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NCAA Division I Athletic Trainers' Perceptions and Use of Psychological Skills during Injury Rehabilitation

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To the Graduate Council:

I am submitting herewith a thesis written by Mary Kathleen Estepp entitled "NCAA Division I Athletic Trainers' Perceptions and Use of Psychological Skills during Injury Rehabilitation." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Kinesiology.

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Abstract

Applied sport psychology research suggests that the use of psychological skills (e.g., positive self-talk, goal-setting, relaxation) during the rehabilitation process increase recovery rates, increase adherence to rehabilitation, and decrease anxiety and stress (Heaney, 2006). Certified athletic trainers (ATCs) hold a critical role within injury rehabilitation as the primary health care professional who interacts with injured athletes. Therefore, properly trained, ATCs have been identified as the ideal professional to implement psychological skills during injury rehabilitation (Larson, Starkey, & Zaichkowsky, 1996). The purpose of this study was to explore National Collegiate Athletic Association (NCAA) Division I (D-I) ATCs use of psychological skills and perceptions of qualifications to implement psychological skills with athletes during rehabilitation. Results revealed that participants reported using goal-setting, communication, and time management most frequently with athletes. Results of a stepwise multiple regression analysis revealed that participants confidence in their ability to effectively demonstrate psychological skills significantly predicted their use of psychological skills, along with perceptions of the effectiveness of psychological skills and previous level of training in sport psychology. Lastly, participants perceived psychologists to be the most qualified professional to implement psychological skills with injured athletes. Implications for ATCs and sport psychology professionals are education. This includes ATCs educational requirements to be more detailed and clear for athletic training students as well as education by sport psychology consultants to help other professional better understand their role in the overall sport team.

Table of Contents

List of Tables

Chapter 1

Introduction

It is the biggest game of the year for college athletics, the National Championship. It has been a close, competitive match up through the entire game. With just minutes left the most influential athlete goes down yelling in pain and grabbing her knee. The crowd may think, "That's a shame", but how many people think about what lies ahead for that injured athlete? Surgery, rehabilitation, treatment, and everyday challenges along with the mental side of coping with the injury are rarely thought about by those watching the event.

I am a certified and licensed athletic trainer working towards my Master's degree in Sport Psychology and Motor Behavior. Therefore, when I see an athlete get injured, the challenges ahead are some of the first things I think about. I was a student-athlete myself at the NCAA Division III level. During my play career I sustained a major back injury that required surgery and took me out the game I loved. For the first time in my life, I experienced the challenges of injury and rehabilitation from the athlete's prospective. This period of my life was both trying and rewarding. It shaped my professional philosophy, which is centered on a holistic approach to injury rehabilitation. I cannot facilitate the healing of an ankle, knee, or shoulder without considering all aspects of an athlete's life (e.g. emotion and mental). I believe that the emphasis on rehabilitation is physical particularly at the National Collegiate Athletic Association (NCAA) Division I (D-I) level sometimes leads ATCs and Athletic Programs to overlook the importance of the athlete's emotional and mental health. Consequently, I decided to pursue a Master's degree in Sport Psychology and Motor Behavior to increase my capabilities as an ATC and provide more comprehensive care. My philosophy is also what drove me to address the topic of this thesis. My some of my thesis questions include: Do certified athletic trainers (ATCs)

implement psychological skills while working with injured athletes? Do ATCs feel properly educated and trained to implement psychological skills? Who do ATCs feel is the best person to implement psychological skills? In this chapter, I provide (a) a brief review of literature; (b) statement of the problem; (c) purpose of the proposed study; (d) limitations; (e) delimitations; and (f) definitions.

Brief Review of Selected Literature

Athletes are typically thought of as strong, competitive, and relentless. So, when an athlete gets injured the struggles and challenges ahead are sometimes overlooked. "Applied sport psychology is concerned with the psychological factors that influence participation and performance in sport and exercise, the psychological effects derived from participation, and theories and interventions that can be used to enhance performance, participation, and personal growth" (Williams & Straub, 2010, p. 1). Applied sport psychology research suggests that the use of psychological skills (e.g., positive self-talk, goal-setting, relaxation) during the rehabilitation process increase recovery rates, increase adherence to rehabilitation, and decrease anxiety and stress (Heaney, 2006). ATCs hold a critical role within injury rehabilitation as the primary health care professional who interacts with injured athletes the most. Therefore, with proper training, athletic trainers have been identified as the ideal professional to implement psychological skills during injury rehabilitation (Larson, Starkey, & Zaichkowsky, 1996).

Larson and colleagues (1996) explored certified athletic trainers' perceptions, attitudes, and application of psychological strategies during injury rehabilitation. Out of the 482 athletic trainers surveyed, nearly half (47%) recognized the need to rehabilitate the athlete both physiologically and psychologically. In addition, 90 percent of athletic trainers surveyed stated that treating the psychological aspect of athletic injuries was "relatively important" or "very

important". The most frequently encountered conditions during injury rehabilitation were stress and anxiety. Athletic trainers also reported neglecting to use specific psychological strategies to address these conditions. These findings suggest that athletic trainers recognize the importance of addressing the psychological aspects of injury rehabilitation, but also that they may not feel adequately trained to use specific strategies to address these concerns.

Research examining athletic trainers' personal experiences using psychological skills during rehabilitation is limited. Wiese, Weiss, and Yukelson (1991) surveyed 115 athletic trainers at a large regional meeting about their attitudes and beliefs concerning the application of psychological strategies in injury rehabilitation. The athletic trainers rated nine techniques as "important" to "very important" in facilitating successful coping with injury. Interpersonal communication skills, positive reinforcement, coach support, keeping the athlete involved with the team, having a realistic timeline for recovery, a focus on short-term goals, encouraging positive self-talk, helping athletes understand rehabilitation strategy, and providing variety in rehabilitation activities. Athletic trainers also rated knowledge of the following psychological strategies as "important" to "very important:" Using a positive communication style, setting realistic goals, encouraging positive self-talk, understanding motivation, enhancing self-confidence, understanding stress/anxiety, and reducing depression. Relaxation techniques and imagery/visualization, as well as knowledge of those skills, was rated by athletic trainers as having much lower importance than the skills mentioned above. This is interesting because one potential way to explain these responses could be that the athletic trainers did not feel qualified to implement relaxation and imagery/visualization. Imagery and visualization are different psychological skills that Wiese, Weiss, and Yukelson (1991) combined in their survey. This may have led to different answers if imagery and visualization would not have been combined.

Imagery is creating or re-creating an experience in one's mind using all the senses (Vealey & Greenleaf, 2010). "Visualization refers to the systematic use of mental imagery in order to rehearse physical actions" (Moran, 2012, p 127)

Some of these findings have been replicated in a study of physiotherapists in the United Kingdom (UK). Physiotherapists are health care professionals who specialize in maximizing movement and function. Since 2005, to practice physiotherapy in the United Kingdom they must have a certificate to practice. To obtain a certificate to practice the physiotherapist must have a Bachelor of Science degree in physiotherapy (Hodgson, 2013). Physiotherapists indicated that goal-setting, creating variety in rehabilitation, and self-talk were strategies that they used the most (Hemming & Povey, 2012). The strategies that physiotherapists reported using the least were imagery and relaxation (Hemming & Povey, 2002). This indicates that physiotherapists and athletic trainers may be more comfortable implementing some techniques (e.g., goal-setting) compared to others (e.g., relaxation). Arvinen-Barrow, Penny, Hemmings, and Corr (2010) interviewed seven physiotherapists working in the U.K. about their personal experiences with using psychological strategies during rehabilitation. Results revealed that physiotherapists felt comfortable using goal-setting and encouraging social support; however, they lacked experience and knowledge with respect to helping patients use other psychological skills (e.g., imagery, relaxation, and self-talk). Although physiotherapists demonstrated an understanding of the emotional processes athletes tend to experience during rehabilitation, they explicitly reported a lack of formal training in sport psychology skills and strategies. This finding was similar to previous research (Moulton, Molstad, & Turner, 1997) that surveyed 14 athletic trainers and found that although athletic trainers viewed their role as including educator and counseling, only 36 percent felt that they were adequately trained in counseling techniques.

Zizzi, Blom, Watson, Downey, and Geer (2009) surveyed 54 certified athletic trainers who were members of the National Athletic Trainers Association (NATA), 64 NCAA college coaches, and 50 licensed psychologist who were members of the American Psychological Association (APA) about their perceptions and use of psychological skills training. Overall, participants perceived certified athletic trainers and physical therapists to be the least qualified professionals to teach psychological skills as compared to coaches, sport psychology consultants and licensed psychologists. On a scale from 1 (*never*) to 7 (*always*), certified athletic trainers reported using goal-setting (M = 5.74; SD = 1.25) and communication skills (M = 5.68; SD = 1.36) most frequently. Athletic trainers also perceived they had more training and confidence in using goal-setting and communication skills compared to all other psychological skills (e.g., imagery, energy management, self-talk). Imagery, cognitive restructuring, energy management, and hypnosis were perceived by all groups to require the most training. Although results from this study provide insight into athletic trainers' perceived qualifications and use of psychological skills, the sample size is rather small. Furthermore, the study did not specify the type of environment athletic trainers worked in. Given the prevalence of athletic trainers at the NCAA D-I level, and the prominent role they hold within athletics, it would be useful to explore athletic trainers' use of psychological skills during rehabilitation at the NCAA D-I level.

Winning is extremely important at the NCAA D-I level and those within athletic departments may feel the pressure to do whatever it takes to deliver successful performances and results. Therefore, it would be useful to explore if athletic trainers at the NCAA D-I level use psychological skills to help injured athletes return to their sport participation because of the added pressure for athletes to return quickly. Previous research has been limited when investigating NCAA D-I athletic trainers use of psychological skills. For example, Wrisberg,

Withycombe, Simpson, Loberg, & Reed, 2012 found that athletic departments hire a variety of support staff (e.g., certified athletic trainers, strength and conditioning coaches, team physicians), only 96 (36%) of 256 surveyed NCAA D-I administrators reported having a sport psychology consultant available at their institution.

Because the majority of athletic trainers at NCAA D-I institutions do not have a sport psychology consultant readily available, they may feel that addressing the psychological aspect of injury and rehabilitation is their responsibility. This perception may be magnified by the fact that certification requirements include the completion of one course related to sport psychology. The Commission on Accreditation of Athletic Training (CAATE) has set standards for athletic training students to have one class in psychological interventions; however, there are no requirements related to experience and skills in implementing these interventions (Hamson-Utley, Martin, & Walters, 2008). Researchers have not yet explored the implementation of psychological skills by NCAA D-I athletic trainers, nor have they examined the perceptions of athletic trainers effectiveness of psychological skills, and who might the best professionals to implement such interventions.

Statement of the Problem

Previous research indicates that athletic trainers believe the implementation of sport psychology strategies is important during injury rehabilitation and also that some strategies are in limited use (Wiese, Weiss, & Yukelson, 1991). However, not all athletic trainers feel they are trained to implement psychological skills. Therefore, several questions remain regarding the use of psychological interventions in athletic training:

- What is the frequency of which athletic trainers use the defined skills with athletes during injury rehabilitation?

- What is the relationship between previous training in sport psychology and athletic trainers' use of psychological skills?
- What is the relationship between athletic trainers' familiarity with psychological skills and how often they use psychological skills with athletes during rehabilitation?
- What is the relationship between athletic trainers' perceptions of the effectiveness of mental skills and how often they use psychological skills with athletes during rehabilitation?
- What are ATCs perceptions of how confident they are that they could effectively use psychological skills with athletes?
- What is the relationship between athletic trainers' perceptions of familiarity with mental skills and their confidence in effectively using psychological skills with athletes?
- What is the relationship between previous training in sport psychology and athletic trainers' perceptions of how qualified they are at using psychological skills with athletes during injury rehabilitation?
- What factors predict frequency of use of psychological skills?
- Who do athletic trainers perceive as most qualified to utilize various psychological skills during injury rehabilitation?

Purpose of the Proposed Study

The purpose of this study was to determine the following:

- What is the frequency of which athletic trainers use the defined skills with athletes during injury rehabilitation?

- What is the relationship between previous training in sport psychology and athletic trainers' use of psychological skills?
- What is the relationship between athletic trainers' familiarity with psychological skills and how often they use psychological skills with athletes during rehabilitation?
- What is the relationship between athletic trainers' perceptions of the effectiveness of mental skills and how often they use psychological skills with athletes during rehabilitation?
- What are ATCs perceptions of how confident they are that they could effectively use psychological skills with athletes?
- What is the relationship between athletic trainers' perceptions of familiarity with mental skills and their confidence in effectively using psychological skills with athletes?
- What is the relationship between previous training in sport psychology and athletic trainers' perceptions of how qualified they are at using psychological skills with athletes during injury rehabilitation?
- What factors predict frequency of use of psychological skills?
- Who do athletic trainers perceive as most qualified to utilize various psychological skills during injury rehabilitation?

Limitations

1) This study will only included certified athletic trainers who work full-time at NCAA D-I institutions. Therefore, results may not generalize to all athletic trainers (e.g., graduate

assistants, part-time, students, those not certified) at all levels of competition (e.g., high school, youth, Olympic, professional, or other collegiate levels).

2) Only NCAA D-I athletic trainers that choose to complete the web based survey will be participants in this study. There may be a difference in perception and opinion between NCAA D-I athletic trainers that choose to respond and those that do not respond.

Delimitations

1) Only full-time athletic training staff members at NCAA D-I institutions will be recruited for participation in this study. Therefore, athletic trainers who are graduate assistants, interns, and student athletic trainers will not be included in this study.

2) Only NCAA D-I athletic trainers that are NATA-BOC certified and licensed in their state will participate in this study.

Definitions

Athletic Trainer- Typically works with a specific sports team to provide acute and long-term care for athletic injuries. Generally assumes the responsibility for overseeing the total health care for the athlete and designs and monitors rehabilitation programs (Zizzi et al., 2009)

Athletic Training Certification- To be a certified athletic trainer, one must graduate with a bachelors or master's degree from an accredited athletic training program and then must pass a comprehensive test administered by the Board of Certification. Once certified the athletic trainer must meet the continue education requirements (www.nata.org/about)

Attention and Concentration Control (focusing)- The ability to keep appropriate focus on the task at hand and shift focus based on performance demands. Attention has two main dimensions; breath and direction of focus (Nideffer, 1976).

BOC- The Board of Certification is the board that administers the certification test to those individuals that have graduated with a bachelors or masters from an accredited institution (NATA, 2013)

Coach- the organizational leader of a specific sports team. Often manages team affairs (travel, recruiting, scheduling) in addition to having a primary role as a teacher of sport-specific skills and strategy (Zizzi et al., 2009).

Communication Skills- Communication helps individuals' develop and maintain self-concepts by bonding individuals with the environment. It helps individuals regulate their own behaviors and sometimes others behaviors (Dance & Larson, 1976). Communication is transmitting and exchanging thoughts, feeling, knowledge, and information. Communication is the process of sending, receiving and interpreting messages through our senses (Yukelson, 2010). Communication is used to help improve interactions within the sport setting (e.g., athlete-athlete, athlete-coach, athlete-athletic trainer).

Goal-Setting- focused on attaining a specific standard or proficiency on a task (Locke, Shaw, Saari, & Latham, 1981). Goal-setting is commonly used to enhance motivation and for focusing attention on aspects of performance that need improvement (Gould, 2010).

Imagery – mental practice with the absence of physical movement while using cognitive rehearsal (Driskell, Copper, Moran, 1994). Creating or re-creating an experience or event in one's mind using all the senses (Vealey & Greenleaf, 2010).

NATA- National Athletic Trainers' Association is a professional membership association that regulates the mission, bylaws, and code of ethics for athletic trainers (NATA, 2013).

Performance Enhancement Consultant – professionals that provide mental skills training to athletes trained in sport psychology and are not licensed psychologists or counselors. Also

known as sport psychology consultants or mental coaches. Provides individual or group consultations geared towards performance-related issues (Wrisberg, Withycombe, Simpson, Loberg, & Reed, 2010; Zizzi & Watson, 2004).

Physical Therapist- typically works in a sports medicine or hospital clinic to provide acute and long-term care for a variety of sport and work-related injuries. Designs and monitors rehabilitation programs (Zizzi et al., 2009).

Psychologist- trained in clinical or counseling psychology to provide individual or group therapy relative to a broad range of behavioral and emotional issues. Typically work in a public clinic or private practice (Zizzi et al., 2009).

Relaxation and Energy Management- "a technique that is used when muscle tension exceeds that which is necessary for optimal performance" (Zaichkowsky & Takenaka, 1993). Jacobson (1929) believed that it would be impossible for an athlete to experience tension or nervousness if muscles are in a relaxed state. He developed a technique that is still widely used today called progressive muscle relaxation (PMR). Energy management is used to help individuals who experience a level of arousal not optimal for performance (too high or too low) (Zizzi et al., 2009).

Self- Talk- anytime an internal dialogue is carried on a person is practicing self-talk; this could be reinforcing a feeling or perception or giving instructions to oneself (Hackfort & Schwenkmezger, 1993).

Time Management- the ability to plan and maintain one's regular schedule in a way that avoids confusion, conflict and undue stress (Zizzi & Watson, 2004).

In the next chapter, I will review literature including: (a) response to injury; (b) cognitive-behavioral approach to understanding response to injury; (c) psychological strategies in rehabilitation; and (d) certified athletic trainers' role in injury rehabilitation.

Chapter 2

Review of Literature

National Collegiate Athletic Association (NCAA) Division I (D-I) athletics are constantly in the spotlight and student-athletes are surrounded with pressures to win. Not only do sports require a high level of physical skills but also a high level of psychological skills (Ivarsson & Johnson, 2010). Rarely do people associate the term "athlete" with sport injury. However, there were 24 million sport injuries in the United Kingdom in 1994 alone (Armatas, Chondrou, Yiannakos, Galazoulas, & Velkopoulos, 2007). In the United States it has been estimated that between 3 million and 17 million individuals are injured each year in sport and recreation related incidents (Pargman, 2007). In this chapter, I review literature including: (a) response to injury; (b) cognitive-behavioral approach to understanding response to injury; (c) psychological strategies in rehabilitation; and (d) certified athletic trainers' role in injury rehabilitation.

Response to Injury

Injury is obviously a physical event. However, research suggests that injury is also a psychological event (Podlog, Dimmock, & Miller, 2011). Post-injury psychological responses can affect how the course of rehabilitation will flow and work (Wiese-Bjornstal, 2010). Furthermore, Morrey, Stuart, Smith, and Wiese-Bjornstal (1999) state that "the issue of recovery is important because some athletes are physically healed and ready to return to sport yet are not mentally prepared to return to competition" (p. 63).

Cognitive-Behavioral Approach to Understanding Response to Injury

The cognitive-behavioral model is a framework used to understand the psychological response to sport injury. This model identifies three main types of responses to injury: cognitive, emotional, and behavioral (Mensch & Miller, 2008). Overall, athletes' cognitive appraisals

influence their emotional responses, which, in turn, influence their behavioral responses. Therefore, it is important to understand the thoughts, emotions, and behaviors an athlete may experience immediately post-injury and throughout the process of rehabilitation.

Athletes respond to injury in different ways and their cognitive appraisals can vary post-injury. What athletes think about, or appraise, following an injury often relates to the perceived cause of the injury, recovery status, loss (e.g., loss of status, playing position), and ability to cope with the injury. Examples of cognitions following an injury may include optimistic or pessimistic beliefs, pressure to return to sport, identity loss, self-perceptions (e.g., self-confidence, self-esteem, self-efficacy), and pain perception (Wiese-Bjornstal, 2010). It is important to understand athletes' cognitive appraisals immediately post-injury and throughout rehabilitation. Athletes who perceived that they did not have the resources to cope effectively with the injury have been found to experience higher mood disturbances and have lower adherence to rehabilitation compared to athletes who perceive they have the resources to cope effectively with injury (Daly, Brewer, Van Raalte, Petitpas, & Sklar, 1995).

Because cognitive appraisals vary, athletes may feel a wide range of positive (e.g., optimism) and negative (e.g., anger) emotions and these emotions can fluctuate throughout the injury and rehabilitation process (Mensch & Miller, 2008; Rock & Jones, 2002). Common emotional responses such as depression, anxiety, low vigor, grief, fatigue, anger, and even relief or a sense of escape from pressure have been reported by athletes post-injury (Wiese-Bjornstal, 2010).

Behavioral responses post-injury refer to coping mechanisms athletes use and their adherence to rehabilitation. As with emotions, behaviors can be varied and fluctuate between both positive and negative behaviors (Mensch & Miller, 2008). Examples of an athletes'

behavior may include his or her return to sport apprehension, re-injury fears, and rehabilitation adherence (Mensch & Miller, 2008). Positive behaviors may include rehab adherence, compliance, and asking questions to better understand the injury and rehabilitation process whereas negative behaviors may include malingering, risky behavior, substance use, suicidal behaviors, or exercise dependence (Wiese-Bjornstal, 2010).

Overall, cognitions, emotions, and behaviors fluctuate throughout the rehabilitation process and it is useful to understand the differences between athletes who cope well and those who do not cope well with injury rehabilitation and return to sport. Larson, Starkey, and Zaichkowsky (1996) found that athletes who coped effectively with injury tended to have a more positive attitude overall, were more adherent and compliant with rehabilitation and treatment, were more motivated and dedicated, set goals, and asked more questions. Conversely, athletes who tended to not cope effectively with injury were described as those who withdrew, blamed others, did not comply with rehabilitation, had no motivation, and displayed anger (Larson et al., 1996). Podlog, Dimmock, and Miller (2011) found that athletes experienced anxieties associated with re-injury, concerns about an inability to perform to pre-injury standards, feelings of isolation, a lack of athletic identity, insufficient social support, pressures to return to sport, and self-presentational concerns about the prospect of appearing unfit or lacking in skills in relation to competitors, all of which may contribute to athletes not coping well with injury and rehabilitation.

Variables such as life stress, motivation, and social support can impact an injured athlete's rehabilitation progress, the athlete's return to sport, and an athlete's well-being (Podlog, Dimmock, & Miller, 2011). "Researchers and practitioners have argued that in order to ensure holistic injury recovery, both the physical and psychological aspects of injury need to be

addressed" (p. 36). Understanding the various responses to injury is the first step toward providing holistic care. Literature suggests that whoever is working with the injured athlete needs to do seven very important things: address re-injury anxieties, build confidence in performance capabilities, minimize the influence of self-presentational concerns, provide various forms of social support, ensure athletes' stay involved with sport, reduce return to sport pressure, and foster feelings of personal autonomy (Podlog et al., 2011). Furthermore, the psychological response to injury influences an athlete's physiological response. For example, feelings of anxiety are often accompanied with muscle tension, sweating, increased heart rate, throat constriction, and gastrointestinal dysfunction. Therefore, managing psychological responses to injury (e.g., anxiety) can influence physiological responses associated with healing (e.g., muscle relaxation) (Monsma, Mensch, & Farroll, 2009). Strategies for helping athletes cope more effectively with injury and rehabilitation is the second important step in providing holistic care with athletes during injury and rehabilitation.

Psychological Strategies in Rehabilitation

Research suggests that during an injured athlete's rehabilitation psychological skills are essential (Hamson-Utley, Martin, & Walters, 2008, p. 259). For example, psychological skills such as goal-setting, imagery, positive thinking, self-talk, and relaxation can enhance psychological well-being and the process of rehabilitation (Rock & Jones, 2002).

Cognitive behavioral strategies have been successful in transforming an athlete's negative thoughts, emotions, and behaviors into more productive thoughts, emotions, and behaviors that facilitate rehabilitation. For example, Perna, Antoni, Baum, Gordon, and Schneiderman (2003) implemented a cognitive behavioral stress management (CBSM) intervention with uninjured athletes. Within their study, athletes either participated in the CBSM group (18 athletes) or the

control group (16 athletes). The CBSM intervention consisted of progressive muscle relaxation, diaphragmatic breathing, emotional imagery, cognitive restructuring, and visual motor behavioral rehearsal. This group met twice a week for 35 to 40 minutes each session, for a total of seven sessions. The control group received one two-hour stress management education session and this session was informational except for one brief relaxation exercise. Results revealed that the CBSM group had significantly fewer office visits, fewer days out due to injury, and reduced pain and anxiety. The CBSM group also had half the number of health service visits compared to the control group.

Research has found relaxation, self-talk, goal-setting, and social support strategies to facilitate rehabilitation adherence and increase the rate of the healing process (Wiese-Bjornstal, 2010). In addition, stress hormones increase when negative stress is experienced, which may extend the time frame for injury and illness (Perna, Antoni, Baum, Gordon, & Schneiderman, 2003). One thing to consider when reviewing this study is that non-injured athletes were used, injured athletes may respond to the CBSM differently. Therefore, the strategies mentioned above may help athletes' stress levels and facilitate optimal healing. This study should be repeated with injured athletes instead of non-injured athletes.

Imagery and goal-setting are two psychological skills that have been found to assist in injury recovery and return to sport (Theodorakis, Beneca, Malliou, & Goudas, 1997). Imagery has been found to enhance mental toughness, increase self-efficacy, manage the experience of stress and pain, and increase adherence to injury rehabilitation (Driediger, Hall, & Callow, 2006). Interestingly, Driediger and colleagues (2006) also found that athletes reported using negative imagery (e.g., being out of shape, not performing well at practice, making simple errors) to enhance motivation during rehabilitation. The available literature clearly reveals a

psychological component to injury and rehabilitation. It is also clear that the use of psychological skills positively influence injury rehabilitation. In addition to the literature just reviewed, it is important to understand athletic trainers' perceptions, especially given that when appropriately trained the athletic trainer is the professional in the best position to handle the psychological aspects of athletic injuries and rehabilitation (Larson, et al., 1996).

Certified Athletic Trainers' Role in Injury Rehabilitation

The certified athletic trainer is the person who is in charge of ensuring that all phases of health care are met for athletes in the athletic environment (Mensch & Miller, 2008). Due to psychological factors becoming more recognized in sports medicine, athletic trainers should consider the psychological and physiological aspects to recovery for the athlete (Rock & Jones, 2002; Heaney, 2006). Research by Moulton, Molstad, and Turner (1997) suggest that all 14 athletic trainers surveyed believed their role went farther than athletic injuries and included counseling roles. What counseling roles entailed in the survey was not clear but it is interesting that athletic trainers felt their role went outside of athletic training and into another licensed professional role. Zizzi, Blom, Watson, Downey, and Geer (2009) surveyed 54 athletic trainers, 64 coaches, and 50 licensed psychologists and found that athletic trainers felt they were more qualified to teach sport psychology techniques compared to how other professionals (e.g., coaches and psychologists) perceived them. Due to the fact that having a full-time sport psychologist or sport psychology consultant is rare at most universities, athletic trainers are often expected to address the psychological aspect of injury and rehabilitation (Larson et al., 1996; Moulton et al., 1997;).

Wiese, Weiss, and Yukelson (1991) distributed a survey to 115 individuals at a regional athletic trainers' meeting regarding the use of sport psychology in the training room. Overall,

athletic trainers reported that psychological skills and strategies are important during injury rehabilitation. The athletic trainers rated nine techniques as "important" to "very important" in facilitating successful coping with injury: Interpersonal communication skills, positive reinforcement, coach support, keeping the athlete involved with the team, having a realistic timeline for recovery, a focus on short-term goals, encouraging positive self-talk, athletes' understanding of the strategy for rehabilitation, and providing variety in rehabilitation activities. Athletic trainers also rated knowledge of the following psychological strategies as "important" to "very important:" Using a positive communication style, setting realistic goals, encouraging positive self-talk, understanding motivation, enhancing self-confidence, understanding stress/anxiety, and reducing depression. Results also revealed that athletic trainers ranked the use of concentration development, relaxation, and imagery as having lower importance than other techniques (e.g., using positive communication, realistic goal- setting, positive self-talk). These results could be explained by the fact that participants came from several different places of employment (high schools, colleges, universities, clinics, private settings, 2-year colleges) were different psychological skills are implemented.

Larson and colleagues (1996) explored certified athletic trainers' perceptions, attitudes, and application of psychological strategies during injury rehabilitation. Participants were randomly selected from the NATA membership database which means were employed in a number of settings including; high schools, clinics, colleges/universities, professional sports, and amateur sports. Out of the 482 athletic trainers surveyed, nearly half (47%) recognized the need to rehabilitate the athlete both physiologically and psychologically. In addition, 90 percent of athletic trainers surveyed stated that treating the psychological aspect of athletic injuries was "relatively important" or "very important". The most frequently encountered conditions during

injury rehabilitation were stress and anxiety; however, athletic trainers also reported not using specific psychological strategies to address these conditions. Although specific psychological strategies were not used for specific conditions, athletic trainers did report using the following five strategies during injury and rehabilitation: Short-term goals, keeping athletes involved with their teammates, variation to rehabilitation, encouraging positive self-thinking, and encouraging effective communication skills.

Research examining athletic trainers' personal experiences with using psychological skills during rehabilitation is limited within the United States. Some of these findings have been replicated, more recently, with physiotherapists from the United Kingdom (UK). Physiotherapists indicated that the use of goal-setting, creating variety in rehabilitation, and self-talk are the strategies that are most used (Arvinen-Barrow et al., 2010; Hemming & Povey, 2012). The strategies that physiotherapist reported using the least were imagery and relaxation (Arvinen-Barrow et al., 2010; Hemming & Povey, 2002). This indicates that physiotherapists and athletic trainers may be more comfortable implementing some techniques more than others. Arvinen-Barrow, Penny, Hemmings, and Corr (2010) interviewed seven physiotherapists working in the U.K. about their personal experiences using psychological strategies during rehabilitation. Results revealed that physiotherapists felt comfortable using goal-setting and encouraging social support; however, they lacked experiences and knowledge with other psychological skills (e.g., imagery, relaxation, and self-talk). Although physiotherapists demonstrated an understanding of the emotional processes athletes tend to experience during rehabilitation, they explicitly reported a lack of formal training in sport psychology skills and strategies. Physiotherapists and athletic trainers are health care professionals who specialize in maximizing movement and function. Physiotherapists are more closely related to physical

therapist because they do not specialize in athletic injuries like athletic trainers do. To practice both athletic training and psychotherapy the practitioner must have a certificate to practice. To obtain a certificate to practice the physiotherapist must have a Bachelor of Science degree in physiotherapy while athletic trainers must have a Bachelor of Science of Masters of Science in Athletic Training (Hodgson, 2013).

Taken together, these findings suggest that individuals in the regular contact with the injured athlete such as the athletic trainers or physiotherapist recognize the importance of, as well as the need to address, the psychological aspect of injury rehabilitation. In addition, it appears that athletic trainers may value some psychological skills (e.g., goal-setting) more than others (e.g., relaxation). Although stress and anxiety were the conditions most frequently encountered, athletic trainers did not report using specific strategies to address these conditions. Interestingly, the most frequently encountered conditions (e.g. stress and anxiety) are conditions in which strategies such as relaxation and imagery would be useful; however, there were two of the lower valued skills. It is possible that the value placed on some psychological skills may be related to athletic trainers' perceptions of their own preparation in using these skills. For instance, athletic trainers may lack formal training and may not feel adequately trained to use some specific strategies (e.g., relaxation and imagery) to address specific psychological concerns (e.g., stress and anxiety).

Heaney (2006) identified three main barriers that keep athletic trainers from using psychological skills to assist athletes in injury rehabilitation: lack of knowledge about sport psychology and mental skills training, not having access to sport psychology consultants and services, and the stigma that is associated with sport psychology. Of the 14 certified athletic trainers that completed Moulton and colleagues' (1997) questionnaire only five of them (36%)

felt properly trained through their NATA-BOC certification to counsel athletes and teach them psychological skills. Because certified athletic trainers may not feel comfortable with integrating some psychological strategies during injury and rehabilitation, it is important to look closely at their perceived and actual level of training in this area.

To prepare athletic training students for certification and the demands of being a competent professional, the U.S. Commission on Accreditation of Athletic Training Education (CAATE) has set standards that must be addressed within academic programs. Out of the 191 different competencies in athletic training, 12 (6%) address the psychological aspect of athletic injury (Larson et al., 1996). While CAATE has set standards for athletic training students to have one course in psychological interventions, there are no requirements for what type of course it is or that it includes implementing the psychological skills (Hamson-Utley et al., 2008). Of the 482 ATCs surveyed, only 261 had taken a formal course in sport psychology (Larson et al., 1996). Hamson-Utley and colleagues (2008) found that the more formal training athletic trainers and physical therapist had received or wished to receive in the psychology of injury, the more positive their attitude was concerning psychological strategies. Therefore, if athletic trainers education is increased in psychology skills then their confidence may increase which could lead to an increase in use. "Education plays a vital role in the preparedness of the athletic trainers and physical therapists to care for the injured athlete" (Hamson-Utley et al., 2008, p. 263). Some suggest that if athletic trainers had more formal training in the area of sport psychology they would be more likely to integrate it into rehabilitation programs (Hamson-Utley et al., 2008). "Helping injured people cope with the demands of rehabilitating from an injury has been identified as an important and integral role for health professionals" (Tracy, 2008, p.414).

An athlete's first and main source of contact within the health care system is the athletic trainer (Barefield & McCallister, 1997). Because athletic trainers are in regular contact with the athlete during treatment, they are in an ideal position to inform, educate, and assist athletes on the use of psychological strategies to enhance recovery with appropriate training (Arvinen-Barrow et al., 2010; Hamson-Utley et al., 2008). For example, Wiese, Weiss, and Yukelson, (1991) concluded that athletic trainers are in the best position to encourage positive and realistic thoughts during rehabilitation as well as cheer on the athlete during the rehabilitation process. While an athletic trainer might be in the prime position to help an athlete both psychologically and physically through an injury, it is very important that athletic trainers be able to recognize when they should refer to a sport psychology consultant and when they can handle the situation (Heaney, 2006).

Zizzi, Blom, Watson, Downey, and Geer (2009) surveyed 54 certified athletic trainers who were members of the National Athletic Trainers Association (NATA), 64 NCAA college coaches, and 50 licensed psychologist who were members of the American Psychological Association (APA) about their perceptions and use of psychological skills training. Overall, participants perceived certified athletic trainers and physical therapists to be the least qualified professional to teach psychological skills as compared to coaches, sport psychology consultants and licensed psychologists. On a scale from 1 (*never*) to 7 (*always*), certified athletic trainers reported using goal-setting (M = 5.74; SD = 1.25) and communication skills (M = 5.68; SD = 1.36) most frequently. Athletic trainers also perceived they had more training and confidence in using goal-setting and communication skills compared to all other psychological skills (e.g., imagery, energy management, self-talk). Imagery, cognitive restructuring, energy management, and hypnosis were perceived by all groups to require the most training. Although this study

provides insight into athletic trainers' perceived qualifications and use of psychological skills, the sample size is rather small. Furthermore, the study did not specify the type of environment athletic trainers worked in. Given the prevalence of athletic trainers at the NCAA D-I level and the prominent role they hold within athletics, it would be useful to explore athletic trainers' use of psychological skills during rehabilitation at the NCAA D-I level.

Summary

Winning is of utmost importance at the NCAA D-I level and those within the athletic department may feel the pressure to do whatever it takes to deliver successful performances and results. Therefore, it would be useful to explore if athletic trainers at the NCAA D-I level use or feel qualified to use psychological skills to help injured athletes return to their sport participation. Previous research has been limited when investigating NCAA D-I athletic trainers' use of psychological skills. Although athletic departments hire a variety of support staff (e.g., certified athletic trainers, strength and conditioning coaches, team physicians), only 96 (36%) of the 256 NCAA D-I administrators surveyed reported having a sport psychology consultant available at their institution (Wrisberg, Withycombe, Simpson, Loberg, & Reed, 2012). Therefore, the majority of athletic trainers at NCAA D-I institutions do not have a sport psychology consultant readily available. Athletic trainers may feel that addressing the psychological aspect of injury and rehabilitation is their responsibility, especially since CAATE requires certified athletic trainers to complete a course related to sport psychology during their academic training. Researchers have yet to explore what psychological skills are being implemented by NCAA D-I athletic trainers, their perceptions of their effectiveness in implementing various psychological skills, and their perceptions of who are the best professionals to implement various psychological strategies during injury and rehabilitation.

The purpose of this study is to determine:

- What is the frequency of which athletic trainers use the defined skills with athletes during injury rehabilitation?
- What is the relationship between previous training in sport psychology and athletic trainers' use of psychological skills?
- What is the relationship between athletic trainers' familiarity with psychological skills and how often they use psychological skills with athletes during rehabilitation?
- What is the relationship between athletic trainers' perceptions of the effectiveness of mental skills and how often they use psychological skills with athletes during rehabilitation?
- What are ATCs perceptions of how confident they are that they could effectively use psychological skills with athletes?
- What is the relationship between athletic trainers' perceptions of familiarity with mental skills and their confidence in effectively using psychological skills with athletes?
- What is the relationship between previous training in sport psychology and athletic trainers' perceptions of how qualified they are at using psychological skills with athletes during injury rehabilitation?
- What factors predict frequency of use of psychological skills?
- Who do athletic trainers perceive as most qualified to utilize various psychological skills during injury rehabilitation?

In this chapter, I reviewed the current literature in the following areas: (a) response to injury; (b) cognitive-behavioral approach to understanding response to injury; (c) psychological strategies in rehabilitation; and (d) certified athletic trainers' role in injury rehabilitation. In the next chapter, I will describe my methodology in the following way: (a) guiding research questions; (b) participants; (c) instrumentation; (d) procedures; (e) pilot study; and (f) data analysis.

Chapter 3

Method

In this study, a correlational research design was used to explore NCAA D-I ATC's use of psychological skills, their perceptions of their effectiveness in implementing psychological skills, and their perceptions about who (i.e., coach, physical therapist, athletic trainer, psychologist, sport psychology consultant) is most qualified to implement psychological skills with athletes during injury rehabilitation (Thomas, Nelson, & Silverman, 2011). This chapter is organized in the following way: (a) participants; (b) instrumentation; (c) procedures; (d) pilot study; and (e) data treatment analysis.

Participants

The sample included 485 NCAA D-I ATCs, 240 were females (49.5%) and 245 were males (50.5%) and ranged from 22 years of age to 67 years of age (M = 34.31, SD = 9.73). All participants were full-time staff ATCs and NATA BOC- certified. Participants reported their highest academic achievement as Bachelor's Degree (n = 35), Master's Degree (n = 445), and Doctoral Degree (n = 5). The ATC's that completed this survey identified their title as Director of Sports Medicine (n = 55), Head ATC (n = 47), Associate ATC (n = 49), and Assistant ATC (n = 334). The participants total years of experience as an ATC ranged from 1 to 52 years (M = 11.75, SD = 9.437) while their years of experience at the NCAA D-I level ranged from 1 to 46 years (M = 9.96, SD = 8.791). ATCs reported the following ethnicities. Table 1, 2, and 3 provide participants' ethnicity, sport coverage, and formal exposure with sport psychology.

Instrument

A web-based survey (see Appendix A) was used in this study and included the following sections: (a) demographics and (b) the Psychological Skills Questionnaire.

Demographics. The demographic section of the survey included items about gender, age, ethnicity, education, years of experience as a ATC, professional title, primary sport(s) participants' worked with, and formal training or experience with sport psychology.

Psychological Skills Questionnaire. Items included in this section were modified from Zizzi, Blom, Watson, Downey and Geer's (2009) Psychological Skills Questionnaire. ATCs' perceptions and use of psychological skills were examined related to the following seven skills: self-talk, attention and concentration, time management, goal-setting, communication skills, imagery/visualization, and relaxation and energy management. A definition of each skill was included to help participants understand the terminology. Items asked about participants' (1) familiarity with psychological skills, (2) use of psychological skills, (3) confidence with effectively demonstrating psychological skills during injury rehabilitation, (4) perceptions of the effectiveness of psychological skills for improving an athlete's rehabilitation, (5) perceptions of how qualified they are to use psychological skills during injury rehabilitation and (6) perceptions of how qualified they believe various professionals (i.e., coach, physical therapist, athletic trainer, psychologist, sport psychology consultant) are with implementing psychological skills with athletes during rehabilitation. A 7-point Likert-type scale was used for each item and ranged from 1 (*not at all familiar*) to 7 (*very familiar*); 1 (*never*) to 7 (*often*); 1 (*not confident*) to 7 (*very confident*); 1 (*not at all effective*) to 7 (*very effective*); and 1 (*not at all qualified*) to 7 (*very qualified*).

Open-Ended Item

Lastly, an open-ended item was included for participants to provide additional comments about ATCs' perceptions or use of psychological skills during injury rehabilitation.

Procedures

Institutional Review Board (IRB) approval was obtained prior to recruiting participants and collecting data. A national sample of ATCs from NCAA D-I institutions were recruited to participate in this study. E-mail addresses of all NCAA D-I full-time staff ATCs were obtained through each individual NCAA D-I athletic department website. All ATCs with e-mail addresses available were contacted and encouraged to participate in this study. Because contact information was not available for all ATCs, head ATCs were sent a separate e-mail encouraging them to participate in the study and asking them to forward the e-mail to their full-time athletic training staff. The e-mail to head ATCs and full-time staff ATCs (see Appendix B) included the cover letter inviting them to complete the survey and included the internet link to the survey. Participants were informed that clicking the link to the survey implied their consent to participate, that participation was completely voluntary, assured that their participation would remain confidential, and that they could withdraw at any time without penalty. A follow-up e-mail (see Appendix C) was sent one-week after the initial e-mail in an effort to increase participation. Each participant was thanked for his or her time and for participating in the research study. Survey completion took approximately five to ten minutes.

Pilot Study

The pilot sample consisted of graduate assistant ATCs from a large NCAA D-I university in the southeastern region of the United States (N = 9). Five of the pilot participants were female and the other four were male. Four participants were currently working towards obtaining their master's degree in Sport Psychology and Motor Behavior. All participants had a bachelor's degree in Athletic Training and were working towards their master's degree. The pilot study was used to assess the instrument for content, clarity of items, ease of responding, and duration of completion. Pilot participants provided positive feedback regarding ease of response and clarity

of items. No modifications were made to the survey items. Completion of the survey took between five to ten minutes.

Data Treatment and Analyses

SPSS statistical package 19.0 was used to perform all statistical analyses. First descriptive analyses were conducted with demographic information. The frequency, mean, and standard deviation were reported for the demographic items.

Scores were interpreted with the means and standard deviations for each psychological skill within each category (use of self-talk, familiarity with self-talk, etc.). In addition, a total average score was obtained across all seven psychological skills for the following variables: familiarity with psychological skills, use of psychological skills during rehabilitation, confidence in effectively demonstrating psychological skills with athletes, perceived effectiveness of psychological skills for improving athletes rehabilitation, and perception of personal qualification to implement psychological skills during rehabilitation. Pearson's correlation tests were performed to check for correlations between the psychological skills within each category. Overall, variables were moderately to highly correlated, which provided further support for creating an average score for each category (an average score for familiarity with psychological skills, use of psychological skills, etc.).

Means and standard deviations were provided to describe how often ATCs' use each psychological skill (self-talk, attention and concentration, time management, goal-setting, communication skills, imagery, and relaxation and energy management) with athletes during rehabilitation.

Bivariate correlations were used to determine the relationship between (a) previous training in sport psychology and ATCs' use of psychological skills, (b) ATCs' familiarity with

psychological skills and ATCs use of psychological skills with athletes' during rehabilitation, and (c) ATCs' perceptions of the effectiveness of mental skills and ATCs use of psychological skills with athletes during rehabilitation.

To determine the perceptions of how confident ATCs are that they could effectively use psychological skills with athletes, means and standard deviations were provided for each of the seven skills (self-talk, attention and concentration, time management, goal-setting, communication skills, imagery, and relaxation and energy management). Correlations were calculated to determine the relationship between ATCs' confidence in effectively using psychological skills with athletes during rehabilitation and their familiarity with psychological skills. Correlations were calculated to determine the relationship between ATCs' previous training in sport psychology and perceptions of how qualified they are at using psychological skills.

A stepwise multiple regression analysis was performed to determine if several predictor variables (i.e., gender, age, professional title, total years of experience as an ATC, level of previous sport psychology training, perceived effectiveness of psychological skills for improving athletes' rehabilitation, and confidence in effectively demonstrating psychological skills with athletes during injury rehabilitation) predicted use of psychological skills (criterion variable). For analyses purposes, the overall mean score was used for the following variables in the regression analysis: perceived effectiveness of psychological skills for improving athletes' rehabilitation and confidence in effectively demonstrating psychological skills with athletes during injury rehabilitation.

A doubly-multivariate analysis of variance (MANOVA) was performed to assess if there were differences between ATCs perceptions of the five professionals (i.e., coach, physical

therapist, athletic trainer, psychological, sport psychology consultant) and their qualifications to use seven psychological skills (dependent variables). A MANOVA is an extension of an Analysis of Variance (ANOVA) and is used to assess the mean differences among groups (independent variable) on a combination of dependent variables (Thomas et al., 2011). A doubly multivariate design involves multiple dependent variables (seven psychological skills) analyzed multiple times by each subject (five different professions, between factor). Subjects "repeat" their evaluation of the seven dependent variables or psychological skills (repeated measures or within subjects factor) (Thomas et al., 2011). A univariate follow-up test was performed after the MANOVA, followed by a post hoc test using Tukey-Kramer. The post hoc test was performed to determine how the groups (profession) differ on each measure (psychological skills). For the proposed study, the independent variable was profession (i.e., coach, physical therapist, athletic trainer, psychologist, and sport psychology consultant) and the dependent variables were the seven psychological skills (i.e., self-talk, attention and concentration, time management, goal-setting, communication skills, imagery, and relaxation and energy management).

Analysis of Open-Ended Comments

A consensual qualitative research method was used to analyze open-ended comments (see Hill, Thompson, & Williams, 1997; Thomas, Nelson, & Silverman, 2011). First the principal investigator and thesis advisor read through all open-ended comments (n = 58) separately to familiarize themselves with the responses and make sense out of the data (Thomas et al., 2011). The principal investigator and thesis advisor then met and discussed the main themes that emerged. The investigator and thesis advisor agreed that the majority (n = 52) of the comments could be classified as "education/training," "ATC's use and general positive perception of psychological skills," "psychological skills are underutilized/undervalued,"

"ATC's relationships with athletes," "qualifications and (mis)understanding," and "a team approach of integrating other professionals." Nine comments were classified into more than one theme. The principle investigator and thesis advisor then read the comments again to "ensure completeness and confirm general analytical categories (Thomas et al., 2011). Each person independently classified each comment according to the themes and achieved an adequate level of inter-rater agreement (67%). Discussion about the classification of the remaining comments continued until consensus was achieved (Thomas et al., 2011).

In the next chapter, I review the results of this study including: (a) ATCs' use of psychological skills during rehabilitation; (b) ATCs' confidence in effectively implementing psychological skills with athletes during injury rehabilitation; (c) ATCs previous level of training in sport psychology and perceived qualification in implementing psychological skills during injury rehabilitation; (d) factors that predict ATCs' use of psychological skills during rehabilitation; (e) ATCs' perceptions of the qualifications of various professional to use psychological skills during rehabilitation; and (f) open-ended comments.

Chapter 4

Results

In this chapter, I review the results of this study including: (a) ATCs' use of psychological skills during rehabilitation; (b) ATCs' confidence in effectively implementing psychological skills with athletes during injury rehabilitation; (c) ATCs previous level of training in sport psychology and perceived qualification in implementing psychological skills during injury rehabilitation; (d) factors that predict ATCs' use of psychological skills during rehabilitation; (e) ATCs' perceptions of the qualifications of various professional to use psychological skills during rehabilitation; and (f) open-ended comments.

ATCs Use of Psychological Skills during Rehabilitation

Table 4 provides means and standard deviations for ATCs familiarity with psychological skills, use of psychology skills with athletes during injury rehabilitation, confidence in effectively demonstrating psychological skills with athletes, perceptions of the effectiveness of psychological skills for improving athletes' rehabilitation, and perceived personal qualification to implement psychological skills during injury rehabilitation.

Overall, the psychological skills ATCs used most frequently with athletes during injury rehabilitation were goal-setting, followed by communication, time management, and attention/concentration (see Table 4). ATCs reported scores that indicated they used these skills occasionally or slightly more than occasionally.

For all correlations a weak relationship was indicated by correlations < .30, a moderate relationship was indicated by correlations between .30 and .70, and a strong relationship was indicated by correlations > .70 (Thomas, Nelson, & Silverman, 2011). Correlations were used to assess the relationship between ATCs previous level of sport psychology training and their use of

each of the seven psychological skills with athletes during injury rehabilitation. Due to the large sample size, a conservative alpha ($p \leq .0001$) was adopted to determine significant relationships between variables. Bivariate correlations revealed weak to moderate positive relationships between previous level of sport psychology training and use of self-talk ($r = .32$, $p < .0001$), attention and concentration ($r = .24$, $p < .0001$), goal-setting ($r = .17$, $p < .0001$), communication skills ($r = .18$, $p < .0001$), imagery ($r = .22$, $p < .0001$), and relaxation and energy management ($r = .30$, $p < .0001$). As ATCs perceptions of previous level of sport psychology training increased so did their use of all seven psychological skills.

Correlations were used to analyze the relationship between ATCs familiarity with psychological skills and their use of each of the seven psychological skills. Bivariate correlations revealed moderately strong positive relationships between ATCs familiarity with self-talk and their use of self-talk ($r = .64$, $< p = .0001$), familiarity with attention and concentration and use of attention and concentration ($r = .57$, $p < .0001$), familiarity with time management and use of time management ($r = .48$, $p < .0001$), familiarity with goal-setting and use of goal-setting ($r = .55$, $p < .0001$), familiarity with communication skills and use of communication skills ($r = .60$, $p < .0001$), familiarity with imagery and use of imagery ($r = .57$, $p < .0001$), and familiarity with relaxation and energy management and use of relaxation and energy management ($r = .66$, $p < .0001$). As ATCs familiarity with each of the seven skills increased so did their use of each psychological skill.

Correlations were used to analyze the relationship between ATCs perceptions of qualification to implement psychological skills and their belief of effectiveness of each of the seven psychological skills. Bivariate correlations revealed moderately strong positive relationships between ATCs perceptions of qualification to implement self-talk and their belief

of effectiveness of self-talk (r = .63, < p = .0001), perceptions of qualification to implement attention and concentration and their belief of effectiveness of attention and concentration (r = .56, p < .0001), perceptions of qualification to implement time management and their belief of effectiveness of time management (r = .51, p < .0001), perceptions of qualification to implement goal-setting and their belief of effectiveness of goal-setting (r = .48, p < .0001), perceptions of qualification to implement communication skills and their belief of effectiveness of communication skills (r = .52, p < .0001), perceptions of qualification to implement imagery and their belief of effectiveness of imagery (r = .53, p < .0001), and perceptions of qualification to implement relaxation and energy management and their belief of effectiveness of relaxation and energy management (r = .53, p < .0001).

Correlations were used to analyze the relationship between ATCs' perceptions of the effectiveness of psychological skills for improving an athlete's rehabilitation and their use of each of the seven psychological skills. Bivariate correlations revealed moderately strong positive relationships between perceptions of the effectiveness of self-talk and use of self-talk (r = .57, p < .0001), perceptions of the effectiveness of attention and concentration and use of attention and concentration (r = .58, p < .0001), perceptions of the effectiveness of time management and use of time management (r = .54, p < .0001), perceptions of the effectiveness of goal-setting and use of goal-setting (r = .48, p < .0001), perceptions of the effectiveness of communication skills and use of communication skills (r = .58, p < .0001), perceptions of the effectiveness of imagery and use of imagery (r = 0.54, p < .0001), and perceptions of the effectiveness of relaxation and energy management and use of relaxation and energy management (r = 0.55, p < .0001). As ATCs perceptions of the effectiveness of each of the seven psychological skills increased so did their use of each of the psychological skills.

ATC's Confidence in Effectively Demonstrating Psychological Skills

The means and standard deviations for ATCs' confidence in effectively demonstrating psychological skills are provided in Table 4. Overall, ATCs reported being most confident in effectively demonstrating the following skills with athletes during injury rehabilitation: goal-setting, communication, and time management. ATCs scores for these skills were slightly above the midpoint, indicating that they were moderately to very confident in their ability to effectively demonstrate goal-setting, communication, and time management.

Correlations were used to analyze the relationship between ATCs' confidence in their ability to effectively demonstrate each of the seven psychological skills and familiarity with each of the seven psychological skills (self-talk, attention and concentration, time management, goal-setting, communication skills, imagery, and relaxation and energy management). Bivariate correlations revealed a moderate to strong positive correlation between familiarity with self-talk and confidence in effectively demonstrating self-talk ($r = .74$, $p < .0001$), familiarity with attention and concentration and confidence in effectively demonstrating attention and concentration ($r = .63$, $p < .0001$), familiarity with time management and confidence in effectively demonstrating time management ($r = .59$, $p < .0001$), familiarity with goal-setting and confidence in effectively demonstrating goal-setting ($r = .59$, $p < .0001$), familiarity with communication skills and confidence in effectively demonstrating communication skills ($r = 0.65$, $p < .0001$), familiarity with imagery and confidence in effectively demonstrating imagery ($r = .73$, $p < .0001$), familiarity with relaxation and energy management and confidence in effectively demonstrating relaxation and energy management ($r = .74$, $p < .0001$). As ATCs familiarity with each of the seven psychological skills increased so did their confidence in effectively demonstrating each psychological skill.

ATC's Previous Level of Sport Psychology Training and Perceived Qualification to Implement Psychological Skills

Bivariate correlations revealed weak to moderate positive relationships between previous level of sport psychology training and perceived qualification to implement self-talk ($r = .43$, $p < .0001$), attention and concentration ($r = .40$, $p < .0001$), time management ($r = .29$, $p < .0001$), goal-setting ($r = .28$, $p < .0001$), communication skills ($r = .31$, $p < .0001$), imagery ($r = .40$, $p < .0001$), and relaxation and energy management ($r = .42$, $p < .0001$). As ATCs previous level of sport psychology training increased so did their perceptions of their qualifications to effectively implement each of the seven psychological skills.

Predicting ATCs' Use of Psychological Skills

A stepwise multiple regression was performed to determine if gender, age, professional title, total years of experience as an ATC, level of previous sport psychology training, perceived effectiveness of psychological skills for improving athletes' rehabilitation, and confidence in effectively demonstrating psychological skills with athletes during injury rehabilitation (predictor variables) predicted use of psychological skills (criterion variable). Multicollinearity of independent variables was determined not to be significant; all bivariate correlations between independent variables were less than .7, tolerance values were all greater than .20, and the VIF values were less than 2.0. The stepwise multiple regression revealed a two variable solution [$F(2) = 342.4$, $p < .001$] that accounted for 58.7% of the total variance in ATCs' use of psychological skills with athletes during injury rehabilitation. Confidence in their ability to effectively demonstrate psychological skills ($\beta = .61$, $p < .001$) was the most significant predictor of ATCs' use and accounted for 55% of the variance, followed by perceived

effectiveness of psychological skills for improving athletes' rehabilitation (β = .23, p < .001, 3.6%).

ATCs' Perceptions of Who is Most Qualified to Utilize Psychological Skills

A doubly-multivariate analysis of variance (MANOVA) was performed to assess if there were differences between the five professionals (coach, physical therapist, athletic trainer, psychological, sport psychology consultant) in terms of ATCs perceptions about their qualifications to use seven psychological skills (dependent variables). Normality and equality variance assumptions were met. The F test for the within subjects effect, group, was significant, Wilk's Lambda = .133, $F(28, 457) = 106.30$, $p < .0001$. Univariate follow-up tests revealed that all dependent variables (seven psychological skills) have a significant group difference (five professions): self-talk $F(4, 701.35) = 478.75$, $p < .0001$, attention and concentration $F(4, 538.79) = 355.85$, $p < .0001$, time management $F(4, 351.28) = 218.75$, $p < .0001$, goal-setting $F(4, 296.03) = 184.36$, $p < .0001$, communication skills $F(4, 356.48) = 243.44$, $p < .0001$, imagery $F(4, 690.82) = 404.90$, $p < .0001$, and relaxation and energy management $F(4, 943.39) = 570.88$, $p < .0001$. To determine how the groups (profession) differ on each measure (psychological skill) a post hoc test using Tukey-Kramer was done at alpha = .01. See Table 2 for means and standard deviations for qualification to utilize psychological skills by profession.

Self-talk. ATCs' perceived psychologists as significantly more qualified to utilize self-talk with injured athletes than all other professions (p < .01). All means were statistically different between professions, in which psychologists were perceived to be more qualified than sport psychology consultants, who were significantly more qualified than ATCs, who were significantly more qualified than physical therapists, who were significantly more qualified than coaches.

Attention and concentration. ATCs' perceived psychologist as significantly more qualified to utilize attention and concentration with injured athletes than all other professions ($p < .01$). All means were statistically different between professions, where psychologists were perceived more qualified than sport psychology consultants, who were more qualified than ATCs, who were more qualified than physical therapists, who were more qualified than coaches.

Time management. ATCs' perceived psychologists as significantly more qualified to use time management with injured athletes than all other professions ($p < .01$). In addition, ATCs were perceived to be significantly more qualified to utilize time management than physical therapists and sport psychology consultants. Lastly, physical therapists and sport psychology consultants were perceived to be significantly more qualified than coaches. There were no significant differences in ATCs' perceptions between the qualifications of physical therapists and sport psychology consultants.

Goal-setting. ATCs' perceived psychologists as significantly more qualified to utilize goal-setting with injured athletes than all other professions ($p < .01$). ATCs were perceived to be significantly more qualified to use goal-setting with injured athletes compared to sport psychology consultants and coaches. Physical therapists and sport psychology consultants were more qualified than coaches. There were no significant mean differences between ATCs and physical therapists or physical therapists and sport psychology consultants.

Communication skills. ATC's perceived psychologists as significantly more qualified to utilize communication skills with injured athletes than all other professions ($p < .01$). Additionally, ATCs were perceived to be significantly more qualified to use communication skills with injured athletes compared to physical therapists and coaches. There was no significant

mean difference between ATCs and sport psychology consultants or physical therapists and sport psychology consultants.

Imagery. ATCs' perceived psychologists were significantly more qualified to utilize imagery with injured athletes than all other professions ($p < .01$). All means were statistically different between professions, in which psychologists were perceived more qualified than sport psychology consultants, who were more qualified than ATCs, who were more qualified than physical therapists, who were more qualified than coaches.

Relaxation and energy management. ATCs' perceived psychologist significantly more qualified to utilize relaxation and energy management skills with injured athletes than all other professions. In addition, sport psychology consultants were perceived to be significantly more qualified to use relaxation and energy management skills with injured athletes compared to physical therapists, ATCs, and coaches. There were no significant mean differences between ATCs and physical therapists.

Open-Ended Comments

A consensual qualitative research method was used to analyze open-ended comments provided by NCAA D-I ATCs (see Hill, Thompson, & Williams, 1997; Thomas, Nelson, & Silverman, 2011). There were a total of 58 open-ended comments and the majority ($n = 53$, 91.38%) of the comments could be classified into six themes: education/training ($n = 12$), ATC's use and general positive perspective of psychological skills ($n = 16$), psychological skills are underutilized/undervalued ($n = 11$), ATC's relationships with athletes ($n = 7$), qualifications and (mis)understanding ($n = 11$), and a team approach of integrating other professionals ($n = 5$). Nine comments were classified into more than one theme.

Education/training represented participants' perceptions that their education and training in sport psychology was lacking or that it varied widely among ATCs. Also included was ATCs' perception of the need for more ATCs to obtain more training in the use of psychological skills. For example, one participant stated, "I truly believe that more athletic trainers would like to have more training in the use of psychological skills and how to implement them in a rehabilitation setting, but it is not common for specific training in this area." Another participant stated

> ATs and PTs are in a similar boat with no formal "training" so some have experience with sport psychology techniques from participation in sports or working with sport psychologist(s) in the past or from CEUs. But their abilities and expertise will be widely varied.

ATCs use of psychological skills and general positive perspective of psychological skills represented comments about personal use of psychological skills or other ATCs use of psychological skills as well as ATCs general positive perspective of the use of psychological skills during injury rehabilitation. One participant stated, "It is important for ATs to use psychological skills when working with athletes who have injuries. It is also important to work with athletes that may not have injuries but struggle with other aspects of their sport."
Yet another participant said,

> I don't specifically set out to utilize these psychological skills, but do find myself utilizing some of them. I feel as though time management and goal-setting are crucial in the rehab process because a) there is limited time that a student-athlete is available and b) without specific goals it's easy to get bogged down by minor setbacks.

Sport psychology skills are underutilized/ undervalued represented the perception that psychological skills are either underutilized or undervalued by ATCs. Two comments that

displayed this theme were, “I think as a profession athletic trainers under value the importance of psychological skills when working with student athletes” and “Sport psychology skills are not utilized enough.” Another ATC stated, “I would love to see psychology used more during the rehab process because mental training is just as important as the physical training of an injury.”

ATCs put an emphasis on their relationship with the athlete. ATCs described that their relationship with the athlete sometimes goes beyond the injury. This theme was displayed through one participant’s statement, “An athletic trainer’s use or perception of psychological skills is truly dependent on their relationship/trust/rapport with the student-athlete.” In this theme, ATCs also stressed the importance of being “in-tuned” with the athletes they work with. This was displayed in the following statement by a participant, “Athletic trainers, may not specifically use those psychological techniques but I feel they are intuned with their athlete on a mental and physical level, since they tend to see the, every day unlike any other health care providers.”

Qualifications and (mis)understanding represented ATCs perceptions that qualifications to use psychological skills vary individually within professions. In addition, this theme represented ATCs misunderstanding of what professionals (particularly sport psychology consultants) do and what their qualifications involve. One participant stated, “There is no way to assess how qualified each of these professionals are to perform these skills.” The next comment also represented this category; “If a person can call themselves a “performance enhancement specialist” without any licensing board overseeing their education/CEUs/etc, their level of expertise or qualifications would be completely dependent upon the level of commitment that person has.”

Lastly, a team approach of integrating other professionals represented the last theme that emerged from the ATCs' open ended comments. ATC discussed using other resources to best help the athlete. One ATC stated, "We have no in house resources for sport psychology services. We hope to develop the relationship with local hospitals, but till then, ATCs will do basic reporting system and refer to team physician for any expertise." Another ATC stated,

> It is critically important to involve the sport psychologist into the rehab of an injured athlete, though exceedingly difficult to do so. Better practices [are needed for] bringing the sport psychologist into the realm of physical rehab and getting [them] involved with the athlete are needed.

In the next chapter, I discuss: (a) major findings and connections to previous research, (b) potential implications for sport psychology consultants and ATCs, (c) limitations, (d) future directions, and (e) concluding remarks.

Chapter 5

Discussion

In this chapter, I discuss: (a) major findings and connections to previous research, (b) potential implications for sport psychology consultants and ATCs, (c) limitations, (d) future directions, and (e) concluding remarks.

Major Findings and Connections to Previous Research

The purpose of this study was to better understand NCAA D-I ATCs perceptions and use of psychological skills as well as who ATCs perceive to be most qualified to implement psychological skills with athletes during injury rehabilitation. In the current study ATCs' rated that they had a below "moderate" (M = 3.22) level of previous training in sport psychology, were "moderately" (M = 4.75) familiar with psychological skills, used psychological skills "moderately" (M = 4.4) often, were "moderately" (M = 4.64) confident in their ability to effectively demonstrate psychological skills with athletes, perceived psychological skills to be "moderately" to "very" effective for improving athletes rehabilitation, and perceived that they were "moderately" (M =4.35) qualified to implement psychological skills with athletes during injury rehabilitation.

ATCs in this study reported using goal-setting, communication, and time management the most often while relaxation and energy management, self-talk, and imagery were reported being used less often. These findings mirror previous research with physiotherapists who indicated that goal-setting and creating variety in rehabilitation were strategies that they used the most (Hemming & Povey, 2002; Arvinen-Barrow, Penny, Hemmings, & Corr, 2010). Furthermore, strategies that physiotherapists reported using the least were imagery, relaxation, and self-talk (Arvinen-Barrow et al, 2010; Hemming & Povey, 2002). This indicates that

physiotherapists and ATCs may be more comfortable implementing some techniques (e.g., goal-setting) compared to others (e.g., relaxation) (Hemming & Povey, 2002). In the current study, moderate to strong positive relationships were found between ATCs perceptions of the effectiveness of each psychological skill (e.g., goal-setting) for improving an athlete's rehabilitation and their use of that skill (e.g., goal-setting). Not only did ATCs use goal-setting, communication, and time management most often, they also rated these skills as most effective. This is comparable to Wiese, Weiss, and Yukelson (1991) who found that ATCs perceived a positive communication style, setting realistic goals, and understanding motivation as important and effective psychological skills for facilitating athletes' ability to cope with injury rehabilitation. In addition, ATCs rated relaxation techniques and visualization, as well as knowledge of those skills, with lower importance. These previous findings in combination with the results of the current study suggest that ATCs use goal-setting, communication, and time management most often and also perceive these skills to be the most effective during injury rehabilitation.

The regression analysis provided insight into what could be influencing ATCs use of psychological skills. Overall, the results of the regression analysis revealed that confidence in ability to effectively demonstrate psychological skills and perceived effectiveness of psychological skills for improving athletes' rehabilitation predicted ATCs use of psychological skills with athletes during injury rehabilitation. However, confidence in ability to effectively demonstrate psychological skills contributed substantially more variance in ATCs use of psychological skills. Arvinen-Barrow and colleagues(2010) interviewed seven physiotherapists working in the U.K. about their personal experiences with using psychological strategies during rehabilitation. Results revealed that physiotherapists were open about their lack of experience

and knowledge with respect to helping patients use psychological skills (specifically imagery, relaxation, and self-talk). Similarly, Moulton, Molstad, and Turner (1997) found that the majority of ATCs surveyed felt inadequately trained to use psychological skills. Although the Commission on Accreditation of Athletic Training (CAATE) has set standards that require athletic training students to take one class in psychological interventions, Hamson-Utley, Martin, and Walters (2008) argue that there are no requirements related to developing experience and skills in effectively implementing these skills. Clement and Shannon (2009) also reported a need to improve the current format of exposing athletic trainers to sport psychology by utilizing active learning approaches. From the results of this study, it appears that it would be beneficial to nurture efforts toward influencing ATCs confidence in their ability to effectively demonstrate psychological skills with athletes during injury rehabilitation.

ATCs hold a critical role within injury rehabilitation as the primary health care professional who has the most interaction with injured athletes. Therefore, with proper training, ATCs have been identified as the ideal professional to implement psychological skills during injury rehabilitation (Larson, Starkey, & Zaichkowsky, 1996). However, another approach to helping ATCs with their comfort with the psychological aspect of rehabilitation might be to encourage a team approach to helping athletes who are injured. A team approach was also reported in the open ended comments in this study suggesting that some ATCs may desire the support of additional professionals with helping athletes recover. Literature also supports the idea of a team approach because some researchers have discussed the difficulty for ATCs to be in a position to address all psychological recovery needs with athletes who are injured (Roh & Perna, 2000). Therefore, it would make sense to integrate sport psychology consultants to provide selected services while ATCs are in the best position to be the “frontline” practitioner

who reinforces psychological skills interventions during rehabilitation (Heaney, 2006; Roh & Perna, 2000).

Perhaps one of the most interesting findings of the current study was ATCs perceptions that psychologists were most qualified to implement each of the seven psychological skills. This is interesting because sport psychology consultants (also known as sport psychology consultants or mental skills coaches) are professionals that provide mental skills training to athletes, are trained in sport psychology, and are not licensed psychologists or counselors (Zizzi & Watson, 2004). They provide individual or group consultations geared towards performance-related issues (Wrisberg, Withycombe, Simpson, Loberg, & Reed, 2010). Psychologists on the other hand, are trained in clinical or counseling psychology to provide individual or group therapy relative to a broad range of behavioral and emotional issues. They typically work in a public clinic or private practice (Zizzi et al., 2009). With the current sample of NCAA D-I ATCs there may be a misunderstanding of the qualifications of sport psychology consultants and their qualifications to implement psychological skills with athletes during rehabilitation. The open ended responses supported this idea, in which some comments suggested that ATCs may not fully understand the role, education, or qualifications of a sport psychology consultant. Another perspective is that ATCs may personally value the process of licensure. ATCs have to obtain certification and licensing through overseeing agencies in order to work with athletes at the NCAA D-I level. Therefore, ATCs may expect other professionals working with NCAA D-I athletes to also be licensed..

Potential Implications for Sport Psychology Consultants and ATCs

Although athletic departments hire a variety of support staff (e.g., certified athletic trainers, strength and conditioning coaches, team physicians), only 96 (36%) of the 256 NCAA

D-I administrators surveyed in previous research reported having a sport psychology consultant available at their institution (Wrisberg, Withycombe, Simpson, Loberg, & Reed, 2012). Therefore, the majority of ATCs at NCAA D-I institutions may not have a sport psychology consultant readily available. From the existing literature, it is clear that ATCs feel that sport psychology is an important component to include during rehabilitation; however, results of this study also indicate that they feel they are not the most qualified to implement psychological skills with athletes during injury rehabilitation. If sport psychology consultants become a standard component of NCAA D-I institutions support staff (like ATCs and strength and conditioning coaches) it might alleviate some stress off the ATC and may increase referrals to the proper professional for psychological skills during injury rehabilitation. In addition, Wrisberg, Withycombe, Simpson, Loberg, and Reed (2010) studied NCAA D-I coaches and athletes who expressed positive perceptions of the inclusion of sport psychology consultants (SPC) within the athletic department. It appears that that now might be the time for SPCs to establish their role within athletic departments at the NCAA D-I level. The Association for Applied Sport Psychology (AASP) and sport psychology professionals can put efforts toward continued education about the role of, need for, and benefits of sport psychology consultants as part of the support team within athletics. Although only 36% of NCAA D-I institutions employ a SPC, this also demonstrates that sport psychology consultants can fit into the athletic department with ease. NCAA D-I institutions employ a variety of support staff professionals to help ensure athletes are in the best physical state to perform well. Sport psychology consultants are a missing professional within athletic department support staffs and could be a useful component to providing athletes with a holistic standard of care when injured. Sport psychology professionals need to continue to develop a relationship and put efforts toward educating athletic department

support staffs (e.g., ATCs, strength and conditioning coaches, team physicians) about the need for sport psychology consultants at the NCAA D-I level.

Sport psychology professionals and AASP are also in a position where they can educate others about the roles and qualifications of sport psychology consultants. Due to the fact that The Commission on Accreditation of Athletic Training Education (CAATE) requires athletic training students to take one general psychology course or one sport psychology course ATCs may have a broad knowledge about psychology (if they are exposed to a general psychology course) and not a focus on sporty psychology. Because of this ATCs may also perceive that professionals implementing psychological skills with athletes need to be licensed psychologists. Continued exposure to specific sport psychology courses may help to decrease the misunderstanding that might exist with ATCs perceptions of the qualifications to implement mental skills with athletes as well as differentiate between performance-based issues and clinical issues. In addition, ATCs may value the process of certification and licensure. It would be useful to continue to educate ATCs about the process of becoming a sport psychology consultant as well as the certification procedures through AASP for becoming a certified consultant.

From this study it can be inferred that the more confident the ATC is that s/he could effectively demonstrate psychological skills, the more effective s/he believes psychological skills are for improving an athlete's rehabilitation, and the higher level of previous sport psychology training the more s/he uses psychological skills with athletes. This means for ATCs to integrate psychological skills in rehabilitation they need to feel confident in their ability to demonstrate these skills, perceive that the skills are effective, and increase their level of training in sport psyhcology. One way that ATCs could grain training and confidence in psychological skills would be if CAATE would increase the exposure athletic training students have to psychological

skills. For example, CAATE couldset more precise parameters as to what sport psychology courses should contain and what requirements should be met. Kamphoff, Hamson-Utley, Antoine, Knutson, Thomae, and Hoenig (2010) found 180 athletic training student participants surveyed expressed that psychological skills were important. This demonstrates that not only do established professional ATCs see the need for implementing psychological skills during injury rehabilitation but athletic training students also feel the need for implementing psychological skills during injury rehabilitation. Clement and Shannon (2009) implemented a short workshop (75 minutes) with athletic training students about sport psychology. Prior to and following the workshop (as well as a six-week follow-up) students completed a psychological behaviors survey. Results from their study suggest that providing workshops that are short in duration (75 minutes) and focus on the application of sport psychology can impact sport psychology behaviors in ATCs (e.g, seeking additional information about sport psychology, talking about sport psychology with athletes who are injured). Changing ATCs curriculum will take time; however, ATCs could be required to complete continued education that focuses specifically on psychological skills. This would provide ATCs with exposure to psychological skills in a convenient way.

Limitations and Future Directions

One limitation of this study is that only NCAA D-I ATCs completed the survey; therefore, the finding may not apply to other NCAA institutions or work environments (e.g. semi-professional, professional, high school, NCAA D-II, NCAA D-III, non-NCAA institutions, clubs). Although 485 ATCs completed the survey, findings may not generalize to NCAA D-I ATCs who chose not to complete the survey.

More research is needed regarding ATCs perceptions of their use of psychological skills during injury rehabilitation and the role of other professionals (e.g., psychologists and sport psychology consultants) in the teaching of psychological skills during rehabilitation. Education regarding the qualifications of psychologists and sport psychology consultants to implement various psychological skills may be needed with NCAA D-I ATCs. This education can help ATCs know when to refer, what to refer for, and who to refer the athlete to. By ensuring that ATCs clearly understand the difference between a psychologist and sport psychology consultant more successful referrals can be made. The results from this study show a need for the NATA and AASP to come together and give athletes a more holistic treatment. Both professions could learn from each other and help each other to benefit the athlete. Another area that should be investigated more thoroughly is how much ATCs value the licensure associated with clinical practice. The amount that ATCs value licensure may give a clearer link to why in the current study ATCs reported psychologists more qualified to implement psychological skills than sport psychology consultants. This could be done through a follow-up interview or survey.

Conclusion

Through this research better knowledge of ATCs' use of psychological skills during injury rehabilitation was gained. Specifically, this study helped to provide a greater understanding of how (a) familiar ATCs were with psychological skills; (b) how confident they were in effectively demonstrating psychological skills with athletes; and (c) how effective they perceive psychological skills are in improving rehabilitation. It is apparent that ATCs value psychological skills during injury rehabilitation; however, they do not perceive themselves as being the most qualified professional to implement psychological skills during injury rehabilitation. Therefore, a team approach to the holistic care of athletes during injury

rehabilitation can be emphasized, along with continued education about the roles and qualifications of various professionals. Sport psychology consultants are the most specialized professional in the area of mental skills training; however, knowledge about their role and qualifications may be misunderstood.

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Appendices A-D

Appendix A
Web-Based Survey

1. TITLE

Thank you for choosing to complete the following questionnaire. Your participation is completely voluntary and your response will be held in strict confidence. Any publication or presentations resulting from this study will be reported in summary form only. You may withdraw or terminate the survey at any time. Your completion of the questionnaire will be your consent to participate and also confirms that you are a full time staff athletic trainer at your institution (e.g., NOT a graduate assistant or part time staff member). By completing this questionnaire, you are confirming that you are at least 18 yours of age.

2. GENDER What is your gender? Single Response
   a. Female
   b. Male
3. AGE What is your age? Numeric Response
4. ETHNICITY What is your ethnicity? Single Response
   a. African American
   b. Caucasian
   c. Hispanic or Latino
   d. Asian/Pacific Islander
   e. American Indian
   f. Two or more races (not Hispanic or Latino)
   g. Other (specify)
   h. Prefer not to answer

5. CONFERENCE What is your NCAA D-I institution's primary conference? Single Response
   a. American East Conference
   b. American Southwest Conference
   c. Atlantic 10 Conference
   d. Atlantic Coast Conference
   e. Atlantic Sun Conference
   f. Big 12 Conference
   g. Big East Conference
   h. Big Sky Conference
   i. Big South Conference
   j. Big Ten Conference
   k. Big West Conference
   l. Colonial Athletic Association
   m. Conference USA
   n. Great West
   o. Horizon League
   p. Independent
   q. Ivy League
   r. Metro Atlantic Athletic Conference
   s. Mid-American Conference
   t. Mid-Eastern Athletic Conference
   u. Missouri Valley Conference

v. Mountain West Conference
w. Northeast Conference
x. Ohio Valley Conference
y. Pacific-10 Conference
z. The Patriot League
aa. Southeastern Conference
bb. Southern Conference
cc. Southland Conference
dd. Southwestern Athletic Conference
ee. Sun Belt Conference
ff. The Summit League
gg. West Coast Conference
hh. Western Athletic Conference
ii. Other_____

6. ACADEMIC ACHIEVEMENT What is your highest level of academic achievement completed? Single Response

a.Bachelor's degree
b.Master's degree
c.Doctorate degree
d.Other _____

7. TITLE Which of the following best represents your current professional title? Single Response

a. Director of Sports Medicine
b. Head AT
c. Associate AT
d. Assistant AT
f. Other _____

8. CERTIFICATION Are you NATA BOC-Certified (Board of Certification)? Single Response

a. Yes
b. No

9. TOTAL Approximately how many years of experience do you have as an athletic trainer? Numeric Response

10. NCAA DI Approximately how many years of experience do you have as an athletic trainer at the NCAA Division I level? Numeric Response

11. SPORT What are your primary sport(s) responsibilities at the NCAA Division I level over the academic year? (Check all that apply) Multiple Response

a. Archery
b. Badminton
c. Baseball
d. Basketball
e. Bowling

f. Cross Country
g. Diving
h. Equestrian
i. Fencing
j. Field Hockey
k. Football
l. Golf
m. Gymnastics
n. Ice Hockey
o. Lacrosse
p. Rifle
q. Rowing
r. Rugby
s. Sailing
t. Skiing
u. Soccer
v. Softball
w. Squash
x. Swimming
y. Tennis
z. Track, Indoor
aa. Track, Outdoor
bb. Volleyball
cc. Water polo
dd. Wrestling
ee. Other
ff. None

12. TRAINING Please rate your level of previous training in sport psychology. Single Response

No Training			Moderate Training			Considerable Training
1	2	3	4	5	6	7

13. FORMAL EXPOSURE Please identify ALL your formal training or experience(s) with sport psychology? Multiple Response

a. None
b. Workshop(s)
c. Continuing education workshop(s)
d. Undergraduate college/university course(s)
e. Graduate college/university course(s)
f. Undergraduate degree emphasis in sport psychology
g. Graduate degree emphasis in sport psychology
h. Other

DEFINE The following items pertain to implementing various psychological skills during injury rehabilitation. Please review the definitions related to the following psychological skills.

Self- Talk- what you say or think to yourself. Self-talk patterns are related to how people feel and act. Changing self-talk is commonly used for 1) prompting a specific behavior, 2) improving self-confidence, 3) attention control, 4) motivation, and 5) arousal control.

Attention and Concentration Control (focusing)- The ability to keep appropriate focus on the task at hand and shift focus based on performance demands. Skills are used to help 1) focus on the relevant aspects of performance (or rehabilitation), 2) maintain attention within a situation or 2) shift attention based on changing performance demands.

Time Management- the ability to plan and maintain one's regular schedule in a way that avoids confusion, conflict and undue stress. Common skills in this area include: 1) teaching how to use a planner, 2) learning about the demands of a task, 3) setting legitimate goals for tasks, 4) understanding the demands of one's life, and 4) developing pre-performance routines.

Goal-Setting- focused on achieving some standard. Goal-setting is commonly used to enhance motivation and for focusing attention on aspects of performance that need improvement. Goal-setting often includes: 1) identifying target dates for attaining goals, identifying goal achievement strategies, and providing regular goal evaluation.

Communication Skills- used to help improve interactions within the sport setting (e.g., athlete-athlete, athlete-coach, athlete-athletic trainer). Communication is transmitting and exchanging thoughts, feeling, knowledge, and information. Skills used include: 1) teaching active listening and communication skills (reflecting, clarifying, encouraging, paraphrasing), 2) expressing self in a constructive manner, 3) providing support and care, and 4) assertiveness training.

Imagery - creating or re-creating an experience in one's mind using all the senses. Imagery skills are commonly used for 1) mental preparation, 2) arousal control, 3) attention/focus, 4) building self-confidence, 5) learning new skills, and 6) injury recovery.

Relaxation and Energy Management- used to help individuals who experience a level of arousal not optimal for performance (too high or too low). Relaxation skills often used to decrease arousal, anxiety, or stress and manage energy include: 1) breathing exercises, 2) progressive relaxation, 3) meditation, 4) visualization, and 5) self-talk.

14. FAMILIARITY How **familiar are you** with the psychological skills listed below? Single Response Grid

Self- Talk

Not at all familiar			Moderately familiar			Very familiar
1	2	3	4	5	6	7

Attention and Concentration Control (focusing)

Not at all familiar			Moderately familiar			Very familiar
1	2	3	4	5	6	7

Time Management

Not at all familiar			Moderately familiar			Very familiar
1	2	3	4	5	6	7

Goal Setting

Not at all familiar			Moderately familiar			Very familiar
1	2	3	4	5	6	7

Communication Skills

Not at all familiar			Moderately familiar			Very familiar
1	2	3	4	5	6	7

Imagery

Not at all familiar			Moderately familiar			Very familiar
1	2	3	4	5	6	7

Relaxation and Energy Management

Not at all familiar			Moderately familiar			Very familiar
1	2	3	4	5	6	7

15. USE How **<u>often do you use</u>** the following skills with the athletes you work with during injury rehabilitation? Singe Response Grid

Self- Talk

Never			Occasionally			Always
1	2	3	4	5	6	7

Attention and Concentration

Never			Occasionally			Always
1	2	3	4	5	6	7

Time Management

Never			Occasionally			Always
1	2	3	4	5	6	7

Goal Setting

Never			Occasionally			Always
1	2	3	4	5	6	7

Communication Skills

Never			Occasionally			Always
1	2	3	4	5	6	7

Imagery

Never			Occasionally			Always
1	2	3	4	5	6	7

Relaxation and Energy Management

Never			Occasionally			Always
1	2	3	4	5	6	7

16. CONFIDENCE How **<u>confident are you</u>** that you could **<u>effectively demonstrate</u>** each of the following skills **<u>with athletes</u>** during injury rehabilitation? Single Response Grid

Self- Talk

Not at all confident			Moderately confident			Very confident
1	2	3	4	5	6	7

Attention and Concentration

Not at all confident Moderately confident Very confident
1 2 3 4 5 6 7

Time Management

Not at all confident Moderately confident Very confident
1 2 3 4 5 6 7

Goal Setting

Not at all confident Moderately confident Very confident
1 2 3 4 5 6 7

Communication Skills

Not at all confident Moderately confident Very confident
1 2 3 4 5 6 7

Imagery

Not at all confident Moderately confident Very confident
1 2 3 4 5 6 7

Relaxation and Energy Management

Not at all confident Moderately confident Very confident
1 2 3 4 5 6 7

17. EFFECTIVENESS How **effective do you believe** the following skills are for improving an athlete's rehabilitation? Single Response Grid

Self- Talk

Not at all effective Moderately effective Very effective
1 2 3 4 5 6 7

Attention and Concentration

Not at all effective Moderately effective Very effective
1 2 3 4 5 6 7

Time Management

Not at all effective Moderately effective Very effective
1 2 3 4 5 6 7

Goal Setting

Not at all effective Moderately effective Very effective
1 2 3 4 5 6 7

Communication Skills

Not at all effective Moderately effective Very effective
1 2 3 4 5 6 7

Imagery

Not at all effective Moderately effective Very effective
1 2 3 4 5 6 7

Relaxation and Energy Management

Not at all effective Moderately effective Very effective
1 2 3 4 5 6 7

18. QUALIFICATION How **qualified do you perceive you are** to implement the following skills during injury rehabilitation **with an athlete**? Single Response Grid

Self- Talk
Not at all qualified Moderately qualified Very qualified
1 2 3 4 5 6 7

Attention and Concentration
Not at all qualified Moderately qualified Very qualified
1 2 3 4 5 6 7

Time Management
Not at all qualified Moderately qualified Very qualified
1 2 3 4 5 6 7

Goal Setting
Not at all qualified Moderately qualified Very qualified
1 2 3 4 5 6 7

Communication Skills
Not at all qualified Moderately qualified Very qualified
1 2 3 4 5 6 7

Imagery
Not at all qualified Moderately qualified Very qualified
1 2 3 4 5 6 7

Relaxation and Energy Management
Not at all qualified Moderately qualified Very qualified
1 2 3 4 5 6 7

DEFINE The following items pertain various professionals and how qualified you perceive they are to be able to use psychological skills during injury rehabilitation. Please review the definitions related to the following professionals.

Athletic Trainer – typically works with a specific sports team to provide acute and long-term care for athletic injuries. Generally assumes the responsibility for overseeing the total health care for the athlete and designs and monitors rehabilitation programs.

Physical Therapist – typically works in a sports medicine or hospital clinic to provide acute and long-term care for a variety of sport and work-related injuries. Designs and monitors rehabilitation programs.

Coach – the organizational leader of a specific sports team. Often manages team affairs (travel, recruiting, scheduling) in addition to having a primary role as a teacher of sport-specific skills and strategy.

Psychologist – trained in clinical or counseling psychology to provide individual or group therapy relative to a broad range of behavioral and emotional issues. Typically work in a public clinic or private practice.

Performance Enhancement Consultant – professionals that provide mental skills training to athletes trained in sport psychology and are not licensed psychologists or counselors. Also known as sport psychology consultant or mental coach. Provides individual or group consultations geared towards performance-related issues.

(Source: Zizzi, S. J., Blom, L. C., Watson, J. C., Downey, V. P., & Geer, J. (2009). Establishing a hierarchy of psychological skills: coaches', athletic trainers', and psychologists' uses and perceptions of psychological skills training. Athletic Insight The Online Journal of Sport Psychology, 11 (2), Retrieved: August 23, 2012, from http://www.athleticinsight.com/Vol11Iss2/Feature.htm.)

19. WHO How qualified do you perceive **coaches** are to utilize the following psychological skills **during injury rehabilitation with an athlete**? Single Response Grid

Self- Talk

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Attention and Concentration

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Time Management

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Goal Setting

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Communication Skills

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Imagery

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Relaxation and Energy Management

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

20. WHO How qualified do you perceive **physical therapists** are to utilize the following psychological skills **during injury rehabilitation with an athlete**? Single Response Grid

Self- Talk

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Attention and Concentration

Not at all qualified	Moderately qualified	Very qualified

1 2 3 4 5 6 7

Time Management

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Goal Setting

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Communication Skills

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Imagery

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Relaxation and Energy Management

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

21. WHO How qualified do you perceive **athletic trainers** are to utilize the following psychological skills **during injury rehabilitation with an athlete**? Single Response Grid

Self- Talk

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Attention and Concentration

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Time Management

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Goal Setting

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Communication Skills

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Imagery

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Relaxation and Energy Management

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

22. WHO How qualified do you perceive **psychologists** are to utilize the following psychological skills **during injury rehabilitation with an athlete**? Single Response Grid

Self- Talk

Not at all qualified Moderately qualified Very qualified

1 2 3 4 5 6 7

Attention and Concentration

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Time Management

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Goal Setting

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Communication Skills

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Imagery

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Relaxation and Energy Management

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

23. WHO How qualified do you perceive **performance enhancement consultants** are to utilize the following psychological skills **during injury rehabilitation with an athlete**? Single Response Grid

Self- Talk

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Attention and Concentration

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Time Management

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Goal Setting

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Communication Skills

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Imagery

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

Relaxation and Energy Management

Not at all qualified			Moderately qualified			Very qualified
1	2	3	4	5	6	7

24. ADDITIONAL COMMENTS Please provide any additional comments regarding athletic trainers' use or perception of psychological skills with athletes during injury rehabilitation at the NCAA Division I level (optional):

Appendix B
E-Mail

Dear NCAA Division I Athletic Trainer:

My name is Mary Estepp and I am a Master's student at the University of Tennessee. I am currently collecting data for my Thesis and I'm interested in athletic trainers' use and perceptions of psychological skills during rehabilitation at the NCAA Division I level.

I am inviting all full-time staff athletic trainers at the NCAA D-I to complete a short survey. The web-based questionnaire will take approximately **5-10 minutes** to complete and all responses will be held in strict confidence. Any publications or presentations resulting from this study will report summary statistics only.

Last year, a total of 659 athletic trainers' responded to a survey about their perceptions of sport psychology services at the NCAA D-I level. Overall, athletic trainers reported that athletes rehabilitating an injury would benefit most from the following sport psychology services: managing anxiety, improving coping mechanisms, managing emotions, and building confidence. As an extension of last year's study, your participation will help to gain a more complete picture of the use and perceptions of psychological skills by athletic trainers at the NCAA D-I level.

Please click on the link below to activate the survey. Completion of the survey will constitute your consent to participate. At any point during the survey you can withdraw from participating by closing out of it.

http://survey.utk.edu/mrIWeb/mrIWeb.dll?I.Project=ATCCPERCEPTIONSUSEOFPSYCHOLOGICALTECHNIQUESDURINGINJURYREHABILIT

If you have any questions about the survey please e-mail Mary Estepp at mmccaul2@utk.edu . Thank you for your consideration of this request. I would appreciate it if the questionnaire is completed in the next 5-7 days.

Best wishes,

Mary Estepp, ATC, LAT

Dear NCAA Division I Head Athletic Trainer:

My name is Mary Estepp and I am a Master's student at the University of Tennessee. I am correctly collecting data for my Master's Thesis and I'm interested in athletic trainers' perceptions of their use of psychological skills during rehabilitation at the NCAA Division I level.

I would greatly appreciate it if you would forward this e-mail link to your full-time athletic training staff members so they also have the opportunity to complete the survey.

I am inviting all full-time staff athletic trainers at the NCAA D-I to complete a short survey. The web-based questionnaire will take approximately **5-10 minutes** to complete and all responses will be held in strict confidence. Any publications or presentations resulting from this study will report summary statistics only.

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Mary Estepp, ATC, LAT

Appendix C
Follow-up E-mail

Dear NCAA Division I Athletic Trainer:

Last week I sent you an e-mail asking for your help with my study about athletic trainers' use and perceptions of psychological skills during injury rehabilitation. If you have already completed the survey thank you and please disregard this e-mail. If not, I want to provide a friendly reminder and encourage you to complete the short survey. Please click on the link below. The original e-mail explaining the study is also below.

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Best wishes,

Mary Estepp, ATC, LAT

Appendix D
Tables 1-5

Table 1

Participants Ethnicity

Ethnicity	Response Rate
Caucasian	409
African American	21
Hispanic or Latino	17
Asian/Pacific Islander	17
American Indian	2
Two or more ethnicities(non Hispanic or Latino)	9

Table 2

Participants Sport Coverage

Sport	Response Rate
Baseball	63
Basketball	158
Bowling	6
Cross Country	64
Diving	25
Equestrian	2
Fencing	6
Field Hockey	13
Football	126
Golf	52
Gymnastics	15
Ice Hockey	13
Lacrosse	35
Rifle	4
Rowing	17
Rugby	1
Sailing	1
Skiing	4
Soccer	113
Softball	46
Squash	5
Swimming	48
Tennis	92
Track Indoor	62
Track Outdoor	65

Table 3

Participants Formal Training Experiences in Sport Psychology

Formal Training Experiences	Response Rate
None	28
Workshop(s)	124
Continued education workshop(s)	151
Undergraduate college/university course(s)	368
Graduate college/university course(s)	248
Undergraduate degree emphasis in sport psychology	9
Graduate degree emphasis in sport psychology	28
Other	13

Table 4

Mean and Standard Deviation of ATCs' Familiarity, Use, Confidence, Effectiveness, and Qualifications Regarding Psychological Skills during Rehabilitation

	Familiarity with Skills		**Use of Skills**		**Confidence in Demonstrating Skills**		**Effectiveness of Skills**		**Qualification to Use Skills**	
Psychological Skills	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Self-Talk	4.29	1.61	3.53	1.68	4.18	1.88	4.84	1.61	3.90	1.68
Attention and Concentration	4.29	1.47	4.36	1.67	4.44	1.74	5.38	1.45	4.17	1.65
Time Management	5.24	1.38	4.91	1.53	5.16	1.62	5.53	1.39	4.83	1.58
Goal Setting	5.47	1.34	5.61	1.37	5.55	1.50	6.16	1.15	5.17	1.53
Communication	5.28	1.38	5.33	1.47	5.21	1.62	5.71	1.32	4.91	1.59
Imagery, Visualization, and Mental Practice	4.50	1.63	3.63	1.70	4.11	1.85	4.87	1.66	3.83	1.66
Relaxation and Energy Management	4.19	1.60	3.41	1.66	3.81	1.80	4.65	1.66	3.63	1.68
Total Average Score	4.75	1.23	4.40	1.14	4.64	1.40	5.31	1.12	4.35	1.34

Table 5

Mean and Standard Deviation of Perceived Qualification to Use Psychological Skills by Profession

	ST		AC		TM		GS		CS		I,V, MP		REM	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Athletic Trainer	4.47	1.48	4.76	1.47	5.30	1.37	5.58	1.36	5.35	1.36	4.36	1.54	4.18	1.55
Physical Therapist	4.08	1.52	4.40	1.57	4.66	1.58	5.37	1.50	4.90	1.51	4.02	1.55	3.87	1.58
Coach	3.11	1.54	3.45	1.60	3.79	1.64	4.03	1.76	3.91	1.61	3.20	1.67	2.54	1.38
Performance Enhancement Consultant	5.04	1.71	5.10	1.68	4.91	1.70	5.21	1.64	5.02	1.66	5.07	1.76	4.86	1.85
Psychologist	6.35	0.99	6.34	0.98	6.11	1.15	6.16	1.15	6.29	1.03	6.36	0.97	6.34	1.02

Note: ATC=Certified Athletic Trainer, PT=Physical Therapist, PEC=Performance Enhancement Consultant, PSYC=Psychologist, ST=Self-Talk, AC=Attention and Concentration, TM=Time Management, GS=Goal-Setting, CS=Communication Skills, I, V, MP= Imagery, Visualization, Mental Practice, REM= Relaxation and Energy Management

Vita

Mary Kathleen McCauley was born in Goshen, Indiana to Michael and Kristine McCauley. She is the youngest of four children, Robert, Patrick, and Katie. She grew up in Syracuse Indiana. She attended Syracuse Elementary School, Wawasee Middle School, and graduated from Wawasee High School in 2007. After graduation she attended Manchester College, North Manchester, IN where she was a four year letter winner in golf. While playing golf she pursued a Bachelors of Science in Athletic Training and Exercise and Sport Science. She graduated from Manchester College in 2011. Following graduation she married Chase Ryan Estepp and they moved to Knoxville Tennessee. Mary Kathleen Estepp accepted a graduate assistantship in the Sports Medicine Department and is continuing her education in a Masters in Science at the University of Tennessee.