EXAMINING THE SELF-EFFICACY OF CERTIFIED ATHLETIC TRAINERS IN THEIR
USE OF MENTAL SKILLS TECHNIQUES WITH INJURED ATHLETES

By

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ABSTRACT

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<u>Purpose</u>: This study examined the self-efficacy of certified athletic trainers (ATC)s in their use of imagery, goal setting, and self-talk with injured athletes

<u>Methods</u>: A demographic and self-efficacy survey was distributed to 1,000 members of the National Athletic Trainers' Association in the "certified" category. 131 participants completed the survey.

<u>Results</u>: Results found that ATCs were most confident using goal setting, followed by self-talk, and imagery. Canonical correlation analysis revealed two functions. First, feelings of success in using the mental skill technique and in having education about the mental skill technique were the highest predictors of ATCs' self-efficacy in using the mental skill technique with injured athletes. The second canonical function revealed that beliefs about the importance of using mental skills techniques with injured athletes were predictors of ATCs' self-efficacy in using mental skills technique with injured athletes.

<u>Conclusion</u>: This study concluded that ATCs who are most confident in using a mental skill technique are more likely to be confident in using other mental skills techniques. Therefore, it is important that ATC education programs include information on imagery, goal setting, and self-talk. In addition, having previous success using the mental skill technique and education about the technique are two of the greatest predictors of self-efficacy in using the technique.

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CHAPTER 1

INTRODUCTION

1.1 OVERVIEW OF THE PROBLEM

Certified Athletic Trainers (ATCs) are required to understand and know the psychological aspects of injury. In fact, they must be competent in psychological techniques such as imagery, goal setting, and self-talk, and must be able to demonstrate and implement mental skills techniques into clinical decision-making and patient care (NATA, 2011). However, with the multitude of tasks ATCs must perform, how much emphasis is placed on learning and implementing mental skills techniques with injured athletes? Understanding how to implement imagery, goal setting, and self-talk with injured athletes can greatly enhance the injury recovery process, both physiologically and psychologically (Cressman & Dawson, 2011; Cupal & Brewer, 2001; Theodorakis, Beneca, Malliou, & Goudas, 1997). Thus, ATCs need to be confident in their ability to teach and facilitate mental skills techniques with injured athletes. However, with the multitude of tasks ATCs must perform the question arises as to how much emphasis is actually placed on learning and implementing mental skills techniques with injured athletes? Moreover, to date no studies have examined the self-efficacy of ATCs in their use of mental skills techniques with injured athletes. The majority of literature has instead focused on ATCs' beliefs and perceptions of mental skills techniques in aiding injured athletes (Hamson-Utley, Martin, & Walters, 2008; Larson, Starkey, & Zaichkowsky, 1996), the role of ATCs in the post injury psychological recovery of athletes (Tracey, 2008; Washington-Lofgren, Westerman, Sullivan, & Nashman, 2004), and the use of psychological strategies with injured athletes (Wiese, Weiss, & Yukelson, 1991). Another important area of athletic training research has focused on educating athletic training students on the psychosocial aspects of injury (Kamphoff,

Hamson-Utley, Antoine, Knutson, Thomae & Hoenig, 2010; Stiller-Ostrowski, Gould, & Covassin, 2009; Stiller-Ostrowski & Ostrowski, 2009). While the previously mentioned areas of study with ATCs are important, research is needed to understand ATCs' self-efficacy in using and implementing mental skills with injured athletes.

1.2 SIGNIFICANCE OF THE PROBLEM

Due to ATCs interactions with athletes, they are often in the best position to engage in mental skills training with those who are injured. ATCs spend extended periods of time with injured athletes that allow them to build and foster personal relationships. ATCs are often injured athletes' greatest social support system during the injury recovery process (Robbins & Rosenfield, 2001; Tracey, 2008).

Often times when an athletic injury occurs, the focus is on the physical effects of the injury and rehabbing the injury so that the athlete may return to play. Many times, though, the psychological impact of injury is ignored. Neglecting the psychological response to injury can be a problem if not addressed. Research has shown that injured athletes may possibly face numerous psychological consequences. These consequences include depression and negative emotions such as fear, anger, guilt, mood disturbance, and anxiety (Leddy, Lambert, & Ogles, 1994; Smith, Scott, O'Fallon, & Young, 1990; Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998). However, the abundance of research suggests that mental skills training with injured athletes can have a positive physiological and psychological effect (Christakous, Zervas, & Lavallee, 2007; Cressman & Dawson, 2011; Cupal & Brewer, 2001; Lebon, Guillot, & Collet, 2012; Theodorakis, Beneca, Goudas, Antonoiu, & Malliou, 1998; Theodorakis, Beneca, Malliou, & Goudas, 1997; Theodorakis, Mallious, Papaioannou, Beneca, & Filactakidou, 1996).

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Imagery, goal setting, and self-talk are often used in conjunction to aid in injury recovery. One of the first studies conducted by Ievela and Cupal (1991) found that athletes with knee and ankle injuries who engaged in imagery, goal setting, and self-talk had quicker recovery times than those who did not engage in imagery, goal setting, and self-talk. Mental skills training helps athletes improve their physical rehabilitation. Cupal and Brewer (2001) found that athletes who used imagery during their injury recovery period demonstrated greater knee strength than those who did not engage in imagery. Similarly, Christakou, Zervas, and Lavallee (2007) found that athletes suffering from grade II ankle sprains who used imagery during recovery displayed better muscular endurance than those who did not use imagery. With regards to self-talk, Theodorakis and colleagues (1998) found that injured athletes who used self-talk during a quadriceps-strengthening program, performed better on a quadriceps strength task than injured athletes who did not use self-talk. While mental skills training can impact the physical aspect of rehabilitation, it has been shown to also improve the psychological aspect of recovery.

The majority of research has focused on the use of imagery to help injured athletes improve negative mood states and adherence to rehabilitation. Cressman and Dawson (2011) found that injured athletes who engaged in imagery reported an increase in confidence, motivation, relaxation, focus and rehabilitation adherence. Similarly, Evans, Hare, and Mullen (2006) found that athletes who used imagery also reported increased confidence, motivation, and relaxation. However, more research is needed to understand the impact of mental skills training with injured athletes.

While many studies have addressed injured athletes' use of mental skills techniques for enhancing recovery, there is less research addressing ATCs' involvement in facilitating mental skills techniques with injured athletes. Particularly, there is limited research on the self-efficacy

of ATCs' use of mental skills training with athletes and no research on the self-efficacy of ATCs' use of mental skills training with injured athletes. One study examined the self-efficacy beliefs and usage of nine psychological skills of ATCs, coaches, and licensed psychologists self-efficacy and usage of nine psychological skills (Zizzi, Blom, Watson II, Downey, & Geer, 2009). The researchers found that self-efficacy scores corresponded to the frequency of usage of each skill. Therefore, ATCs reported high self-efficacy for goal setting with athletes and thus implemented that mental skill more frequently. Though not specifically looking at self-efficacy, Washington-Lofgren and colleagues (2004) found that 33% of ATCs have been in a situation in which they knew what mental skill to use with injured athletes but did not know how to or had the confidence to do so. It is important for ATCs to be confident in their ability to facilitate mental skills with injured athletes because those who are confident using the mental skill technique will be more likely to do so with injured athletes.

Having a general belief in one's ability to successfully perform a task is referred to as self-efficacy (Bandura, 1997). Self-efficacy is a cognitive mechanism that influences thoughts, actions and behaviors (Bandura). That is, self-efficacy can influence an individual's choice of activities and goals, effort and persistence, performance, and thought patterns and emotional reactions (Bandura). Therefore, individuals with high self-efficacy beliefs will be more likely to pursue challenging goals, employ effective coping mechanisms, and persevere through setbacks (Feltz, Short, & Sullivan, 2008). On the other hand, individuals with low self-efficacy beliefs may avoid difficult goals, quit in the face of failure, and worry about not performing well (Feltz et al., 2008).

Thus, if ATCs' have high self-efficacy beliefs in teaching and facilitating mental skills training with injured athletes they may be able to help injured athletes in a more effective and

positive manner. However, ATCs with low self-efficacy beliefs in teaching and facilitating mental skills training might neglect the psychological aspect of recovery, thus potentially not engaging in mental skills training with injured athletes. Neglecting the psychological aspect of recovery can be detrimental to injured athletes. Therefore, self-efficacy beliefs may play a role in determining which ATCs use mental skills techniques with injured athletes.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to examine the self-efficacy of ATCs in their use of mental skills techniques (imagery, goal setting, and self-talk) with injured athletes. This study investigated whether self-efficacy beliefs differ for each mental skill technique, what sources predict self-efficacy of ATCs, whether or not level of self-efficacy relates to the usage of each technique with injured athletes, and whether or not ATCs' beliefs about the importance of mental skills techniques relate to their level of self-efficacy. In addition, demographic characteristics were compared to see differences between level of education, sex, year of certification, occupation, and sport psychology or psychology of injury coursework.

1.4 RESEARCH QUESTIONS

This study examined the following research questions.

RQ1: What percentage of ATCs sampled state that they have had formal education in sport psychology or the psychology of injury?

RQ2: What will be the level of ATCs' self-efficacy in using imagery with injured athletes?

RQ3: What will be the level of ATCs' self-efficacy in using goal setting with injured athletes?

RQ4: What will be the level of ATCs' self-efficacy in using self-talk with injured athletes?

RQ5: Do the self-efficacy beliefs of ATCs differ among the following mental skills techniques: Imagery, goal setting, and self-talk?

RQ6: What sources of efficacy information (observing others using the skills, using the skill with athletes, education about the skill, and having success using the skill) predict self-efficacy beliefs of ATCs in their use of the following mental skills techniques: imagery, goal setting, self-talk with injured athletes?

RQ7: What is the strength of the relationship between level of self-efficacy and usage of the following mental skills techniques: Imagery, goal setting, and self-talk with injured athletes?

RQ8: What is the strength of the relationship between ATCs' beliefs about the importance of the following mental skills techniques (Imagery, goal setting, and self-talk) and their level of self-efficacy?

1.5 OPERATIONAL DEFINTIONS OF TERMS

Certified Athletic Trainer (ATC)- Allied healthcare professionals who specialize in the prevention, diagnosis, treatment, and rehabilitation of medical conditions involving impairment, functional limitations, and disabilities in physically active populations (NATA, 2012).

Goal setting- Establishing what an individual is trying to accomplish within a specified time frame (Saari & Latham, 1981).

Imagery- The use of one's senses to re-create or create an experience in the mind (Vealey & Greenleaf, 2010).

Mental skills techniques- Cognitive-behavioral strategies and techniques used to enhance or improve athletes' psychological abilities in order to facilitate sport performance or personal development (Vealey, 2005).

Self-efficacy- An individual's perception in his or her ability to successfully perform a specific task (Bandura, 1997).

Self-talk-Verbal or non-verbal talk that a person engages in with him- or herself (Theodorakis et al., 2000).

CHAPTER 2

REVIEW OF THE LITERATURE

2.1 INTRODUCTION

The review of literature is divided into eight sections. The first section describes the history of athletic training. Within this section the field of athletic training is discussed with particular attention directed at the route to becoming an ATC and the required competencies ATCs must posses. The second section provides a brief overview of sport psychology and mental skills training. The third to fifth sections define and provide an overview of imagery, goal setting, and self-talk, respectively. These sections include types, theories, and evidence of imagery, goal setting, and self-talk effectiveness in athletic populations. The sixth section describes the use of mental skills training with injured athletes. It details the use and effectiveness of imagery, goal setting, and self-talk with aiding in the recovery of injured athletes. The seventh section discusses the role of ATCs in working with injured athletes. It details the main topics of study within the athletic training literature regarding mental skills training with injured athletes. The eighth and final section defines self-efficacy and the need to research the self-efficacy of ATCs in using mental skills techniques with injured athletes.

2.2 HISTORY AND SCOPE OF ATHLETIC TRAINING

Athletic training is defined as a practice that "encompasses the prevention, diagnosis, and intervention of emergency, acute, and chronic medical conditions involving impairment, functional limitations, and disabilities" (NATA, 2012). Currently, to become an ATC, individuals must graduate from a Commission on Accreditation of Athletic Training (CAATE) accredited program and pass a national certification exam administered by the Board of

Certification (BOC). However, the path to becoming an ATC was not always as clear and concise.

The route to becoming an ATC has dramatically changed in the last 55 years (Craig, 2003). Beginning in 1959, the first athletic training curriculum was approved by the National Athletic Training Association (NATA). The athletic training curriculum was very similar to that of a physical education major except that it included an advanced athletic training course and laboratory practice (Delforge & Behnke, 1999). Then in 1969, the first undergraduate athletic training programs were recognized by the NATA. In addition, the Professional Education Committee (PEC) was formed to evaluate and recommend NATA recognition of the first undergraduate athletic training programs. During this time period the four ways to become an ATC included: graduation from a NATA-approved athletic training education program, completion of an apprenticeship program, graduation from a school of physical therapy, and a special consideration route (Delforge & Behnke, 1999).

In the 1980s in order to unify the field, the NATA implemented a resolution that stated that all NATA-approved undergraduate education programs offer a major field of athletic training. During this time period there were two ways to become an ATC: graduation from an athletic training major from a college or university or completion of an internship in athletic training (Delforge & Behnke, 1999). Then in 1989 the BOC was established to serve as an independent entity that provided a certification program for entry-level athletic trainers and recertification standards for ATCs. The BOC is the only accredited certifying body for athletic trainers in the United States. In order to sit for the BOC Examination, individuals had to complete either the athletic training curriculum or internship.

As the field of athletic training progressed more reforms and changes occurred. In order to have consistency within athletic training education programs the Joint Review Committee on Education Programs in Athletic Training (JRC-AT) was established under the Commission on Accreditation of Allied Health Profession Programs (CAAHEP) (Delforge & Behnke, 1999). The CAAHEP became responsible for reviewing and accrediting educational programs in athletic training. As athletic training curriculum and education matured, the route to certification dwindled as the internship route to certification was eliminated. As of 2004, in order to sit for the BOC Examination and become an ATC, athletic training students must graduate from a four-year accredited institution (Craig, 2003).

More recently, the JRC-AT became the CAATE and acts as the new certifying body for entry-level athletic training education programs. The CAATE is responsible for defining the standards and practices for all accredited athletic training programs in the United States. Today, the CAATE currently oversees 343 undergraduate and 24 entry-level graduate programs (CAATE, 2012). The transformation of athletic training education programs over time has created a more unified and standard process for becoming an ATC. ATCs are required to learn and understand specific competencies set by the NATA.

The 5th edition of the NATA Athletic Training Education Competencies (2011) specifies the skills and proficiencies required of entry-level ATCs. These competencies are composed of the Foundational Behaviors of Professional Practice, Clinical Integration Proficiencies (CIP), and the following eight content areas: Evidence-Based Practice, Prevention and Health Promotion, Clinical Examination and Diagnosis, Acute Care of Injury and Illness, Therapeutic Interventions, Psychosocial Strategies and Referral, Healthcare Administration, and Professional Development

and Responsibility (NATA, 2011). Of particular interest to this paper is the Psychosocial

Strategies and Referral content.

Within the Psychosocial Strategies and Referral content, ATCs are required to

understand, recognize, and intervene with clients and patients who exhibit abnormal emotional,

social, and mental behaviors. Additionally, ATCs should understand the connection between

mental health, injury, and recovery in order to use interventions that facilitate the return to

participation (NATA, 2011). Specifically, the Psychosocial Strategies and Referrals require that

ATCs understand psychosocial strategies which include, but are not limited to, goal setting,

imagery, and positive self-talk. For example one competency reads, "Describe the psychological

techniques (e.g., goal setting, imagery, positive self-talk, relaxation/anxiety reduction) that the

athletic trainer can use to motivate the patient during injury rehabilitation and return to activity

processes" (NATA, 2011, p. 26).

Psychosocial Strategies and Referral are also included, as part of the CIP required of

ATCs. The CIPs are the "synthesis and integration of knowledge, skills, and clinical decision-

making into actual client/patient care" (NATA, 2011, p. 31). Therefore, according to the CIP

ATCs should be able to "Select and integrate appropriate psychosocial techniques into a patient's

treatment or rehabilitation program to enhance rehabilitation adherence, return to play, and

overall outcomes. This includes, but is not limited to, verbal motivation, goal setting, imagery,

pain management, self-talk, and/or relaxation" (NATA, 2011, p. 31). The fact that the NATA

requires ATCs to be competent in Psychosocial Strategies and Referral highlights the importance

of the role of sport psychology in aiding injured athletes.

Thus, over time, the athletic training field has evolved and matured. The current

standards and competencies set in place by the NATA and the CAATE represents the expected

skills and proficiencies ATCs should posses. ATCs are expected to be knowledgeable in a variety of areas, including psychological aspects of injury. Based on the standards set in place by the NATA, it appears that mental skills training serves an important role in the field of athletic training.

2.3 OVERVIEW OF SPORT PSYCHOLOGY

Sport psychology is defined as " the scientific study of people and their behaviors in sport and exercise contexts and the practical application of that knowledge" (Weinberg & Gould, 2007, p. 4). Within the field of sport psychology two main objectives have been identified. The first objective is to "understand the effects of psychological factors on physical or motor performance" (Weinberg & Gould, 2007, p. 4). The second objective is to "understand the effects of physical participation on psychological development, health, and well-being" (Weinberg & Gould, 2007, p. 4). One component of sport psychology focuses on the theories and interventions that can be applied to enhance performance and increase success and is often referred to as mental skills training (Williams & Straub, 2010). Mental skills training includes a variety of methods and programs with popular techniques focusing on imagery, relaxation techniques, goal setting, and positive self-talk. It is well documented in the literature that mental skills training can be effective in helping athletes reach peak performance (Gould, Guinan, Greenleaf, Medbery, Peterson, 1999; Krane & Williams, 2010; Weinberg & Gould, 2007). In a study assessing factors that affect Olympic performance, Gould and colleagues (1999) found that athletes who engaged in mental skills training performed better than athletes who did not engage in mental skills training. This study examined if mental skills and strategies as well as physical, social, and environmental factors affect Olympic performance. A total of 23 Olympic athletes of varying competition levels participated in focus groups interviews. A major theme that emerged

was that teams and athletes that performed to or above expectations mentioned mental skills techniques in detail, discussed its importance often, and reported using mental skills techniques to aid in competition. In contrast, those who did not perform to or above expectations reported not using mental skills techniques enough and merely discussed the importance of mental skills training. Similarly, Fournier, Calmels, Durand-Bush, and Salmela (2005) conducted a study with 10 nationally ranked female gymnasts to understand the effects of a mental skills training program. The intervention group participated in a 10 month mental skills training program. The gymnasts in the intervention group performed better in three out of four events than the gymnasts who did not participate in the mental skills training program. The benefits of mental skills training are well documented in the literature. The mental skills of most interest to this paper are imagery, goal setting, and positive self-talk.

2.4 OVERVIEW OF IMAGERY

According to Vealey and Greenleaf (2010), imagery can be defined as "using one's senses to re-create or create an experience in the mind" (p. 268). For example, athletes may create images of themselves running through the motions of their sport prior to competing. While the word imagery invokes the idea that the practice of imagery simply relies on the visual sense, it in fact is a polysensory experience. Imagery relies on the use of more than just the visual sense. Auditory, tactile, olfactory, gustatory, and kinesthetic senses are all important for effective imagery (Weinberg & Gould, 2007).

In addition, two main criteria central to the effectiveness of the use imagery is controllability and vividness (Weinberg & Gould, 2007). Controllability refers to one's ability to control the images produced. Therefore, athletes who continue to imagine their injured body part as weak and unhealthy, rather than strong and healthy, are not able to control what they are

imaging. Vividness refers to the use of multiple senses during imagery. It is most effective when athletes can image the actual experience they are trying to recreate.

Another area of importance within imagery is the imagery perspective. Mahoney and Avener (1977) found that athletes take an internal or external view when engaging in imagery. An internal view of imagery implies that imagery is being viewed from the vantage point of the person doing the imaging (Mahoney & Avener, 1977). Therefore, the person would only see what they could from their perspective as if they were executing the skill. Internal imagery is a first person experience. An athlete rehabbing on a seated hamstring curl machine using internal imagery would see his/her leg swinging up and down, but would not see his determined face. The focus of internal imagery is on the kinesthetic feel of the movements. In contrast, external imagery refers to an outsider view (Mahoney & Avener, 1977). This perspective is like watching oneself in a movie. Take for example the same volleyball player mentioned above using the external perspective. This time the player would see himself or herself making contact with the volleyball from the lens of an observer. They would see all teammates, fans, and anything else going on in the competition. Unlike the internal perspective of imagery, there is little focus on the kinesthetic feel of movement. Research and athlete testimonials suggest that athletes use both types of perspectives when engaging in imagery (Weinberg & Gould, 2007). For example, Murphy, Fleck, Dudley, and Callister (1990) found that most Olympic athletes reported using both an internal and external imagery perspective. Regardless of what type of perspective is employed, imagery is frequently used by athletes of various competitive levels.

2.4.1. Prevalence of Imagery Use

It is well established in the literature that imagery is widely used in the athletic population. Both research studies and athlete testimonials highlight the prevalence and

importance of imagery use. In a study conduced by Hall, Rodgers, and Barr (1990) the researchers found that athletes at multiple levels of competition frequently used imagery during both practice and competition. In an unpublished report to United States Olympic Committee, Jowdy and Durtschi (1989) found that 90% of athletes and 94% of coaches surveyed at the Olympic Training Center in Colorado Springs used imagery. Similarly, of 235 athletes surveyed at the 1984 Olympic games, 99% reported using imagery (Orlick & Partington, 1988). Thus, it is evident that athletes commonly use imagery to aid in performance.

2.4.2. Evidence that Imagery Works

Imagery can be used to enhance performance in a multitude of ways. Athletes may use imagery to learn and practice new skills, build confidence, reduce anxiety, correct mistakes, prepare pre-competition routines, build and improve mental skills, and aid in injury recovery. The plethora of uses of imagery has been extensively studied in the sport psychology field and thus many studies have showed a positive link between the use of imagery and sport performance (Feltz & Landers, 1983; Hinshaw, 1991; Jordet, 2005; Orlick, 2008; Vadocz, Hall, & Moritz, 1997).

Feltz and Landers (1983) conducted a meta-analysis to better understand the effect of imagery on motor skill learning and performance. Effect sizes were calculated by "dividing the difference between the means of the treatment and control group by the within-group standard deviation" (Feltz & Landers, 1983, p. 30). Of the 60 studies examined, 146 effect sizes were noted with the overall average effect size being .48 (SD= .67). A more recent meta-analysis on the effect of imagery on motor skill performance found an average effect size of .68 (SD= .11) (Hinshaw, 1991). Twenty-one studies were examined and 44 effect sizes were noted. The average effect size of .68 suggests that imagery can have a positive influence on performance.

Vadocz and colleagues (1997) conducted a study with 57 North American Roller Skating Championship competitors and found that the athletes with high kinesthetic imagery abilities and self-confidence were more likely to be medalists than non-medalists. Athletes were asked to complete the Sport Imagery Questionnaire (SIQ), the Competitive State Anxiety Inventory (CSAI-2) as well as the Movement Imagery Questionnaire- Revised (MIQ-R). Participants with greater self-confidence and greater kinesthetic imagery ability were factors that determined whether or not an athlete placed in the North American Roller Skating Championship (Vadocz et al., 1997).

In a qualitative investigation of imagery benefits, White and Hardy (1998) examined the use of imagery among three high-level slalom canoeists and three artistic gymnasts. It was found that all athletes engaged in imagery to aid in some aspect of competition. All athletes surveyed stated that imagery use improved confidence and enhanced motivation. Similarly, national softball players trained in imagery were better able to handle the increase in external stimuli allowing them to narrow attentional focus (Calmels, Berthoumieux, & d'Arripe-Longueville, 2004). Four participants completed this study over a 14-week period. All four participants completed a baseline phase, and three of the four completed the imagery intervention. The intervention consisted of practicing a ten-minute audio taped imagery session daily. Using the Test of Attentional and Interpersonal Style (B-TAIS) and a comparison of skills at baseline, the imagery intervention appeared to successful help participants narrow attention and integrate external stimuli without being overloaded (Calmels et al., 2004). A case study of an elite rugby union player revealed that an imagery intervention lasting 14 weeks had significant benefits (Evans, Jones, & Mullen, 2004). For this player, the imagery intervention helped to control anxiety and motivation levels and improve and generate confidence.

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Scientific studies have aided in the understanding of how imagery enhances performance and anecdotal reports by athletes provide an insight into how athletes perceive imagery. Applied Sport Psychologist Terry Orlick (2008) believes that imagery can allow for individuals to perform better, respond to challenges, create solutions, and sharpen coping skills. In his work with athletes he has had many success stories of how imagery helped an athlete improve performance. Take for example Canadian swimmer and Olympic gold medal winner Alex Baumann. Baumann remarks:

> In my imagery I concentrate on attaining the splits I have set out to do. About 15 minutes before the race I visualize the race in my mind and "see" how it will go. I see where everybody is, and then I really focus on myself. I do not worry about anybody else. I think about my own race and nothing else. I try to get those splits in my mind, and after that I am ready to go. That is what really got me to world record and Olympic medals. (Orlick, 2008, pp. 101).

In conjunction with scientific studies that examines imagery effectiveness, it is important to also have anecdotal reports about the effectiveness of imagery. Having such reports allows for researchers, practitioners, coaches, and athletes to garner a better understanding of how imagery facilitates performance.

While the effects of imagery on performance have been extensively studied, many researchers have examined the effect of mental skills training programs with imagery being one component (Kendall, Hrycaiko, Martin, & Kendall, 1990; Mamassis & Doganis, 2004; Munroe, Giacobbi, Hall, & Weinberg, 2000; Thelwell & Greenlees, 2001). While a majority of the studies mentioned above show the positive effect of mental skills training programs, on performance, the improvements gained could not be attributed to imagery alone.

2.5 OVERVIEW OF GOALS

According to Locke, Shaw, Saari, and Latham (1981), a goal is "what an individual is trying to accomplish; it is the object or aim of an action" (p. 126). Goals may be classified as subjective, general objective, and specific objective (McClements, 1982). Subjective goals can be defined as general statements of intent (Weinberg & Gould, 2007). Examples of subjective goals may include, "I want to play hard," "I want to do well," and "I want to recover from my injury." In contrast, general objective and general specific goals focus on attaining a specific level or proficiency. Examples of general objective goals may include, "I want to win the tournament," I want to place in the top three," and "I want to make the team." While both general objective and specific objective goals focus on attaining a level of proficiency, specific objective goals are more detailed. Examples of specific objective goals may include, "I want to decrease my mile time by two seconds," I want to increase my serve percentage," "I want to increase my pushup count."

In addition to subjective, general objective, and specific objective goals, researchers have also defined outcome, performance, and process goals (Burton, 1989; Hardy, Jones, & Gould, 1996; Martens, 1987). First, outcome goals refer to the results of a competitive event, such as winning a competition. Therefore, outcome goals are often difficult to control since the competitor's actions and abilities must be taken into account. Second, performance goals are goals that focus on personal performance improvement. Performance goals are set independently of competitors and do not focus on results of competition. For example, a performance goal may be to set a personal record in long jump. Finally, process goals refer to the skills, procedures, and actions that must be completed in order to have a successful

performance. For a pole-vaulter, focusing on a specific cadence before takeoff is an example of a process goal.

2.5.1. Prevalence of Goal Setting Use

A psychological strategy that has been employed to achieve a goal or goals is called goal setting. Goal setting has been extensively studied in a multitude of fields including business, psychology, and more recently, sport psychology (Weinberg & Gould, 2007). Goal setting is a frequently used technique in athletics. Athletes of various competitive levels regularly employ goal setting. Weinberg, Burton, Yukelson, and Weigand (1993) found that in a study of 678 Division I athletes the majority of athletes practiced goal setting to enhance performance. Similarly, 228 Olympic athletes were found to use goal setting to enhance performance (Weinberg, Burton, Yukelson, & Weigand, 2000). Not surprisingly, coaches are often found to use goal setting techniques with both individual and teams in practice and competition settings (Weinberg, Butt, Knight, & Perritt 2001). Goal setting is also one of the most used intervention techniques used by sport psychologists (Gould, Tammen, Murphy, & May 1989). In fact, in a study conducted with 47 sport psychology consultants who had experience working with the U.S. Olympic Committee, the goal setting was found to be the number one intervention used during both group and individual counseling sessions (Gould et al., 1989).

2.5.2. Evidence that Goal Setting Works

It is a widely accepted notion that goal setting can be effective in enhancing performance or changing behavior in a number of settings (Locke & Latham, 2002; Mento, Steel, & Karren, 1987). In fact, in an extensive review of laboratory and field setting studies conducted by Locke and colleagues (1981) 90% of the studies showed that those who set goals had higher performances than those who did not set goals. More recently Locke and Latham's (1990a),

review of 201 studies of over 40,000 participants found that goal setting effects were evident in 91% of the studies. The evidence for the effect of goal setting on performance is astounding. Of particular interest is the effectiveness of goal setting in the sport and exercise field. A meta-analysis of 36 sport and exercise psychology studies conducted by Kyllo and Landers (1995) revealed that goal setting improved sport and exercise performance by a standard deviation of 0.34. It is interesting to note that even "do your best" goals were found to influence performance over no goals at all. Clearly that notion emphasizes that goal setting can be effective in enhancing performance. Supporting the work of Kyllo and Landers (1995), a meta-analysis by Burton, Naylor, and Holliday (2001) determined that 44 out of 56 sport and exercise studies, demonstrated moderate to strong effects of goal setting on performance, thus concluding that goal setting is effective in sport.

A plethora of research has been conducted with a number of sports to show how goal setting influences performance in a variety of ways (Brobst & Ward, 2002; Burton, Pickering, Weinberg, Yukelson, & Weigand, 2010; Lee, 1988; Lerner & Locke, 1995; Mellalieu, Hanton, & O'Brien, 2006; Lerner, Ostrow, Yura, & Etzel, 1996). Research has tested the effect of goal setting on skill improvement and performance. A study conducted with four starters on a men's university basketball team found that a goal setting intervention was responsible for skill improvement in three of four participants (Swain & Jones, 1995). In this study a pre-intervention performance assessment was conducted for the first eight games of the season. Next, participants were asked to identify one aspect of their performance they felt needed improvement (e.g., free throws). Each participant was then instructed to set a numerical goal for the skills they sought to improve. After the goal setting intervention participant's performance was assessed in eight more games. The goal setting intervention proved successful in improving

the desired skill with three of the four participants (Swain & Jones, 1995). While goal setting

has been shown to positively influence physical skill performance, other studies have highlighted

how goal setting can positively affect psychological characteristics, which in turn influence

performance (Burton, 1989; Lerner & Locke, 1995; Miller & McAuley, 1987).

Kingston and Hardy (1997) examined the effects of different types of goals on

psychological components that affect performance. It was found that those who participated in

the goal setting intervention, regardless of the type of goals they set had lower cognitive anxiety

than the control group. Also those who set process-oriented goals had greater improvements in

self-efficacy, cognitive anxiety control, and concentration than the control group and

performance goal setting group (Kingston & Hardy, 1997). In a similar study Burton (1989)

tested the impact of performance goals on collegiate swimmers cognitions and performance.

Over a five month period, participants who engaged in the goal setting intervention had greater

scores in self confidence, concentration, and cognitive anxiety than participants who did not

complete the goal setting intervention (Burton, 1989).

2.6 OVERVIEW OF SELF-TALK

Self-talk can be defined as "what people say to themselves either out loud or as a small

voice inside their head" **(**Theodorakis, Weinberg, Natsis, Douma, & Kazakas, 2000, p. 246).

While this definition accurately describes self-talk, the simplistic nature of it does not address the

multidimensional function of self-talk. In a critical review of the self-talk literature, Hardy

(2006) provides a critique of various self-talk definitions and devises the following working

definition:

Self-talk should be defined as: (a) verbalizations or statements addressed to the self; (b)

multidimensional in nature; (c) having interpretive elements association with the content

of statements employed; (d) is somewhat dynamic; (e) serving at least two functions; instructional and motivational, for the athlete. (p. 84)

Self-talk plays an important role in mediating an event and a response (Weinberg & Gould, 2007). The most common types of self-talk include positive/motivational self-talk, instructional self-talk, and negative self-talk (Weinberg & Gould, 2007). Self-talk can influence how an individual responds to a specific event, which can in turn influence future actions and feelings. For example, an athlete who misses a free throw can choose to employ positive/motivational, instructional, or negative self-talk. Choosing to employ either a positive/motivational or instructional self-talk strategy may lead to better concentration, optimism, and calmness. Whereas, employing a negative self-talk strategy can lead to anger, frustration, and increased muscle tension (Weinberg & Gould, 2007).

While the type of self-talk employed is important, Hardy, Hall, and Hardy (2004) suggest that content of self-talk matters. Content of self-talk can be divided into the following four categories: nature, structure, person, and task instruction. First, the nature of self-talk refers to the type of self-talk employed: positive or negative. Second, the structure of self-talk refers to how individuals talk to themselves. The structure of self-talk can be categorized in three ways: single cues, phrases, and full sentences. Third, the person content of self-talk refers to which perspective (first or second person) individuals take when talking to themselves. Lastly, the task instruction content refers to the type of instructions individuals report giving themselves. Task instruction can be broken down into skill specific instructions and general instructions.

2.6.1. Prevalence of Self-Talk

Self-talk is a mental skill that many athletes use during practice and competition. Highly successful athletes use self-talk as part of their mental skills training package (Orlick &

Partington, 1988). A qualitative study, conducted with 17 Olympic figure skaters examined the different types of coping strategies participants employed in order to deal with the stress of competition. Participants identified 158 unique coping strategies or raw data themes, which were then organized into 51 first-order themes and 29 second-order themes. From the themes that emerged 13 general dimensions of coping were identified. Of the 17 participants, 13 identified self-talk as a coping strategy, therefore, showing that elite athletes use self-talk as a mental skills strategy (Gould, Finch, & Jackson, 1993). Also, Mahoney and Avener (1977) sought to determine the psychological makeup of elite athletes. The participants of the study were 13 elite male gymnasts. Using interviews and questionnaires they found that male gymnasts who qualified for the Olympic team used self-talk more frequently than those who did not qualify for the team. Thus, indicating that Olympic athletes may engage in self-talk more frequently than sub-elite athletes.

Self-talk is also one of the main mental skills techniques sport psychologists employ with athletes. Gould and colleagues (1989) found that self-talk was one of the top five mental skills techniques sport psychologists taught and worked on with athletes. Self-talk is a frequently used mental skills technique because research supports its effectiveness in enhancing performance.

2.6.2. Evidence that Self-Talk Works

Many researchers attest to the positive role self-talk can have in aiding performance (Cutton & Landin, 2007; Hatzigeorgiadis, Theodorakis, & Zourbanos, 2004; Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011; Johnson, Hrycaiko, Johnson, & Halas, 2004). In a meta-analysis of 32 studies using self-talk strategies for performance enhancement in different tasks, Hatzigeorgiadis and colleagues (2011), found an effect size of .48, indicating a positive

moderate effect. Based on the positive moderate effect size it can be concluded that self-talk interventions can be effective in enhancing performance in sport.

Other studies have corroborated the notion that self-talk enhances performance. In a study conducted with four "elite" under-14 female regional soccer team participants, it was found that self-talk enhanced the soccer shooting performance of two of the three participants (Johnson et al., 2004). Using a single-subject, multiple baseline, across individuals design, one participant remained as a control, while the other three received the self-talk intervention. Upon completion of the study it was found that two of the three participants improved their soccer shooting performance and post intervention performance remained stable, while the control participant's soccer shooting performance was variable throughout the study (Johnson et al., 2004). Another self-talk intervention conducted with 12 elite sprinters found that 11 of the 12 participants displayed improvement in performance (Mallet & Hanrahm, 1997). Not only did performance increase, but participants also had more consistent sprint performances when using self-talk (Mallet & Hanrahm, 1997). While self-talk has been shown to enhance physical performance, it has also been shown to enhance psychological characteristics that influence performance.

Self-talk has been been shown to enhance attentional control, confidence, and motivation (Hatzigeorgiadis, Zourbanos, Mpoumpaki, & Theodorakis, 2009; Landin & Herbert, 1999; Perkos et al., 2002). Landin and Herbert (1991) conducted a self-talk intervention study with collegiate tennis players and found that not only did performance increase but players reported that self-talk was effective in helping them to increase their confidence and direct their attention efficiently. Similarly, Hatzigeorgiadis and colleagues (2009) work with 72 competitive youth tennis players and revealed that participants who completed the self-talk intervention program

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reported enhanced self confidence and lower cognitive anxiety. Overall, there is an abundance of research that supports self-talk, as a mental skills strategy that can positively influence performance.

2.7 MENTAL SKILLS TRAINING AND INJURY REHABILITATION

Sport psychology also plays an important role in injury rehabilitation. It is recognized in the sport psychology literature that mental skills techniques can aid injured athletes in recovery (Williams & Scherzer, 2010). With regards to an injured athletic population, imagery, goal setting, and self-talk are the most commonly studied mental skills techniques (Cupal, 1998; Ievela & Orlick, 1991; Weise & Weiss, 1987). With the demonstrated success of imagery, goal setting, and self-talk in aiding in performance and influencing psychological factors that affect performance, it is no surprise that these techniques have proven successful in injury rehabilitation. A multitude of studies have examined the effect these mental skills techniques on physical recovery as well as on confidence, coping, mood, and adherence to rehabilitation and treatment (Cressman & Dawson, 2011; Driediger, Hall, & Callow, 2006; Evans et. al., 2006; Evans, Hardy, & Fleming, 2000; Magyar& Duda, 2000; Sordoni, Hall, & Forwell, 2000; Theodorakis, Beneca, Malliou, & Goudas, 1997).

Often times, multiple mental skills techniques are used together when aiding in the rehabilitation process of injured athletes. In a review of 17 psychological intervention studies, Cupal (1998) found that many of the interventions demonstrated positive outcomes and resulted in improved psychological and physical outcomes. Among the first to study the role of mental skills techniques in the rehabilitation and recovery process of injured athletes was Ievela and Orlick (1991). Their earliest study examined how the use of mental skills training enhanced healing time. Thirty-two former sports medicine clinic patients with knee or ankle injuries were

administered surveys that measured the following: outlook, positive attitude, stress and stress control, social support, goal setting, positive self-talk, and mental imagery. Athletes who recovered the fastest from their injury scored high on all variables tested, compared to those with a slower recovery time. The most significant contributors to healing time were goal setting, positive self-talk, and imagery (Ievela & Orlick 1991).

In another study, Evans, Hardy, and Fleming (2000), used a longitudinal, qualitative approach to understand the role of mental skills techniques in aiding in the rehabilitation process of three injured elite athletes. Using the information gathered from interviews, participant diaries, case notes, and physiotherapist and participant consultations it was determined that goal setting and imagery played a role in facilitating recovery (Evans et al., 2000). The use of imagery during rehabilitation helped the participants gain confidence in the ability of the injured body part (Evans et al., 2000).

Johnson's (2000) work with long-term injured competitive athletes examined the role of stress management and cognitive control, goal-setting skills, and guided imagery on the rehabilitation process. While stress management/cognitive control and goal setting had some impact on patient mood, imagery was the only technique that was shown to significantly improve patient mood (Johnson, 2000). While a combination of mental skills has been shown to facilitate the rehabilitation process, other researchers have examined the use of a single mental skills technique on the injury recovery process (Christakous et al., 2007; Cressman & Dawson, 2011; Cupal & Brewer, 2001; Lebon et al., 2012; Theodorakis et al., 1998; Theodorakis et al., 1997; Theodorakis et al., 1996).

With regards to the sport psychology literature, imagery is often the most studied intervention with an injured population. Cupal and Brewer (2001) examined the effects of

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guided imagery on knee strength, reinjury anxiety, and pain of 30 participants following anterior

cruciate ligament reconstruction. Participants were then assigned to one of the three following

groups: An imagery group, where individuals completed ten imagery sessions, a placebo group,

where individuals received attention, encouragement, and support, or a control group, where no

interventions were received. Those who participated in the imagery group demonstrated greater

knee strength and less reinjury anxiety and pain than both the placebo and control groups, thus

strongly indicating the benefits of imagery on rehabilitation (Cupal & Brewer, 2001). While not

dealing specifically with knee strength, Christakou and colleagues (2007) examined the role of

imagery on the functional rehabilitation of a grade II ankle sprain. They found that of the 20

participants in their study, the 10 who completed the imagery intervention displayed better

muscular endurance as measured by heel-rise and toe-rise tests, than the control group. Again,

supporting the notion that imagery can be an effective intervention in injury recovery.

  While imagery proved beneficial for influencing the functional aspect of recovery, it has

also been shown to affect psychological factors. Cressman and Dawson (2011) conducted a

study with nine participants to determine the role of imagery in athletic injury rehabilitation.

The intervention group participated in imagery throughout the rehabilitation process, while the

control group did not receive any treatment. Based on a qualitative review, participants in the

intervention group perceived imagery to be effective in increasing confidence, motivation,

relaxation, focus, and rehabilitation adherence (Cressman & Dawson, 2011). Similarly, in a

qualitative study assessing the perceptions and influence of imagery on injury rehabilitation, four

participants with varying injuries revealed the positive effects imagery had on their recovery

(Evans, et al., 2006).   Participants revealed that imagery was useful for increasing confidence,

motivation, and adherence to rehabilitation. Imagery also allowed participants to feel calm and relaxed (Evans et al., 2006). Thus, validating the benefits of imagery.

While imagery is the most researched mental skills technique for aiding in the rehabilitation process of injured athletes, goal setting and self-talk have also received attention. With regards to goal setting, Theodorakis and colleagues (1997) examined the effectiveness of goal setting on performance, self-efficacy, pretesting anxiety, and self-satisfaction during an injury rehabilitation program. Thirty-seven participants were divided into an experimental group, which set weekly goals, and a control group. Both groups also participated in a 4-week quadriceps-strengthening program. Those in the experimental group improved in performance significantly better than the control group. They also reported greater self-satisfaction with performance than the control group (Theodorakis et al., 1997). In a similar experiment set up, Theodorakis and colleagues (1998) examined the effect of self-talk on the rehabilitation process of 20 participants. Twenty participants were divided into an experimental group, which employed positive self-talk, and a control group. Again, both groups also participated in a quadriceps-strengthening program. Results revealed that participants in the intervention group improved performance on the strength task significantly more than the control group. Thus, indicating that self-talk can be influential in a rehabilitation setting. More research examining the role of goal setting and self-talk would add to the current literature and provide a better understanding of the importance of incorporating such techniques into rehabilitation programs.

2.8 ATHLETIC TRAINING LITERATURE

ATCs are often in the best position to engage in mental skills training with injured athletes as they spend extended periods of time with athletes before, during, and after injury rehabilitation. Thus, the amount of time spent with athletes puts them in a unique position to

facilitate personal interaction and build relationships (Moulton, Molstad, & Turner, 1997).

Athletes rely on ATCs for more than just physical treatment. ATCs are expected to provide

social support, emotional support, motivation, and guidance for athletes rehabilitating from

injury (Tracey, 2008). Robbins and Rosenfield (2001) conducted a study to examine athletes'

perceptions of social support provided to them by their head coaches, assistant coaches, and

athletic trainers before injury and during rehabilitation. Participants included 35 Division I

athletes who completed a modified version of the Social Support Survey. Participants identified

the type of support received and the effect of the support on their well-being. Results revealed

that during rehabilitation participants were more satisfied with support they received from their

athletic trainers than their head or assistant coaches. In addition, for four types of support,

participants perceived the athletic trainers support to be more beneficial to their well-being than

the support provided by their head or assistant coaches. Therefore, reiterating that ATCs serve as

support systems for injured athletes and are often whom athletes seek out for help.

One study found that some athletes preferred to discuss emotional reactions to injury with

ATCs rather than sport psychologists (Washington-Lofgren et al., 2004). Fifty-two Division I

soccer players were administered the Athlete Rehabilitation Perception Survey and a

demographic questionnaire. In addition, participants participated in focus groups to further

identify athletes' expectations of a successful rehabilitation program and the role of the athletic

trainer. Results from the focus groups revealed that participants preferred to seek the help of

athletic trainers to sport psychologists. Participants preferred to seek the help of athletic trainers

because they either didn't want to get a new person involved or they had a negative perception of

what it meant to be sent to a sport psychologist. Another study conducted by Maniar, Curry,

Sommers-Flanagan, and Walsh (2001) examined whom student-athletes prefer to seek help from

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when confronted with sport performance problems. One hundred Division I athletes were administered the Athlete Preference Questionnaire for the following situations: midseason slump, return from serious injury, and the desire to perform more optimally. Results showed that for all three situations, when an ATC is not available, participants preferred to seek the help of coaches rather than clinical psychologists, counselors, and sport-titled professionals (Maniar et al., 2001). These studies indicate that ATCs are a valuable part of an athlete's social support system and to whom athletes turn to when sport performance issues arise.

Athletic training literature regarding mental skills techniques has examined the following: ATCs' beliefs and perceptions of mental skills techniques in aiding injured athletes (Hamson-Utley et al., 2008; Larson et al., 1996), the role of ATCs in the post injury psychological recovery of athletes (Tracey, 2008; Washington-Lofgren et al., 2004) and the use of psychological strategies with injured athletes (Wiese et al., 1991). Another main facet of athletic training literature regarding mental skills techniques has focused on the educational needs of athletic training students to better equip them with the ability to handle the psychosocial aspects of injury (Kamphoff et al., 2010; Stiller-Ostrowski et al., 2009; Stiller-Ostrowski & Ostrowski, 2009).

Larson and colleagues (1996) surveyed 482 ATCs on their attitudes, beliefs, and applications of various psychological strategies and techniques used in treating injured athletes. Results showed that 90% of ATCs believed in the importance of treating both the physical and psychological aspects of injury (Larson et al., 1996). Not only did they believe that psychological aspects were important to treat, they also reported using a variety of mental skills techniques, such as goal setting, positive self-talk, and imagery, with injured athletes. In addition to using these mental skills techniques, ATCs also revealed that they believed mental

skills techniques were important for ATCs to learn (Larson et al., 1996). Finally, it was reported

that 75% of ATCs surveyed did not have a sport psychologist as a member of their sports

medicine team (Larson et al., 1996). Thereby indicating, the need for ATCs to engage in mental

skills techniques to enhance rehabilitation outcomes of injured athletes.

Similar to the work of Larson and colleagues (1997), Wiese, Weiss, and Yukelson (1991)

examined the types and perceptions of mental skills techniques ATCs use with injured athletes.

Participants reported that they believed in the effectiveness of short-term goal setting and

positive self-talk, but were less convinced about the effectiveness of imagery. Participants also

revealed that they believed it was important for ATCs to be knowledgeable in aspects such as

goal setting, positive self-talk and self-confidence. While participants believed it to be less

important to be knowledgeable in aspects such as relaxation, emotional control, and mental

imagery skills (Wiese et al., 1991).

Furthermore, in a study assessing both athletic trainers and physical therapists

perceptions about the effectiveness of mental skills training for aiding in the recovery of injured

athletes, Hamson-Utley and colleagues (2008) found that positive responses were given for the

influence of mental skills techniques within the rehabilitation setting. Also participants with

formal education in mental skills techniques such as goal setting, imagery, and self-talk, and

those intending to receive more education, held more positive attitudes about the use of mental

skills techniques with injured athletes that those who did not have training or education

(Hamson-Utley et al., 2008). The positive views held by ATCs on the use of mental skills

techniques with injured athletes reveals the need to continue to educate ATCs on the benefits of

such interventions in the rehabilitation process.

Work by Washington-Lofgren and colleagues (2004) sought to discover the role of ATCs in the post-injury psychological recovery of collegiate athletes. Participants included 105 ATCs employed in the collegiate setting. Each participant filled out a questionnaire that assessed the types of mental skills techniques ATCs use with injured athletes. Results revealed that about 46% of ATCs reported that they could aid in the psychological recovery of injured athletes to a certain extent and 68% revealed that they felt comfortable using the knowledge they did have to facilitate recovery (Washington-Lofgren et al., 2004). The most common mental skill technique employed by participants included goal setting and verbal motivation, while some ATCs reported using imagery/visualization, deep breathing, progressive relaxation, systematic desensitization, and cognitive restructuring (Washington-Lofgren et al., 2004). Therefore, there is a need to educate ATCs on a variety of mental skills techniques to better serve the needs of injured athletes.

More recently, the topic of educating future ATCs on the use of mental skills techniques has been of particular interest. In order for ATCs to use mental skill techniques with injured athletes it is important that ATCs receive proper education and training. Stiller-Ostrowski and Ostrowski (2009) examined recently ATCs undergraduate educational preparation in psychosocial interventions. Participants included 11 recently certified ATCs. Approximately half of the participants had taken either a sport psychology class or a related class. However, participants revealed that the topics covered in those classes were done so at a superficial level. All participants revealed that they would be interested in learning about a wider range of mental skills techniques including relaxation, visualization, imagery, and cognitive techniques (Stiller-Ostrowski & Ostrowski, 2009).

Similarly, Kamphoff and colleagues (2010) tested athletic training students' perceptions of mental skills techniques and academic preparation in the use of mental skills in sport injury rehabilitation. Of the 180 students, approximately 90 students (50%) reported that they had never taken a course in sport psychology or psychological skills training. Those students who had training and education were mostly trained in goal setting, positive self-talk and imagery (Kamphoff et al., 2010). While those without training indicated interest in learning goal setting, pain management strategies, positive self-talk, and imagery. Furthermore, participants believed that treating the psychological aspects of injury are important, and thus had positive perceptions about the use of mental skills techniques in sport injury rehabilitation (Kamphoff et al., 2010). Overall, highlighting the importance of mental skills training for ATCs.

2.9 OVERVIEW OF SELF-EFFICACY

Self-efficacy is defined as an individual's "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p.3). Therefore, it provides an estimate of how individuals perceive their ability to successfully perform a specific task. According to Bandura, (1997) self-efficacy beliefs can influence an individual's activity choice, effort, persistence, and resilience. It has proven to be one of the most powerful predictors of behavior in a multitude of settings and fields including education, sport, job performance, and health and fitness (Clark & Dodge, 1999; Feltz, 1982; Pajares, 1996; Weinberg, Yukelson, & Jackson, 1980). For example, in the sport and performance context, Moritz and colleagues (2002) meta-analysis, based on 45 studies and 102 correlations revealed that the average correlation between self-efficacy and individual performance was .38, thus, proving to be a significant factor in individual athletic performance.

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In addition to examining the influence of efficacy beliefs on a wide range of behaviors, considerable attention has been focused on its sources. The four major sources of self-efficacy include: past performance accomplishments, vicarious experiences, verbal persuasion, and physiological states (Bandura, 1997). First, past performance accomplishments, whether negative or positive, affect self-efficacy. In fact, successful past performances increase self-efficacy while negative performances decrease self-efficacy (Bandura). Performance accomplishments are believed to be the "most dependable source of efficacy information because they are based on one's own mastery experiences" (Bandura). Second, vicarious experiences rely on gaining efficacy information through observation and social comparison (Bandura). Because the information gained relies on social comparison and observation, it is a less dependable but effective source of information about an individual's capabilities (Bandura). Third, verbal persuasion can be suggestions that individuals receive that allow them to believe in their ability (Bandura). Persuasion can take many forms including verbal persuasion, evaluative feedback, self-talk, and expectations by others (Feltz et al., 2008). Verbal persuasion is the most widely used source of self-efficacy because of its simplicity; however, if verbal persuasions do not rise from personal accomplishments it can be less effective (Bandura). The last source of self-efficacy is physiological states, which refers to the physiological reactions such as emotional states, moods, and stress levels that an individual may face in a specific situation (Bandura). The way in which an individual interprets and perceives the situation will affect self-efficacy. Bandura's self-efficacy theory is widely used in several disciplines within psychology and serves as the main theoretical basis for conducting research in self-confidence and sport (Weinberg & Gould, 2007).

While the literature provides an insight into ATCs' beliefs, perceptions, use, and education of mental skills techniques, to date there have been no studies that have examined the self-efficacy of ATCs in their use of mental skills techniques (e.g., imagery, goal setting, and self-talk) with injured athletes. This is important, however, as it seems unlikely that an ATC would use mental techniques with injured athletes if they did not feel confident in their ability to do so.

One study did examine coaches', athletic trainers,' and psychologists' perceptions and use of psychological skills, self-efficacy of using each skill, and their previous training with each skill (Zizzi et al., 2009). The nine psychological skills examined included attention/concentration, communication skills, energy management, goal setting, hypnosis, imagery/visualization, self-talk, team building, and time management. Fifty-four ATCs, 64 college coaches, and 50 licensed psychologists completed the survey. Licensed psychologists reported the highest self-efficacy on all psychological skills except team building. ATCs reported being most confident using goal setting, while coaches reported being more confident using team building and goal setting. The psychological skills in which the highest self-efficacy was perceived corresponded to the skill that was most frequently used. While this study did assess the self-efficacy of ATCs' with clients, it did not specifically address the self-efficacy of using psychological skills to facilitate in injury rehabilitation.

Another previously discussed study by Washington-Lofgren and colleagues (2004) examined the role of ATCs in the post-injury psychological recovery of collegiate athletes. One hundred and five ATCs employed in the collegiate setting completed a questionnaire that assessed the types of mental skills techniques ATCs' use with injured athletes. Though this study did not specifically assess the self-efficacy of ATCs, 33.3% of ATCs reported being in a

situation in which they knew what should be done, but either did not understand how to do it, or did not have the confidence to do it. Thus, indicating the need for ATCs to understand how to use mental skills techniques in order to enhance self-efficacy.

2.10 CONCLUSION

The known benefits of imagery, goal setting, and self-talk on the rehabilitation of injured athletes are evident. Because ATCs have frequent contact with injured athletes and educational training in psychosocial intervention and referral, they may be in the best position to teach and facilitate the use of specific mental skills techniques with injured athletes. This is especially true for settings in which a sport psychologist is not part of the sports medicine team. Based on self-efficacy theory, it would seem logical that ATCs with high self-efficacy would be more likely to use mental skills techniques with injured athletes, thus helping to improve and facilitate injury recovery. However, to date this issue has not been examined. Understanding the level of ATCs' self-efficacy when using imagery, goal setting, and self-talk and the source of self-efficacy could help athletic training education programs enhance curriculum, provide information about what ATCs find important, and ultimately enhance the services ATCs offer.

CHAPTER 3

METHODOLOGY

3.1 PURPOSE

This chapter describes the methods used to assess the self-efficacy beliefs of ATCs in their use of imagery, goal setting, and self-talk with injured athletes as well as what sources influenced ATCs' confidence in using imagery, goal setting, and self-talk with injured athletes.

3.2 RESEARCH DESIGN

This study was a one-time non-experimental survey. The independent variables were the sources of self-efficacy which includes the following: observing other individuals using imagery; using mental skills with athletes; and education about mental skills; and beliefs about the importance of imagery, goal setting, and self-talk. The dependent variables were the use of imagery, goal setting, and self-talk with athletes and ATCs levels of self-efficacy for imagery, goal setting, and self-talk.

3.3 INSTRUMENTATION

3.3.1. Demographic Survey

The demographic survey (Appendix A) is a 20-item questionnaire. Demographic information included questions pertaining to sex, age, race, NATA district, level of education, type of athletic training program, current place of employment, and current primary job description. The demographic survey also asked questions pertaining to ATCs' education in sport psychology or the psychology of injury and level of study (undergraduate or graduate level) and whether or not they have had additional education in those areas. In addition, ATCs were asked if imagery, goal setting, and positive self-talk were topics covered in their sport psychology or psychology of injury course. Furthermore, ATCs were asked whether or not their

current place of employment has a sport psychologist as part of the sports medicine team, and if so, in what capacity. Finally, the survey asked about ATCs' ability to refer clients to sport psychologists, psychologists, and psychiatrists.

3.3.2. Self-efficacy Survey

The self-efficacy survey (Appendix B**)** began by asking ATCs how many hours per week they use imagery, goal setting, and self-talk with injured athletes. Using a five point scale, the next two questions assessed ATCs' beliefs about the importance of athletes engaging in imagery, goal setting, and self-talk and the importance of ATCs in facilitating imagery, goal setting, and self-talk with injured athletes (e.g., How many times per week do you use the following techniques: imagery, goal setting, and self-talk with injured athletes?). The scale ranged from 1 (not at all important) to 5 (extremely important). The next two questions assessed ATCs' self-efficacy level in engaging in imagery, goal setting, and self-talk in general and with injured athletes. Similarly, a five-point scale was used and again ranged from 1 (not at all confident) to 5 (completely confident). The final set of questions assessed what techniques influenced ATCs' self-efficacy in using imagery, goal setting, and self-talk with injured athletes. Again a five-point scale was used and ranged from 1 (not at all) to 5 (completely). An example of the final set of questions is as follows, "How much have the following techniques: observing others using imagery, using imagery with athletes, education about imagery, and having success with using imagery influenced your level of confidence of using imagery with injured athletes?" Respondents answered separately for each subpart question.

3.4 PROCEDURES

Approval from Michigan State University's Institutional Review Board was obtained prior to data collection. Participation in this study was voluntary and only ATCs who were

members of the NATA participated. The survey was sent out to 1,000 members of the NATA in

the category of "certified." The survey was sent out to only ATCs in the United States. Survey

data were collected from 131 participants using SurveyMonkey.com for a response rate of

13.1%. The NATA e-mailed all 1,000 participants an information letter, detailing the nature and

purpose of the study, (Appendix C**)** as well as the link to complete the study. To ensure

maximum participation, the NATA resent the information letter and link to the survey out

weekly after the original send date. Participants had access the survey for 24 hours per day for a

one-month period.

The survey was a one-time self-administered survey to be completed on a computer with

internet access. It was composed of 26 total items divided into two sections. Participants were

asked to fill out the demographics section first followed by the self-efficacy section. By

completing and returning the online survey, the researcher assumed participants consented to

participating in the study. Participants were allowed to withdraw from the study at anytime and

skip questions without penalty.

3.5 DATA ANALYSIS

Demographic data were summarized using descriptive data. The statistical significance

level was set at p<.05. Data were analyzed using the Statistical Package for the Social Sciences

(SPSS) 18.0 software.

The following statistical analyses were used with the research questions:

RQ1: What percentage of ATCs sampled state that they have had formal education in sport

psychology or the psychology of injury?

Descriptive statistics using frequencies were performed.

RQ2: What will be the level of ATCs' self-efficacy in using imagery with injured athletes?

Descriptive statistics using means and standard deviations were performed.

RQ3: What will be the level of ATCs' self-efficacy in using goal setting with injured athletes?

Descriptive statistics using means and standard deviations were performed.

RQ4: What will be the level of ATCs' self-efficacy in using self-talk with injured athletes?

Descriptive statistics using means and standard deviations were performed.

RQ5: Do the self-efficacy beliefs of ATCs differ among the following mental skills techniques: Imagery, goal setting, and self-talk?

A MANOVA was performed to determine significant differences within imagery, goal setting, and self-talk.

RQ6: What sources predict self-efficacy beliefs of ATCs in their use of the following mental skills techniques: imagery, goal setting, self-talk with injured athletes?

A Multivariate multiple regression analysis and a canonical correlation were performed.

RQ7: What is the strength of the relationship between level of self-efficacy and usage of the following mental skills techniques: Imagery, goal setting, and self-talk with injured athletes?

A Bivariate correlational analysis was performed.

RQ8: What is the strength of the relationship between ATCs' beliefs about the importance of the following mental skills techniques (Imagery, goal setting, and self-talk) and their level of self-efficacy?

A Multivariate multiple regression analysis and a canonical correlation were performed.

CHAPTER 4

RESULTS

4.1 OVERVIEW

This research was conducted to examine ATCs' self-efficacy in their use of imagery, goal setting, and self-talk with injured athletes. The following chapter describes the results including the demographic information of the sample, ATCs' self-efficacy using imagery, goal setting, self-talk, and techniques that influence ATCs' self-efficacy of using imagery, goal setting, and self-talk.

4.2 DEMOGRAPHIC DATA

4.2.1. General Demographics

One hundred and thirty one participants began and completed the survey. However, some of the tables have various N values due to missing data. Approximately 2.3% (3/131) of the data is missing. There were more female participants (67/131)[51.1%]) than male participants (59/131)[45.0%]). Two participants did not wish to answer the question regarding sex (2/131[1.5%]), while (3/131[2.3%]) failed to answer the question. The majority of participants were white (119/128[93%]) (see Table D1). Participants have been ATCs for an average of 14.18 years ± 9.40, with a minimum of 1 year and a maximum of 39 years. The average age of participants was 37.4 years ± 10.12 with a minimum age of 22 and a maximum age of 60.

NATA District 4 was the most represented district (27/128[21.1%]) (see Table D2). The majority of participants held a Master's degree (88/128[68.8%]) (see Table D3). More than half of the participants became certified via the undergraduate curriculum route (75/128[58.6%]) while 40% (52/128[40.6%]) became certified via the internship route. One participant (1/128[0.80%]) did not answer the question. Participants reported working in a variety of job

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settings with the majority of participants working at a university or college (39/128[30.0%]) (see Table D4). A large amount of participants identified their current primary job description as head ATC (56/128[43.8%] (see table D5).

Only 14.8% (19/128) of participants stated that their place of employment employed a sport psychologist. Furthermore, more than half of the participants reported that they did not have the ability to refer clients to a sport psychologist (83/128[64.8%]), while only 35.2% (45/128) had the ability to refer clients to a sport psychologist. Over half of participants (76/128[59.4%]) reported that they did not have the ability to refer clients to a psychiatrist, while 40.6% (52/128) reported they did have the ability to refer clients to a psychiatrist. Just over 40% (52/128[40.6%) of participants reported that they did not have the ability to refer clients to a psychologist, while 59.3% (76/128) reported that they did have the ability to refer clients to a psychologist.

Of those who took a sport psychology course 41.1% (35/85) took the course at the undergraduate level, 36.4% (31/85) took the course at the graduate level and 22.3% (19/85) took the course at both the undergraduate and graduate level. In the sport psychology course, 88.2% (75/85) reported learning about imagery, 92.9% (79/85) reported learning about goal setting, and 76.4% (65/85) self-talk. Less than four percent (3/85[3.5%]) of participants reported that they did not learn about imagery, goal setting, or self-talk in their sport psychology course. One participant (1/85[1.1%]) did not wish to answer the question or failed to answer the question.

Only 28.1% (36/128) of participants reported taking a psychology of injury course. Of those who took a psychology of injury course 47.2% (17/36) took the course at the undergraduate level, 36.1% (13/36) took the course at the graduate level, and 16.6% (6/36) took the course at both the undergraduate and graduate level. In the psychology of injury course,

86.1% (31/36) reported learning about imagery, 86.1% (31/36) reported learning about goal setting, and 61.1% (22/36) reported learning about self-talk. Three (3/36[8.3%]) participants reported that they did not learn about imagery, goal setting, or self-talk in their psychology of injury course. Of those participants who had not taken a sport psychology or psychology of injury course, 73.2% (71/97) reported interest in taking a sport psychology or psychology of injury course, while 18.6% (18/97) of participants had no interest in taking a sport psychology or psychology of injury course. Seven participants (7/97[7.2%] did not wish to answer the question.

4.3 ASSESSMENT OF THE SELF-EFFICACY SURVEY

The first part of the self-efficacy survey asked questions about the frequency of ATCs use of imagery, goal setting, and self-talk with injured athletes and then followed with questions about ATCs self-efficacy using imagery, goal setting, and self-talk with injured athletes. Half of the participants (64/128[50.0%] reported that the number of times they use imagery per week with clients is zero (see Table D6). Similarly, about 41.1% (53/129) of participants reported that the number of times they use self-talk with clients is also zero (see Table D6). Goal setting appears to be used more frequently by participants as only 8.5% (11/129) reported the number of times they use goal setting as zero (see Table D6).

Almost 40% (51/128) of participants reported using imagery 1-6 times per week, while 46.1% (59/128) of participants reported using self-talk 1-6 times per week and 54.7% (70/128) of participants reported using goal setting 1-6 times per week.

Almost 75% (98/131) of participants believed it to be very important for injured athletes to engage in goal setting during the rehabilitation process, while their beliefs about the importance of using imagery and self-talk were considerably less (see Table D7). The mean for

the beliefs about the importance of goal setting was 4.65±0.703, which was higher than both the means for imagery (3.14±1.139) and self-talk (3.39±1.103) (see Table D8).

When asked about the importance of ATCs in facilitating the use of goal setting with injured athletes a majority of participants believed it was very important (76/127[69.8%]) (see Table D9). Again, participants' beliefs about the importance of ATCs in facilitating imagery and self-talk with injured athletes was ranked as less important (see Table D9). The mean for the beliefs about the importance of ATCs engaging in goal setting with injured athletes was 4.44±0.823, which was higher than both the means for imagery (3.08±1.103) and self-talk (3.20±1.047) (see Table D10).

Two-thirds (87/130[66.9%]) of participants reported having high confidence in using goal setting, while participants' confidence level of using imagery with injured athletes and self-talk was more spread out across the confidence levels (see Table D11). The mean for the participants' general confidence level in their ability to effectively engage in goal setting was 4.51±0.838, which was higher than both the means for their general confidence level in their ability to engage in imagery (3.31±1.352) and self-talk (3.32±1.323) (see Table D12).

In addition, participants reported having high confidence using goal setting (see Table D13) with injured athletes (90/130[69.2%]). Again, participants' confidence level of using imagery with injured athletes and self-talk was more spread out across the confidence levels (see Table D13). Similarly, the mean for confidence level in using goal setting with injured athletes (4.50±0.900) was much higher than the means for confidence level in using imagery (3.34±1.350) and self-talk (3.37±1.329) with injured athletes (see Table D14).

Many participants reported that observing others using imagery (53/126[42.1%]) and having success using imagery (36/128[28.1%]) did not contribute at all to their self-confidence in

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using imagery (see Table D15). Participants had mixed views about the how using imagery and education about imagery affected their self-confidence in using imagery (see Table D15).   The means and standard deviations for techniques that influenced participants' confidence level in using imagery with injured athletes were very similar (see Table D16).

Most of the participants reported that observing others using goal setting, personally using goal setting, education about goal setting, and success using goal setting was a major influence on their level of confidence in using goal setting (see Table D17). The means and standard deviations for techniques that influenced participants' confidence level in using goal setting with injured athletes were very similar (see Table D18).

Most of the participants reported that observing others using self-talk, personally using self-talk, education about self-talk, and success using self-talk did not influence their level of confidence in using self-talk (see Table D19). The means and standard deviations for techniques that influenced participants' confidence level in using self-talk with injured athletes were very similar (see Table D20).

4.4 ASSESSMENT OF THE RESEARCH QUESTIONS

RQ1: *What percentage of ATCs sampled state that they have had formal education in sport psychology or the psychology of injury?* The data collected showed that 66.4% (85/128) of ATCs sampled have had a formal education course on either sport psychology or the psychology of injury. Whereas 33.6% (43/128) of ATCs sampled did not have a formal education course in either sport psychology or psychology of injury.

RQ2: *What will be the level of ATCs' self-efficacy in using imagery with injured athletes?* The mean for ATCs' self-efficacy in using imagery with injured athletes was 3.34±1.35 on a scale of 5. Thus signifying that ATCs have moderate confidence in using imagery with injured athletes.

RQ3: *What will be the level of ATCs' self-efficacy in using goal setting with injured athletes?* The mean for ATCs' self-efficacy in using goal setting with injured athletes was 4.50± 0.90 on a scale of 5. Thus signifying that ATCs have a high confidence in using goal setting with injured athletes.

RQ4: *What will be the level of ATCs' self-efficacy in using self-talk with injured athletes?* The mean for ATCs' self-efficacy in using self-talk with injured athletes was 3.37±1.33 on a scale of 5. Thus signifying that ATCs have a moderate confidence in using self-talk with injured athletes.

RQ5: *Do the self-efficacy beliefs of ATCs differ among the following mental skills techniques: Imagery, goal setting, and self-talk?* The MANOVA indicated that the self-efficacy of ATCs significantly differ among imagery, goal setting, and self-talk [$F_{(3, 128)}$=1071, p=.001]. ATCs have a significantly higher self-efficacy for goal setting compared to imagery (p=.001) and self-talk (p=.001). However, ATCs self-efficacy beliefs did not differ between imagery and self talk (p=.592).

RQ6: *What sources of efficacy information (observing others using the skills, using the skill with athletes, education about the skill, and having success using the skill) predict self-efficacy beliefs of ATCs in their use of the following mental skills techniques: imagery, goal setting, self-talk with injured athletes?* To test the above research question, a multivariate multiple regression with follow up canonical correlational analysis was conducted. The dependent variables were three separate self-efficacy scores of ATCs in their use of imagery, goal setting, and self-talk with injured athletes. The predictor or independent variables were the four techniques or sources of self-efficacy (observing others, personally using, education, success with) for imagery, goal setting, and self-talk.

The results of this analysis revealed a significant relationship between the three self-efficacy scores and the techniques/sources that influence ATCs' self-efficacy, Wilks' $\lambda = .17$; F (36, 331.64) = 7.31, $p < .001$. These results indicate that the set of predictor variables (i.e., observing other using imagery, personally using imagery, education about imagery, and success using imagery) explained a significant amount of the variability between ATCs' self-efficacy of using imagery, goal setting, and self-talk with injured athletes.

To determine which of the independent variables were most related to, or predictive of, self-efficacy scores, the results of the canonical correlational analysis were examined. These results revealed three significant canonical functions ($R_1 = .76$, $R_1^2 = .57$, $p < .001$; $R_2 = .64$, $R_2^2 = .41$, $p < .001$; $R_3 = .54$, $R_3^2 = .29$, $p < .001$). To determine which variables within each function contributed to the relationship between the three sets of data, the structure coefficients were examined (Courville & Thompson, 2001). These values are presented in Table D21. A criterion value of .40 was used to interpret the structure coefficients (at least 16% or higher of shared variance, Tabatchnick & Fidell, 2007).

The redundancy indices for the three canonical functions indicated that 26.21% of the variance in the dependent variables was explained in the first function, an additional 13.07% was explained in the second function, and 6.6% was explained in the third function. In summary then a total of 45.83% of the variability between ATCs' level of self-efficacy in using imagery, goal setting, and self-talk with injured athletes was explained by the independent variables (i.e., observing others using imagery, personally using imagery, education about imagery, and success using imagery). According to Pedhazur (1982), a redundancy index of 10% or higher suggests significant and meaningful relationships between data sets. Therefore, functions one and two will

be discussed as they have a redundancy index greater than 10%, while function three was not large enough to interpret.

For the first function, high scores on observing others, personally using, education, and success with goal setting as well as observing others, personally using, education, and success with self-talk were predictive of high scores for ATCs' self-efficacy of goal setting and self-talk. In particular, the coefficients for success using self-talk (.75) and success using goal setting (.70) were the strongest predictors of ATCs' self-efficacy in using goal setting and self-talk with injured athletes. Education about self-talk (.68) and education about goal setting (.68) were also significant contributors to the regression equation, though to a lesser extent. Similarly, using self-talk (.65) and using goal setting (.63) were also significant contributors to the regression equation but again to a lesser extent than success of using goal setting and success of using self-talk.

Examination of the canonical loadings for the second canonical function revealed that high self-efficacy scores for using imagery with injured athletes (.85) and high self-efficacy scores for using goal setting (.45) with injured athletes were predicted by high scores on all but five of the independent variables. Examination of relative sizes of the coefficients indicated that using imagery (.69) and success using imagery (.68) were the highest predictors of ATCs' self-efficacy of using imagery and goal setting with injured athletes. Education about imagery (.56) and observing others using imagery (.49) were the next best predictors of ATCs' self-efficacy of using imagery and goal setting with injured athletes. Using goal setting (.46), education about goal setting (.43), and success using goal setting (.46) were also significant contributors, though to a lesser extent, of the regression equation.

In general, the results of these analyses revealed that education about goal setting and success using goal setting and education about self-talk and success using self-talk were

predictive of ATCs' self-efficacy of using goal setting and self-talk with injured athletes. In addition, using imagery and success using imagery were the main predictors for ATCs' self-efficacy of using imagery with injured athletes. Specifically, due to the fact that the most variance in the dependent variable set was explained by the first function, it appears that goal setting and self-talk are the two variables best predicted by the predictor variables.

RQ7: *What is the strength of the relationship between level of self-efficacy and usage of the following mental skills techniques (imagery, goal setting, and self-talk) with injured athletes?* To test the above question, a bivariate correlational analysis was conducted. The results of the bivariate correlational analysis for the self-efficacy for imagery, goal setting, and self-talk and the weekly usage of imagery, goal setting, and self-talk are presented in Table D22.

The results show that the correlation between ATCs' self-efficacy in facilitating imagery with injured athletes and their weekly usage of imagery was positive (r=.43) and significant (p < .01). Next, results also revealed a positive (r=.34) and significant (P < .01) correlation between ATCs' self-efficacy in facilitating goal setting with injured athletes and their weekly usage of goal setting. Lastly, the results revealed a positive (r=.43) and significant (p < .01) correlation between ATCs' self-efficacy in using self-talk with injured athletes and their weekly usage of self-talk.

RQ8: *What is the strength of the relationship between ATCs' beliefs about the importance of the following mental skills techniques (Imagery, goal setting, and self-talk) and their level of self-efficacy?* To test the research question above, a multivariate multiple regression with follow up canonical correlational analysis was conducted. The dependent variables were the three separate self-efficacy scores of ATCs in their use of imagery, goal setting, and self-talk with injured

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athletes. The predictor or independent variables were three separate scores for ATCs' beliefs about the importance of facilitating imagery, goal setting, and self-talk with injured athletes.

The results of this analysis revealed a significant relationship between the three self-efficacy scores and ATCs' beliefs about the importance of facilitating mental skills techniques with injured athletes, Wilks' $\lambda = .45$; $F (9, 304.37) = 13.01$, $p < .001$. These results indicate that the set of predictor variables (i.e., ATCs' beliefs about the importance of facilitating imagery with injured athletes) explained a significant amount of the variability between ATCs' level of self-efficacy in using the technique with injured athletes.

To determine which of the independent variables were most related to, or predictive of, ATCs' self-efficacy, the results of the canonical correlational analysis were examined. These results revealed three significant canonical functions ($R_1 = .53$, $R_1^2 = .28$, $p < .001$; $R_2 = .47$, $R_2^2 = .22$, p $< .001$; $R_3 = .43$, $R_3^2 = .18$, $p < .001$). To determine which variables within each function contributed to the relationship between the three sets of data, the structure coefficients were examined (Courville & Thompson, 2001). These values are presented in Table D23. A criterion value of .40 was used to interpret the structure coefficients (at least 16% or higher of shared variance, Tabatchnick & Fidell, 2007).

The redundancy indices for the two canonical functions indicated that 9.79% of the variance in the dependent variables was explained in the first function, an additional 3.22% was explained in the second function, and 9.37% was explained in the third function. In summary then a total of 22.38% of the variability between ATCs' level of self-efficacy in using imagery, goal setting, and self-talk with injured athletes was explained by their beliefs in the importance of using imagery, goal setting, and self-talk with injured athletes. According to Pedhazur (1982), a redundancy index of 10% or higher suggests significant and meaningful relationships between

data sets. While it is understood that none of the functions meet the above criteria, due to the exploratory nature of this study, functions 1 and 3 will be examined, as they are close to 10%.

For the first function, high scores on ATCs' beliefs about the importance of facilitating goal setting with injured athletes and ATCs' beliefs about the importance of facilitating self-talk with injured athletes were predictive of ATCs' self-efficacy in using goal setting with injured athletes and ATCs' self-efficacy in using self-talk with injured athletes. In particular, the coefficient for ATCs' beliefs about the importance of facilitating goal setting with injured athletes (.90) was considerably higher than the coefficient for ATCs' beliefs about the importance of facilitating self-talk with injured athletes (.50), indicating that ATCs' beliefs about the importance of facilitating goal setting with injured athletes was the single highest predictor of all three types of self-efficacy, but that ATCs' beliefs about the importance of self-talk was also significant, but lesser, contributor to the regression equation.

The third function revealed that high scores on ATCs' beliefs about the importance of facilitating imagery with injured athletes and ATCs' beliefs about the importance of facilitating self-talk with injured athletes were predictive of ATCs' self-efficacy in using imagery with injured athletes and ATCs' self-efficacy in using self-talk with injured athletes. In particular, the coefficient for ATCs' beliefs about the importance of facilitating goal setting with injured athletes (.99) was considerably higher than the coefficient for ATCs' beliefs about the importance of facilitating self-talk with injured athletes (.57), indicating that ATCs' beliefs about the importance of facilitating imagery with injured athletes was the single highest predictor of all three types of self-efficacy, but that ATCs' beliefs about the importance of self-talk was also significant, but lesser, contributor to the regression equation.

In general, the results of these main study analyses revealed that ATCs' beliefs about the importance of using imagery, goal setting, and self-talk were predictors of their self-efficacy in using each technique. Specifically, due to the fact that the most variance in the dependent variable set was explained by the first function and third function, it appears that ATCs' beliefs about the importance of facilitating imagery and goal setting with injured athletes predict higher self-efficacy scores of ATCs' in their use of imagery and goal setting.

CHAPTER 5

DISCUSSION

5.1 OVERVIEW

This study explored the self-efficacy of ATCs in their use of imagery, goal setting, and self-talk with injured athletes. There was particular interest in understanding what ATCs' level of self-efficacy was with each technique, what sources or techniques predicted their self-efficacy, and whether or not their beliefs about the importance of each mental skill technique influenced their self-efficacy. Results of this study revealed that ATCs have the highest self-efficacy in using goal setting when compared to their self-efficacy in using imagery and self-talk. In addition, this study found significant correlations between ATCs' self-efficacy of a mental skills technique and their usage of the mental skills technique. Furthermore, the majority of the sources or techniques positively predicted the self-efficacy of ATCs in their use of the mental skills technique. Lastly, ATCs' beliefs about the importance of using the mental skill technique were significantly and positively predictive of ATCs' self-efficacy of the mental skill technique. This chapter will therefore discuss the relevant findings and factors related to the self-efficacy of ATCs in their use of imagery, goal setting, and self-talk with injured athletes.

5.2 THE SELF-EFFICACY OF CERTIFED ATHLETIC TRAINERS

The results of this study were consistent with the findings by Washington-Lofgren and colleagues (2004) who found that ATCs were more likely to use goal setting than any other mental skill technique to facilitate the recovery of injured athletes. This study found that ATCs used goal setting much more frequently than they used imagery and self-talk. In addition, ATCs reported having the most confidence in using goal setting. Specifically, ATCs' self-efficacy in using goal setting was 4.51 out of 5, while their self-efficacy in using imagery and self-talk was

3.31 and 3.32 respectively. The results from this study are consistent with the findings of Zizzi and colleagues (2009) who found that ATCs were most confident in using goal setting. In addition, ATCs' self-efficacy in using imagery, goal setting, and self-talk in general are very similar to their self-efficacy in using imagery, goal setting, and self-talk with injured athletes.

ATCs' self-efficacy in using imagery with injured athletes is positively and significantly correlated with ATCs' weekly use of imagery, goal setting, and self-talk. It is no surprise that ATCs' self-efficacy of using imagery with injured athletes is more correlated to their weekly use of imagery than their weekly use of goal setting and self-talk. Thus, if ATCs have a high self-efficacy in using imagery they are more likely to use imagery with injured athletes. Perhaps, if ATCs feel confident in using imagery, which is a more specialized skill than goal setting and self-talk, they may believe that they can use the other two techniques (goal setting, self-talk). Similarly, ATCs' self-efficacy of using goal setting with injured athletes is positively and significantly correlated with their weekly use of goal setting and weekly use of self-talk, however it is not correlated with their weekly imagery use. Thus, ATCs may feel confident in using goal setting and self-talk, but may not feel confident enough in imagery, to do it with injured athletes.

The results from this research study suggest that ATCs confident in imagery and self-talk use all three mental skills techniques (imagery, goal setting, self-talk), however, those confident in goal setting only use goal setting and self-talk. Perhaps this may imply that imagery is a skill that is more complex to learn, understand, and facilitate with injured athletes. It can be hypothesized that those who are confident in goal setting feel that self-talk is an easier mental skill technique to facilitate with injured athletes or that goal setting and self-talk go hand in hand, while imagery does not. The results from this research study also suggest that ATCs who are

confident in imagery and self-talk use all three mental skills techniques (imagery, goal setting, self-talk) on a weekly basis. Those who are confident in imagery and self-talk may feel that they are also confident in goal setting because it is a technique that everyone does and thus is not a technique that must be learned extensively to use.

In addition, weekly use of imagery is correlated with the weekly use of goal setting and self-talk. Thus, those who use imagery weekly are also more likely to use goal setting and self-talk weekly. In particular, imagery and self-talk are more highly correlated, therefore, if ATCs use imagery weekly, they are more likely to use self-talk too. It appears that if ATCs are using imagery with injured athletes then they are more likely to use goal setting and self-talk with injured athletes.

Results of this study revealed that success with goal setting and self-talk and education about goal setting and self-talk were the greatest predictors of the self-efficacy of ATCs in their self-efficacy of goal setting and self-talk with injured athletes. Similarly, success with imagery and personally using imagery where the greatest predictors of ATCs' self-efficacy of using imagery with injured athletes. Having previous success using the mental skill technique was the greatest predictor of ATCs' self-efficacy in using the technique with injured athletes. This comes as no surprise because self-efficacy theory states that past performances are the most dependable source of efficacy information because they are based on one's own mastery experiences (Bandura, 1997). Thus ATCs who have had previous success with imagery are more likely to have a higher self-efficacy than those who did not have previous success with imagery. Hamson-Utley and colleagues (2008) believe that confidence in the ability to perform a task is built through clinical practice, which is one of the main things an accredited athletic training

education program includes. Again, this notion highlights the importance of mastery experiences in increasing self-efficacy.

While having previous success using the mental skill technique was the strongest predictor, this study also showed that education was also a strong predictor of ATCs' self-efficacy of using goal setting and self-talk with injured athletes. This highlights the importance of education in mental skills techniques. ATCs need to receive formal education in mental skill strategies such as imagery, goal setting, and self-talk in order to be confident in using the technique. Those who are confident in using the technique are more likely to use the technique than those who are not confident. Therefore, highlighting the importance of ATCs' educational background and training in sport psychology or the psychology of injury.

Though success and education with the mental skill technique was the greatest predictor of ATCs' self-efficacy in using the mental skill technique, observing others and personally using the technique were still significant predictors and therefore should not be ignored. Since all of the techniques were significant in predicting self-efficacy, all should be considered when designing a course, seminar, workshop, etc. for teaching ATCs about the use of mental skills training with injured athletes. It may be important for courses to disseminate information, allow for application and practice, and allow for shadowing opportunities to help increase the self-efficacy of ATCs in their use of the mental skill technique with injured athletes. In fact, Kamphoff and colleagues (2010) mention that unpublished data by Hamson-Utley and Stiller-Ostrowski found that teaching psychological techniques through hands-on methods with assessment through practical exams, increased graduating athletic training students' confidence in using psychological techniques.

Another important predictor for the self-efficacy of ATCs in their use of imagery, goal setting, and self-talk with injured athletes was their beliefs about the importance of ATCs in facilitating the mental skill technique with injured athletes. ATCs' self-efficacy in using goal setting was predicted by ATCs' beliefs about the importance of ATCs' facilitating goal setting with injured athletes as well as ATCs' beliefs about the importance of ATCs' facilitating self-talk with injured athletes and vice versa. Thus believing in the importance of goal setting and self-talk means that ATCs are likely to have higher self-efficacy in using both techniques. With regards to imagery, ATCs' beliefs about the importance of ATCs in facilitating imagery with injured athletes' strongly predicted ATCs' self-efficacy in using imagery. Beliefs about the importance of imagery and its effect on ATCs' self-efficacy in using imagery revealed the strongest correlation when compared to the other two mental skills techniques (goal setting, self-talk). Again, this may show that imagery is a more specialized skill to understand and that ATCs who do not believe in the importance of using imagery with injured athletes may have a low self-efficacy of doing so, thus shying away from using the technique with injured athletes. Whereas, goal setting and self-talk my be relatively easier to use and understand and thus ATCs feel that even though they only moderately believe in the importance of using goal setting and self-talk with injured athletes, they may use the technique anyway.

5.3 GENERAL DEMOGRAPHICS

While the self-efficacy of ATCs in their use of mental skills techniques, sources of self-efficacy, and usage of the mental skills technique were among the most important findings from this study, descriptive statistics revealed other important points that may be of interest. More than half (66.4%) of the ATCs in this study reported having had a formal class in sport psychology or the psychology of injury either at the undergraduate or graduate level. While, a

study by Larson and colleagues (1996) found that only 54.1% of ATCs had taken a sport psychology course. Perhaps, as the research expands on this topic, more ATCs will recognize the value of understanding the psychological aspects of injury. In addition, as the NATA Athletic Training Education Competencies have changed and evolved, ATCs have been required to understand psychosocial strategies in order to become certified.

Results of this study revealed that of the 66.4% of participants that took a sport psychology or psychology of injury course, the majority learned about imagery, goal setting, and self-talk. More participants reported learning about goal setting, followed by imagery, and then self-talk. Thus highlighting that ATCs are learning about mental skills techniques in their sport psychology or psychology of injury course. While they may be learning about imagery, goal setting, and self-talk, to what extent are they learning about these topics with application to injured athletes? Stiller-Ostrowski and Ostrowski (2009) reported that 4 of 11 participants in their study stated learning emotional response to injury, stress management, relaxation, visualization, and imagery, but only at the superficial level. Therefore, it is important that sport psychology or psychology of injury courses be evaluated on how mental skills techniques are being taught to students.

Of those participants in this study that did not take a sport psychology or psychology of injury course, 73.2% reported that they would be interested in taking one. These results are consistent with the findings of Stiller-Ostrowski and Ostrowski (2009) who found that 11 of 11 recently certified athletic trainers would be interested in learning more about sport psychology techniques including relaxation, visualization, cognitive techniques, and imagery. Furthermore, imagery and visualization were of particular interest to the ATCs, who indicated that they would

be more open to using the techniques if they had more knowledge about the techniques (Stiller-Ostrowski & Ostroski 2009).

Stiller-Ostrowski & Ostroski (2009) argue that many in the athletic training field believe that being a "sport psychologist" is not the role of ATCs. However, the NATA educational competencies require ATCs to be proficient in the psychosocial strategies as related to injury. Thus, what role and responsibility do ATCs have for providing sport psychology in the athletic training room? The majority of ATCs in this study (85.2%) reported that they do not have a sport psychologist as part of the sports medicine team and more than half (64.8%) reported the inability to refer patients to a sport psychologist. Similarly, Cramer-Roh and Perna (2000) found that a national survey of ATCs revealed that 75% of ATCs surveyed did not have access to a sport psychologist. Therefore, this raises the question of who is in the best position to work on mental skills training with injured athletes. Are sport psychologists solely responsible for dealing with the psychological aspects of injury and the teaching of mental skills training? Are athletic trainers solely responsible for dealing with the psychological aspects of injury and the teaching of mental skills techniques? Or is there room for a partnership between ATCs and sport psychologist?

While ATCs have a multitude of responsibilities when working with injured athletes, they do have an obligation to help injured athletes with the psychological aspect of injury, whether this is through referral to a sport psychologist or by teaching and facilitating mental skills techniques. Perhaps, an ATC may team up with a sport psychologist to make an imagery CD for an athlete recovering from ACL surgery. While this injured athlete is icing during rehabilitation, he or she can listen to the imagery CD. Or an ATC can engage in goal setting with an athlete during the initial visit and can continue goal setting until rehabilitation is

complete. ATCs should help facilitate mental skills training up to their knowledge level and then refer to sport psychologists as necessary. However, this may pose a problem, when ATCs don't have the ability to refer patients to a sport psychologist. This study revealed that 64.8% of ATCs did not have the ability to refer patients to sport psychologists, while other studies have reported similar results (Larson et al., 1996)

In order to address this issue, Larson and colleagues (1996) made suggestions for practicing sport psychologists and the Association for Applied Sport Psychology (AASP) to create a referral network, by establishing connections between AASP and the NATA. However, to date there is no evidence that this is being done through a partnership between AASP and the NATA. Creating a partnership would be beneficial for injured athletes, ATCs and sport psychologists.

5.4 RECOMMENDATIONS

Based on the results of this study and previous research, a few recommendations could be made to increase the self-efficacy of ATCs in their use of mental skills training with injured athletes. First, results from this study showed that observing others, personally using, education, and success with imagery, goal setting, and self-talk all contribute to ATCs' self-efficacy of using the mental skills technique with injured athletes. Therefore, it is important that accredited athletic training programs require athletic training students to take a course in sport psychology or the psychology of injury. Furthermore, these courses should be tailored to fit the needs of athletic training students by teaching them about mental skills techniques at more than a superficial level. Students need to not only be taught about the mental skills technique, but they should also have the ability to observe others and practice with patients.

Second, athletic training programs need to teach imagery, goal setting, and self-talk. As the results from this study suggest that those who use one technique are more likely to use others and that those who are confident in using one are more likely to be confident in using the others. It appears that ATCs are confident in using goal setting more so that imagery and self-talk, thus more emphasis should be placed on teaching imagery and self-talk.

Lastly, if ATCs do not engage in mental skills training with injured athletes then it is important that more ATCs have a sport psychologist on their sports medicine team or that they have the ability to refer injured athletes to a sport psychologist. Going back to the recommendation of Larson and colleagues (1996) a partnership between AASP and NATA might be a possible solution to opening up the lines of communication and collaboration efforts to get injured athletes the best care possible

5.5 LIMITATIONS

There were a few limitations in this research study. Perhaps the largest limitation was the sampling procedure. First, the sample size was limited to 1,000 e-mail addresses. In addition the survey completion rate was much smaller than expected, thus making it hard to generalize results. It is possible that because of the small sample size a non-response bias could have occurred. This could have been resolved by increasing the time for data collection, which was originally set at 30 days.   Another limitation of the study was that the responses to the survey questions regarding the frequency of ATCs' use of imagery, goal setting, and self-talk was grouped (e.g., 1-3, 4-6) rather than open ended. Therefore, the means of the actual frequency of the usage of each of the mental skills technique could not be calculated, only estimated. Finally, to date there has not been a reliable and valid self-efficacy survey used for ATCs. Thus the self-efficacy survey that was used in this study has not been used previously and therefore its validity

and reliability are unknown. In addition, there may be some common methods bias issues as the survey was a self-report measure.

5.6 FUTURE RESEARCH

Future research could examine whether or not ATCs want to be doing "sport psychology" in the athletic training room. While ATCs may be educated in, understand, believe in the importance of it, and have high self-efficacy in using mental skills techniques with injured athletes, do they want to be doing such things with injured athletes? Or do they feel that it is the role of the sport psychologist? Additional studies might investigate whether or not sport psychologists think ATCs should be facilitating mental skills techniques with injured athletes or if those patients should be referred. Continuing to research the educational opportunities of ATCs and what they are or are not learning in their athletic training programs will only help to strengthen ATCs' knowledge and confidence in using mental skills techniques with injured athletes. Another area of interest might be to examine if ATCs are educated in, believe in the importance of, and highly confident in using mental skills techniques with injured athletes, then why are they not using them? Furthermore, it might be interesting to see if ATCs' usage of mental skills techniques with injured athletes, ATCs' beliefs about the importance of mental skills training with injured athletes and ATCs' self-efficacy in using mental skills techniques with injured athletes differs based on the population ATCs are working with (eg. high school, collegiate, professional).

5.7 CONCLUSION

ATCs play an important and critical role in the well being of injured athletes. While ATCs are responsible for treating the physical aspects of injury, they must also understand the psychological aspects of injury as well. Therefore, ATCs must be confident in using mental

skills techniques with injured athlete in order to facilitate a holistic and successful rehabilitation. The results from this study revealed that ATCs are most confident in goal setting followed by self-talk, and then imagery. ATCs confident in one mental skill technique are more likely to be confident in using other mental skills technique. In addition, ATCs who use one mental skill technique are more likely to use other mental skills technique. Furthermore, ATCs who believed in the importance of using the mental skill technique with injured athletes were more likely to have higher self-efficacy in using the technique than those who did not believe in its importance. Furthermore, the greatest predictor of ATCs' self-efficacy in using the mental skill technique was their success using it and their education about the technique. Results from this study supported other research showing that many ATCs do not have sport psychologist on their sports medicine team and that many lack the ability to refer injured athletes to sport psychologists. Overall, this study showed that more research is necessary to understand and improve ATCs use of mental skills training with injured athletes.

APPENDICES

DEMOGRAPHICS QUESTIONNAIRE

Total number of years as an ATC _____

What NATA district do you work in?_____

How did you complete the athletic training program?
   a) Undergraduate curriculum
   b) Internship
   c) I do not wish to answer this question

Current primary place of employment
   a) University/college
   b) High school
   c) Clinic
   d) High school and clinic
   e) Professional team
   f) Industry
   g) Other _____
   h) I do not wish to answer this question

What is your current primary job description?
   a) Head Athletic Trainer
   b) Assistant/associate Athletic Trainer
   c) Director of sports medicine
   d) Graduate assistant
   e) Other _____
   f) I do not wish to answer this question

Have you taken a sport psychology course?
   a) Yes
   b) No
   c) I do not wish to answer this question

If you answered yes to the previous question when did you take this course?
   a) Undergraduate
   b) Graduate
   c) Both
   d) I do not wish to answer this question

Please circle all the following topics you learned in your sport psychology or psychology of injury course?
   a) Imagery

b) Goal setting
c) Positive self-talk
d) None of the above
e) I do not wish to answer this question

Have you taken a psychology of injury course?
a) Yes
b) No
c) I do not wish to answer this question

If you answered yes to the previous question when did you take this course?
a) Undergraduate
b) Graduate
c) Both
d) I do not wish to answer this question

Please circle all the following topics you learned in your psychology of injury course?
a) Imagery
b) Goal setting
c) Positive self-talk
d) None of the above
e) I do not wish to answer this question

If you have not taken a sport psychology course or psychology of injury course would you be interested in taking a sport psychology or psychology of injury course?
a) Yes
b) No
c) I do not wish to answer this question

Have you attended any of the following regarding sport psychology or the psychology of injury? Please circle all that apply.
a) Seminar
b) Workshop
c) Conference
d) Lecture Series
e) Other_____
f) I do not wish to answer this question

Does your place of employment have a sport psychologist as part of the sports medicine team?
a) Yes
b) No
c) I do not wish to answer this question

If you answered yes to the previous question, in what capacity is your sport psychologist employed? Please circle all that apply.

a) Full-time
b) Part-time
c) Grad-assistant
d) Paid
e) Unpaid
f) Other_____
g) I do not wish to answer this question

In your current place of employment, do you have the ability to refer athletes to any of the following? Please circle all that apply.
a) Sport Psychologist
b) Psychologist
c) Psychiatrist
d) I do not wish to answer this question

Sex Male_____   Female_____   Age_____

Race/ethnicity
a) White   b) Black or African American

c) Asian   d) American Indian or Alaska Native

e) Hispanic   f) Native Hawaiian or Other Pacific Islander

g) I do not wish to answer this question

Highest level of education
a) Bachelors
b) Masters
c) Doctorate
d) I do not wish to answer this question

SELF-EFFICACY SURVEY

1. How many times per week do you use the following techniques with injured athletes?

    **IMAGERY**
    0   1-3   4-6   7-9   10-12   13-15   16-18   19+

    I do not wish to answer this question

    **GOAL SETTING**
    0   1-3   4-6   7-9   10-12   13-15   16-18   19+

    I do not wish to answer this question

    **SELF-TALK**
    0   1-3   4-6   7-9   10-12   13-15   16-18   19+

    I do not wish to answer this question

2. How important do you think it is for injured athletes to engage in the following techniques during the rehabilitation process?

    **IMAGERY**
    1   2   3   4   5
    Not at all   **Extremely**
    Important   **Important**

    I do not wish to answer this question

    **GOAL SETTING**
    1   2   3   4   5
    Not at all   **Extremely**
    Important   **Important**

    I do not wish to answer this question

    **SELF-TALK**
    1   2   3   4   5

Not at all
Important

Extremely
Important

Not at all Important — Extremely Important

I do not wish to answer this question

3. How important do you think it is for ATCs to facilitate the use of the following techniques with injured athletes?

IMAGERY

1	2	3	4	5

Not at all
Important

Extremely
Important

I do not wish to answer this question

GOAL SETTING

1	2	3	4	5

Not at all
Important

Extremely
Important

I do not wish to answer this question

SELF-TALK

1	2	3	4	5

Not at all
Important

Extremely
Important

4. How confident are you that you could effectively use each of the following skills in general?

IMAGERY

1	2	3	4	5

Not at all
Confident

Completely
Confident

I do not wish to answer this question

GOAL SETTING

1	2	3	4	5

Not at all
Confident

Completely
Confident

I do not wish to answer this question

SELF-TALK

1	2	3	4	5
Not at all **Confident**				**Completely** **Confident**

I do not wish to answer this question

5. How confident are you that you could effectively employ each of the following skills with injured athletes to aid in rehabilitation?

IMAGERY

1	2	3	4	5
Not at all **Confident**				**Completely** **Confident**

I do not wish to answer this question

GOAL SETTING

1	2	3	4	5
Not at all **Confident**				**Completely** **Confident**

I do not wish to answer this question

SELF-TALK

1	2	3	4	5
Not at all **Confident**				**Completely** **Confident**

I do not wish to answer this question

6. How much have the following techniques influenced your level of confidence of using the following skills with injured athletes?

   A. IMAGERY
      a. *Observing others using imagery*

1	2	3	4	5
Not at all				**Completely**

I do not wish to answer this question

b. *Using imagery with athletes*

1	2	3	4	5
Not at all				**Completely**

I do not wish to answer this question

c. *Education about imagery*

1	2	3	4	5
Not at all				**Completely**

I do not wish to answer this question

d. *Having success with using imagery*

1	2	3	4	5
Not at all				**Completely**

I do not wish to answer this question

e. *Other:* _____

1	2	3	4	5
Not at all				**Completely**

I do not wish to answer this question

B. GOAL SETTING

a. *Observing others using goal setting*

1	2	3	4	5
Not at all				**Completely**

I do not wish to answer this question

b. *Using goal setting with athletes*

1	2	3	4	5
Not at all				**Completely**

I do not wish to answer this question

c. *Education about goal setting*

    1   2   3   4   5

Not at all   **Completely**

I do not wish to answer this question

d. *Having success with using goal setting*

    1   2   3   4   5

Not at all   **Completely**

I do not wish to answer this question

e. *Other:* _____

    1   2   3   4   5

Not at all   **Completely**

I do not wish to answer this question

C. SELF-TALK

a. *Observing others using self-talk*

    1   2   3   4   5

Not at all   **Completely**

I do not wish to answer this question

b. *Using self-talk with athletes*

    1   2   3   4   5

Not at all   **Completely**

I do not wish to answer this question

c. *Education about self-talk*

    1   2   3   4   5

Not at all   **Completely**

I do not wish to answer this question

d. *Having success with using self-talk*

    1   2   3   4   5

Not at all   **Completely**

I do not wish to answer this question

e. _Other:_ _____

1   2   3   4   5
Not at all   **Completely**

I do not wish to answer this question

LETTER TO SURVEY PARTICIPANTS

Dear Fellow Athletic Trainer,

Our names are Jessica Wallace and Alisha Fisher. We are graduate students at Michigan State University. We are writing to ask for your participation in a research study entitled, "Examining the Self-Efficacy of Certified Athletic Trainers in their Use of Mental Skills Techniques with Injured Athletes." This student survey is not approved or endorsed by the NATA, however, it is being sent to you because of the NATA's commitment to athletic training education and research.

The survey in the link below seeks to determine the self–efficacy of ATCs use of imagery, goal setting, and self-talk with injured athletes. Self-efficacy is defined as an individual's perception in his or her ability to successfully perform a specific task (Bandura, 1997). The survey consists of 20 demographic questions and 9 5-point scale questions, which will take about 10 minutes to complete. One thousand randomly selected certified NATA members with a listed email address are being asked to submit this questionnaire, but you have the right to choose not to participate. Participation is voluntary and you must be 18 years or older to participate in this research study. The current literature does not address the self-efficacy of ATCs, so while you will not directly benefit from participation in this study, your participation will enhance the understanding of the role of self-efficacy of ATCs.

The Michigan State University Institutional Review Board has approved this study for the Protection of Human Subjects. Your confidentiality will be protected. Any information gathered from this research will not be used to identify you in any way. Surveymonkey.com assigns a number to your response, so that no identity information will be linked to your questionnaire. Data will only be accessed by the primary researchers (Jessica Wallace and Alisha Fisher), three advisors at Michigan State University, and the Michigan State University Institutional Review Board. All data will be kept in an electronic password protected folder as well as a locked file cabinet. Data will be kept for seven years. You may withdraw from participation in this research study at anytime and you may also skip questions, all without penalty. There are no known risks inherent in participation of this research study.

If you have an questions or concerns about this research study, please contact us, Jessica Wallace and Alisha at Intramural Rec Sport-Circle, 308 W. Circle Drive, East Lansing, MI 48824, at (360) 927-9173, or at walla310@msu.edu, fishe226@msu.edu. If you have any questions about you role and right as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 207 Olds Hall, MSU, East Lansing, MI 48824.

Thank you in advance for your willingness to participate in this research in hopes of making advances in the profession. Please click on the link below to proceed to the survey. Doing so will indicate your voluntary agreement to participate in this research. Please complete the survey no late than October 10th , 2012.

Click to enter survey: https://www.surveymonkey.com/s/CDLHLD8

Sincerely,

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APPENDIX D

TABLES

Table D1

Race/Ethnicity Represented by Participants (N=128)

Race	Frequency	Percent
White	119	93%
Asian	2	1.6%
Hispanic	3	2.3%
I do not wish to answer	4	3.1%

Table D2

NATA Districts Represented by Participants (N=128)

NATA District	Frequency	Percent
Eastern Athletic Trainers' Association (D1)	9	7.0%
Eastern Athletic Trainers' Association (D2)	16	12.5%
Mid-Atlantic Athletic Trainers' Association (D3)	19	14.8%
Great Lakes Athletic Trainers' Association (D4)	27	21.1%
Mid America Athletic Trainers' Association (D5)	6	4.7%
Southwest Athletic Trainers' Association (D6)	13	10.2%
Rocky Mountain Athletic Trainers' Association (D7)	7	5.5%
Far West Athletic Trainers' Association (D8)	8	6.3%
Southeast Athletic Trainers' Association (D9)	12	9.3%
Northwest Athletic Trainers' Association (D10)	6	4.7%
I do not wish to answer	5	3.9%

Table D3

Education Level of Participants (N=128)

Education Level	Frequency	Percent
Bachelor's Degree	32	25.0%
Master's Degree	88	68.8%
Doctorate	8	6.2%

Table D4

Participants' Primary Place of Employment (N=128)

Employment	Frequency	Percent
University/College	39	30.5%
High School	32	25.0%
Clinic	20	15.6%
High School and Clinic	18	14.1%
Professional Team	8	6.3%
Other	11	8.5%

Table D5

Participants' Primary Job Description (N=128)

Job Description	Frequency	Percent
Head Athletic Trainer	56	43.7%
Assistant/Associate Athletic Trainer	33	25.8%
Director of Sports Medicine	11	8.6%
Graduate Assistant	1	0.8%
Other	27	21.1%

Table D6

Frequency of Participants' Use of Imagery, Goal Setting, and Self-talk with Injured Athletes per Week

Use per week	0	1-3	4-6	7-9	10-12	13-15	16-18	19+
Imagery	50%	30.4%	9.4%	3.9%	1.6%	1.6%	0.8%	2.3%
(N=128)	(64)	(39)	(12)	(5)	(2)	(2)	(1)	(3)
Goal Setting	8.5%	29.5%	24.8%	10.6%	7.8%	6.3%	1.6%	10.9%
(N=129)	(11)	(38)	(32)	(14)	(10)	(8)	(2)	(14)
Self-talk	41.0%	26.4%	19.4%	5.4%	3.1%	1.6%	0.8%	2.3%
(N=129)	(53)	(34)	(25)	(7)	(4)	(2)	(1)	(3)

Table D7

Frequency of Participant's Beliefs about the Importance of Injured Athletes Engaging in Imagery, Goal Setting, and Self-talk During Rehabilitation

Importance Level	1(Not at all important)	2	3	4	5 (Very Important)
Imagery	5.5%	27.6%	28.3%	24.4%	14.2%
(N=127	(7)	(35)	(36)	(31)	(18)
Goal Setting	0.0%	2.3%	6.2%	16.2%	75.3%
(N=130)	(0)	(3)	(8)	(21)	(98)
Self-talk	7.2%	11.1%	33.3%	32.5%	15.9%
(N=126)	(9)	(14)	(42)	(41)	(20)

Table D8

Means and Standard Deviations for Participants' Beliefs about the Importance of Injured Athletes Engaging in Imagery, Goal Setting, and Self-talk During Rehabilitation

Technique	*n*	*M (SD)*
Imagery	127	3.14 (1.139)
Goal Setting	130	4.65 (0.703)
Self-talk	126	3.39 (1.103)

Table D9

Frequency of Participants' Beliefs about the Importance of ATCs in Facilitating the Use of Imagery, Goal Setting, and Self-talk with Injured Athletes

Importance Level	1(Not at all important)	2	3	4	5 (Very Important)
Imagery	5.5%	29.1%	28.4%	26.0%	11.0%
(N=127)	(7)	(37)	(36)	(33)	(14)
Goal Setting	0.0%	3.2%	11.8%	22.8%	62.2%
(N=127)	(0)	(4)	(15)	(29)	(79)
Self-talk	5.6%	20.0%	32.8%	32.0%	9.6%
(N=125)	(7)	(25)	(41)	(40)	(12)

Table D10

Means and Standard Deviations for Participants' Beliefs about the Importance of ATCs in Facilitating the Use of Imagery, Goal Setting and Self-talk with Injured Athletes

Technique	*n*	*M (SD)*
Imagery	127	3.14 (1.139)
Goal Setting	130	4.65 (0.703)
Self-talk	125	3.39 (1.103)

Table D11

Frequency of Participants' General Confidence Level in their Ability to Effectively Use Imagery, Goal Setting, and Self-talk

Confidence Level	1 (Not at all Confident)	2	3	4	5 (Very Confident)
Imagery	12.3%	18.5%	20.0%	24.6%	24.6%
(N=130)	(16)	(24)	(26)	(32)	(32)
Goal Setting	1.5%	1.5%	8.5%	21.5%	66.9%
(N=130)	(2)	(2)	(11)	(28)	(87)
Self-talk	11.6%	17.2%	23.2%	24.0%	24.0%
(N=129)	(15)	(22)	(30)	(31)	(31)

Table D12

Means and Standard Deviations for Participants' General Confidence Level in their Ability to Effectively Use Imagery, Goal Setting, and Self-talk

Technique	n	M (SD)
Imagery	130	3.31 (1.352)
Goal Setting	130	4.51 (0.838)
Self-talk	129	3.32 (1.323)

Table D13

Frequency of Participants' Confidence Level in their Ability to Effectively Use Imagery, Goal Setting, and Self-talk with Injured Athletes

Confidence Level	1 (Not at all Confident)	2	3	4	5 (Very Confident)
Imagery	12.3%	23.1%	23.1%	22.3%	26.1%
(N=130)	(16)	(21)	(30)	(29)	(34)
Goal Setting	1.5%	3.9%	6.9%	18.5%	69.2%
(N=130)	(2)	(5)	(9)	(24)	(90)
Self-talk	10.8%	16.9%	22.3%	23.1%	26.2%
(N=130)	(14)	(22)	(29)	(30)	(34)

Table D14

Means and Standard Deviations for Participants' Confidence Level in their Ability to Effectively Use Imagery, Goal Setting, and Self-talk with Injured Athletes

Technique	*n*	*M (SD)*
Imagery	130	3.34 (1.350)
Goal Setting	130	4.50 (0.900)
Self-talk	129	3.37 (1.329)

Table D15

Frequency of Participants' Beliefs About Techniques that Influence Confidence Level in Using Imagery with Injured Athletes

Influence Level	1(Not at all)	2	3	4	5 (Completely)
Observing Others using Imagery	42.1%	15.1%	23.0%	14.3%	5.6%
(N=126)	(53)	(19)	(29)	(18)	(7)
Past Success using Imagery	28.1%	10.2%	26.6%	21.9%	13.3%
(N=128)	(36)	(13)	(34)	(28)	(17)
Personally using Imagery	26.8%	17.3%	19.7%	26.8%	9.4%
(N=127)	(34)	(22)	(25)	(34)	(12)
Education about Imagery	21.1%	11.7%	28.9%	25.8%	12.5%
(N=127)	(27)	(15)	(37)	(33)	(16)

Table D16

Means and Standard Deviations for Techniques that Influence Participants' Confidence Level in Using Imagery with Injured Athletes

Technique	*n*	*M (SD)*
Observing others using imagery	126	2.26 (1.29)
Past Success using imagery	128	2.75 (1.36)
Personally Using imagery	127	2.75 (1.36)
Education about imagery	128	2.97 (1.32)

Table D17

Frequency of Participants' Beliefs About Techniques that Influence Confidence Level in Using Goal Setting with Injured Athletes

Influence Level	1(Not at all)	2	3	4	5 (Completely)
Observing Others using Goal Setting	11.6%	9.3%	15.5%	31.8%	31.8%
(N=129)	(15)	(12)	(20)	(41)	(41)
Past Success using Goal Setting	3.1%	3.1%	9.3%	28.7%	55.8%
(N=129)	(4)	(4)	(13)	(37)	(72)
Personally using Goal Setting	3.1%	3.1%	9.2%	30.0%	54.6%
(N=130)	(4)	(4)	(12)	(39)	(71)
Education about Goal Setting	3.1%	6.3%	13.3%	27.3%	50.0%
(N=128)	(4)	(8)	(17)	(35)	(64)

Table D18

Means and Standard Deviations for Techniques that Influence Participants' Confidence Level in Using Goal Setting with Injured Athletes

Technique	*n*	*M (SD)*
Observing others using goal setting	129	3.63 (1.33)
Past Success using goal setting	129	4.31 (0.98)
Personally using goal setting	130	4.30 (0.98)
Education about goal setting	128	4.15 (1.07)

Table D19

Frequency of Participants' Beliefs About Techniques that Influence Confidence Level in Using Self-talk with Injured Athletes

Influence Level	1(Not at all)	2	3	4	5 (Completely)
Observing Others using Self-talk	33.1%	15.7%	29.1%	13.4%	8.7%
(N=127)	(42)	(20)	(37)	(17)	(11)
Past Success using Self-talk	30.7%	13.4%	19.7%	19.7%	16.5%
(N=127)	(39)	(17)	(25)	(25)	(21)
Personally using Self-talk	31.5%	9.4%	26.8%	18.1%	14.2%
(N=127)	(40)	(12)	(34)	(23)	(18)
Education about Self-talk	26.0%	15.7%	26.8%	15.0%	16.5%
(N=127)	(33)	(20)	(34)	(19)	(21)

Table D20

Means and Standard Deviations for Techniques that Influence Participants' Confidence Level in Using Self-talk with Injured Athletes

Technique	*n*	*M (SD)*
Observing others using Self-talk	127	2.49 (1.31)
Past Success using Self-talk	127	2.78 (1.48)
Personally using Self-talk	127	2.74 (1.43)
Education about Self-talk	127	2.80 (1.41)

Table D21

Follow Up Canonical Correlational Results for the Techniques/Sources of Self-efficacy

Variable	Function 1	Function 2	Function 3
Dependent Variables			
Self-efficacy in using imagery with injured athletes	.37	.85	-.37
Self-efficacy in using goal setting with injured athletes	.67	.45	.59
Self-efficacy in using self-talk with injured athletes	.88	.16	-.45
Predictor Variables			
Observing others using imagery	.11	.49	-.54
Using imagery	.25	.69	-.64
Education about imagery	.30	.56	-.46
Success using imagery	.25	.68	-.58
Observing others using goal setting	.13	.38	.11
Using goal setting	.63	.46	.44
Education about goal setting	.68	.43	.41
Success using goal setting	.70	.46	.47
Observing others using self-talk	.50	.15	-.58
Using self-talk	.65	.08	-.65
Education about self-talk	.68	.10	-.54
Success using self-talk	.75	.02	-.61

Table D22

Correlational Analysis for the Self-efficacy and Weekly Use of Imagery, Goal Setting and Self-talk

	1	2	3	4	5	6
Self-efficacy of using imagery with injured athletes	1.00					
Self-efficacy of using goal setting with injured athletes	.448**	1.00				
Self-efficacy of using self-talk with injured athletes	.650**	.440**	1.00			
Weekly use of imagery	.425**	.135	.315**	1.00		
Weekly use of goal setting	.323**	.335**	.233**	.525**	1.00	
Weekly use of self-talk	.340**	.176*	.429**	.734**	.591**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table D23

Follow Up Canonical Correlational Results for the Importance of Imagery, Goal Setting, and Self-talk

Variable	Function 1	Function 2	Function 3
Dependent Variables			
Self-efficacy in using imagery with injured athletes	.10	-.31	.95
Self-efficacy in using goal setting with injured athletes	.88	-.41	.24
Self-efficacy in using self-talk with injured athletes	48	.42	.77
Predictor Variables			
ATCs' beliefs about the importance of facilitating imagery with injured athletes	.10	.01	.99
ATCs' beliefs about the importance of facilitating goal setting with injured athletes	.90	-.31	.31
ATCs' beliefs about the importance of facilitating self-talk with injured athletes	.50	.65	.57

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