessing the effectiveness of arousal-regulation techniques, causality has been inferred in few studies.

**Use and Effectiveness of Multicomponent Psychological Skills Training Programs**

Many SPCs choose to teach more than one technique in the programs they provide to athletes with whom they work. Gould et al. (1990) evaluated the effectiveness of a multicomponent PST workshop on elite wrestlers ranging in age from 14 to 32 and found that the program was effective in changing athletes’ knowledge, perceived importance, and use of goal-setting, arousal-regulation (relaxation), and imagery techniques. The researchers also found that the use of mental techniques increased when comparing preworkshop with postworkshop and 3 months after workshop use. Athletes rated how often they utilized each technique using a 5-point Likert-type scale that ranged from very low use (1) to very high use
(5). Imagery was rated to be the most important and useful technique. Adherence to the PST program decreased slightly from the postworkshop assessment to the 3-month check-up but was still higher than at preworkshop.

Brewer and Shillinglaw (1992) conducted a similar study with 49 NCAA Division I lacrosse players. Players were taught goal-setting, arousal-regulation (relaxation), imagery, and cognitive-restructuring techniques over the course of a four-session PST program. In the follow-up assessment 2 weeks succeeding the PST workshops, athletes self-reported significant increases in the use and importance they placed upon all four techniques compared with the reported values they disclosed prior to the PST workshops. The athletes reported relaxation and imagery to be the most important aspects of their PST programs.

Gould, Tammen, Murphy, and May (1989) evaluated 44 SPCs who were identified as working with sports affiliated with the U.S. Olympic Committee. They found that the most commonly taught intervention techniques for performance enhancement were goal-setting, arousal-regulation, imagery, self-talk, and attentional-control training. Goal setting and imagery were the two most taught techniques. The results of this study also provided evidence that SPCs teach multiple techniques in the PST programs they deliver to athletes.

Fournier et al. (2005) studied the effects of a 10-month PST program on the performances of 10 nationally ranked gymnasts. The PST program consisted of arousal-regulation, goal-setting, imagery, self-talk, and attentional-control techniques and was taught to gymnasts for 30 minutes per week throughout the 10-
month season. The 10 gymnasts who underwent the PST program improved 5% more than a control group of 11 similarly ranked gymnasts who did not undergo PST. The athletes rated the most effective components of the PST program as imagery, arousal regulation, and focus/refocus method of attentional control.

Methods for Evaluating the Effectiveness of Psychological Skills Training Programs

Two basic approaches have been utilized by researchers to assess the effectiveness of PST programs: (a) objectively focused and (b) subjectively focused. In general, objectively based research on PST uses a pretest that measures a sport-specific skill such as free-throw-shooting percentage; then the PST program is delivered and the same test is performed again. If the athletes improve from pretest to posttest, researchers attribute some of the improvement to the PST program.

One criticism of the intervention format is that it is difficult to isolate and infers PST as the cause for performance enhancement (Greenspan & Feltz, 1989). Many other variables such as physical health and training cycles can account for discrepancies in performance (Anderson et al., 2002). Greenspan and Feltz also added that the effectiveness of PST programs for improving performance might be overestimated because many studies that do not find support for the effectiveness of PST programs do not get published. Vealey (1994) cited numerous other problems with intervention research, including the need for controls, manipulation checks, and specific treatment descriptions.
In response to these criticisms, Vealey and Garner-Holman (1998) called for methodological improvements and new and original perspectives concerning how to evaluate most appropriately the worth of PST programs. There are equally valuable methods for evaluating PST programs that do not base findings solely on objective performance outcomes.

Subjectively based PST research makes use of surveys and interviews to assess athletes' attitudes and opinions toward PST programs and psychological techniques they have been taught. Subjectively based assessments have been used to determine use, importance, effectiveness, and even SPC effectiveness.

Frey et al. (2003) examined differences in collegiate athletes' use of psychological techniques between practice and competition settings. The results from this study indicated a significantly greater use of mental skills in competition than in practice. They also found that athletes who used certain psychological skills had higher perceptions of success in both environments than their counterparts who reported low use of these skills.

Keller (1995) assessed the use of psychological techniques by U.S. alpine ski team members and the importance they placed on certain skills. The skiers all reported using mental skills, and most claimed that they deemed the skills an important asset for both practice and competition. Athletes rated the most important techniques as attentional control, arousal regulation, and self-talk. Keller used the results of this study to create a PST program specific to the needs of alpine skiers.
Partington and Orlick (1987) created the Consultant Evaluation Form (CEF) as a method to analyze the effectiveness of consultants who provide services to athletes. The CEF allows athletes an opportunity to rate the effectiveness of sport psychology services received. When athletes rate the effectiveness of a SPC, they are likely also rating the effectiveness of the PST the SPC has taught to them. Thus, it may be implied that if a SPC receives a high rating on the CEF, the athlete views the consultant’s PST program as being effective and useful. Athletes rate consultant effectiveness relative to the effect that the SPC had on them using an 11-point scale, with 5 meaning help a lot, 0 meaning no effect, and -5 meaning hindered/interfered. In addition, the CEF instructs athletes to rate SPCs on 10 characteristics, including attitude, usefulness, and ability to apply knowledge to a sport. An example statement that athletes rate when filling out the CEF is the following: “The SPC provided clear, practical, concrete strategies for me to try out in an attempt to solve problems or improve the consistency of my performance?” In this section, athletes rated SPC characteristics on a 10-point scale.

Partington and Orlick (1987) and Gould et al. (1991) administered the CEF to 104 and 47 Olympic athletes, respectively. In the majority of cases, the researchers determined that athletes valued their consultants’ services highly and believed them to be important and effective for improving both experience and performance outcomes. Improved experience in this context means that through their work with a SPC an athlete was able to find more joy and fulfillment from his or her participation in sport regardless of outcome. In the Gould et al. study,
91% of the athletes reported that they would choose to retain the services of their SPC for further work. Another important finding of this study was that athletes rated individual services as being significantly more effective and useful than group workshops. These two studies were limited to Canadian and American Olympic athletes. The CEF has not been validated for other athletic populations (Anderson, Miles, & Robinson, 2004).

Bull (1995) used the CEF to evaluate the effectiveness of a sport psychology program he was providing to England’s female world cup cricket team. Responses indicated that the athletes believed his work had been beneficial for both individuals and the team as a whole.

Smith and Johnson (1990) provided a PST program for 45 minor league baseball players in the Houston Astros organization. The researchers created a survey similar to the CEF, with athletes rating components of the sport psychology program on a scale from *not helpful* to *very helpful*. The baseball players overwhelmingly rated the techniques taught to them as being *somewhat helpful* to *very helpful*. In this study, the techniques taught were not specified. Few players found the services offered to be of little worth. The findings of this study are similar to those that used the CEF; that is, they provide support for the efficacy of PST programs through positive ratings about athletes’ perceptions of SPCs and program effectiveness.

Some researchers have argued that when evaluating the usefulness of a PST program, it can be helpful to examine the degree to which athletes are adhering to
their prescribed programs and utilizing the techniques and methods on their own (Bull, 1991; Grove et al., 1999; Shambrook & Bull, 1995, 1996). In Bull’s study, athletes underwent a 4-week PST program and then were sent off to practice the techniques on their own for the next 2 months. Adherence to PST during the 2 months was generally low but largely variable. Motivation was a significant variable that positively correlated with and affected adherence.

Gould et al. (1990) taught PST to elite-level wrestlers at a training camp. They assessed the athletes’ use, importance placed upon, and knowledge of relaxation, imagery, goal-setting, and mental-preparation techniques. Assessments were performed before the camp, after the camp, and 3 months later. Results revealed that wrestlers’ use, importance placed upon, and knowledge of all four psychological techniques improved from precamp to postcamp but then began to wane at the 3-month follow-up.

Durand-Bush and Salmela (2002) interviewed athletes who had won gold medals at two separate Olympics. They found that the athletes universally reported utilizing imagery, goal-setting, relaxation, and self-talk strategies before and during each competition to attain the state of mind needed for successful performances. All athletes reported using methods of self-talk, with the majority reporting the use of imagery, positive-thinking, goal-setting, and attentional-control techniques before and during competition throughout their careers.
CHAPTER 3

METHODS

This chapter explains the methods used to explore the participants' acquisition, long-term use, and perceived effectiveness of the five selected psychological techniques. This chapter also explains the pilot study, selection of participants, instrumentation, procedures, and research design and statistical analysis.

Pilot Study

A pilot survey was given to 8 athletes who had undergone PST with a qualified SPC but who had not completed their first season of competition. The survey consisted of 69 questions. Most of the participants took between 10 and 20 minutes to complete the survey. Participants were asked to report any survey questions that were not clear or were difficult to understand. In addition, responses were analyzed and revisions were made to questions that participants identified as having a difficult time understanding, responding to, or both. Eleven questions were modified and 5 were removed so as to increase the clarity and precision of the survey.
Participants

The PST was taught either by an AASP certified consultant or someone with a minimum of a doctorate in psychology or exercise and sport science plus greater than 400 hours of experience consulting with athletes. Participants were required to be currently competing at a Division I level or higher. In addition, all athletes were required to have competed for at least one season since the initial PST.

Instrumentation

The survey administered to qualifying athletes was self-developed with the assistance of experts in the field of sport psychology. The experts helped to ensure the reliability and validity of the questions by providing input about how to properly word questions and to organize the survey. Surveys developed by Gould et al. (1990), Keller (1995), and Leffingwell (2001) were used as templates and were modified to meet the purpose of this study. I was forced to modify these instruments because none assessed the long-term use of specific psychological techniques and methods.

The self-developed survey contained seven sections for a total of 64 questions. Participants were initially asked to provide demographic information. The next section addressed the participants’ acquisition of psychological skills. Each of the remaining five sections included 11 questions that focused on the use and perceived effectiveness of the specific technique in question (see Appendix A).
Procedures

After receiving Institutional Review Board approval (see Appendix B) for this study, purposive, snowball sampling was employed to target the specific population required. I utilized my connections in the sport psychology and athletic communities to seek out at least 50 qualified participants. After reviewing the number of participants in previous similar studies, a sample size of 50 was determined to be appropriate (Greenspan & Feltz, 1989; Vealey, 1994). In addition, qualified consultants were identified from the current list of AASP certified consultants and then were contacted by e-mail or phone. Non-AASP certified consultants who met criteria to have the athletes with whom they worked included in the study were contacted in a similar manner. The qualified consultants who agreed to identify athletes for this study were asked to provide a contact list of the athletes with whom they had worked and who met the inclusion criteria or to deliver the survey to the athletes so as not to break confidentiality ethics. The final method of recruiting participants for this study involved me contacting coaches and asking them to give the survey to their athletes. The athletes were assured that coaches would not have access to the results. In all, 10 SPCs and 2 coaches contributed participants to this study. None of the 10 SPCs contributing athletes to this study came from a clinical psychology background.

After determining that an athlete met the inclusion criteria, the survey was mailed or given to the athlete or consultant. Some consultants were given a Web-site address where athletes could complete the survey online. Included with the
survey was an informational cover letter (see Appendix B) that informed potential participants that participation was optional and that their completion of the survey would qualify as their consent. Participants did not provide their name on the survey or the name of the consultant with whom they worked so as to maintain anonymity and confidentiality. There was no more than a minimal risk to the participants. If the participants experienced distress or discomfort while completing the survey, they were allowed to choose to leave questions blank or stop filling out the survey.

The survey took between 10 and 20 minutes to complete. Participants were asked to answer all relevant questions as honestly as possible and to return the survey to me in person or to use the included self-addressed, stamped envelope. Surveys were kept in a locked file cabinet in my office.

Research Design and Statistical Analysis

The nature of this study was primarily descriptive. Descriptive data were compiled and computed. One-way analyses of variance were conducted to determine if currently meeting with a SPC had an effect on the participants’ current use of psychological techniques. An independent samples t test was run to determine if professional athletes reported spending significantly different amounts of time meeting individually with SPCs compared with NCAA athletes. All data were analyzed using the SPSS statistical package.
CHAPTER 4

RESULTS AND DISCUSSION

Participants included 57 English-speaking male and female NCAA Division I and professional athletes over the age of 18 who had undergone PST in one or more of the following techniques: (a) imagery, (b) goal setting, (c) arousal regulation, (d) self-talk, and (e) attentional control. The mean age of the athletes was 22.54 with a standard deviation of 3.25 years. On average, athletes had first met with a SPC 3.96 years before participating in this study. All except 2 of the participants identified themselves as Caucasian. Of the 14 sports represented in these results, more than half of the participants were either professional Nordic skiers (n = 15) or collegiate track and field athletes (n = 22). Other sports represented in this study included gymnastics (n = 5), golf (n = 2), swimming (n = 2), football (n = 2), Nordic combined (n = 2), cross country (n = 1), basketball (n = 1), softball (n = 1), soccer (n = 1), baseball (n = 1), biathlon (n = 1), and freestyle skiing (n = 1).

This study examined athletes’ acquisition, long-term use, and perceived effectiveness of five psychological techniques commonly taught by SPCs. Fifty-seven out of approximately 250 professional and NCAA Division I athletes who were contacted directly or through coaches and SPCs completed the survey. Four of the returned surveys were filled out incompletely but were included because a
majority of the questions were answered. This chapter presents and discusses the results obtained from the analysis of the survey. Table 1 presents the gender and sport-level distribution of the participants in this study. Most of the NCAA athletes were female and most of the professional athletes were male.

Results

Research Question 1

Research Question 1 asked athletes which techniques they had been taught in their PST programs. The results indicated that 89.5% of the participants were taught three or more of the five techniques accounted for in this survey, whereas 56.1% of the participants reported that they were taught all five techniques. Arousal regulation and imagery were the most frequently taught techniques. The least taught technique was attentional control. Athletes on average were taught between two and four methods for each technique. The most commonly taught arousal-regulation methods were breathing exercises and progressive muscle

Table 1

<table>
<thead>
<tr>
<th>Gender</th>
<th>NCAA</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>5</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>22</td>
<td>57</td>
</tr>
</tbody>
</table>

*Note.* NCAA = National Collegiate Athletic Association.
relaxation. Athletes reported that they were taught to use imagery of themselves performing perfectly from an internal perspective more than any other method of imagery. More than 90% of the athletes were taught to set daily, season, and long-term goals. Table 2 presents the percentage of athletes who reported that they were taught each technique and method. Table 2 also presents the percentage of athletes who reported that they continue to use each method and technique taught. In addition, Table 2 presents the percentage of participants who rated each method as most effective of the methods they were taught within each technique.

**Research Question 2**

Research Question 2 asked athletes which techniques they continued to use and if they currently used the techniques more or less often than in the past. More than 95% of the athletes reported that they continue to use at least one method of the imagery, self-talk, goal-setting, attentional-control, and arousal-regulation techniques taught. Psyching-up and breathing exercises were the most-used arousal-regulation methods. Internal imagery and imagery to see a perfect performance were used by more than 89% of the athletes, which are similar to the findings on what they were taught. External imagery and imagery to overcome adverse situations were used by less than 65% of the athletes. The most commonly used method of self-talk involved athletes changing the way they perceive a situation. This method was still being used by 95% of the participants. All of the athletes who were taught goal setting continued to use at least one method. Setting daily goals (95.3%) was both the most taught and most-used goal-setting method. More
Table 2

Percentage of Participants Who Were Taught, Continue to Use, and Rated Each Technique and Method as Most Effective

<table>
<thead>
<tr>
<th>Techniques/methods</th>
<th>Taught</th>
<th>Continue to use&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Most effective&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arousal regulation</td>
<td>91.1 (51)</td>
<td>96.2 (50)</td>
<td></td>
</tr>
<tr>
<td>(n = 56)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breathing exercises</td>
<td>92.3 (48)</td>
<td>81.3 (39)</td>
<td>16.7 (8)</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progressive muscle relaxation</td>
<td>90.4 (47)</td>
<td>74.5 (35)</td>
<td>29.8 (14)</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meditation</td>
<td>61.5 (32)</td>
<td>75.0 (24)</td>
<td>25.0 (8)</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psyching-up</td>
<td>48.1 (25)</td>
<td>84.0 (21)</td>
<td>32.0 (8)</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yoga</td>
<td>26.9 (14)</td>
<td>64.3 (9)</td>
<td>0.0</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autogenic training</td>
<td>25.0 (13)</td>
<td>69.2 (9)</td>
<td>7.7 (1)</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biofeedback</td>
<td>13.5 (7)</td>
<td>42.9 (3)</td>
<td>57.1 (4)</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Hypnosis</td>
<td>5.8 (3)</td>
<td>100.0 (3)</td>
<td>0.0</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1.9 (1)</td>
<td>100.0 (1)</td>
<td>0.0</td>
</tr>
<tr>
<td>(n = 52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imagery</td>
<td>90.7 (49)</td>
<td>98.0 (48)</td>
<td></td>
</tr>
<tr>
<td>(n = 54)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performing perfectly</td>
<td>98.0 (48)</td>
<td>89.6 (43)</td>
<td>39.6 (19)</td>
</tr>
<tr>
<td>(n = 49)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>internal</td>
<td>93.9 (46)</td>
<td>95.7 (44)</td>
<td>39.1 (18)</td>
</tr>
<tr>
<td>(n = 49)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcome adverse situations</td>
<td>61.2 (30)</td>
<td>63.3 (19)</td>
<td>20.0 (6)</td>
</tr>
<tr>
<td>(n = 49)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External</td>
<td>57.1 (28)</td>
<td>64.3 (18)</td>
<td>3.6 (1)</td>
</tr>
<tr>
<td>(n = 49)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Self-talk</td>
<td>83.3 (45)</td>
<td>95.6 (43)</td>
<td></td>
</tr>
<tr>
<td>(n = 54)</td>
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</tbody>
</table>
Table 2 (continued)

<table>
<thead>
<tr>
<th>Techniques/methods</th>
<th>Taught</th>
<th>Continue to use&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Most effective&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change perception of situation</td>
<td>88.9 (40)</td>
<td>95.0 (38)</td>
<td>39.5 (15)</td>
</tr>
<tr>
<td>(n = 45)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Cue words</td>
<td>82.2 (37)</td>
<td>89.0 (33)</td>
<td>52.7 (19)</td>
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<tr>
<td>(n = 45)</td>
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<td></td>
<td></td>
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<tr>
<td>Thought stopping</td>
<td>62.2 (28)</td>
<td>82.1 (23)</td>
<td>11.1 (3)</td>
</tr>
<tr>
<td>(n = 45)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>13.3 (6)</td>
<td>83.3 (5)</td>
<td>33.3 (2)</td>
</tr>
<tr>
<td>(n = 45)</td>
<td></td>
<td></td>
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<tr>
<td>Goal setting</td>
<td>82.1 (46)</td>
<td>100.0 (46)</td>
<td></td>
</tr>
<tr>
<td>(n = 56)</td>
<td></td>
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<tr>
<td>Daily</td>
<td>93.5 (43)</td>
<td>95.3 (41)</td>
<td>58.1 (25)</td>
</tr>
<tr>
<td>(n = 46)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Season</td>
<td>91.3 (42)</td>
<td>85.7 (36)</td>
<td>4.8 (2)</td>
</tr>
<tr>
<td>(n = 46)</td>
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<td></td>
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<tr>
<td>Long term</td>
<td>91.3 (42)</td>
<td>81.0 (34)</td>
<td>0.0</td>
</tr>
<tr>
<td>(n = 46)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technique</td>
<td>69.6 (32)</td>
<td>87.5 (28)</td>
<td>18.8 (6)</td>
</tr>
<tr>
<td>(n = 46)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Result oriented</td>
<td>54.3 (25)</td>
<td>80.0 (20)</td>
<td>20.0 (5)</td>
</tr>
<tr>
<td>(n = 46)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attentional control</td>
<td>74.1 (40)</td>
<td>95.0 (38)</td>
<td></td>
</tr>
<tr>
<td>(n = 54)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refocusing</td>
<td>92.5 (37)</td>
<td>89.2 (33)</td>
<td>52.9 (18)</td>
</tr>
<tr>
<td>(n = 40)</td>
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<td></td>
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<tr>
<td>Attention shifting</td>
<td>70.0 (28)</td>
<td>67.9 (19)</td>
<td>22.2 (6)</td>
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<td>(n = 40)</td>
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<tr>
<td>Routines</td>
<td>65.0 (26)</td>
<td>88.5 (23)</td>
<td>26.9 (7)</td>
</tr>
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<td>(n = 40)</td>
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<tr>
<td>Other</td>
<td>7.5 (3)</td>
<td>66.7 (2)</td>
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<tr>
<td>(n = 40)</td>
<td></td>
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</tr>
</tbody>
</table>

Note. The number of participants answering yes to the question is listed in parentheses. The number of responses differs among techniques due to incomplete surveys.
Table 2 (continued)

aCalculated by dividing the number of participants who continue to use the method by the number of participants who were taught the method.

bCalculated by dividing the number of votes for the method by the number of athletes who were taught that specific method.
than 80% of the athletes continued to use all other methods of goal setting. Of the attentional-control methods, most of the participants continued to use refocusing (89.2%), followed by routines (88.5%) and attention shifting (67.9%). Table 2 presents the percentage of athletes who continued to use each of the techniques and methods taught at the time they completed the survey.

The 30 participants who were taught and continued to use all five psychological techniques reported that they devoted the most amount of time to practicing imagery ($M = 26.9\%, SD = 19.4$) and self-talk ($M = 23.0\%, SD = 13.2$). Goal setting ($M = 22.0\%, SD = 17.5$), arousal regulation ($M = 16.4\%, SD = 12.0$), and attentional control ($M = 11.7\%, SD = 8.3$) were the techniques that participants reported spending the third, fourth, and fifth most amount of time practicing.

All techniques were used more often currently than during the acquisition phase. The use of arousal regulation increased the least ($M = 6.50, SD = 1.80$) and self-talk use increased the most ($M = 7.79, SD = 1.54$). These scores were rated on a scale from 1 to 10. A rating of 1 meant that the techniques were used much less, 5 meant that they were used the same amount, and 10 meant that they were used much more than during the acquisition phase. On average, participants first met with a SPC 3.96 years before completing the survey. Table 3 presents the participants' ratings of change in the use of each psychological technique when compared with the acquisition phase.
Table 3

Mean Scores for Change in the Use of Psychological Techniques Since the Acquisition Phase

<table>
<thead>
<tr>
<th>Technique</th>
<th>Rating (M)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arousal regulation</td>
<td>6.50</td>
<td>1.80</td>
</tr>
<tr>
<td>Imagery</td>
<td>7.56</td>
<td>1.14</td>
</tr>
<tr>
<td>Self-talk</td>
<td>7.79</td>
<td>1.54</td>
</tr>
<tr>
<td>Goal setting</td>
<td>7.76</td>
<td>1.89</td>
</tr>
<tr>
<td>Attentional control</td>
<td>7.37</td>
<td>1.65</td>
</tr>
</tbody>
</table>

Note. Rating on a scale from 1 to 10 (1 = use less, 5 = same, and 10 = use more).

Research Question 3

Research Question 3 asked athletes how often and when they were using the techniques and if they were using them outside of sport. The first part of Research Question 3 asked how often and when athletes were using the techniques they had been taught. The results indicated that the amount of time spent practicing psychological techniques per week was variable among athletes, with 60.7% reporting they spent between 1 and 30 minutes. Another 37.5% spent between 31 minutes and 3 hours. One athlete reported practicing psychological techniques more than 6 hours per week. Of the participants in this study who continued to practice psychological techniques, the percentage of the participants who were currently using that technique at least once a week was self-talk (100%), goal setting (97.8%), imagery (95.8%), arousal regulation (80%), and attentional
control (76.3%). Self-talk (65.1%) and goal setting (64.4%) were used almost daily. Attentional-control techniques were used the least frequently of the five techniques. Table 4 presents how often athletes reported practicing each psychological technique.

With the exception of self-talk, the techniques were reportedly used more frequently before competition than at any other time. Across the five techniques, all were used the least after competition. Self-talk was the most-used technique before, during, and after competition as well as for practice. Imagery and goal setting were used more for practice than during and after competition. Table 5 presents when athletes reported using each of the five techniques compared with competition and practice.

The second part of Research Question 3 asked athletes if they used the techniques they had been taught outside of sports. Overall, 77.8% of the athletes reported that they used the techniques taught to them by a SPC outside of the

Table 4

<table>
<thead>
<tr>
<th>Technique</th>
<th>Daily (%)</th>
<th>&gt; Weekly (%)</th>
<th>Weekly (%)</th>
<th>Biweekly (%)</th>
<th>Monthly (%)</th>
<th>&lt; Monthly (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arousal regulation</td>
<td>18.0</td>
<td>40.0</td>
<td>22.0</td>
<td>8.0</td>
<td>8.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Imagery</td>
<td>19.1</td>
<td>46.8</td>
<td>29.8</td>
<td>2.1</td>
<td>2.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Self-talk</td>
<td>65.1</td>
<td>32.6</td>
<td>2.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Goal setting</td>
<td>64.4</td>
<td>28.9</td>
<td>4.5</td>
<td>0.0</td>
<td>2.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Attentional control</td>
<td>36.8</td>
<td>31.6</td>
<td>7.9</td>
<td>15.8</td>
<td>7.9</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Table 5

*When Participants Reported Using Each Technique*

<table>
<thead>
<tr>
<th>Technique</th>
<th>Before (%)</th>
<th>During (%)</th>
<th>After (%)</th>
<th>Practice (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arousal regulation</td>
<td>90.2</td>
<td>47.1</td>
<td>19.6</td>
<td>51.0</td>
</tr>
<tr>
<td>Imagery</td>
<td>91.5</td>
<td>51.1</td>
<td>29.8</td>
<td>72.3</td>
</tr>
<tr>
<td>Self-talk</td>
<td>95.3</td>
<td>97.7</td>
<td>53.5</td>
<td>90.7</td>
</tr>
<tr>
<td>Goal setting</td>
<td>88.9</td>
<td>64.4</td>
<td>44.4</td>
<td>86.7</td>
</tr>
<tr>
<td>Attentional control</td>
<td>82.9</td>
<td>74.3</td>
<td>11.4</td>
<td>77.1</td>
</tr>
</tbody>
</table>

*Note.* Before, during, and after refer to before, during, and after competition.

Sport setting. Imagery was the least-used skill outside of the sport setting (62.5%). Goal setting (88.9%) and self-talk (86.0%) were the most-used techniques outside of the sport setting. These two techniques were followed by arousal regulation (78.0%) and attentional control (73.7%).

**Research Question 4**

Research Question 4 asked the athletes how effective the psychological techniques and methods were for improving performance. One question in the survey asked athletes to rate the overall effectiveness of the PST programs they participated in for improving their performance. On average, athletes rated the PST programs 7.18 out of 10. When comparing the means for effectiveness of the five techniques, arousal regulation was rated lowest (\(M = 7.34, SD = 1.94\)) and goal
setting was rated highest \( (M = 8.67, SD = 1.63) \). Table 6 presents the perceived effectiveness of each technique.

Of the methods taught for arousal regulation, biofeedback was reported as the most effective technique, followed by psyching-up and progressive muscle relaxation. For imagery, only 3.6% of those who were taught to view images from a spectator’s perspective rated it as most effective. Out of the 34 participants who were taught imagery from both the spectator’s perspective and the competitor’s perspective, only 1 rated the spectator’s perspective as most effective. Imagery of a perfect performance was rated the most effective method of imagery by 41.3% of the athletes who were taught that method. Thought stopping was the least effective method of self-talk. The use of cue words was rated the most effective technique by 52.7% of the participants who were taught the method. Participants rated daily goal setting as the most effective form of goal setting. Season and long-term goals

Table 6

Mean Scores for Perceived Effectiveness of Techniques

<table>
<thead>
<tr>
<th>Technique</th>
<th>Rating ((M))</th>
<th>(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arousal regulation</td>
<td>7.34</td>
<td>1.94</td>
</tr>
<tr>
<td>Imagery</td>
<td>8.58</td>
<td>1.14</td>
</tr>
<tr>
<td>Self-talk</td>
<td>8.49</td>
<td>1.35</td>
</tr>
<tr>
<td>Goal setting</td>
<td>8.67</td>
<td>1.63</td>
</tr>
<tr>
<td>Attentional control</td>
<td>7.82</td>
<td>1.57</td>
</tr>
</tbody>
</table>

*Note.* Rating on a scale from 1 to 10 \((1 = low\) and \(10 = high\)).
were rated the least effective methods. Refocusing was rated the most effective method of attentional control. Table 2 presents the percentage of participants who rated each method as the most effective for each technique.

Research Question 5

Research Question 5 asked if there was a difference in the number of hours (current use) that psychological techniques were used among athletes who currently met with a SPC and those who did not meet with a SPC. A three-way analysis of variance was run to determine if currently meeting with a SPC (gender of the athlete, level of competition, or any interactions) had an effect on the participants' current use of psychological techniques. Overall, the analysis indicated that athletes who were currently meeting with a SPC used psychological techniques more often than those who did not currently meet with a SPC, but the difference was not statistically significant, $F(1,48) = 1.29, p = .261$. The power for this analysis was low (power = .200). NCAA athletes used the techniques they were taught significantly less often than professional athletes, $F(1,48) = 4.25, p = .045$. The interaction of currently meeting with a SPC and gender was not significant, $F(1,48) = 2.40, p = .128$. Again, the power for this analysis was low (power = .330).

This interesting nonsignificant difference revealed that men used psychological techniques about the same whether or not they were meeting with a SPC, whereas women used the psychological techniques more with a SPC (see the Figure). Caution should be used in interpreting these results because of the
Do Athletes Currently Meet With a SPC? Use of psychological techniques with male and female participants who currently do or do not meet with sport psychology consultants.

Use of psychological techniques with male and female participants who currently do or do not meet with sport psychology consultants.
potential confounding of level of competition and gender.

Research Question 6

Research Question 6 asked athletes if they preferred to meet with SPCs individually or in a group setting. Despite the population for this study spending the majority of time in a group setting, 71.4% of the athletes reported that individual meetings with a SPC were more useful and helpful than group sessions. After dividing the results by gender and sport level, 80.0% of the men, 66.7% of the women, 62.9% of the NCAA athletes, and 85.8% of the professional athletes in this study preferred to meet individually. A three-way analysis of variance was run to determine if the amount of time that athletes spent in an individual setting with a SPC was affected by sport level or gender. The analysis indicated that females spent a higher percentage of their time in individual sessions than males (38.56% and 30.00%, respectively), $F(1,53) = 7.68, p = .008$, and that professionals spent a higher percentage of their time in individual sessions than NCAA athletes (44.91% and 29.43%, respectively), $F(1,53) = 10.21, p = .002$.

Research Question 7

Research Question 7 asked which techniques athletes no longer use, why they stopped using them, and how long they used them before they stopped. Out of all participants in this study who were taught arousal regulation and imagery, only 1 person stopped using these techniques. Two participants quit using self-talk and attentional-control techniques. Each participant who was taught goal setting
continued to use at least one of the methods.

The results indicated that 57.1% of the athletes in this study reported that they continued to meet with a SPC. Of those who no longer met with a SPC, the majority cited that they were either able to “do the skills on their own” or they “do not have the time to meet.” Several participants reported that they no longer used a SPC’s services because their class ended or their team stopped working with one. Only 12% of the participants who reported that they stopped meeting with a SPC did so because it was not helpful or a priority. On average, the athletes who stopped meeting with a SPC met for 2.53 years ($SD = 2.82$).

Research Question 8

Research Question 8 asked athletes how PST programs were delivered to them and when they met with SPCs. The mean age that athletes first met with a SPC was 18.58 with a standard deviation of 2.02 years. Participants in this study reported that they spent twice as much time with a SPC in a group setting as in an individual setting. The majority of athletes met weekly to monthly with SPCs during the acquisition phase and continued to meet nearly as often presently. Nearly 78% of the professional athletes reported meeting with SPCs while at training camps and during big competitions such as world championships and the Olympics. Many of the collegiate athletes were taught PST through a course provided by their university’s athletic programs. Athletes reported meeting with a SPC more frequently before competitions than after. More than 45% of the athletes reported that one of the reasons they met with a SPC was because a problem
Discussion

The purpose of this study was to examine factors relevant to athletes' acquisition, long-term use, and perceived effectiveness of five psychological techniques. Specifically, this study was designed to determine what psychological techniques athletes had been taught, the amount of time they spend engaged in PST, how the techniques were used in the long term, and if they perceived psychological techniques to be effective for enhancing their performance. Finally, this study examined whether athletes used the techniques taught in PST in nonsport-related aspects of their lives.

Research Question 1

The analysis supported the hypothesis that imagery and arousal regulation would be the most commonly taught techniques. These results support the literature that indicates these are the most commonly taught techniques and provides evidence that athletes in this study underwent similar PST programs as those in previous research (Brewer & Shillinglaw, 1992; Gould et al., 1990, 1991; Keller, 1995). Breathing exercises and progressive muscle relaxation were the most taught arousal-regulation methods. This finding is not surprising because these two methods are the easiest to teach and most basic of arousal-regulation methods. Breathing exercises and progressive muscle relaxation are often incorporated and used within the other psychological techniques.
Although goal setting was only the fourth most-taught technique of the five, it is interesting to note that more than 90% of the athletes who were taught goal setting were taught to set daily, season, and long-term goals. This finding provides evidence that the SPCs in this study believe a combination of the three goal-setting methods is most effective for improving performance and is supported by the research of Durand-Bush and Salmela (2002).

Research Question 2

The first part of the hypothesis for Research Question 2 stated that arousal regulation, goal setting, and imagery would be rated as the three most-used psychological techniques. This hypothesis was supported by the evidence that athletes continued to use goal setting, imagery, and arousal regulation. The continued use rating for athletes in this study was above 95% for all five techniques. These findings provide additional support to the similar findings of many other studies (Brewer & Shillinglaw, 1992; Gould et al., 1990, 1991; Orlick & Partington, 1988). These results, paired with those from Research Question 1, provide evidence that the participants in this study were taught and currently use psychological techniques in a similar manner as those in previous studies. These findings indicate that the delivery and utilization of PST programs have not changed drastically over the last decade.

The finding that internal imagery is both taught and used more frequently than external imagery supports the research of Spittle and Morris (2007). SPCs should note that athletes in this study preferred to perform imagery from an
The second part of the hypothesis for Research Question 2 stated that athletes would report using the techniques they were taught slightly less currently than they did in the acquisition phase. Athletes were expected to be meeting frequently with a SPC during the acquisition phase, and it was believed that this contact would increase the use of psychological techniques during that time. This hypothesis was not supported. As a whole, participants reported using psychological techniques and methods significantly more often currently than they did during the acquisition phase. These findings are opposite of those in the Gould et al. (1990) and Bull (1991) findings that the use of techniques decreased after the acquisition phase. Perhaps SPCs taught PST to athletes in this study in a more relevant, effective, and applicable format than SPCs in previous research. A higher continued use in the practice phase, when compared with the acquisition phase, may have been the result of athletes in this study acquiring a superior understanding of how to use the techniques they were taught in PST.

The possibility exists that athletes had a difficult time distinguishing between the acquisition phase and practice phase of PST. The acquisition phase was defined in this study as the phase when athletes were working on developing new psychological skills with the guidance of a SPC until they became proficient at using them. The practice phase was defined as the stage when athletes began to independently utilize and incorporate the skills into “real-life” athletic settings. If the participants could not easily identify when one stage ended and the other
began, they would have a difficult time answering the question accurately.

Social desirability bias could have affected the results for this research question. Participants may have overestimated their current use of psychological techniques because they believed that they were to answer that they currently used the techniques more than they had in the past. Participants may have assumed that the desirable behavior would be to increase their use of psychological techniques and, therefore, answered the question with this in mind. Perhaps athletes in this study were able to maintain a high level of psychological technique use beyond the acquisition phase because they were immersed in an environment or a culture of athletes and coaches who supported and promoted the benefits of PST.

**Research Question 3**

Due to a possible problem with semantics, the hypothesis that use of psychological techniques would be higher in competition than in practice was not supported. Although use of psychological techniques was highest before competition in this study, the participants reported using the imagery and goal-setting techniques more frequently in practice than during or after competition. Previous studies such as that of Frey et al. (2003) have not clearly defined whether or not the use of techniques “during competition” includes just before or after an athlete competes. In other words, it is unclear if “before competition” in this study would have been considered the same as “in competition” in previous studies. In addition, the time frames for the questions about practice in this study were not divided into before, during, and after practice the way they were for competition.
Therefore, comparisons between this study and previous research are difficult to interpret. Future researchers should structure similar and more precise time frames for competition and practice in order to distinguish exactly when athletes use psychological techniques.

Relaxation-based methods of arousal regulation may be used more before competition than during competition because anxiety is usually highest just before competition begins (Filaire, 2007). Perhaps low psychological technique use during and after competition indicates that athletes are not being taught how to incorporate the methods taught in PST during those times. These findings indicate that athletes in this study use psychological techniques more during practice than the participants in the Frey et al. (2003) study.

Perhaps results of this study and those of the Frey et al. (2003) study differ because they did not examine the same techniques. In addition to the five techniques addressed in this study, Frey et al. examined other constructs such as automaticity, negative thinking, and emotional control. Techniques such as imagery and goal setting are potentially more suitable for use before competition and for practice than at any other time. It is possible to perform imagery and goal setting between events but unlikely that athletes will engage in these techniques while actually competing—especially in short events. Imagery and goal setting might have been used more for practice than during or after competition because these techniques can assist with learning new skills. Attentional-control and self-talk techniques can be applied and used easily by athletes while they are competing.
The results might also be affected by the diversity of competition formats in sport. Athletes competing in sports that require predominantly closed skills may, out of necessity, utilize techniques differently than athletes in sports that require mostly open skills. In sports with timeouts such as golf and gymnastics, athletes have time between each shot or event to practice techniques such as imagery and goal setting. Other sports such as cross-country skiing and running are continuous and do not allow for in-between time to use techniques. This study did not account for such factors.

Hypothesis 3 also stated that participants would report using psychological techniques in situations outside of sport. The hypothesis was supported by the findings that the majority of athletes in this study reported using these psychological techniques outside of sport. These results provide support for the claim of Danish et al. (1992); that is, the techniques taught by a SPC are “life skills” that can be applied in many domains and are not just sport-specific skills. These findings are important and provide convincing evidence to support SPCs who are interested in working with performers in domains outside of sport. SPCs might also broaden the bounds of their practice and encourage the athletes with whom they are working to use and practice the techniques they are taught in nonsport settings for additional practice.

It is unclear why imagery was the least-used technique outside of sport by the athletes. Perhaps the uses of imagery outside of sport are not as obvious to athletes as they are for the other techniques. Imagery is commonly used as a way
to practice and memorize difficult movements that are probably not attempted in situations outside of athletics. Another possibility is that athletes do not feel comfortable using imagery in situations outside of sport because it is not as socially accepted or as easy to hide when practicing as are the other undetectable techniques.

Research Question 4

Hypothesis 4 stated that athletes would attribute performance improvements more to the use of arousal-regulation and imagery techniques than the other three techniques. This hypothesis was not supported. Overall, participants rated goal-setting techniques as the most effective. This finding is consistent with the research findings of Weinberg et al. (1993) and Weinberg et al. (2000). They found that athletes rated goal setting as a moderately to highly effective technique. Although imagery was ranked the second most effective technique, arousal regulation was ranked least effective of the five. These findings are surprising considering that arousal regulation is the most frequently taught technique by SPCs and that 98% of athletes continued to use arousal-regulation methods. Even though participants rated arousal regulation the least effective of the five techniques, the rating is still relatively high ($M = 7.34, SD = 1.94$), indicating that this technique is viewed as being effective for improving performance. Nevertheless, athletes were not as satisfied with arousal-regulation techniques as they were with the other four techniques. The effectiveness ratings found in this study, which ranged from 7 to 9, are comparable with those found in previous research (Gould et al., 1990;
Perhaps arousal-regulation techniques are initially effective techniques, but they become less useful as athletes are taught new techniques such as learning how to perceive a situation differently. Changing perspective of a situation might reduce arousal in athletes more effectively than “typical” arousal-regulation techniques.

Assuming that most participants in this study used arousal-regulation techniques to cope with problems of overarousal, there is another possible explanation for the discrepancy between the findings of this study and previous research. Many of the athletes in this study compete in running and skiing; these sports do not require the fine motor skills that become disrupted when arousal becomes too high. Even though arousal-regulation techniques may function to reduce or increase anxiety somewhat, the possibility also exists that athletes in this study did not rate arousal regulation as highly as the other techniques because they were still unable to attain arousal levels as low or as high as they would have preferred.

The finding that biofeedback was rated the most effective arousal-regulation method warrants attention. This result should be interpreted with caution because it was only taught to 13.5% of the athletes. When interpreting the results from this study, it is important to consider the number of participants represented in each statistic. In addition, biofeedback had the lowest continued use rating of any of the arousal-regulation techniques. Nevertheless, results indicate that SPCs might consider incorporating biofeedback in their PST programs because some of the
participants in the current study considered it to be effective.

Another notable finding is that only 1 athlete rated external imagery as the most effective imagery method. This finding is similar to that of research by Spittle and Morris (2007); they found that participants preferred to use internal imagery more frequently than external imagery. Athletes were not asked to specify whether they were imaging themselves performing perfectly or using imagery to overcome adverse situations from an internal or external perspective. Therefore, the exact percentage of participants who thought internal imagery was more effective than external is unknown. This finding does not support the research findings of Hardy and Callow (1999); they claimed that external imagery is more effective than internal imagery for improving performance. Participants in the Hardy and Callow study were taught a new skill, whereas the athletes in the present study can be considered experts at their sport. Hardy and Callow proposed that external imagery is superior for learning a new skill, but internal imagery is superior for perfecting an already practiced skill. Perhaps athletes should be taught both internal and external imagery and also be informed that the most effective perspective may change depending on the purpose of the imagery.

The most effective method of goal setting was daily goals. Long-term goals received zero votes for most effective method. The literature indicates that the most effective goal setting combines both short- and long-term goals (Durand-Bush & Salmela, 2002). Hall and Byrne (1988) stated that when performances are gauged against long-term goals only, the disparity between the goal and the
performance might be large and discouraging for athletes. Daily goal setting can help athletes to measure their improvements and give a sense of immediate accomplishment as they are achieved. Clearly, this study provides evidence that daily goal setting is perceived as a much more useful and effective component when compared with long-term goals.

Research Question 5

Hypothesis 5 stated that use of psychological techniques would be higher in athletes who currently meet with a SPC compared with those who no longer meet, but use will be highly variable among athletes. Overall, the results did not support Hypothesis 5. Psychological skills use was highly variable among participants; in general, athletes who currently meet with a SPC do not practice PST techniques significantly more often than athletes who do not meet with a SPC. Perhaps one explanation for why significance was not found is that athletes who were currently meeting with a SPC were not working specifically on PST. SPCs provide services to athletes that do not involve PST. Other services provided by SPCs include working to improve team dynamics, increase motivation, and even help athletes overcome injuries. In addition, athletes often prefer to talk with a SPC about issues that are concerning them and prefer not to involve any practicing of psychological skills in their session. Perhaps the athletes in this study use the techniques and methods taught in PST more without current SPC contact than was found in previous studies because the SPCs are doing a better job of teaching the athletes to become self-sufficient at utilizing the skill on their own.
However, when gender was accounted for, the results indicated that the women in this study who currently met with a SPC utilized the psychological techniques more often than women who no longer met with a SPC. This finding is supported by the research of Heishman and Bunker (1989). They found that female lacrosse players who had more contact with a SPC practiced psychological techniques more often than those with less contact.

The analysis also revealed that males spent more time than females using psychological techniques, although not a statistically significant amount more. In addition, NCAA athletes used the techniques they were taught significantly less than professional athletes. A majority of men in this study were professional athletes who might have had more to gain or lose from their success in sport than women. It has been well documented that athletes respond to economic and social incentives and work harder to succeed when the rewards are high (Lallemand, Plasman, & Rycx, 2008). Perhaps professional and male athletes were more motivated to practice PST on their own than collegiate and female athletes because of the social and financial rewards that they stand to gain from performance improvements (Stempel, 2006). Bull (1991) found that self-motivation was a significant variable that positively correlated with and affected adherence to PST programs. In addition, Bull proposed that athletes who are high in self-motivation are more likely to adhere to PST programs without SPC contact than athletes who are not as highly motivated. A majority of collegiate athletes do not advance to have professional careers. In effect, most collegiate athletes are nearing the end of
their athletic careers, they already have scholarships, they may be less motivated, and they have less time because of school than professional athletes to seek out improvement through the practice of PST (Bull). It is also possible that sport level and gender of the athlete were confounded in this study.

Research Question 6

Hypothesis 6 stated that athletes would prefer to meet individually with SPCs. The finding that most athletes prefer to meet with SPCs in an individual rather than in a group setting was expected. Gould et al. (1991) found that many athletes in their study desired more individualized PST programs. When a SPC meets with a client individually, the SPC’s ability to tailor the program specifically to the athlete’s needs is improved. The specificity and quality of individual meetings cannot be easily attained when delivering a PST program to a group. The finding that professional athletes in this study spent a greater amount of time in an individual setting than NCAA athletes indicates that professional athletes are receiving PST in the setting they preferred more often than college athletes.

Research Question 7

Research Question 7 asked participants which techniques they no longer use. The question also addressed why and when they stopped using the techniques. The question was exploratory in nature due to a limited amount of research from which to make predictions. Although slightly more than half of the participants continue to meet with a SPC, 88% report that the techniques they were taught were
useful and effective for improving performance. Of the athletes who stopped meeting with SPCs, 36% reported that they no longer needed to meet because they were capable of practicing the techniques and methods on their own. This finding provides evidence that the SPCs who contributed athletes to this study were teaching psychological techniques and methods effectively. On the other hand, a large number of athletes claimed that they did not have time to meet with a SPC. This finding provides evidence that sport psychology is not a high priority for many of the athletes in this study. Fewer than 4% of the athletes reported that they stopped using even one of the techniques they were taught. Of those who stopped using techniques, the time at which they stopped using them was extremely variable.

**Research Question 8**

Research Question 8 asked how PST programs were delivered to participants in this study. Participants were also asked when they met with SPCs. In addition, participants reported the percentage of time spent with a SPC in group and individual settings.

Athletes, for the most part, do not seek out SPCs’ services on their own. This finding indicates that athletes might not have deemed it worthwhile to seek out and pay for a SPC’s services if they had to pay for it on their own. Professional athletes rely on their coaches and sports-governing bodies to organize and pay for services. Similarly, NCAA athletes meet with a SPC when it is required as a class or organized by a coach. These findings indicate that SPCs
should work together closely with coaches and sports-governing bodies because they usually decide if their athletes will be funded to meet with SPCs.

Professional athletes were likely able to meet individually with SPCs more often than collegiate athletes because the governing bodies for their sport provide the funding and environment to do so. In addition, the professional athletes in this study depend on their performance results to provide income, and they may be even more motivated to seek out the more effective individual meetings with SPCs.
CHAPTER 5

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study was designed to examine NCAA Division 1 and professional athletes' acquisition, long-term use, and perceived effectiveness of five psychological techniques commonly taught by SPCs. The following chapter provides a summary and findings from the current study, presents conclusions, and makes recommendations for future research in the area of PST.

Summary

The sample for this study consisted of 57 English-speaking male (n = 21) and female (n = 36) athletes between the ages of 18 and 31 who were competing at the NCAA Division 1 (n = 35) or professional (n = 22) level. The PST was taught either by an AASP certified consultant or by someone with a minimum of a doctorate in psychology or exercise and sport science plus greater than 400 hours of experience consulting with athletes. Each participant completed a survey designed to assess his or her acquisition, continued use, and perceived effectiveness of imagery, goal-setting, arousal-regulation, self-talk, and attentional-control techniques. Descriptive statistics showing the means, standard deviations,
variances, and frequencies for each of the variables were calculated using the SPSS statistical package. A three-way analysis of variance was run to determine if currently meeting with a SPC, sport level, or gender had an effect on the amount of participants' current use of psychological techniques. An additional two-way analysis of variance was run to determine if the amount of time that athletes spent in an individual setting with a SPC was affected by sport level or gender.

Findings

The purpose of this study was to examine factors relevant to the acquisition and practice phases of PST. It was hypothesized that the most commonly taught and most effective techniques would be imagery and arousal regulation and that the techniques most athletes continued to use would be arousal regulation, imagery, and goal setting. In addition, it was expected that participant use of techniques would be greater in competition than in practice and that athletes would report using the techniques outside of sport. Finally, it was hypothesized that use of psychological techniques would increase if the participant was currently meeting with a SPC and would decline as time passed since initial training. The data from this study revealed the following findings:

1. Imagery and arousal regulation were the most commonly taught techniques and attentional control was the least taught technique.

2. Most athletes were taught between two and four methods for each technique in PST programs.
After first meeting with a SPC 3.96 years (on average) before participating in this study, more than 95% of athletes reported that they continue to use at least one PST method for each technique they were taught.

The majority of athletes reported using psychological techniques at least once a week.

Athletes used PST techniques more before competition than at any other time.

Athletes (77.8%) frequently apply the techniques taught in PST to other areas of their lives outside sport.

Athletes in this study believed that PST and all five techniques are effective for improving their performance.

Males tended to spend more time than females utilizing psychological techniques and methods. NCAA athletes used the techniques they were taught statistically less often than professional athletes. Women who currently met with a SPC used the psychological techniques and methods more often than women who did not use the psychological techniques and methods. In contrast, male use was not affected by whether or not they met with a SPC.

Athletes reported using PST techniques slightly more often at the time they completed the survey than they did during the acquisition phase.
10. Of the athletes (42.9%) who no longer met with a SPC, the most common reasons given for no longer meeting were that they did not have enough time or that they were able to use the techniques on their own.

11. Only 12% of the participants did not find PST to be useful or helpful.

12. Meeting with a SPC in an individual setting was rated as being more useful and helpful than meeting in a group setting.

13. Professional athletes spent a higher percentage of their time with a SPC in individual sessions than collegiate athletes.

14. Female athletes spent a higher percentage of their time with a SPC in individual sessions than male athletes.

Conclusions

A large gap in the literature concerning PST programs was the lack of quantitative research examining the effectiveness and long-term use of psychological techniques beyond the beginning of the practice phase of psychological skill acquisition. This study provides clear evidence that athletes utilized the techniques and perceived them to be effective for improving performance several years beyond their initial PST.

When comparing the results from this study with previous findings, it is important to remember that all of the PST programs taught in this study were taught by applied SPCs using an educational approach. The educational approach to
teaching PST is derived from the philosophy that athletes already possess the psychological skills needed for success in sport but sometimes require assistance developing and optimizing them (Vealey, 2007). Many of the past studies involved athletes who were taught PST programs by licensed psychologists who utilized a clinical approach. The clinical approach to teaching PST operates from the philosophy that athletes should be provided therapy to help overcome dysfunctional personality behaviors and processes that may be directly or indirectly associated with sport (Gardner & Moore, 2006). Any differences between this study and previous research may be the result of SPCs' differing philosophies of program delivery.

Discrepancies in results between this study and previous research may also be the result of changes in PST programs over the last 10 to 20 years. According to Vealey (2007), the delivery of PST has improved over time and continues to become more sophisticated as the research base and resources available to SPCs continue to grow. Operating philosophies have been developed to help consultants implement more refined and specialized psychological training programs for specific sports and athletic environments.

The participants in this study were presented PST in varied formats and settings. Many of the collegiate athletes attended a class that met weekly for 1 semester, whereas a majority of the professional athletes met with SPCs at big competitions and during training camps. Few participants in this study reported that they personally sought out or paid for a SPC’s services on their own.
This study provides evidence that athletes value PST and their interactions with SPCs. Nearly every participant in this study continued (if they had been taught the technique) to use arousal-regulation, imagery, goal-setting, self-talk, and attentional-control techniques in the long term to improve their performances. Fewer than 4% of the athletes in this study reported that they stopped using any of the techniques they were taught.

Certain techniques such as arousal regulation and imagery were taught more frequently to athletes than self-talk and attentional-control techniques. The results also indicate that not all methods for a technique were perceived to be equally effective. Further research is needed to determine which techniques and methods athletes find most useful and effective for their particular sport. This type of research could help explain and justify why certain techniques should be taught more often than others.

This study also provides evidence that gender and sport-level differences may affect the use and practice of psychological techniques and methods. Perhaps female athletes benefit more from continuing to meet with SPCs than male athletes. The results of this study provide some preliminary findings from which researchers can build.

Clearly, athletes use the techniques taught through PST in nonsport-related aspects of their lives. This finding opens the door to a number of other potential uses for PST that may involve improving an athlete as a whole person rather than just attempting to improve his or her athletic performance.
Beyond providing evidence for the efficacy of PST programs to improve performance throughout athletes’ careers, the findings from this study provide some evidence from which to make specific recommendations to SPCs. For instance, SPCs should be aware that athletes in some sports and situations found goal setting to be the most effective of the commonly taught techniques. All of the athletes in this study who were taught goal setting continued to use at least one method. The finding that many athletes use the methods they learned in PST outside of sport is somewhat surprising because most SPCs do not teach athletes to apply these methods in other areas. SPCs can improve the services they offer by being aware that the skills they teach are not necessarily sport specific and by providing examples of how the strategies might be used or practiced in nonsport aspects of athletes’ lives. SPCs should also inform coaches and sport organizations about research providing evidence that most athletes prefer individual consultation to group consultation. The results from this study should serve as a confidence booster to SPCs and ensure them that the PST programs they deliver to athletes are appreciated, perceived as being effective, and used beyond just a few months posttraining.

**Recommendations for Future Research**

The results of this study provide a good foundation from which researchers can build off of in the future and move toward improving their understanding of athletes’ use and perceived effectiveness of psychological techniques and methods. There are several weaknesses to using a closed-ended survey and a cross-sectional
study design to assess athletes’ attitudes, opinions, and long-term utilization of the techniques learned within a PST program. When comparing differences in use and perceived effectiveness among athletes, this study was unable to account for other factors that may also affect acquisition and use. For instance, this study was unable to explore how athletes’ answers to questions were possibly influenced by their subculture of teammates, competitors, and coaches who do or do not promote PST. In addition, this study could not explore how factors outside of the actual PST program with the consultant such as reading books or articles about mental training on their own impacted the uses and perceptions of psychological techniques. This study was also unable to describe in-depth why certain techniques were perceived as being more effective than others, how the skills were being used outside of sport, or how use had possibly changed over time.

A natural progression in research should involve delving further into the reasons behind the quantitative findings of the present study. Much could be learned from a qualitative longitudinal study designed to assess athletes’ long-term use and perceived effectiveness of techniques and methods taught in PST by a SPC. More qualitative, in-depth research is needed to increase researchers’ understanding of both when and how the psychological techniques taught in PST are effectively used by successful athletes to improve experience, recovery, and performance throughout their careers. Further qualitative research is also needed to learn more about PSTs’ usefulness outside of sport and could help to broaden the role of a SPC to perhaps that of a “performance psychology consultant.”
Future researchers should monitor and assess athletes throughout their careers after they have been presented a comprehensive PST program that provides them with a large number of methods to use for each of the techniques. Another weakness of this study was that not all athletes were presented the same PST program or taught exactly the same combination of techniques and methods. Therefore, the conclusions about the most effective methods and techniques must be interpreted with caution. If athletes are presented with a large number of the same methods for each technique from which to choose, researchers will be able to assess the use of each method and technique over time and compare which ones athletes find most useful.

Future research should seek to determine if any differences exist in psychological technique use for gender and level of competition (i.e., high school, collegiate, and professional) among athletes who do and do not currently meet with a SPC. Researchers should also look into assessing any differences concerning use and perceived effectiveness that might occur among athletes competing in different types of sports such as distance running, golfing, and playing soccer.

The low utilization of techniques and methods after competition by athletes in this study may be the result of a lack of research informing SPCs about the use and effectiveness of psychological techniques and methods during this time. Potential benefits may be gained from the utilization of psychological techniques after competition. Arousal control may be used to aid in speeding the recovery process, imagery could be used to learn from both mistakes and successes, and
self-talk techniques may help to keep athletes thinking positively. Future research should explore and test the effectiveness of potential uses for psychological techniques and methods after competition.

Not all forms of and uses for imagery were examined in this study. Unfortunately, commonly used methods such as kinesthetic and auditory imagery were not included as options in the survey. A future revision of the survey should include these as options in order to gain a better understanding of which techniques are being utilized over the long term and how effective they are perceived to be for improving performance.

Athletes who did not have a good experience with PST would be unlikely to have been recruited for or participated in this study because they probably would not have been in contact with a SPC anymore. Asking coaches rather than SPCs to provide athletes may give a less positively biased sample.

When giving a long and somewhat repetitive survey of this nature, it might be advantageous to randomize the order of the techniques presented. Taking this precaution could help to ensure that the results do not get skewed by participants losing interest or rushing to finish.

In conclusion, SPCs and researchers should continue to communicate and work together toward streamlining and specializing PST programs so that they are most effective for individual athletes with whom they are working. To accomplish this, the field of sport psychology must work towards a better understanding of how athletes are effectively making use of the services they receive from a SPC.
APPENDIX A

PSYCHOLOGICAL SKILL ASSESSMENT
Demographics

1. Sport(s) you currently compete in at the NCAA Division I or professional level:

2. Gender: ________
3. Age: ________
4. Ethnicity: ________

5. Do you currently compete as a NCAA Division I athlete? (Please circle one answer.)
   Yes
   No

6. Do you currently compete as a professional athlete? (Please circle one answer.)
   Yes
   No

Definitions of Terms

The following is a list of definitions of psychological techniques and methods that will assist you in answering the questions contained in this survey. (Techniques are in bold.)

Arousal Regulation: Try to achieve an optimal mental and physical energy level
Methods:
- Meditation—focus on a single thought, sound, or object that results in relaxation
- Yoga
- Progressive muscle relaxation—tense and relax muscle groups
- Biofeedback—learn to relax with the aid of instruments that measure physiological responses
- Psyching-up—use various methods to increase energy and arousal level
- Breathing exercises—focus on breathing to reduce arousal levels
- Hypnosis—be in a state of mind in which one is not critical of suggestions
- Autogenic training—focus on warmth and heaviness in the body
Self-Talk: The verbal dialogue in which athletes interpret their feelings and perceptions, evaluate themselves, and give themselves instructions or reinforcement

Methods:
- Thought stopping—actively stop negative and irrelevant thoughts that may decrease one's ability to perform
- Change the way one perceives a situation
- Say cue words to elicit a positive response

Imagery:
Methods:
- Imagery as competitor (internal)—perspective from one's own eyes
- Imagery as spectator (external)—perspective of a spectator watching one perform
- Imagery to see oneself performing perfectly
- Imagery to overcome adverse situations

Goal Setting: Set a standard and try to achieve that standard
Methods:
- Daily—set small goals each day
- Season—what one hopes to accomplish over the course of a season
- Long term—the ultimate goals one wants to accomplish in sport: “dream goals”
- Result oriented—goals to attain a certain placing
- Technique related—goals to make technical improvements

Attentional Control: One’s ability to concentrate and focus with or without distractions
Methods:
- Attention shifting—shift focus to the most relevant task
- Refocusing
- Routines—a set of behaviors that is performed regularly in preparation for one’s performance

Acquisition

1. At what age did you first meet with a sport psychology consultant? ________

2. Percentage of time spent with a sport psychology consultant in an individual setting: ________
   Percentage of time spent with a sport psychology consultant in a group setting: ________
   *The sum of the answers to the two questions above should equal 100%.
3. Which was more useful/helpful for improving your performance (based on how you felt about your performance regardless of the outcome)? (Please circle one answer.)
   Individual
   Group

4. How often did you meet with a sport psychology consultant? (Please circle one answer.)
   Weekly
   Biweekly
   Monthly
   Other (please specify): __________________________

5. When did you meet with a sport psychology consultant? (Please circle all that apply.)
   Before competitions
   After competitions
   When a problem arose
   Other (please specify): __________________________

6. On a scale from 1 to 10, how effective was the psychological skills training program taught by the sport psychology consultant for improving your performance? (Please circle one number, 1 = not at all effective and 10 = absolutely effective.)
   1 2 3 4 5 6 7 8 9 10

7. Do you continue to meet with a sport psychology consultant? (Please circle one answer.)
   Yes
   No
   *If you answered yes to question 7, skip questions 10 and 11. If you answered no to question 7, skip questions 8 and 9.

8. How often do you currently meet with a sport psychology consultant? (Please circle one answer.)
   Weekly
   Biweekly
   Monthly
   Other (please specify): __________________________
9. When do you currently meet with a sport psychology consultant? (Please circle all that apply.)
   Before competition
   After competition
   When a problem arose
   Other (please specify): __________________________

10. If you no longer meet with a sport psychology consultant, why did you stop? (Please circle the most appropriate answer.)
    Was not helpful
    Not useful for my sport
    Not enough time
    I can do the skills on my own now
    Boring
    Psychology in sport is not a priority
    Other (please specify): __________________________

11. For approximately how long did you meet with a sport psychology consultant before you stopped meeting?
    Years: _____
    Months: _____
    Weeks: _____

12. Approximate number of hours/minutes currently spent practicing psychological techniques per week. (Please circle one answer.)
    0
    1 to 10 minutes
    11 to 30 minutes
    31 to 59 minutes
    1 to 2 hours
    2:01 to 3 hours
    3:01 to 4 hours
    4:01 to 5 hours
    5:01 to 6 hours
    6+ hours

13. List the approximate percentage of time dedicated to practicing and using each psychological technique (must sum to 100%):
    Arousal regulation: ___%
    Goal setting: ___%
    Attentional control: ___%
    Imagery: ___%
    Self-talk: ___%
Arousal Regulation

1. Have you undergone training with a sport psychology consultant for arousal regulation (examples: relaxation and psyching-up)? (Please circle one answer.)
   Yes
   No
   *If you answered no to this question, please skip this section and move to the goal-setting section.

2. What methods were you taught? (Please circle all that apply.)
   Meditation
   Yoga
   Progressive muscle relaxation
   Biofeedback
   Psyching-up
   Breathing exercises
   Hypnosis
   Autogenic training
   Other (please specify): ____________________________

3. Do you continue to use any of these methods? (Please circle one answer.)
   Yes
   No
   *If you answered yes to this question, please go to question 6.

4. For approximately how long did you use methods of arousal regulation before you stopped?
   Years: _____
   Months: _____
   Weeks: _____

5. Why did you stop using arousal-regulation techniques? (Please circle the most appropriate answer.)
   Was not helpful
   Not useful for my sport
   Not enough time
   Boring
   Psychology in sport is not a priority
   Other (please specify): ____________________________
   *If you do not currently use any methods of arousal regulation, please skip the next questions and move to the goal-setting section.
6. Which methods do you continue to use? (Please circle all that apply.)
   Meditation
   Yoga
   Progressive muscle relaxation
   Biofeedback
   Psyching-up
   Breathing exercises
   Hypnosis
   Autogenic training
   Other (please specify): _______________

7. Which of the methods that you were taught is most effective for improving performance (based on how you felt about your performance regardless of outcome)? (Please circle one answer.)
   Meditation
   Yoga
   Progressive muscle relaxation
   Biofeedback
   Psyching-up
   Breathing exercises
   Hypnosis
   Autogenic training
   Other (please specify): _______________
   No method stands out as being more effective than the others.

8. How often do you use arousal-regulation techniques? (Please circle one answer.)
   Daily
   More than once a week
   Once a week
   Every other week
   Once a month
   Less than once every 3 months

9. In sport, when do you use arousal-regulation techniques? (Please circle all that apply.)
   Before competition
   During competition
   After competition
   Practice
10. Do you use this technique outside sport? (Please circle one answer.)
   Yes
   No

11. On a scale from 1 to 10, how has using arousal regulation changed since initial training? (Please circle one number.)
   1 2 3 4 5 6 7 8 9 10
   use much less same amount use much more

12. On a scale from 1 to 10, how has using arousal-regulation techniques helped you to achieve greater results in your sport (based on how you felt about your performance regardless of outcome)? (Please circle one number.)
   1 2 3 4 5 6 7 8 9 10
   not at all moderately helped absolutely helped

Goal Setting

1. Have you undergone training with a sport psychology consultant for goal setting? (Please circle one answer.)
   Yes
   No
   *If you answered no to this question, please skip this section and move to the self-talk section.

2. What kind of goals were you taught to set? (Please circle all that apply.)
   Daily
   Season
   Long term
   Result oriented
   Technique related

3. Do you continue to use any of these methods? (Please circle one answer.)
   Yes
   No
   *If you answered yes to this question, please go to question 6.

4. For approximately how long did you use goal setting before you stopped?
   Years: _____
   Months: _____
   Weeks: _____
5. Why did you stop using goal setting? (Please circle the most appropriate answer.)
   - Was not helpful
   - Not useful for my sport
   - Not enough time
   - Boring
   - Psychology in sport is not a priority
   Other (please specify): _______________________________________________________________________
   *If you do not currently use goal setting, please skip the next questions and move to the self-talk section.

6. Which methods of goal setting do you continue to use? (Please circle one answer.)
   - Daily
   - Season
   - Long term
   - Result oriented
   - Technique related

7. Which of the methods that you were taught is most effective for improving performance (based on how you felt about your performance regardless of outcome)? (Please circle one answer.)
   - Daily
   - Season
   - Long term
   - Result oriented
   - Technique related
   - No method stands out as being more effective than the others.

8. How often do you use goal setting? (Please circle one answer.)
   - Daily
   - More than once a week
   - Once a week
   - Every other week
   - Once a month
   - Less than once every 3 months

9. In sport, when do you use goal setting? (Please circle all that apply.)
   - Before competition
   - During competition
   - After competition
   - Practice
10. Do you use this technique outside sport? (Please circle one answer.)
   Yes
   No

11. On a scale from 1 to 10, how has using goal setting changed since initial training? (Please circle one number.)
   1  2  3  4  5  6  7  8  9  10
   use much less  same amount  use much more

12. On a scale from 1 to 10, how has using goal setting helped you to achieve greater results in your sport (based on how you felt about your performance regardless of outcome)? (Please circle one number.)
   1  2  3  4  5  6  7  8  9  10
   not at all  moderately helped  absolutely helped

Self-Talk

1. Have you undergone training with a sport psychology consultant for self-talk? (Please circle one answer.)
   Yes
   No
   *If you answered no to this question, please skip this section and move to the imagery section.

2. What methods of self-talk were you taught? (Please circle all that apply.)
   Thought stopping
   Changing the way you perceive a situation
   Saying cue words to elicit a positive response
   Other (please specify): ____________________________

3. Do you continue to use any of these methods? (Please circle one answer.)
   Yes
   No
   *If you answered yes to this question, please go to question 6.

4. For approximately how long did you use self-talk before you stopped?
   Years: _____
   Months: _____
   Weeks: _____
5. Why did you stop using self-talk techniques? (Please circle the most appropriate answer.)
   - Was not helpful
   - Not useful for my sport
   - Not enough time
   - Boring
   - Psychology in sport is not a priority
   Other (please specify): ____________________________

*If you do not currently use self-talk, please skip the next questions and move to the imagery section.

6. Which methods do you continue to use? (Please circle all that apply.)
   - Thought stopping
   - Changing the way you perceive a situation
   - Saying cue words to elicit a positive response
   Other (please specify): ____________________________

7. Which of the methods that you were taught is most effective for improving performance (based on how you felt about your performance regardless of outcome)? (Please circle one answer.)
   - Thought stopping
   - Changing the way you perceive a situation
   - Saying cue words to elicit a positive response
   Other (please specify): ____________________________

8. How often do you use self-talk to improve your performance?
   - Daily
   - More than once a week
   - Once a week
   - Every other week
   - Once a month
   - Less than once every 3 months

9. In sport, when do you use self-talk? (Please circle all that apply.)
   - Before competition
   - During competition
   - After competition
   - Practice

10. Do you use this technique outside sport? (Please circle one answer.)
    - Yes
    - No
11. On a scale from 1 to 10, how has using self-talk changed since initial training? (Please circle one number.)

1  2  3  4  5  6  7  8  9  10
use much less  same amount  use much more

12. On a scale from 1 to 10, how has using self-talk helped you to achieve greater results in your sport (based on how you felt about your performance regardless of outcome)? (Please circle one number.)

1  2  3  4  5  6  7  8  9  10
not at all  moderately helped  absolutely helped

Imagery

1. Have you undergone training with a sport psychology consultant for imagery? (Please circle one answer.)
   Yes
   No
   *If you answered no to this question, please skip this section and move to the attentional-control section.

2. What methods were you taught? (Please circle all that apply.)
   Imagery as competitor (internal)
   Imagery as spectator (external)
   Imagery to see yourself performing perfectly
   Imagery to overcome adverse situations
   Other (please specify): ______________ _

3. Do you continue to use any of these methods? (Please circle one answer.)
   Yes
   No
   *If you answered yes to this question, please go to question 6.

4. For approximately how long did you use imagery before you stopped?
   Years: _____
   Months: _____
   Weeks: _____
5. Why did you stop using imagery techniques? (Please circle the most appropriate answer.)
   Was not helpful
   Not useful for my sport
   Not enough time
   Boring
   Psychology in sport is not a priority
   Other (please specify):
   *If you do not currently use imagery, please skip the next questions and move to the attentional-control section.

6. Which methods do you continue to use?
   Imagery as competitor (internal)
   Imagery as spectator (external)
   Imagery to see yourself performing perfectly
   Imagery to overcome adverse situations
   Other (please specify):

7. Which of the methods that you were taught is most effective for improving performance (based on how you felt about your performance regardless of outcome)? (Please circle one answer.)
   Imagery as competitor (internal)
   Imagery as spectator (external)
   Imagery to see yourself performing perfectly
   Imagery to overcome adverse situations
   Other (please specify):
   No method stands out as being more effective than the others.

8. How often do you use imagery?
   Daily
   More than once a week
   Once a week
   Every other week
   Once a month
   Less than once every 3 months

9. In sport, when do you use imagery?
   Before competition
   During competition
   After competition
   Practice
10. Do you use this technique outside sport? (Please circle one answer.)
   Yes
   No

11. On a scale from 1 to 10, how has using imagery changed since initial training? (Please circle one number.)
   1 2 3 4 5 6 7 8 9 10
   use much less  same amount  use much more

12. On a scale from 1 to 10, how has using imagery helped you to achieve greater results in your sport (based on how you felt about your performance regardless of outcome)? (Please circle one number.)
   1 2 3 4 5 6 7 8 9 10
   not at all  moderately helped  absolutely helped

Attentional Control

1. Have you undergone training with a sport psychology consultant for attentional control? (Please circle one answer.)
   Yes
   No
   *If you answered no to this question, you are finished with the survey.

2. What methods were you taught? (Please circle all that apply.)
   Attention shifting
   Refocusing
   Routines
   Other (please specify): ________________________________

3. Do you continue to use any of these methods? (Please circle one answer.)
   Yes
   No
   *If you answered yes to this question, please go to question 6.

4. For approximately how long did you use attentional-control techniques before you stopped?
   Years: _____
   Months: _____
   Weeks: _____
5. Why did you stop using attentional-control techniques? (Please circle the most appropriate answer.)
   Was not helpful
   Not useful for my sport
   Not enough time
   Boring
   Psychology in sport is not a priority
   Other (please specify): ____________________________
   *If you do not currently use attentional-control techniques, you are finished with this survey.

6. Which methods do you continue to use?
   Attention shifting
   Refocusing
   Routines
   Other (please specify): ____________________________

7. Which of the methods that you were taught is most effective for improving performance (based on how you felt about your performance regardless of outcome)? (Please circle one answer.)
   Attention shifting
   Refocusing
   Routines
   Other (please specify): ____________________________
   No method stands out as being more effective than the others.

8. How often do you use attentional-control techniques?
   Daily
   More than once a week
   Once a week
   Every other week
   Once a month
   Less than once every 3 months

9. In sport, when do you use attentional-control techniques? (Please circle all that apply.)
   Before competition
   During competition
   After competition
   Practice

10. Do you use this technique outside sport?
    Yes
    No
11. On a scale from 1 to 10, how has using attentional-control techniques changed since initial training? (Please circle one number.)

1 2 3 4 5 6 7 8 9 10
use much less same amount use much more

12. On a scale from 1 to 10, how has using attentional-control techniques helped you to achieve greater results in your sport (based on how you felt about your performance regardless of the outcome)? (Please circle one number.)

1 2 3 4 5 6 7 8 9 10
not at all moderately helped absolutely helped

Thank you for your time and input!
Title

“Exploring the Acquisition, Use, and Perceived Effectiveness of Selected Psychological Techniques”

Principal Investigator

Joshua Russell Smullin, Department of Exercise and Sport Science, University of Utah

You are being invited to participate in a research study designed to assist exercise and sport psychologists in understanding more about professional and NCAA Division I athletes' acquisition, use, and perceived effectiveness of five selected psychological techniques. To my knowledge, limited research has been performed to address how athletes are acquiring and using the psychological techniques they are taught from sport psychology consultants. In order to help athletes improve performance more effectively, it is important for sport psychologists to gain a better understanding of what skills you, the athlete, find useful and believe to be most effective for your sport. I hope to take the information obtained from this survey and provide the results to sport psychology consultants in order to improve the quality and experience of future athletes seeking performance enhancement through sport psychology.

Study Procedure

As a participant in this study, you will be asked to complete a survey aimed at assessing your acquisition, use, and perceived effectiveness of five psychological techniques that you may have been taught while undergoing psychological techniques training with a sport psychology consultant. The survey will take approximately 20 minutes to complete. You may choose not to answer any questions with which you are uncomfortable. The return of this completed survey will serve as consent to participate.

Person to Contact

If you have any questions about your participation in this study, please contact Joshua Russell Smullin at (541)848-9815 or jrsmullin@yahoo.com in the Department of Exercise and Sport Science at the University of Utah.

Institutional Review Board

If you have questions regarding your rights as a research participant or if problems arise that you do not feel you can discuss with the investigator, please contact the Institutional Review Board Office at (801)581-3655.
Confidentiality

You will not be asked to include your name anywhere on the survey you return. Therefore, data you submit will be kept confidential. All returned surveys will be kept locked in the primary investigator's office.

Thank you for taking the time to participate in this study!
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