PSYCHOLOGICAL IMPACT OF INJURY:
CHANGES IN ATHLETIC TRAINING STUDENTS' PERCEPTIONS OF THE COLLEGIATE ATHLETE

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By
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ABSTRACT

Pain, limited range of motion, and decreased strength are signs and symptoms that are commonly suffered by student-athletes following injury. However, denial, depression, anger, anxiety, and fear can also occur as a result of injury. Although most athletic trainers are well prepared to care for the physical ailments associated with injury, some are much less adept at designing rehabilitation and treatment programs aimed at addressing psychological reactions. The potential for helping athletic trainers recognize both the physical and psychological ramifications of injury begins with academic preparation. Currently, undergraduate athletic training students are expected to complete course work that addresses twenty different subject matter areas. Yet, only one of the twenty subject matter areas addresses the psychological component of health care. This apparent under-representation of psychosocial intervention in the curricular preparation of athletic trainers may not adequately address the complex nature of injury and its effect on student-athletes.

A course specifically designed to address the assessment and mediation of psychological reactions to injury was offered to a group of athletic training students (N = 19). Pretest and posttest measures were taken in the form of an interview (n = 6) and a questionnaire (N= 19) in order to determine the degree to which athletic training
students' perceptions changed regarding the psychological impact of injury on student-athletes. An analysis of the pretest and posttest questionnaire results revealed that students significantly changed how they perceived the impact of sporting and social influences on the type and severity of psychological response to injury, as well as the impact injury can have on academic standing. The ability to recognize the presence of psychological reactions did not change significantly from pretest to posttest. The pretest and posttest interview results appeared to support the findings of the questionnaire. The six interviewees seemed to become more complex in their understanding of the possible psychological responses to injury and also became more empathetic practitioners. Consequently, the value of a course specifically designed to address the psychological impact of injury seems to be founded.
Dedicated to my father and grandfather.
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CHAPTER 1

INTRODUCTION

Athletic Training is a young profession that officially established its roots in the athletic community when the National Athletic Trainers' Association was founded in 1950 (Delforge & Behnke, 1999). Since that time, Athletic Training has continued to take steps to increase its recognition in the health care community, and ultimately improve the health care for its patient population, athletes and the physically active. The traditional educational competencies used to prepare athletic training students were originally implemented in 1981-1982 and focused on six educational domains: (1) prevention of athletic injury and illness; (2) recognition and evaluation; (3) management, treatment, and disposition; (4) rehabilitation of athletic injuries; (5) organization and administration; and (6) education and counseling (Athletic Training Competencies 1999; Delforge & Behnke, 1999). These traditional competencies focused on the "physical" aspect of injury prevention, treatment, and rehabilitation, while largely ignoring the "psychological" aspects of injury. As a result, new educational competencies were presented in 1999 to address apparent weaknesses in the academic preparation of athletic training students. Today the educational domains include: (1) risk management; (2) assessment and evaluation; (3) acute care; (4) general medical conditions and disabilities; (5) pathology of injury and illness; (6) pharmacological aspects of injury and illness; (7)
nutritional aspects of injury and illness; (8) therapeutic exercise; (9) therapeutic modalities; (10) health care administration; (11) professional development and responsibilities; and (12) psychosocial intervention and referral (Athletic Training Competencies, 1999). Although the newly revised athletic training competencies have addressed many apparent weaknesses in the academic preparation of future certified athletic trainers (ATCs) the addition of one competency, psychosocial intervention and referral, still may not provide athletic training students with a thorough understanding of the complex issues surrounding psychological adjustment to injury and illness in an athletic population. To provide adequate health care, an ATC should have an appreciation for holistic health care. This includes care of the physical ailments, as well as care and attention to the many cognitive, emotional, and behavioral challenges that arise from the grief response associated with injury (Pedersen, 1986). This is especially important when considering the age range typically treated by ATCs. Approximately 44% of ATCs are employed in a setting where ATCs are treating athletes in high school, college, or professional athletic organizations (NATA, 1999), which not only exposes ATCs to an age group that is experiencing crises in regards to establishing identity and other psychosocial factors, but also demands that the ATC be able to recognize and treat psychological distress that is suffered as a result of an unexpected injury that threatens the athletic identity (Parham, 1993).

Much has been documented regarding the psychological reaction to injury (Ford & Gordon, 1998; Heil, 1993, Taylor & Taylor, 1997; Weise & Weiss, 1987; Weis & Troxel, 1986), chronic illness (Westbrook & Viney, 1983), and amputation (Frank, Kashani, Kashani, Wonderlich, Umlauf, & Ashkanazi, 1984; Friedman, 1978; Waites &
Zigmond, 1999). Denial, depression, anger, anxiety, fear, identity loss, and isolation are all common consequences of injury (Ford & Gordon, 1998; Heil, 1993; Leddy, Lambert, & Ogles, 1994; Parham, 1993; Pearson & Petitpas, 1990; Taylor & Taylor, 1997; Weise & Weiss, 1987; Weiss & Troxel, 1986). Such psychological responses not only adversely affect physical healing, but also often negatively impact psychological health and therefore impede physical rehabilitation and academic performance. Yet, the existing sport literature about the psychology of injury and educational literature about the student-athlete fails to merge and recognize the full consequence of injury for the student-athlete. Therefore, research should begin to examine this apparent oversight, and Athletic Training, as a profession, should integrate these findings into the academic preparation of athletic training students. The following research study evaluates athletic training students’ (ATS) perceptions of collegiate student-athletes’ (SA) psychological response to injury, and examines how ATSs perceive the impact of injury on the academic success of a SA in an attempt to establish the efficacy of a course designed to educate ATSs about psychosocial intervention and referral.

PSYCHOLOGICAL IMPACT OF INJURY ON COLLEGIATE STUDENT-ATHLETES

Statement of the Problem

Student-athlete

Maloney and McCormick (1993) looked at academic achievement between the student body and student-athletes at an NCAA Division I school, Clemson University, and found that student-athletes as a group arrived with lower SAT scores and poorer high school preparation, which translated into a lower collegiate grade point average for
student-athletes. Both DeFrancesco and Gropper (1996) and the NCAA (1988-89) reported similar findings. In a case study of a large, urban, Division I university, DeFrancesco and Gropper (1996) reported that 76% of African American student-athletes indicated SAT scores below the university admissions requirement of 1000. In addition, according to the NCAA (1988-89), football and basketball players reported lower SAT/ACT scores and lower collegiate GPAs when compared to non-athletes.

Specifically for Clemson University, all sports except for women’s tennis, women’s track and field, women’s swimming, and women’s volleyball averaged below the student body grade point average of 2.681 (Maloney & McCormick, 1993). Even with background characteristics controlled, evidence was found to support the claim that athletes in revenue sports do not perform as well in the classroom as other students, even other student-athletes (Maloney & McCormick, 1993). As a whole, Maloney and McCormick (1993) state, “athletes have weaker academic credentials than the rest of the student body coming into the university [Clemson University] and that is the most important determinant of lower grades. Their high school rank is about 19 percentage points lower, and their SAT scores average 150 points less” (p.563).

When considering the academic data related to Division I revenue sports, it becomes glaringly apparent that an injury could pose an additional risk to the successful completion of a baccalaureate degree, not to mention opportunities for a professional athletic career. According to Pearson and Petitpas (1990), “as a person’s identity and activity increasingly center on athletics, the likelihood increases of encountering developmental issues and events that are unique, or are substantially different from those of other persons not engaged in careers centered on performance that demands high
levels of physical excellence” (p. 7). Thus, an injury, which threatens athletic identity, could interfere with rational thought processes, self-concept, self-esteem, and social and occupational functioning (Heil, 1993; Pearson & Petitpas, 1990; Taylor & Taylor, 1997). Additionally, the threat of an injury may cause emotional distress in the form of fear, anxiety, and depression, which could further complicate psychosocial development (Ford & Gordon, 1998; Heil, 1993; Larson, Starkey, & Zaichkowsky, 1996; Leddy, Lambert, & Yost, 1994; Parham, 1993; Taylor 1995; Taylor & Taylor, 1997; Weise & Weiss, 1987; Weiss & Troxel, 1986). Smallman, Sowa, and Young (1991) report that student-athletes are at a higher risk of developmental crises and psychological distress than the general student body. Thus, anxiety, tension, psychosomatic illness, and depression (Smallman, Sowa, & Young, 1991) may be prevalent in the typical student-athlete; therefore, with the addition of injury, psychological response may in some cases be similar to the responses suffered when a loved one dies (Heil, 1993). Heil (1993) concludes, “the wisdom of this is evident given that injury can mean the instant death of an athletic career cultivated by years of work” (p. 36).

Given that an athletic injury can create such disrupting psychological reactions, it is necessary that someone who works closely with an injured student-athlete be able to distinguish between typical and atypical behaviors and responses for a particular injured athlete. Because an ATC, certified athletic trainer, usually has daily contact with most student-athletes during the competitive season, ATCs could be capable of developing a “picture” for how a particular student-athlete typically responds to daily stressors. Whereas one student-athlete may react to stress with increased anxiety, another may withdraw socially. Regardless, it is important that someone close to the student-athlete
can take this typical “picture” and evaluate when reactions to stress appear to exceed
what is normal for a particular student-athlete. Although professors or academic advisors
or counselors could assist the injured student-athlete within the academic domain, and
friends and family may also be able to detect atypical psychological reactions within the
social domain, the major health care provider within the athletic domain is perhaps in the
best position to detect such responses (Heil, 1993; Pedersen, 1986; Taylor & Taylor,
1997). The athletic trainer, who is the major health care provider to student-athletes, is
the person who will be personally assisting the injured student-athlete throughout his or
her physical rehabilitation. So, providing an ATC with the training necessary to detect
and filter through the possible psychological responses that may have a negative impact
upon the injured student-athlete’s health seems appropriate.

**Athletic trainer**

The sports medicine team is composed of five main figures (Arnheim & Prentice,
1993). At the core of the sports medicine team is the ATC and the athlete (figure 1.1).
The coach, team physician, and sport psychologist are the remaining three members. As
members of the sports medicine team, the coach, team physician, sport psychologist, and
ATC are expected to work in collaboration for the benefit of the student-athlete.
However, individually, the sport psychologist has become an increasingly important
member of the sports medicine team by providing a valuable resource to the ATC and
student-athlete. Sport psychologists provide “relaxation, imagery, concentration, and
confidence skills that [are] critical to athletes’ training and success” (Weiss & Troxel,
1986, p. 104). Although the sport psychologist is available to assist the injured student-
athlete who is suffering psychological trauma, the sport psychologist typically is not in
direct, daily communication with athletes. Therefore, the ATC, acting as the “hub” of the communication system, needs to be able to determine accurately when a student-athlete may need the services of a sport psychologist. However, without an academic preparation addressing common psychological responses to injury, an ATC may not be qualified to determine the need for intervention from a sport psychologist.

Figure 1.1. The Sports Medicine Team. The ATC serves as the primary health care professional to the injured student-athlete; however, other members are at the disposal of the ATC and student-athlete in order to deliver a holistic model of health care.
As recommended by CAAHEP (2001), the standard subject matter for the preparation of ATCs suggests that the following subject matter areas be addressed: (1) assessment of injury and illness; (2) exercise physiology; (3) first aide and emergency care; (4) general medical conditions and disabilities; (5) health care administration; (6) human anatomy; (7) human physiology; (8) kinesiology/biomechanics; (9) medical ethics and legal issues; (10) nutrition; (11) pathology of injury and illness; (12) pharmacology; (13) professional development and responsibility; (14) psychosocial intervention and referral; (15) risk management and injury/illness prevention; (16) strength training and reconditioning; (17) statistics and research design; (18) therapeutic exercise and rehabilitation techniques; (19) therapeutic modalities; and (20) weight management and body composition. Despite 15 subject matter areas dedicated to physical injury and illness, only one subject matter area, psychosocial intervention and referral, is dedicated to the psychology of injury and illness. Yet, as research continues to expand within sports medicine, the need to treat the injured athlete, psychology included, has become a common theme (Ford & Gordon, 1998; Heil, 1993; Taylor & Taylor, 1997; Weiss & Troxel, 1986). According to Faris (1985), “to treat a knee and ignore the brain and emotions that direct the choreography of that knee is not consistent with total care of the patient” (p.546). Psychological as well as physical symptoms need to be addressed and treated in order for an injured student-athlete to regain a sense of control over the long periods of inactivity and rest, and to deal with the uncertainties surrounding future competition opportunities (Weiss & Troxel, 1986). Thus, a holistic approach is needed, and as a means to provide such holistic care in terms of physical and psychological treatment, the sports medicine team must work cooperatively to serve the complete
athlete (figure 1.1). Injuries require a holistic treatment; consequently, ATCs should treat the patient, and not just the injury. It is analogous to a car accident that results in a fatality. A physician who treats the survivor’s physical injuries and ignores the psychological trauma is not delivering the necessary holistic treatment to ensure a healthy recovery.

Because the population typically treated by ATCs involves high school athletes being treated in a sports medicine clinic or collegiate athletes being treated on campus, an ATC would benefit from instruction that addresses the complex issues surrounding injury and athletics. An athlete, specifically a student-athlete, who has largely defined him or herself through athletics could suffer some serious psychological distress when success in athletics is altered due to injury. The end result for an injured student-athlete could be to give up any hope of a successful recovery from injury or to give up on college altogether. According to Wiese and Weiss (1987), “social support systems such as those provided by coaches, athletic trainers, and sport psychologists can…assist athletes in readjusting and coping with life changes and stresses in an attempt to minimize vulnerability to injury” (p. 320). However, current college preparation for ATCs does not recommend or require formal course training specific to recognizing and treating stress associated with athletic injury. Nevertheless, the athletic trainer is the “hub” of the communication system when it comes to treating an injured student-athlete; therefore, it makes sense to analyze what steps and techniques could be used by an ATC in assisting an injured student-athlete overcome psychological trauma associated with injury (figure 1.1). With that being stated, the focus of this study is designed to address the perceptions of the athletic training student in directing the holistic health care of the injured student-athlete.
Purpose of the Study

The focus of this research project is to describe the athletic training student’s (ATS) perceptions of collegiate student-athletes’ (SA) psychological response to injury, and to examine how the ATS perceives the impact of injury on the academic success of the SA. Although a sport psychologist is the most qualified individual to deal with psychological issues relative to injuries, this does not preclude the ATC from developing the skills to cope with an injured student-athlete during physical rehabilitation. Without an understanding of the psychological impact of injury on a student-athlete, an ATC may not be able to detect potential problems, which may complicate the physical rehabilitation and ultimately interfere with academic success. To date no published research has explored an ATC’s responsibility relative to athletic recovery and academic success.

Therefore, the primary purposes of the study are:

1. To investigate the athletic training student’s perceptions of a student-athlete’s psychological response to injury;

2. To investigate the athletic training student’s perception of the impact of injury on a student-athlete’s continued academic success;

3. To evaluate the effectiveness of a course about the psychological impact of injury in changing ATSs’ perceptions of injury.
Research Questions

The study is designed to answer the following questions:

1. Does an athletic training student’s perception of an injured student-athlete’s psychological response to injury change following the completion of a college course on the psychological impact of injury?

2. Does an athletic training student’s perception of the impact of injury on a student-athlete’s continued academic success change following the completion of a college course on the psychological impact of injury?

3. What is the perceived value of a college course about the psychological impact of injury? Does it provide the athletic training student with the necessary tools to perform an effective rehabilitation on an injured student-athlete?

Definitions of Terms

1. Athletic Training Student (ATS): A college student who is enrolled in an undergraduate degree program designed to meet the specifications determining eligibility for the certification examination to become a certified athletic trainer (ATC).

2. CAAHEP: The Commission on Accreditation of Allied Health Education Programs; a non-profit allied medical organization that accredits entry level allied health education programs such as Athletic Training.

3. Certified Athletic Trainer (ATC): An individual who has been certified by the NATA-BOC (National Athletic Trainers’ Association-Board of Certification) to practice as an allied health professional.

4. Continued academic success: An injured student-athlete’s academic progress that continues to meet NCAA eligibility and graduation requirements.
5. Course (AMP 694) on Psychological Impact of Injury: A course specifically designed for this study at The Ohio State University to address the five factors that can impact a student-athlete’s psychological response to injury.

6. Injury: Physical trauma suffered in athletic participation, which results in a forced absence from athletic practices and/or games.

7. Rehabilitation: An organized process consisting of specific exercises and drills that are directed by the ATC in order to assist an injured athlete’s return to pre-injury form, physically and psychologically.

8. Student-athlete (SA): A college student who also participates in college level varsity athletics.

Significance of the Problem

Within the past decade, the research regarding the psychological impact of injury has flourished (Ford & Gordon, 1998; Gordon, Potter, & Ford, 1998; Ogilvie & Taylor, 1993; Smith, Smoll, & Ptacek, 1990; Weiss & Troxel; 1986). As such, the recommended Athletic Training Competencies (1999) and the Athletic Training Proficiencies (1999) established by the NATA Education Council to prepare prospective athletic training students for a future in the rehabilitation of injured athletes includes a recommendation for subject matter addressing psychosocial intervention and referral (CAAHEP, 2001). This subject matter could be covered in one lecture within a course or within a course designed specifically for psychosocial intervention and referral. A course specifically designed to address the psychological problems encountered throughout the rehabilitation process is not specifically recommended; therefore, to include such a course would be a decision by a college or university to exceed the minimal standards as established by the
athletic training accrediting agency, CAAHEP. Such a decision would likely be taken on the basis of evidence that the course increases awareness by preparing the athletic training student to meet and face in a healthful manner the many cognitive, emotional, and behavioral challenges that arise from the grief response (Pedersen, 1986). According to Pedersen (1986), on a cognitive level, the athletic trainer must be able to explain the nature of the injury and the treatment protocol to the injured athlete, while emotionally the athletic trainer must be able to recognize common signs of depression, anxiety, and general distress (Pedersen, 1986). Furthermore, the athletic trainer must be able to help the injured athlete adjust behaviorally to the entire process of rehabilitation through the implementation of behavioral techniques like thought stopping, relaxation, and mental imagery. Therefore, if the results of the proposed study indicate that athletic training students change their perceptions of injured student-athletes following the conclusion of the course, thereby establishing the value of the course, further studies should be implemented on a larger scale to determine the key content areas necessary for instruction and to establish the need to amend the CAAHEP recommendations to include an actual course, and not just subject matter addressing the psychological impact of injury. Ultimately, the goal is to prepare athletic training students to handle the holistic health care of injured student-athletes, thereby improving the healing cycle, decreasing the amount of inactivity, and increasing rehabilitation and classroom adherence.
CHAPTER 2

LITERATURE REVIEW

One of the many responsibilities for the high school and collegiate athletic trainer is to facilitate an injured student-athletes’ psychological and physical adjustment to injury, so that minimal academic and athletic disruption occurs. One way to accomplish this goal is to amend the traditional undergraduate athletic training curriculum. The traditional approach taken by many colleges offering athletic training as a major is to provide course work addressing the skills required to prevent, manage, and treat the physical injuries and illnesses suffered by athletes. The result produces an athletic trainer who can evaluate an injured athlete’s physical injury and manage an effective rehabilitation designed to return the athlete to the previous level of competition (figure 2.1). However, this “result” may produce an athletic trainer who is not qualified or prepared to recognize the psychological anguish created by injury. By requiring an undergraduate course about the psychological impact of injury, which serves to address the psychosocial subject matter requirement within CAAHEP’s guidelines and Athletic Training’s competencies, colleges offering athletic training as a major may be capable of producing an athletic trainer who is more capable of providing a multifaceted rehabilitation (i.e. physical and psychological). This multifaceted rehabilitation would not only aim to return an injured athlete to their precompetition level, but would also
address the many psychological factors that could negatively impact academic success, and ultimately NCAA eligibility (figure 2.2). The conceptual framework presented in this chapter will define the subject matter that could be used to develop a course addressing the preparation of student athletic trainers in the physical and psychological components of rehabilitation, and the research study that follows will test the efficacy of such a course.

Figure 2.1. Traditional Curricular Model. Traditionally ATCs have not been given specific instruction or training in dealing with psychological responses to injury; therefore, academics were not considered to be a concern during rehabilitation.

Figure 2.2. Proposed Curricular Model. By offering a course on the psychological impact of injury within the formal curriculum required to become a certified athletic trainer, knowledge and techniques necessary for recognizing and providing the initial treatment for psychological distress may be possible.
History of Athletic Training

Dating back to 1938, prior to the establishment of the National Athletic Trainers’ Association (NATA), the “trainer” wore many hats (Hunt, 1998). Athletic trainers could be found performing the roles of an athletic director, manager, janitor, referee, recruiter, counselor, and water boy. With the establishment of the NATA in 1950, athletic training, as a profession began to organize and collaborate defining the appropriate roles for an athletic trainer. “By 1956, the NATA started to produce a quarterly scientific journal dedicated to the profession, and college courses naturally followed” (Hunt, 1998, p.8). In 1959 the first curriculum model for athletic training was in place and in 1970 a national certification exam became mandatory to certify anyone wishing to practice as an athletic trainer (Delforge & Behnke, 1999). However, athletic training as a profession, is still trying to gain respect within the allied health professions despite being recognized by the AMA as an Allied Health Profession in 1990 (Delforge & Behnke, 1999).

The most recent attempt at change has been in the arena of practitioner preparation through a standardized college curriculum. In 1991, the NATA joined CAHEA, the Committee on Allied Health Education and Accreditation, which was later restructured and renamed CAAHEP, the Commission on Accreditation of Allied Health Education Programs in 1994. Currently CAAHEP accredits 18 different allied health professional fields, including Athletic Training, in an attempt to reform and standardize the educational process to becoming an allied health practitioner (CAAHEP, 2001). One of the main goals of the CAAHEP and athletic training collaboration is to eliminate multiple routes to becoming an ATC (Hunt, 1998). Currently, a student wishing to take the certification exam to practice as an ATC can major in a non-accredited athletic training

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program, in an accredited athletic training major, or in a curricular area similar to athletic training. The standardization of the route available for becoming a certified athletic training professional will go into effect in 2004. At that time, eligibility for the certification exam to become an ATC will be restricted to students graduating from a CAAHEP accredited athletic training major (Delforge & Beknke, 1999).

As part of the association with CAAHEP (2001), athletic training programs within colleges and universities must provide subject matter in twenty areas: (1) assessment of injury and illness; (2) exercise physiology; (3) first aide and emergency care; (4) general medical conditions and disabilities; (5) health care administration; (6) human anatomy; (7) human physiology; (8) kinesiology/biomechanics; (9) medical ethics and legal issues; (10) nutrition; (11) pathology of injury and illness; (12) pharmacology; (13) professional development and responsibility; (14) psychosocial intervention and referral; (15) risk management and injury/illness prevention; (16) strength training and reconditioning; (17) statistics and research design; (18) therapeutic exercise and rehabilitation techniques; (19) therapeutic modalities; and (20) weight management and body composition. The meaning of the term “subject matter,” which is used to establish the curricular guidelines for athletic training, is vague. A college or university could elect to cover the listed “subject matter” in only one lecture or establish an entire course. The lack of specification on the term “subject matter” is an apparent weakness. Despite the fact that research within the area of rehabilitation has established that rehab involves more than a physical component (Ford & Gordon, 1998) and that psychological interventions during physical rehabilitation may facilitate the recovery process (Brewer et al, 1995; Ross & Berger, 1996), only one of 20 “subject matter” areas addresses the psychology of injury.
Fifteen of the 20 “subject matter” areas address physical injury and illness. Sadly, a course specific to psychological techniques is lacking from the curriculum outlined by CAAHEP and the NATA’s Education Council (Athletic Training Competencies, 1999). Yet, through experience most ATCs are able to recognize potential psychological reactions that can have a deleterious effect on the outcomes of the rehabilitation, but “there are concerns about whether they [ATCs] can effectively implement these skills without more in-depth training” (Gordon, Potter, & Ford, 1998, p.148). A course adapted to address psychological training would shorten the learning curve for ATCs and perhaps allow ATCs to use psychological theory in more insightful and productive ways. Larson, Starkey, and Zaichkowsky (1996) found that 71% of surveyed ATCs recognized stress and anxiety in injured athletes and 53% recognized anger. However, even though anxiety and anger were recognized, techniques aimed at alleviating such conditions were not frequently reported. Furthermore, 85% of the surveyed ATCs believed that a sport psychology course would be important or very important in facilitating the effectiveness of rehabilitations with injured athletes (Larson, Starkey, & Zaichkowsky, 1996).

Apparently, most ATCs do understand the negative implications associated with noncompliance, denial, and wanting to return too soon, as well as the positive effects of goal setting, positive self-talk, relaxation, and healing imagery. However, ATCs do not know how to implement such techniques aimed at facilitating a healthy psychological adjustment (Ford & Gordon, 1998).

In an earlier study, Gordon, Milios, and Grove (1991) reported that 84% of sport physiotherapists (i.e. Australian ATCs) felt that psychological training was inadequate and 87% indicated a need for more curricular training. Thus, it only seems logical to
educate ATCs in the delivery of such techniques. Fritts-Pero (1995) found that an educational program designed for continuing education resulted in an improved posttest score for males and females on sport psychology. According to Ford and Gordon (1998), "professional training and accreditation programs should address these shortcomings and endeavor to integrate these data with both theoretical and applied material at all levels of training" (p.92).

**Conceptual Framework**

For the purpose of defining the content of a course about the psychology of injury for athletic training students, Flint’s (1998) Injured Athlete-Injury Scenario Interaction was used to develop the foundation of the course and the lectures. The proposed intervention for this study, AMP 694, entitled the Psychological Impact of Injury was used to test the efficacy of the content outlined by Flint (1998). AMP 694 was offered to prospective and admitted freshmen, sophomore, junior, and senior athletic training students as an elective course during the winter 2001 quarter at The Ohio State University. Flint’s framework presents four main factors that can ultimately impact the degree and severity of the psychological response to injury: (1) personal influences, (2) social influences, (3) sport influences, and (4) injury influences. However, the model used here has been modified (figure 2.1). A fifth factor, stress reactions, was added to Flint’s original framework based upon the literature addressing individual differences and potential influences on psychological responses to injury (Blackwell & McCullagh, 1990; Ford & Gordon, 1998; Frank, Kashani, Kashani, Wonderlich, Umlauf, & Ashkanazi, 1984; Friedman, 1978; Heil, 1993; Kleiber & Brock, 1992; Larson, Starkey, & Zaichkowsky, 1996; Leedy, Lambert, & Ogles, 1994; Sarason, Sarason, & Pierce, 1990;
Taylor & Taylor, 1997; Waites & Zigmond, 1999; Westbrook & Viney, 1983). The conceptual framework for this study is described in five sections that parallel the factors: (1) personal influences, (2) social influences, (3) sport influences, (4) stress reactions, and (5) injury influences (figure 2.1).

Modifications were also made within the original four factors of Flint’s framework. Within the factor of personal influences pain expression was moved to injury influences in order to describe how different types of pain relative to the injury can be interpreted incorrectly by an injured athlete (Heil, 1993; Taylor & Taylor, 1997). Sports medicine practitioners, within personal influences, was eliminated because the entire framework is designed for future ATCs, and not just one factor within the framework. Within the second factor, social influences, family support was eliminated, as family support is considered a type of social support within sport psychology literature; therefore, it was removed to avoid redundancy (Richman, Hardy, & Rosenfeld, 1989; Rosenfeld, Richman, & Hardy, 1989). In addition, predisposing conditions and life experiences was eliminated because an entirely new factor, stress reactions, was added to more fully address this subcategory. Within the factor, sport influences, two of Flint’s subcategories were combined, nature of particular sport and individual versus team sport, and renamed the subcategory, type of sport. Type of sport will collectively describe the nature of the sport (team or individual), and the classification of the sport (revenue or non-revenue). Injury influences, as a factor, was modified by eliminating the subcategory of body part injured due to a lack of literature investigating differential psychological reactions based upon upper versus lower limb injuries, and the subcategory of level of understanding was added to address the importance of keeping the injured athlete informed of the injury and
the rehab process. Additionally, the subcategories of *cause of injury* and *onset of injury* were combined into *macrotrauma/microtrauma* as a cohesive term to explain the physiological onset of injury, and the subcategories of *severity of injury* and *potential impact to career* were combined into the subcategory, *severity*, to condense the entire factor.

The ultimate objective for revising Flint's (1998) Injured Athlete-Injury Scenario Interaction is to provide a structured framework upon which to build a course on the psychological impact of injury for athletic training students. Currently the NATA (National Athletic Trainers' Association) and CAAHEP (Committee on Accreditation of Allied Health Education Programs) only recommend subject matter, not a course, to address psychosocial intervention and referral as part of the athletic training curriculum (Athletic Training Competencies, 1999; CAAHEP, 2001). This may under-represent the role psychology plays in not only identifying and treating psychological issues related to injury, but also the impact injury can have on academic progress (Larson, Starkey, & Zaichkowsky, 1996).

The five factors that can impact or alter the influence of injury on a student-athlete’s psychological reaction are represented laterally in Figure 2.3. Clinically, there is no hierarchical order; any of the five factors can impact psychological reactions at any time and in any order. Furthermore, factors may surface more than once. An injured student-athlete might effectively deal with one factor such as sport influences, only to have the same issues reappear two weeks later. In addition to providing a framework for the potential influences that could impact the psychological reaction to injury, each subcategory within the five main factors provides guidelines that the ATC may use in
handling and treating such psychological reactions. Pedagogically, Flint’s (1998) factors were delivered in the following order: (1) stress reactions; (2) sport influences; (3) injury influences; (4) personal influences; and (5) social influences. This order allowed the researcher to present existing theory at the beginning of the course and then add to the theories with additional factors and research that complement or discredit existing theories. (The specific details of the course are presented in more detail in Chapter 3.)

However, for the purpose of the literature review, Flint’s factors are presented in an order that moves from general information to more specific information. By presenting Flint’s first factor, personal influences, the framework for the remaining factors is outlined by talking about general psychosocial factors that pertain to all athletes. However, Flint’s last factor, injury influences, is specific and relevant to the individual athlete’s injury. The presentation of Flint’s factors from the general to the specific is conceptually more logical for the reader. The sections are ordered as follows: (1) personal influences; (2) social influences; (3) sport influences; (4) stress reactions; and (5) injury influences.
Injured Student-Athlete

Post-Injury or Post-Diagnosis

Personal Influences
- Age, Maturity, Gender
- Previous Injuries
- Mental Training

Social Influences
- Emotional Support
- Technical Support
- Ethnic Background

Sport Influences
- Athlete's Status
- Type of Sport
- Time during Season

Stress Reactions*
- Life Events
- Coping Resources
- Responses

Injury Influences
- Pain Expression
- Macro/Microtrauma
- Understanding*

*Understanding is the subcategory “Level of Understanding.”

**Bold**. Indicates that the factor was added to Flint's (1998) original model.

*Italic*. Indicates that the subcategories are the result of combining two categories in Flint's (1998) original model.

**Underline**. Indicates that the subcategory was moved from personal influences in Flint's (1998) original model to injury influences in the modified version.

Figure 2.3. Injured Athlete-Injury Scenario Interaction. The five factors that can impact or alter the influence of injury on a student-athlete's psychological reaction.
INJURED ATHLETE-INJURY INTERACTION SCELARIO LITERATURE REVIEW

Personal Influences

Age, maturity, gender

College is a time for establishing identity and intimate relationships; however, the time demands placed upon student-athletes may limit the social opportunities necessary to enhance psychosocial development. In fact, Brown and Hartley, (1998) report that “individuals who identify strongly with the athlete role may be less likely to explore other career, educational and lifestyle options because of their intensive involvement in sports” (p. 18). When an injury occurs and impacts athletic identity, extreme identity foreclosure could result, which ultimately may create adjustment difficulties and failure to plan for post-athletic career opportunities (Grove, Lavallee, & Gordon, 1997). The critical importance of physical prowess upon identity and future development is illuminated by Westbrook and Viney’s (1983) finding that younger patients (ages 18-30) suffered more anxiety and feelings of helplessness following the diagnosis of a chronic illness, and Frank, Kashani, Kashani, Wonderlich, Umlauf, and Ashkanazi’s (1984) finding that younger patients suffered more emotional distress than older patients following amputation. Additionally, Lavallee, Gordon, and Grove (1997) found that the quality of adjustment following an injury is dependent upon the degree of athletic identity (i.e. lesser degree of athletic identity leads to better adjustment). Yet, considerable controversy still exists regarding the student-athlete and his or her ability to advance within the vectors of psychosocial development. Various studies (Brown, Glastetter-Fender, & Shelton, 2000; Brown and Hartley, 1998; Murphy, Petitpas, & Brewer, 1996) have indicated that student-athletes who participate in revenue producing sports score
lower on measures of career maturity than non-student-athletes, whereas Cornelius
(1995) found that within a group of intramural athletes, athletic identity was associated
with the accomplishment of more developmental tasks relative to time management,
successful management of relationships and obligations as well as leading more satisfied
lives. In regards to academic commitment, Martin, Eklund, and Adams-Mushett (1997)
claim that student-athletes with higher degrees of athletic identity had less interest in
academics. Research findings such as these bring light to the need for support personnel
like ATCs to understand the complex issue of identity development so that effective
support can be rendered.

In addition to the athlete identity, Parham (1993) notes that there are several
issues weighing on the traditional college student that parallel Chickering’s (1993)
vectors of psychosocial development. Typical college aged students are faced with (1)
developing a set of social, academic, and intrapersonal competencies to enhance control
over their environment (Chickering’s first vector: developing competence); (2)
developing values and goals separate from their communities and families (Chickering’s
fifth vector: identity); (3) discovering and creating successful and mature interpersonal
relationships (Chickering’s fourth vector: developing mature interpersonal relationships);
(4) creating a personal set of values and beliefs, which are consistent with their behaviors
(Chickering’s seventh vector: developing integrity); and (5) developing a career path
(Chickering’s sixth vector: developing purpose). However, the traditional aged student-
athlete also has to deal with (1) balancing academic and athletic demands; (2) adapting to
the isolation from mainstream social events; (3) managing subsequent success or failure
in athletics, academics, or both; (4) maintaining optimal physical health in order to
minimize injury and maximize performance; (5) balancing relationships between coaches, teammates, parents, and friends; and (6) dealing with the impending end of an athletic career. Nonetheless, despite the added challenges associated with being a student-athlete, athletic participation does have its advantages relative to levels of self-esteem (Taylor, 1995). In fact, Taylor (1995) reported “senior participants were significantly higher in self-esteem than the junior participants both when precollege characteristics and the nonathletic college experience variables were controlled.”

Furthermore, Perna, Zaichkowsky, and Bocknek (1996) found that student-athletes who received psychosocial mentoring scored higher on intimacy scales and indicated greater comfort with emotional expressions and self-disclosure. In fact, “psychosocial mentoring accounted for twice the variance in athletes’ intimacy score than degree of vocational mentoring score, 31.1% to 15.5% respectively” (Perna, Zaichkowsky, & Bocknek, 1996). Therefore, mentoring within the psychosocial construct may provide student-athletes with an essential tool relative to degree attainment persistence when facing an injury. Yet, it is surprising that Perna, Zaichkowsky, and Bocknek (1996) did not find any student-athlete to report the ATC as a mentor; instead coaches, academic advisor, professors, and alumnus were listed.

Rosenfeld, Richman, and Hardy (1989) investigated social support in Division I sports and found no significant differences between genders in the amount and type of social support received; a difference in the amount of social support was also not found to be significant between low and high stress student-athletes. However, Smallman, Sowa, and Young (1991) found that male athletes suffered from more anxiety associated with life events, but females suffered more anxiety with competition. Therefore, the
“increased anxiety for female athletes within sports and for male athletes within the university environment limits each gender within one aspect of the student-athletes’ lives” (p. 234). Thus, it is possible that some student-athletes require more social support in order to cope with daily stressors and/or stress suffered from injury. Petrie and Stoever (1997) found that social support accounted for 10% of the variance in freshmen female student-athlete GPA, but not for senior female student-athlete GPA. Hence, it may be more important for freshmen student-athletes to be provided social support in order to facilitate the transition away from family support systems and into collegiate affairs and peer support systems. This finding should not be surprising taken in light of Chickering’s (1993) psychosocial developmental vectors. As freshmen and sophomore student-athletes struggle to development intellectual competence and establish an identity separate from family, peers often become critical providers of support (Chickering, 1993). However, juniors and seniors tend to have resolved the issues surrounding the development of competence and the establishment of identity and have moved onto more complex tasks of developing autonomy and career direction (Chickering, 1993).

Social support can have an important impact on identity development. Therefore, the ATC, as an effective gatekeeper to communication and support systems, needs to have a firm understanding of the psychological issues surrounding the psychosocial development of college aged student-athlete. For example, an athlete who expresses a high professional sport orientation may suffer different psychological stressors regarding the recovery from injury than an athlete who is using athletics as a financial avenue for achieving a career separate from athletics. Hence, ATCs could benefit the rehabilitation process by taking the time during everyday activities like ankle taping, stretching, and
modality applications to ask questions regarding a student-athlete’s goals for the future. Knowledge of the individual student-athlete’s future goals can help an ATC make an early assessment of the appropriateness of the psychological reaction to injury, thus curtailing the manifestation of psychological trauma. By asking injured student-athletes to define themselves and to state what is important to them through everyday conversations, the ATC can assess the potential threat to identity and goal achievement as stated by the injured athlete before injury ever occurs (Balague, 1999).

Since injured student-athletes who have lost their athletic identity may suffer from a sense of inadequacy, worthlessness, depression, and helplessness, the rehabilitation of an injured student-athlete needs to address the athletic based identity (Taylor & Taylor, 1997). Rehab that is presented as a form of athletic participation requiring focus, goals, determination, and achievement can make progress towards recovery more efficient. Such an approach would utilize the talents that have landed him or her a position within a Division I athletic team, thus preventing the unnecessary disruption of identity development.

**Previous injuries**

Previous history of injury can have a cumulative positive or negative effect depending on how an athlete assesses the situation (Heil, 1993; Taylor & Taylor, 1997). On a positive note, a previous injury that is marked with a successful recovery can lessen anxiety and increase confidence in the rehabilitation process, especially if it is a similar injury (Rotella & Heyman, 1993). For example, an athlete who sprained his left ankle previously, and this time sprained his right ankle may refer back to the coping resources developed previously. Consequently, he may progress at an even faster rate as the
anxiety and tension in the current rehab are lessened due to familiarity with the process and confidence in the outcome. On the other hand, "a recurring injury that has posed significant difficulty in the past is particularly noteworthy. The repeated stress and strain of injury over a career may, at some point, undermine the recovery process" (Heil, 1993, p. 74-5). For this scenario, the ATC may enhance a healthy psychological adjustment by finding new exercises or extracurricular involvements during the rehabilitation process; redirecting attention into another realm may preserve athletic involvement.

**Mental training**

Mental training techniques have been found to "influence metabolic parameters, endurance, muscular strength, as well as motor skills, presumably through effects on the cognitive-symbolic processes that underlie these skills" (Heil, 1993, p. 153). In the application of mental training techniques to injured student-athletes, the largest benefit appears to be a decrease in anxiety and an increase in the perception of control leading to increased self-efficacy (Heil, 1993; Rotella, 1982; Taylor & Taylor, 1997).

Three main types of imagery or mental rehearsal are typically used in injury rehab settings. Healing imagery (Taylor & Taylor, 1997), or body rehearsal (Rotella & Heyman, 1993), involves having the patient visualize mending of the injury and healing tissues. This requires that the injured student-athlete have a sound understanding of the physiological effects of the injury and the rehab in order to be effective. The second type of imagery is soothing imagery. Soothing imagery (Taylor & Taylor, 1997), or emotive rehearsal (Rotella & Heyman, 1993), requires the visualization of a relaxing and comfortable environment or setting. Immediate effects and benefits include reduced muscle tension and decreased anxiety. Such positive effects can lead to enthusiasm for
recovery and an increase in self-confidence (Rotella & Heyman, 1993). Performance imagery (Taylor & Taylor, 1997), or visual rehearsal (Rotella & Heyman, 1993), is the final method; it is best utilized for injured student-athletes who are experiencing anxiety over returning to sport. The goal of performance imagery is to have the injured student-athlete mentally prepared to handle a similar scenario as the one that resulted in injury. Mental rehearsal of sport skills and agility enables “athletes to work on technique, tactics, mental preparation, and competitive performance during the course of rehabilitation” (Taylor & Taylor, 1997, p. 201). Mental rehearsal should be encouraged throughout the day and can even be instituted while the injured athlete is sitting during practice or watching films of opponents.

Rotella (1982) describes performance imagery in terms of the fear hierarchy, i.e. systematic desensitization. As an injured student-athlete approaches the end of the rehabilitation process, anxiety can develop concerning the return to activity. Often athletes will become apprehensive of their physical abilities. Hence, Rotella (1982) recommends using a desensitization technique, which calls for the athlete to identify five to ten anticipated performance fears. Desensitization begins with mental rehearsal of each fear while remaining relaxed. Relaxation can be monitored through thermal biofeedback or subjective ordinal scales. Finally, prior to a full return to competition, the fear hierarchy list can be implemented physically as the final reassurance to the athlete that he or she is ready to compete.
Social Influences

Emotional support

According to Sarason, Sarason, and Pierce (1990), the essence of social support is letting someone know that he or she is loved and that someone will always be there for support. This kind of support can aid an injured student-athlete in coping with setbacks and dysfunction. A sense of support is “a belief that there are supportive others who are willing to provide support, regardless of what might be required or the sacrifices that might have been made in order to provide it” (Sarason, Sarason, & Pierce, 1990, p. 120). Providing an injured student-athlete with a sense of support can enhance their ability to explore new tasks in rehab, increase communication, lower anxiety, increase a positive self-image, and lead to an improved sense of self-efficacy (Rosenfeld, Richman, & Hardy, 1989; Sarason, Sarason, and Pierce, 1990). A sense of support may also indirectly support academic success in times of athletic turmoil. This is especially important for student-athletes as the physical isolation that typically results from traveling and practice schedules can reduce a student-athlete’s access to social support (Pearson & Petitpas, 1990). As such, Petrie and Stoever (1997) reported “higher levels of social support at the beginning of the semester were predictors of higher subsequent GPAs for minority football player” (p. 599).

To address the need for support, Rosenfeld (1989; cited in Taylor & Taylor, 1997) has identified six different types of social support: (1) listening- active listening without judgment, (2) emotional support- willingness to provide unconditional support even when the supporter is not in total agreement with the injured student-athlete, (3) emotional challenge- questions and challenges geared towards goal achievement, (4)
shared social reality—sharing of similar situations, values, and views, (5) technical appreciation—acknowledgement of task effort, and (6) technical challenge—questions and challenges aimed to prevent staleness and encourage greater involvement.

Listening, emotional support, emotional challenge, and shared social reality are all general types of emotional support that can be provided by friends, teammates, parents, coaches, and ATCs. However, general emotional support does not seem to come from a variety of sources. Rosenfeld, Richman, and Hardy (1989) found that parents and friends mostly offer emotional support. More specifically Richman, Hardy, and Rosenfeld (1989) found parents most often provide listening, and emotional support. In addition, coaches and teammates mostly provide emotional challenge, and friends offer shared social reality. Surprisingly, ATCs were not identified as providers of any type of support.

The key to the ATC’s role in social support is for social support to be a proactive resource and not a reactive resource. Successful student-athletes require an active social support network throughout their careers; however, when injury enters the picture, the necessity of the social support network takes on a whole new importance. Hence, it would be best if the social support network were already in place prior to injury. However, in the event that it is not, the ATC can communicate to teammates, coaches, parents, and possibly friends the correct things to say and do in order to encourage a healthy outlook on recovery. Furthermore, the ATC can maintain a line of support for the injured student-athlete by being an active listener who can provide technical
challenge and appreciation as an injury can create a sense of emotional loss due to separation from once significant others such as teammates and coaches (Lavallee, Gordon, & Grove, 1997).

**Technical support**

General technical support is composed of technical appreciation and technical challenge. Coaches and teammates are more apt to give technical support mainly because this type of support requires some expertise of the sport and the skill required (Rosenfeld, Richman, & Hardy, 1989). However, Richman, Hardy, and Rosenfeld (1989) found that coaches and parents were most likely to give technical appreciation, whereas teammates and coaches mostly provided technical challenge. Once again ATCs were not identified as support providers. This is alarming. Although ATCs are in the position to provide support, neither study (Richman, Hardy, & Rosenfeld, 1989; Rosenfeld, Richman, & Hardy, 1989) identified ATCs as providers of social support. There are two possible reasons, one for each study. One is the population studied in Richman, Hardy, and Rosenfeld’s 1989 study, 36 coaches and sport psychologists who were asked to identify the type and level social support provided to SAs. It is possible that neither coaches nor sport psychologists recognized the role ATCs play in SAs’ lives. For example, the majority of the interactions between SAs and ATCs occur when neither sport psychologists nor coaches are around. In fact, coaches and sport psychologists rarely enter the Athletic Training Room; most interaction occurs through memos, on the playing field, or in the office of the coach or sport psychologist, not in the Athletic Training room. The other explanation concerns Rosenfeld, Richman, and Hardy’s 1989 study where 170 Division I athletes were asked to identify social support networks. The 170
athletes represented soccer, field hockey, track and field, gymnastics, cross country, and wrestling. These sports, with the exception of soccer, field hockey and wrestling, are not considered collision or contact sports, thus the risk of injury is less compared to sports like ice hockey and football. Thus, it is possible that many of the SAs included in the study were not familiar with ATCs. This is particularly important when considering the date of the study, 1989. Athletic training is a relatively new profession, and until the mid 1990’s a limited number of ATCs were employed as part of each college’s Athletic Training staff. It is possible the athletes in these studies would have had limited access to an ATC based upon the fact that there may have been only one to three ATCs responsible for as many as ten to twenty varsity sports. This leaves little time for the ATC to interact and provide social support to injured SAs. Nevertheless, this is purely speculation.

Technical support is perhaps the best type of support an ATC can give. ATCs usually know what skills are required for each sport; else rehabilitation would not serve its purpose. Hence, ATCs should be able to provide technical support relative to rehab progress, and in doing so provide the injured student-athlete with connections between rehab exercises and sport specific skills. By educating injured student-athletes as to the rationale for each exercise, injured athletes are capable of seeing how rehab is really a form of conditioning for sport. Thus, rehab provides ATCs with a wonderful opportunity for technical support in regards to encouragement, complements, and feedback.

**Ethnic background**

Within the NATA, only 5% of certified, practicing ATCs are of color, which includes African American, Asian American, Native American, Hispanic, and Latin ethnicities (NATA, 1999). Such a low minority ATC population may not adequately
meet the needs of the diverse population, which is served by the ATC in collegiate settings. Within collegiate athletics, 2.9% of student-athletes are Latin American, and 23.4% of student-athletes are African American (Brennen, 1999). Such a glaring discrepancy in available ATCs of color poses the issue of cultural relevance, and whether or not communicative barriers may exist when a white ATC attempts to provide the necessary social support to an injured student-athlete from an ethnic minority. In fact a majority of black athletes at predominately white universities feel isolated (DeFrancesco & Gropper, 1996; NCAA, 1988-89; Sellers, Kuperminc, & Damas, 1997), and as many as 33-36% report racial discrimination (DeFrancesco & Gropper, 1996; NCAA, 1988-89). In addition, many African American athletes come into college with characteristics that place them “at-risk” of failure in college. According to DeFrancesco and Gropper (1996), African American student-athletes often have a low socioeconomic status, live in an urban environment, and are first generation college students. A case study analysis of one Division I institution reported that 52% of African American student-athletes come from households that earn less than $30,000 a year, and only 25% had fathers who were college graduates and 8% had mothers who were college graduates (DeFrancesco & Gropper, 1996).

However, precollege handicaps are not the only obstacle African American student-athletes must overcome. Sellers (1992) reported that African American student-athletes do not differ from white student-athletes in the stated importance for obtaining a degree nor in the amount of time allocated to class preparation and study. Yet, in response to academic needs and experiences, 52% reported that it is often harder for them to be regarded as a serious student by professors (DeFrancesco & Gropper, 1996).
Inevitably, such an environment may create distress for the African American student-athlete. Smallman, Sowa, and Young (1991) reported that African American student-athletes indicated significantly higher levels of perceived stressful life events. Thus, “the Black athlete may be at risk for the development of depression, anxiety, somatic discomfort, and general feelings of stress” (p. 233). In other studies about African American student-athletes, African American female student-athletes reported feeling on average that “it is somewhat easier for them to learn social skills, gain opportunities, and be more assertive as a result of their athletic status” (Seller, Kuperminc, & Dumas, 1997, p. 709-710). Such positive perceptions of the collegiate experience were consistently reported across academics, athletics, and life satisfaction of African American female student-athletes despite the finding that African American female student-athletes had lower SES levels, earned lower high school GPAs, and scored an average of 100 points lower on the SAT than their white female counterparts (Sellers, Kuperminc, & Damas, 1997). Such findings illuminate the complex issues facing minority student-athletes. As a result, ATCs need to be extremely persistent in assisting injured student-athletes with their student as well as athlete roles.

**Sport Influences**

**Athlete’s status**

Whether a student-athlete is a starter or a nonstarter can have a large impact on the degree and severity of psychological reactions resulting from injury (Flint, 1998). If the student-athlete is a key starter for the team, the coaches, media, and even teammates may be adding to the stress by continually pressuring the injured student-athlete to make a speedy recovery (Weiss & Troxel. 1986). On the other hand, if the injured student-
athlete is a nonstarter, the injury may pose just as much stress. If the nonstarter is a non-scholarship athlete, he or she could be struggling to show his or her potential in order to be awarded a scholarship. In this scenario, an injury has the potential to interfere with goals for scholarship attainment. Furthermore, a nonstarter may feel that a missed day of practice may mean losing more status or perhaps even the marginal amount of playing time he or she already sees (Rotella & Heyman, 1993). Hence, the degree of stress produced by injury will vary for student-athletes according to their situations.

In practice, goal setting can be used to motivate an injured student-athlete regardless of his or her status. Goal setting, as a strategy, has been shown to substantially improve sport and exercise performance and motivation (Kyllo & Landers, 1995). The most effective goal setting strategies are outcomes oriented, a combination of short-term and long-term goals, announced publicly, and made jointly by the athlete and the ATC (Kyllo & Landers, 1995). By focusing on short-term goals or smaller goals, inevitable setbacks will create less insult to self-confidence and motivation than focusing on long-term goals (Pollard, 1994). Altogether, a simple approach to establishing long and short term goals involves answering three questions: who, will do what, and by when (Smith, Scott, & Weise, 1990).

Type of sport

Some speculation has been made whether a team sport creates more injury related stress than an individual sport (Richman & Hardy, 1989; Richman, Hardy, & Rosenfeld, 1989; Rosenfeld, Rotella & Heyman, 1993; Weiss & Troxel, 1986). Such reasoning hypothesizes that a team sport always has someone ready to step up and fill an injured student-athlete’s position (Rotella & Heyman, 1993). Competition for a starting position
in most Division I sports can be fierce, and once one player is injured, there is more than likely another athlete ready to prove his or her potential. Knowing that the nonstarter behind the injured student-athlete could actually replace him or her is stressful, especially if the replacement is gaining notoriety.

In addition to the stress of competition for positions on a team, Weiss and Troxel (1986) noted that some injured student-athletes actually report feelings of guilt due to not being able to help the team or the coach. A team environment that is rich in the cohesive dimensions of teamwork could actually, in this case, provide a supportive environment for the injured student-athlete (Flint, 1998; Rotella & Heyman, 1993). It is possible that a close-knit team could feel responsible for coming into rehabilitation sessions to provide their injured colleague pep talks, thus enhancing feelings of acceptance and support. However, for the individual sport like wrestling or tennis, psychological reactions are more or less dependent on the individual and the coach. Although, there is still stress in knowing that a nonstarter can step up and take an injured student-athlete’s position, there is, nonetheless, less opportunity for team support (Rotella & Heyman, 1993).

The revenue category of sport may also impact the psychological responses to injury. Murphy, Petitpas, & Brewer (1996) found that student-athletes in revenue sports were more likely to be foreclosed on their athletic identities, and thus are less likely to have engaged in career exploration outside of athletics. Consequently, a foreclosed student-athlete participating in revenue sports could suffer more in terms of limited career options when an injury occurs that could potentially alter his or her physical ability and professional athletic career.
An ATC can analyze a student-athlete’s orientation towards professional goals by relating his or her personality to the type of sport chosen (Gilbourne & Taylor, 1998). For instance, an athlete who is more task oriented is likely to participate in a sport that does not pose head to head competition, such as gymnastics. Task orientated athletes are motivated by the need to evaluate their performance based upon completion of their pre-established performance levels, and therefore need pre-established goals for daily rehab sessions. On the other hand, an ego oriented athlete is more inclined to thrive on head to head competition such as in wrestling or tennis. An ego-orientation drives student-athletes to appraise their achievements according to how such achievements measure against others’ achievements. For the ATC, understanding task versus ego-orientation is critical to understanding how to motivate an injured student-athlete. Ego-oriented athletes thrive on competition, and need competition during rehab to enhance self-concept. Thus, competition in the rehabilitation setting can lead to performance enhancements over and above performance with traditional goal setting (Kyllo & Landers, 1995). Yet, during the early phases of rehabilitation, injured student-athletes are often separated from coaches and teammates, which restricts opportunities to motivate an ego-orientated athlete. A lack of support resulting from team member social isolation can adversely affect empowerment and self-determination (Martin, 1999). Therefore, for the ego-oriented student-athlete, self-worth and self-efficacy can suffer leading to frustration, anger, and depression. Pairing such an athlete with another injured athlete during rehabilitation sessions may help facilitate the appraisal of ego-oriented goals. On the other hand, caution needs to be taken by the ATC during the mid-phase of the rehabilitation when the injured student-athlete begins more functional exercises. At this
phase teammates and coaches can re-emerge and tempt a recovering ego-oriented student-athlete, who is more prone to overdoing it. However, a task-oriented injured student-athlete is motivated quite simply by intrinsic goals and not competition with others. For this type of orientation, an ATC would be most influential by assisting the injured student-athlete in setting goals for each rehabilitation session and for the week as a whole. This helps guide and direct the process of rehabilitation as well as motivate a task-oriented athlete.

ATCs should also have an understanding of the injured student-athlete’s team culture, and how such culture could positively or negatively impact psychological reactions. If the injured student-athlete provides information relative to feeling isolated, coaches and teammates should be encouraged to stop by during rehab sessions in order to provide support and encouragement. This is especially important for the ego-oriented athlete who needs contact with others to maintain a healthy self-concept (Flint, 1998). Other task-oriented injured student-athletes may benefit more from a scheduled meeting with a team coach in order to set personal goals that can be monitored and approved by the ATC. According to Rotella and Heyman (1993), “as soon as possible after injury, athletes should develop routines similar to prior training and competition” (p.352). Thus, the purpose is to make the injured athlete feel as though they are still an athlete and still a member of the team. In fact, some athletes may benefit from becoming “temporary” position coaches offering teammates praise and constructive criticism. An ATC can mention different options to the injured athlete and together assess which may prove most beneficial.
Time during season

The timing of the season can be critical to the amount of psychological reaction (Arnheim & Prentice, 1993; Weiss & Troxel, 1986). An injury suffered in pre-season may not be as threatening to a student-athlete’s athletic season as an injury that occurs the week before a championship game. On the other hand, an injury suffered in pre-season may have a larger impact on academics due to conflicts with class and rehabilitation sessions throughout the quarter or semester. In addition the point in the student-athlete’s career can also have an impact. An injury to a senior can be more devastating than an injury to a red-shirt freshman due to the fact that an injury suffered in the senior year makes the death of the athletic career seem all the more inevitable.

An ATC can do little to control the timing of the injury; however, knowing the importance of the timing to the injured student-athlete helps the ATC gain more insight into possible reactions and roadblocks to rehab progression. Likewise, knowing that a senior athlete is unable to play his or her last home game may prompt the ATC to enlist assistance from a sport psychologist. Such an event could create a lost sense of control as the ability to finish one’s career has been taken out of his or her hands. In this case, the injury can be perceived as the controlling factor (Weiss & Troxel, 1986).

Coach

A coach’s reaction to an injury can have a significant impact on how an injured student-athlete assesses the situation. Weiss and Troxel (1986) found that many coaches send mixed signals to their injured athletes. Common practices such as “ignoring the athlete, not finding the time to console and encourage him or her, and constant questions as to when the injured athlete will return to practice directly and indirectly communicate
to the athlete the coach’s main concern” (Weiss & Troxel, 1986, p. 106). A coach who demonstrates acceptance, empathy, and a genuine concern while concomitantly setting high standards of performance may have a positive influence of the achievements and personal development of team members and injured athletes (Rotella & Heyman, 1993; Sarason, Sarason, & Pierce, 1990). However, not all coaches believe in expressing empathy towards their team. Rosenfeld, Richman and Hardy (1989) found that many coaches do not listen or provide emotional support to their athletes because coaches often felt that they had to maintain their status as an authority figure. In addition, some coaches stated that by showing preferential treatment to injured athletes, other team members might be encouraged to “milk” their injuries in order to receive similar attention (Rosenfeld, Richman & Hardy, 1989).

The most important role the ATC can play relative to the coach is communicator. The ATC can best serve the injured student-athlete by keeping the coach abreast of progress and setbacks. Additionally, the ATC can also encourage the coach to provide the injured athlete with a temporary role on the team in order to enhance feelings of social support and prevent feelings of isolation. By keeping contact with the coach, an injured student-athlete is less likely to feel as if he or she has been disposed of in exchange for a healthy athlete (Heil, 1993; Taylor & Taylor, 1997).

**Stress Reactions**

*Life events*

A student-athlete’s natural reaction to stress can impact his or her appraisal of an injury. Selye (1976) indicated that stressors could be interpreted as pleasant or unpleasant. Depending upon the impact and severity, an injury may create varying
degrees of distress. Eustress, a positive stress that promotes optimal health and growth, is often the product of a successful rehabilitation, resulting in complete recovery. However, distress is damaging stress and most commonly occurs in response to an injury. Thus, an injury, as appraised by an athlete, has the potential to impede the progress of physical rehabilitation and academic endeavors (Blackwell and McCullagh, 1990).

Student-athletes who possess high levels of state and/or trait anxiety may react more negatively to injury because they are already dealing with high levels of anxiety in their daily lives. High state anxiety is a characteristic used to define individuals who emotionally react to certain situations with tension, apprehension, nervousness, and worry (SALAR, 2000). On the other hand, trait anxiety is a characteristic which is found in individuals who tend to view the world, and not just certain situations, as threatening and dangerous (SALAR, 2000). Weiss and Troxel (1986) believe that student-athletes who display high state anxiety and high trait anxiety usually suffer from low self-esteem and low expectations for recovery. Furthermore, highly anxious athletes may not explore, persist, or embark on new adventures because their focus has been narrowed to the distress and not focused on the task—recovery (Sarason, Sarason, & Pierce (1990). This can complicate recovery because a highly anxious student-athlete may not be willing to attempt progressively more difficult and challenging exercises or techniques. Academic success may also suffer as persistence wanes. Petrie and Stoever (1997) provide evidence of the academic implications by reporting, “negative life stress and competitive trait anxiety were related to the semester GPAs of White [student-athletes] who were academically unsuccessful” (p. 599).
Stressful life events predispose an athlete to injury by taxing coping resources and offsetting the athlete’s internal equilibrium (Pollard, 1994; Rotella & Heyman, 1993). Examples of such stressful life events can range from major events like death or divorce to minor events such as coach or teammate incompatibility or reduced playing status of the athlete (Pollard, 1994). According to Blackwell and McCullagh (1990), general daily “stress may lead to an increase in muscle tension that can change flexibility and therefore cause injuries” (p. 27). Furthermore, as a result of increased stress “athletes may narrow their attentional field and fail to pick up important environmental cues that would help them avoid injury situations” (Blackwell & McCullagh, 1990, p. 27).

In order to alleviate unnecessary stress, an ATC can use various techniques that are designed to optimally focus the student-athlete and therefore limit external distractions caused by anxiety and distress (Pedersen, 1986). An ATC might ask questions and probe to find the true feelings of injured student-athletes; only through questioning and active listening can life distress be identified and mediated.

Progressive relaxation techniques prior to beginning rehab exercises are perhaps the initial step to eliminate the negative impact stress can have on a rehab session. ATCs can instruct highly stressed injured student-athletes to actively contract facial muscles and then relax. This scenario of active contraction followed by relaxation is continued until the athlete works his or her way to the muscles of the feet. After relaxation has been achieved, ATCs who know a student-athlete’s personality preference for introversion versus extroversion can assist injured athletes to find techniques that move the focus away from distress during rehab (Gilbourne & Taylor, 1998). Athletes who tend to draw energy by focusing within, introversion, may be easily distracted by others within
rehabilitation and classroom settings. Hence, introverted athletes would benefit mostly from a quiet environment void of other athletes and distractions (Gilbourne & Taylor, 1998). On the other hand, athletes who focus more on external cues are often times more distracted by internal cues such as pain. An ATC can enhance rehabilitation effects by helping an extroverted student-athlete direct his or her focus on external cues such as verbal encouragement, music, or even a rehab partner.

**Coping resources**

According to Ogilvie and Taylor (1993) three types of coping skills exist. Cognitive coping skills involve the perceptions injured athletes hold about the injury and its consequences. Emotional or psychological coping skills involve the injured athlete’s ability to manage anger, anxiety, and sadness that are created by the injury situation. Behavioral coping skills represent a wide repertoire of skills designed to manifest a healthy adjustment to injury through techniques aimed at physical relaxation.

As individuals, student-athletes also have a predilection for how each will cope with distress (Ford, & Gordon, 1998). Some student-athletes may keep all of their feelings inside, never disclosing how they truly feel. Others go to the extremes. Some may continually complain about the distress and never mention progress that has been made, whereas others may give the impression that everything is all right, in spite of real distress. The best scenario, perhaps, involves those who disclose feelings of distress, but also express an attempt to alleviate such distress by focusing on positive aspects of the rehabilitation process (Ford & Gordon, 1998). According to Weiss and Troxel (1986), individual levels of self-motivation can have a strong impact on a student-athlete’s disposition to persist and cope effectively.
In order to provide the best care for the student-athlete, ATCs must question and listen attentively in order to get an accurate picture of how an injured student-athlete may be coping (Heil, 1993; Taylor & Taylor, 1997). Most important, ATCs may pay close attention to how coping resources are impacting life outside of athletics as “it is imperative that medical practitioners get to know their athlete’s particular individual qualities such as their trait anxiety, self-esteem, expectation, and self-motivation” (Weiss & Troxel, 1986, p. 106). Smith, Smoll, and Ptacek (1990) found that subjects low in social support and coping skills had the strongest correlation between major negative life events and injuries. Hence, low social support and poor coping skills may provide ATCs with an indication of “the existence of a subgroup that appears quite vulnerable to the impact of negative life events,” which can make the ability to detect adjustment problems more acute (Smith, Smoll, & Ptacek, 1990, p. 366). Therefore, the ability to show concern through questioning and “the specific act of confiding may assist athletes who have experienced a distressful reaction” (Lavallee, Gordon, & Grove, 1997, p. 138).

As an additional measure to enhance an injured student-athlete’s ability to cope with the stress of injury, ATCs can advise injured student-athletes to use thought stoppers whenever a negative statement is thought or spoken. For instance, a student-athlete sitting alone in his or her room may begin to ponder the future and feel as though the injured body part will never be the same again. A thought stopper could be used to reverse negative self-talk and encourage a positive outlook (Heil, 1993; Taylor & Taylor, 1997; Weiss & Troxel, 1986). Such an emphasis on positive self-talk involves cognitive restructuring in a three-step process (Pollard, 1994). Step one involves identifying the source or cause of stress. Step two identifies the type of emotional or psychological
response to the stress, and step three encourages the injured athlete to practice behavioral
and cognitive coping skills in a variety of locations (Pollard, 1994).

Responses

Perhaps the key to understanding a student-athlete’s response to injury is to
understand the issues surrounding any college student. Discovering who one is and
defining one’s self-concept are key issues for college students at large (Chickering, 1993;
Parham, 1993). Particularly for student-athletes, participation in collegiate athletics can
produce a positive effect on social involvement, leadership skills, satisfaction with
college, and motivation to graduate (Taylor, 1995). However, an injury suffered as a
result of athletic participation, can alter a student-athlete’s identity in terms of their self
image and physical appearance and in terms of their athletic status. Grove, Lavallee, and
Gordon (1997) found that among athletic young adults with an average age of 25 years “a
strong and exclusive athletic identity at [forced] retirement was found to be associated
with increased reliance on denial” (p.199). Additionally, heightened stress and anxiety
were found to be reported by those athletes who scored high on measures of athletic
identity prior to retirement (Grove, Lavallee, & Gordon, 1997).

In regard to typical psychological responses to injury, common emotional
responses have been linked to injury in athletes. Grief, anger, sadness, denial, sexual
difficulties, regret, anxiety, uncertainty, neediness, depression, and psychosis have all
been identified as possible responses to physical injury (Ford & Gordon, 1998; Friedman,
1978; Larson, Leedy, & Ogles, 1994; Larson, Starkey, & Zaichkowsky, 1996; Parham,
1993; Waites & Zigmond, 1999). In a study designed to evaluate the severity and type of
emotional responses relative to injury, Leedy, Lambert, and Ogles (1994) found that 51%
of the injured athletes examined displayed mild symptoms of depression at post injury, and 12% of the depressed injured athletes displayed depression levels comparable to those who receive outpatient treatment for depression. Thus, Leddy, Lambert and Ogles (1994) report that there is evidence "to suggest that high-level athletes are vulnerable to emotional reactions following injury, including increased depression and anxiety and reduced self-esteem, and that in some instances, these emotional responses reach similar levels of intensities to clients receiving outpatient psychotherapy" (p. 351).

Therefore, in light of the wide spectrum of psychological responses suffered relative to injury, four models are typically used to explain the sequence of psychological responses to injury. The first theory consists of the stages of bereavement identified by Kubler-Ross (1972), (1) denial, (2) anger, (3) bargaining, (4) depression, and (5) acceptance, and is perhaps the most common theory that has been applied to the impact of physical injury (Heil, 1993; Waites & Zigmond, 1999). In Kubler-Ross's theory, injured athletes usually deny that an injury has occurred; hence, by refusing to accept reality, anger, bargaining and depression complicate and delay the road to acceptance. This can be particularly alarming if depression causes a student-athlete to withdrawal socially by missing classes and rehabilitation sessions. The result could create a setback of months and irreparable academic damage.

The second model used to explain the sequence of psychological responses to injury is Passer's Psychophysiological Model (figure 2.4). Passer & Seese (1983) claim that personality and motivational factors influence each of the four components of this stage model: (1) situation; (2) cognitive appraisal; (3) emotional response; and (4)
consequences. The situation component involves the presence of any physical or mental stimulus that places a “demand” on the body. Demands are interpreted as stressors; however, the intensity of the demand is interpreted in the next component, cognitive appraisal, where the stress is assessed as threatening or nonthreatening. Appraising an injury as a distress at this phase can cause negative self-talk patterns, which can further impact the next component, emotional responses. Emotional responses are identified in two domains, physical and psychological. Physical emotional responses involve the autonomic nervous system, which causes increased heart rate and elevated blood pressure. Psychological emotional responses can lead to increased pain, fear, anxiety, anger, frustration, and depression. The final component is consequences. The consequences can impact performance, health, or psyche. Chronic tension, loss of appetite, loss of sleep, and lack of motivation are all negative consequences that can adversely affect the healing cycle.

![Figure 2.4. Passer's Psychophysiological Model.](image)

The third theory is a two-stage model proposed by Shontz (1975). The first stage is a brief and intense impact stage composed of shock and encounter. Shock is “a feeling of detachment whereas encounter is a feeling of panic, disorganization” (McDonald &
Hardy, 1990). The second stage includes *retreatment* and *acknowledgment*. *Retreatment* is a type of denial where the individual retreats into illness (negative adjustment) or health (positive adjustment), and *acknowledgement* includes the option to approach (positive adjustment) or avoid the circumstances (negative adjustment) created by the injury.

The final theory is a three-phase model developed by Brown and Stoudemine (1983). Phase I is characterized by shock where an injured athlete can feel stunned, lost, dazed, disorganized, and helpless. Physical maladies include crying, tightness of throat and chest, and nausea. The second phase is marked by an intense preoccupation with the injury and its consequences. Anger, guilt, conflict, crying, fatigue, insomnia, and social isolation are common. The final phase is indicated by a resurgence of interests and return to activities marked by acceptance of reality. Often in the final stage, social contacts are re-established and memories of the injury are no longer distressful.

The four different models of psychological responses to physical injury may be used separately or in conjunction to assist an ATC in identifying early signs of depression, denial or anxiety (Brown & Stoudemine, 1983; Kubler-Ross, 1972, Passer & Seese, 1983; Shontz, 1975). The key is to recognize the similarities presented within each model so that the ability to detect early signals of distress is enhanced. For instance, all four models present the initial response as one of shock or denial, with the exception of Passer's (1976; cited in Passer & Seese, 1983) model, which takes one step back and presents the first phase as "the situation" (table 2.1). Subsequently, after the first phase, all models present an array of responses including depression, anger, guilt, and anxiety, and then end with some form of acceptance, acknowledgement, or resurgence of interest.
in sport. Ultimately by using the models, the goal is to provide a smooth transition into rehabilitation that does not create a negative impact on academic achievement.

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<td>Shock (detached) Panic (disorganized)</td>
<td>Shock (stunned, lost, helpless, confused)</td>
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<td>APPRAISAL &amp; SHOCK</td>
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<td>PHASE 6</td>
<td>Depression</td>
<td>Emotional Responses (elevated heart rate) (pain, fear, anxiety, depression)</td>
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<td>DEPRESSION &amp; PSYCH RESPONSES</td>
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<td>PHASE 7</td>
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<td>Consequences (positive or negative effect on health)</td>
<td>Retreatment (deny or accept truth) Acknowledgment (approach or avoid injury consequences)</td>
<td>Resurgence (regains interest in hobbies and sport participation)</td>
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Table 2.1. Comparison of models addressing psychological response to injury.
An ATC may help avoid confounding problems by implementing PST (Psychological Skills Training), which involves actively practicing relaxation, visualization/imagery, and positive self-talk techniques to improve coping resources. Once mastered, PST can be used to assist the student-athlete in neutralizing muscle tension and also enhancing his or her awareness of muscle physiology (Taylor & Taylor, 1997). Altogether, the goal is to get the injured student-athlete to “accept the reality of the injury, experience and express the emotions involved, and then reinvest his/her energy into the rehabilitation process” (McDonald & Hardy, 1990, p. 270).

Severe emotional reactions can negatively impact an injured student-athlete and stem from both short term and long term consequences. Therefore, Rotella and Heyman (1993) urge that ATCs recognize the normalcy of distressful feelings and accept that feelings actually show signs of progression. ATCs should resist the typical or common urge to tell an injured athlete to pick up their spirits, as it might appear to negate an important set of emotions (Rotella & Heyman, 1993).

Additionally, mental imagery can be an invaluable technique that requires the student-athlete to focus on the physiology of the muscle and not the prolonged consequences of the injury (Heil, 1993; Taylor & Taylor, 1997; Weiss & Troxel, 1986). ATCs can encourage injured athletes to imagine healing as increased blood volume is flowing to muscles, thus causing relaxation within individual muscle fibers. Mental imagery and relaxation performed pre and post rehabilitation exercises may also aid in increasing a student-athlete’s focus on the positive aspects of rehab, and subsequently decrease muscle tension. Monitoring muscle tension can enhance an injured athlete’s self-awareness as he or she learns to differentiate between stressed/relaxed and
energized/fatigued muscles (Heil, 1993; Taylor & Taylor, 1997). A strong sense of
muscle physiology can also benefit the student-athlete outside of the rehab setting.
Whenever anxiety creates tension, imagery can be utilized to alleviate the symptoms,
especially during finals or other stressful academic periods.

Academic

A student-athlete has to deal with the time demands of being a full time athlete
and a full time student. The conflicting demands of being both, student and athlete, can
result in poor time management, limited study, weak peer relationships, lack of career
and social development, and/or poor self-concept or self-worth (Chartrand & Lent, 1987).
According to Parham (1993) many student-athletes feel isolated and left out of regular
campus activities due to the excessive demands on their time. In fact, studies (Brown &
Glastetter-Fender, 2000; NCAA, 1988-89) have found that Division I student-athletes
report spending an average of 30 hours a week in their respective sports in season and 18
hours a week out of season. Hence, adding injury rehabilitation to the equation can
further compromise a student-athlete’s time, especially when mobility is compromised
(i.e. crutches, wheelchair, etc.).

In addition to time demands, social isolation, and limited mobility, an NCAA
study (1988-89) produced findings that 61% of black football and basketball players
reported having less than $25 a month for personal expenses. Therefore, when
considering the lack of financial resources and privileges, it is possible that injured
student-athletes are at an increased risk of social isolation resulting from two factors
(DeFrancesco & Gropper, 1996). One, student-athletes’ primary source of social
involvement is sports, and injury can limit the amount of time an athlete spends with his
teammates. Second, if financial resources are as poor as indicated by the NCAA (1988-1989), some student-athletes do not have the privilege to attend movies or other social events that require revenue. Altogether, the imposed social isolation resulting from injury and lack of resources can lead to a withdrawal from academics too. Kleiber and Brock (1992) found that injured student-athletes with a high desire to become a professional athlete reported lower grade point averages, less participation in course selection, less self-perceived success in school, and less perceived value of education than injured student-athletes with a low desire to become a professional athlete. Placing such a low value on academics is especially alarming when considering that fewer than one in 10,000 American boys actually become professional athletes (Stiles, Gibbons, Sebben, & Wiley, 1999). Additionally, Grove, Lavallee, and Gordon (1997) indicated that athletes who score highest on measures of athletic identity and are also experiencing high levels of stress, denial, and anxiety over injury or retirement “have a tendency to suppress low-priority activities [academics] in an effort to cope more effectively with the primary stressor [injury]” (p.199). Additionally, various studies (Brown, Glastetter-Fender, & Shelton, 2000; Murphy, Petitpas, & Brewer, 1996) have concluded that those student-athletes whose identity is mostly tied to athletics are more prone to inhibited career decision making. Thus, the issue of athletics and academics does not become any clearer when reading the literature. In fact, what becomes clear is the complexity of the issue as many different conclusions can be drawn. It could be that the idea of academics needs to be encouraged more strongly. On the other hand, it could also be that the professional sporting opportunities offered to Division I athletes recruits an audience that is less receptive to academics.
Whatever the conclusion, an ATC may benefit from understanding the underlying issues. Therefore, an ATC should be familiar with the academic support services offered to student-athletes. If academic withdrawal or dropout is possible, an ATC can notify academic counselors and advisors in order to provide the injured student-athlete with additional support. In addition, within the rehab setting by implementing a combination of techniques aimed at narrowing focus and creating relaxation, an ATC could decrease the distress a student-athlete is having during rehabilitation. Ideally the newly required relaxation and imagery techniques will be implemented in daily routines outside of the rehab setting, which may decrease the probability of psychological distress impairing academic achievement. Furthermore, ATCs should encourage an injured student-athlete to identify a fellow student-athlete who is also injured. This type of peer involvement could create a sense of support and may prevent any unnecessary social and academic withdrawal (Taylor & Taylor, 1997; Weiss & Troxel, 1986).

Injury Influences

Pain expression

Once a student-athlete suffers an injury, any perception of pain can unnecessarily alarm the athlete and create an inaccurate appraisal of the current situation. According to surveyed injured student-athletes, the amount of pain suffered and an insufficient social support network are the best indicators of psychological distress (Brewer, Petitpas, Van Raalte, Sklar and Ditmar, 1995). Thus, an understanding of the types of pain that injured athletes feel and educating injured student-athletes on how pain affects them physically, psychologically, and emotionally may enhance the sense of control over pain (Taylor & Taylor, 1997).
Benign pain and harmful pain necessitate two different types of reactions from injured athletes. Benign pain is often dull, generalized, soreness that does not last long and often occurs without any swelling or localized tenderness. Such pain does not indicate that “something is wrong;” it simply means that the rehabilitation is of proper intensity to create changes in tissue structure and strength. However, harmful pain is sharp, localized and creates swelling and soreness, which is experienced during and after exertion. Harmful pain is a message that too much is being done too soon, and the potential for a setback in the rehabilitation process is imminent unless the student-athlete learns to slow down. In order to decrease anxiety over sensations of pain, injured athletes need to be counseled as to the different types of pain (Taylor & Taylor, 1997).

Perceptions of pain can cause feelings of helplessness and lack of control, which can ultimately increase anxiety, fear, and a loss of confidence in their body’s abilities to perform at the pre-injury level (Taylor & Taylor, 1997). Confidence losses can increase the negative effects of pain upon rehabilitation as, “self-confidence may be the most important single determinant of sport performance” (Janelle, 1999, p. 205). Hence, it is extremely important to gauge the amount and quality of discomfort throughout the rehabilitation cycle. Pain drawing, which requires a student-athlete to draw where pain is experienced, is a useful technique that can provide an estimate of the quantity, quality, and response to pain. Pain, which produces unusual patterns or amounts of pain for a particular injury, often signals that an injured student-athlete is having difficulty adapting to the injury’s limitation (Heil, 1993). For instance, a knee injury that is referring pain
into the neck or creating migraine headaches can alert an ATC to the possibility of adjustment difficulties. Therefore, “pain drawing can predict rehabilitation problems and can indicate successful rehabilitation” (Heil, 1993, p. 105).

**Macrotrauma versus microtrauma**

Macrotrauma results from an obvious incident, which creates dysfunction and pain. Conversely, microtrauma occurs over several months prior to the actual perception of pain; hence, the actual cause of the dysfunction is not well defined. When dealing with injured student-athletes, injuries resulting from microtrauma are often associated with more frustration and anger due to the lack of understanding how the injury occurred (Flint, 1998). According to Pollard (1994), “the chronic injury, [caused by microtrauma], has the potential to demotivate the athlete…” (p.19). As a result, microtraumatic injuries can be relatively difficult to treat and can cause the injured athlete to lose confidence in their body’s physical limits (Arnheim & Prentice, 1993). However, with macrotrauma an athlete typically understands how their injury occurred and recognizes that the likelihood of the incident occurring again are not as high.

Perhaps the most important technique to counteract increasing complaints of pain, depression and anxiety resulting from injury influences is to provide the injured student-athlete with as much information as possible concerning their injury, expected recovery, rehabilitation process, and expected pain, discomfort, and plateaus. By providing the injured student-athlete with a sense of control and understanding regarding the probability of injury reoccurrence, anxiety and fear of reinjury may be diminished (Heil, 1993; Taylor & Taylor, 1997). However, for microtrauma, the cause of injury is often less clear, even to the ATC. The injured student-athlete can be presented with all of the
possible mechanisms leading to the eventual injury, as well as an explanation of how the
injury will heal. If the injured student-athlete can understand how the injury will heal,
imagery and visualization of the healing process can be enhanced (Heil, 1993; Taylor &
Taylor, 1997).

Level of understanding

As demonstrated with mircotrauma, the key to the distress the injured student-
athlete feels is tied to the degree to which he or she understands how the injury occurred.
If a student-athlete does not understand how an injury occurred, it is even more difficult
for him or her to understand how to prevent such an injury from occurring again.
Fitzpatrick (1995) found that nonsurgical low-back pain sufferers benefited from
additional information delivered through videotapes and pamphlets. Patients who
received additional information reported superior comprehension and recall of
information relative to their injury and higher levels of compliance to their physical
therapy programs (Fitzpatrick, 1995). Educating an injured student-athlete on the
physiological reactions to injury and the function of the injured part can be crucial to
their appropriate appraisal and reaction to injury. Faris (1985) recommends that
therapists first explain the present injury and its nature. Secondly, the desired outcome
should be presented relative to what constitutes recovery and an estimated time for
recovery (Faris, 1985). Anxiety can be alleviated if pictorial language is used to explain
how an injury will heal and how each phase of the rehabilitation will subsequently
improve healing (Heil, 1993). Third, a relative timeline and plan should be set for the
rehabilitation process as well as anticipated plateaus in recovery and expectations of pain.
Each incremental step within the rehabilitation plan should be broken into small pieces
and explained relative to each step’s purpose and importance to recovery (Faris, 1985). An open line of communication is essential so that injured athletes can feel comfortable asking questions and searching for clarity (Faris, 1985). The result should be reduced anxiety and uncertainty in addition to an improved capacity for mental imagery relative to healing (Heil, 1993; Taylor & Taylor, 1997). According to Taylor and Taylor (1997), “information is power” for three main reasons (p. 16). One, information increases an injured athlete’s familiarity with the rehab process. Two, information allows some degree of predictability to the rehab process. Three, information provides a sense of control because the injured athlete is equipped with the tools to actively participate in his or her recovery.

Another strategy for controlling the effects of pain involves mental processes. Janelle (1999) recommends that injured athletes attempt to dissociate acute pain by trying to focus on anything but the pain. Dissociation tends to work best for short bouts of rehabilitation exercises because ultimately an ironic response to the mental dissociation is initiated so that pain will become the focus despite attempts to ignore pain. However, association strategies may prove to be better suited for chronic pain (Janelle, 1999). By focusing solely on the pain, eventually another ironic response to the mental process occurs as pain can no longer be focused upon and a distraction results. Whatever strategy is used, the key is to remember that anxiety tends to increase the amount of ironic mental processing, which decreases one’s ability to ignore distractions (Janelle, 1999).

“Consequently, the monitoring process becomes more salient, and mental control paradoxically works against itself by attending to those thoughts that are least desirable” (Janelle, 1999, p.204).
Severity

As the severity of an injury increases, the amount and degree of psychological reaction can be more significant. Current research indicates that 14-32% of all athletes, recreational, high school, collegiate, and professional, are forced to end their careers prematurely due to injury (Ogilvie & Taylor, 1993). Smith, Scott, O’Fallon, and Young (1990) found that seriously injured athletes experienced more tension, depression, and anger and demonstrated less vigor than other college students, which can increase the likelihood of class and rehabilitation absences. Additionally, Lavallee, Gordon, and Grove (1997) contend that “athletic identity can influence the psychosocial aspects of adaptation to retirement from sport” (p. 131). Hence, career-ending injuries can have adverse affects on the development of autonomy, mature interpersonal relationships, life purpose, and integrity; therefore, when the injury suffered is so severe as to cause the forced termination or retirement of an athletic career, the psychological reactions can potentially become even more severe. Kleiber and Brock (1992) studied Division I collegiate athletes five to ten years after suffering a career ending injury in sport participation. Their results indicate that career-ending injuries significantly affected perceived quality of life. In fact, the athletes who suffered a career ending injury and also reported a high professional sport orientation also reported the lowest life satisfaction and self esteem nearly a decade after their trauma (Kleiber & Brock, 1992).

ATCs can keep in mind an injured student-athlete’s future goals when dealing with severe injuries. Aspirations of a professional sporting career can be trounced upon by a severe injury. Therefore, an ATC should make referrals to a sports psychologist anytime the injury may cause a forced retirement or termination of athletic involvement.
At this point a successful athletic recovery is not the point so much as the successful adaptation to future academic and life demands.

CONCLUSION

Depending upon the goals of the injured student-athlete, the psychological reaction to injury can vary in intensity and duration. Those student-athletes whose post-collegiate aspirations focus on a career related to their major may react negatively to the imposed physical limitation of the injury; whereas, those who aspire to join the ranks of professional athletics may have difficulty dealing with the consequences on their athletic futures. This is particularly true in Division I football programs where more than 65% of the drafted student-athletes become professional football players (DeBrock, Hendricks, & Koenker, 1996). Regardless of the injured student-athlete’s different career goals, every ATC should be aware of the potential impact an injury may have on the psychological well being of student-athletes, which can adversely affect academic achievements as well. The NCAA (1999) has reported that since 1985 the entering freshmen class of Division I student-athletes has continually graduated at a higher rate than the overall Division I student body. Thus, the importance of enhancing an ATC’s ability to assist an academically oriented SA to continue to focus becomes even clearer. Without having ATCs prepared in the psychological responses to injury, student-athletes have been able to maintain a respectable academic record in comparison with the general student body. A key question is whether the student-athlete graduation rate could be further improved if ATCs were prepared to tap into the motivation and diligence already demonstrated by the typical student-athlete. Whatever the scenario and consequences, “it is up to the student-athlete, the parents, the coaching and training staff, the sport psychologist, the academic
support staff, and team members, as a unit, to increase awareness of the need for social support and perhaps implement some of the ideas and strategies presented here” (Richman, Hardy, & Rosenfeld, 1989, p. 159). However, without the ATC having the skill and knowledge to recognize an injured athlete in distress, none of the support systems or mediation techniques can be fully utilized. Therefore, it should become the goal of every ATC and each member of the sports medicine team to become conversant in the five possible factors that can influence the psychological reactions to injury. By being aware of personal influences, social influences, sport influences, stress reactions, and injury influences it may be possible to provide not only a challenging physical rehabilitation, but also a suitable psychological rehabilitation that prevents academic fall out and maintains athletic involvement. As stated by Smallman, Sowa, and Young (1991), “the omission of a dual student-athlete focus within athletic programs continues to place subcultures of the athletic population at high risk for developmental and psychological harm” (p. 234).
CHAPTER 3

METHODS

This chapter describes the purpose and procedures of the research that was undertaken in order to establish the degree of change in athletic training students' (ATS) perceptions towards injured student-athletes (SA) following a course on the psychological impact of injury. The chapter is organized into six sections: (a) research design, (b) instrumentation, (c) data collection, (d) data analysis, and (e) ethical issues.

RESEARCH DESIGN

The purpose of this study is to describe athletic training students' (ATS) perceptions of collegiate student-athletes' (SA) psychological responses to injury, and to examine how athletic training students perceive the impact of injury on the academic success of the student-athlete. For this purpose, a pre-experimental modified one group pretest-posttest design \([O_1 \ O_2 \ X \ O_3 \ O_4]\) with a mixed methodology was chosen. A combination of questionnaire and interview methodologies was used to triangulate the data and gain insight into athletic training students' perceptions categorized by three major variables or characteristics of interest:
(a) athletic training students’ perceptions of a student-athlete’s psychological response to injury;
(b) athletic training students’ perceptions of the impact of injury on a student-athlete’s continued academic success; and
(c) the perceived value of a course about the psychological impact of injury to athletic training students.

The modified one group pretest-posttest design was chosen due to limitations and restrictions in obtaining a sample of athletic training students at The Ohio State University. Ideally, a comparison group would have been used; however, the athletic training student population at The Ohio State University is not large enough to accommodate a control group. Therefore, a one group design with pretests and posttests was chosen, which allowed a baseline measure in order to assess changes from before intervention to after intervention. Collectively, the modified one-group pretest-posttest is not the strongest of research designs, especially when considering its limitation in generalizability (Campbell & Stanley, 1963). Therefore, in addition to a questionnaire, interviews were included in the design.

Interviews were chosen to triangulate questionnaire results because Likert scales, like the one used in this study, do not allow a subjective sense of the degree of respondent agreement or disagreement. Through interviews, I was able to analyze more fully what the respondents thought through interview dialogue, thereby illustrating the experiences and perceptions of athletic training students. According to Kvale (1996), “interviews are particularly suited for studying people’s understanding of the meanings in their lived world, describing their experiences... and clarifying and elaborating their own
perspective on their lived worlds” (p. 105). Thus, interviews provided richer, more powerful data, thereby adding more credibility to the findings.

The questionnaire was divided into five constructs. Three of the five constructs (stress reactions, sport influences, and social influences) represent factors in Flint’s (1998) Injured Athlete-Injury Scenario Interaction as presented in chapter two. The remaining two constructs are ‘academic impact’ and ‘demographics.’ The three constructs in Flint’s (1998) Injured Athlete-Injury Scenario Interaction were used collectively to assess ATS’s perceptions of student-athletes’ psychological response to injury. The fourth construct, academic impact, assessed how ATSs perceive the impact of injury on a student-athlete’s continued academic success, and the fifth construct provided background information in the form of age, gender, race, class rank (e.g. freshmen, sophomore, junior, or senior), year in the athletic training program, number of injured athletes with which the ATS has worked, and the number of weeks of instruction about the psychology of injury the ATS has received.

The entire study spanned 28 weeks or 7 months from November 21, 2000, to June 4, 2001 (see figure 3.1). The pretest period involved two observations, a qualitative interview and a questionnaire. The intervention, the course itself, was delivered over ten weeks from January 2, 2001, to March 6, 2001 (figure 3.1). The first observation period \([O_1]\) spanned from November 21st to January 9th, 2000, as 6 ATSs (2 sophomores, 2 juniors, and 2 seniors) were selected from the class roster of the winter quarter course, AMP 694, Psychological Impact of Injury, to participate in a qualitative interview (see table 3.1).
Figure 3.1. Research time line. A timeline of data collection and intervention.

<table>
<thead>
<tr>
<th>Date</th>
<th>Respondent</th>
<th>Location</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 21, 2000</td>
<td>Female Sophomore (Lori)(^a)</td>
<td>Biggs</td>
<td>Interview</td>
</tr>
<tr>
<td>November 22, 2000</td>
<td>Female Senior (Whitney)</td>
<td>Biggs</td>
<td>Interview</td>
</tr>
<tr>
<td>November 22, 2000</td>
<td>Male Senior (Tommie)</td>
<td>Biggs</td>
<td>Interview</td>
</tr>
<tr>
<td>November 29, 2000</td>
<td>Male Sophomore (Steve)</td>
<td>Biggs</td>
<td>Interview</td>
</tr>
<tr>
<td>January 2, 2001</td>
<td>15 ATSs</td>
<td>Biggs</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>January 3, 2001</td>
<td>Female Sophomore (Bonnie)(^b)</td>
<td>Mack Hall</td>
<td>Interview</td>
</tr>
<tr>
<td>January 5, 2001</td>
<td>Female Junior (Reese)</td>
<td>Biggs</td>
<td>Interview</td>
</tr>
<tr>
<td>January 8, 2001</td>
<td>Female Junior (Vickie)</td>
<td>French</td>
<td>Interview</td>
</tr>
<tr>
<td>January 9, 2001</td>
<td>5 ATSs</td>
<td>Biggs</td>
<td>Questionnaire</td>
</tr>
</tbody>
</table>

\(^a\) Lori dropped the course prior to winter quarter due to academic difficulties arising from the preceding fall quarter.

\(^b\) Bonnie was chosen to replace Lori.

Table 3.1. Schedule of pretest observations.

The second observation period \([O_2]\) occurred on January 2, 2001, and January 9, 2001, during the first and second days of class for AMP 694, Psychological Impact of Injury (figure 3.1). On January 2, 15 ATSs completed the pretest questionnaire, including one respondent who later dropped the course. The following week on January 9, 2001, the remaining five ATSs completed the pretest questionnaire. These five ATSs were unable to attend the first class due to their clinical duties, which required them to
travel with their respective sporting assignments, or due to adding the course late. Both
observations involved the administration of a 29 item, seven point Likert scale
questionnaire to all students enrolled AMP 694.

The posttest period involved a qualitative interview and a questionnaire as well.
The qualitative interview, the third observation \([O_3]\), was conducted on the same 6 ATSs
as in the pretest, and followed the pretest question format, with only slight changes. The
posttest interview occurred from May 22\textsuperscript{nd} to 23\textsuperscript{rd}, 2001, 11 weeks following the
conclusion of the course, AMP 694 (table 3.2).

<table>
<thead>
<tr>
<th>Date</th>
<th>Respondent</th>
<th>Location</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 22, 2001</td>
<td>Female Senior (Whitney)</td>
<td>Biggs</td>
<td>Interview</td>
</tr>
<tr>
<td>May 23, 2001</td>
<td>Female Sophomore (Bonnie)</td>
<td>Mack Hall</td>
<td>Interview</td>
</tr>
<tr>
<td></td>
<td>Male Sophomore (Steve)</td>
<td>Biggs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female Junior (Reese)</td>
<td>Biggs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female Junior (Vickie)</td>
<td>French</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male Senior (Tommie)</td>
<td>Biggs</td>
<td></td>
</tr>
<tr>
<td>May 30, 2001</td>
<td>11 ATSs</td>
<td>Biggs</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>June 1, 2001</td>
<td>7 ATSs</td>
<td>Biggs</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>June 4, 2001</td>
<td>1 ATS</td>
<td>My office</td>
<td>Questionnaire</td>
</tr>
</tbody>
</table>

Table 3.2. Schedule of posttest observations.

The fourth and final observation \([O_4]\) involved the administration of the same
questionnaire as in the pretest. The posttest questionnaire was administered on May 30,
2001, to 11 ATSs and on June 1, 2001, to 7 ATSs, 12 weeks following the conclusion of
the course, AMP 694 (figure 3.1 and table 3.2). One ATS did not attend either date listed previously; therefore, the one remaining ATS took the posttest questionnaire in the researcher’s office on June 4, 2001.

Collectively the pretest measures collected from November to January were compared to posttest measures collected from May to June to ascertain the degree of change in ATSS’s attitudes, thus determining the value of the intervention, AMP 694. Although the questionnaire provided the primary means of data collection, the triangulation of quantitative (e.g. questionnaire) measures with qualitative (e.g. interviews) measures strengthened the validity and credibility of the questionnaire results (Patton, 1990). By comparing pretest and posttest questionnaires in light of pretest and posttest interviews, richer detail enhanced the analysis of ATSS’s changing perceptions. Furthermore, the interviews illuminated new lines of thinking that could encourage additional research.

Internal Validity

Because threats to internal validity can directly or indirectly skew the results of an intervention, actions were taken to limit internal validity threats (Campbell & Stanley, 1963). According to Fraenkel and Wallace (1996), “when a study has internal validity, it means that any relationship observed between two or more variables should be meaningful in its own right, rather than being due to ‘something else’” (p.242). However, validity in qualitative research deals with thick descriptions and explanations, and whether or not a given explanation fits a given description (Guba & Lincoln, 1989). Although the quantitative research component to this study left some internal validity threats uncontrolled as explained later, the qualitative research component provided an
additional measure of validity by allowing the respondents to perform member checks on both the transcribed pretest interview and summarized posttest interview.

For this study, there was only one group; therefore, the threats resulting from differential selection to groups, differential attrition from groups, and statistical regression are not concerns (Campbell & Stanley, 1963). However, the lack of a control group did not allow for a comparison group by which to judge the effect of the intervention, AMP 694. Therefore, to control for this weakness, pretest measures were used in order to establish a baseline for comparison between pretest and posttest measures.

In order to control for implementation and locations threats, pretest questionnaire data was collected within the same environment as posttest data. Both pretest and posttest questionnaires were administered within Biggs classroom, except for one respondent who took the posttest in the researcher’s office. The pretest questionnaire was administered on January 2nd and 9th, 2001, in AMP 694, and the posttest questionnaire was administered on May 30th, and June 1st, 2001. The one respondent who could not attend either posttest questionnaire dates completed the questionnaire on June 4th, 2001. The original researcher administered all questionnaires.

Although the location was held constant during the pretest and posttest interviews, implementation was not. All interviews were conducted within one of three environments depending upon the respondent’s preference (Biggs facility, French Fieldhouse training room, or Mack Hall study room) during the following time periods, November 21st to 29th 2000, January 3rd to 8th, 2001, and May, 22nd to 23rd 2001. The researcher conducted the pretest interviews; however, a different researcher conducted
the posttest interview in order to avoid undue influence by the original researcher, who may have caused bias since she was also the instructor for the course. The change of interviewer to avoid bias was considered more important than controlling the possibility of an implementation threat introduced by different interviewers.

Although maturation was a concern due to the inclusion of different age groups being tested at the beginning and end of a 28 week time span, the mixture of the class, representing freshmen, sophomore, junior, and senior athletic training majors at The Ohio State University more than likely balanced the maturation effect. An additional concern was the low statistical power resulting from the small sample size ($N = 19$). When performing a two-tailed $t$-test with a sample size of 19, a medium effect size ($d = 0.5$) with an a priori alpha level of 0.05 produces power below 0.50 (Cohen, 1988). Therefore, to increase the power of the statistical tests, a nonparametric test was employed. According to Siegel and Castellan (1988), a Wilcoxon Signed Ranks test can attain the same power as a $t$-test when the sample size ratio of the Wilcoxon Signed Ranks test is 3:1 to that of the $t$-test. Therefore, using the Wilcoxon Signed Ranks test is the equivalent to using a sample size of 57 with a $t$-test. Thus, the test for statistical power with a sample size of 57 and a medium effect size ($d = 0.5$) and a priori alpha level of 0.05 is approximately 0.74 (Cohen, 1988). This is approaching the generally accepted 0.80 statistical power threshold (Cohen, 1988).

One of the three threats to internal validity that was left uncontrolled included the threat of testing. Because a pretest and posttest was used, the pretest may have sensitized respondents to the relevant issues within the intervention. However, this was felt to be a minimal concern based upon the fact that the pretest provided the only baseline
comparison for assessing a change in perceptions. Furthermore, since the intervention was a college course with graded examinations, respondents were more than likely going to study the relevant issues, thereby making it difficult to avoid sensitizing the respondents.

Another factor, which was left uncontrolled, is history. During the 28 weeks, which spanned the intervention and data collection, the content of other AMP courses and internship experiences was not controlled. This is again, of minimal concern, mainly because this is how the course, e.g. intervention, would be delivered in a non-research context. Most faculty would probably agree that the course would be considered a success if it did in fact influence the learning experiences in other courses and internship experiences. Nonetheless, the pretest and posttest questionnaires asked athletic training students to estimate the number of instructional weeks they have received on the psychology of the injured athlete and the number of injured student-athletes with which they have worked in order to estimate curricular and internship history.

The last threat left uncontrolled was the attitude of the respondents towards participation in the course, AMP 694. Respondents voluntarily enrolled in the course; therefore, respondents may have responded to the intervention favorably based upon their personal interest in the course content and not due to the value of the course. Although this was a concern, the time limitations of the study and the organizational structure of the athletic training curriculum did not allow for this to be a mandatory course. Unfortunately, this is one threat that may have biased the sample and the results. However, the triangulation of the questionnaire results with the interviews added a component of trustworthiness to the data. As stated previously, the same interview and
questionnaire format was used for both pretest and posttests, and respondents checked transcribed interviews in order to validate the content. A research journal was also kept throughout the interview process in order to provide the researcher with a basis to comment on and monitor possible interviewer bias. Journal entries were made following each pretest and posttest interview and following each lecture of AMP 694.

External Validity

Most research is undertaken in order to generalize the results to a larger population. If this is the case, threats to external validity need to be identified and controlled (Campbell & Stanley, 1963). For this study some threats to external validity were controlled and some were not. However, this was not a great concern for generalizability for three reasons. First, this study is exploratory research. More research in this area will be needed, and consequently more rigorous and controlled research will emerge. Second, the results of this study were used for programmatic recommendations and possible changes within The Ohio State University Athletic Training Division. Those who wish to use the results for changes in other universities must do so with caution. Third, qualitative methods, such as interviews, provide respondents with depth and voice in order to assist the researcher in making informed decisions. According to Kvale (1996), the target of interviews is to locate exceptional and ideal situations through study, thereby illuminating what could be. Therefore, the decision of transferability rests with the reader.

The first controlled threat was the threat of multiple treatment interference. Since there was only one treatment delivered, this study was not limited by multiple treatments. Another controlled threat was the experimenter effect. In this study the researcher and
teacher were the same person who held the credentials of an ATC and had experience in the rehabilitation of injured athletes. Thus, the results may be generalized to other teachers within an athletic training curriculum who also are certified as an ATC and have similar experiences in the practice of rehabilitation. Posttest sensitization was another threat to external validity that was controlled. In a real world situation posttests do not exist; however, final examinations do typically exist. Thus, the posttest may have had a similar effect as a final examination, which encourages students to study and reflect upon the material delivered in the course. The final threat controlled for in this study, was the interaction of time of measurement and intervention. The posttest interview and questionnaire were delayed 11 to 12 weeks respectively following the conclusion of the intervention so that the intervention effects would more likely be independent of the posttest results. The researcher felt that if the respondents in fact internalized the content of AMP 694, measuring their perceptions 11 to 12 weeks following the conclusion of the course was more likely to distinguish between “short term memory responses” and true internalization and learning.

Five threats to external validity were not controlled in this study. The first was a threat to population validity. Respondents, in this study, were a convenience sample. As a result, generalizability is limited to the target population, ATSs in an internship Athletic Training program at The Ohio State University, and not all ATSs enrolled in athletic training programs working towards CAAHEP accreditation. Before a course could be considered as a requirement for ATSs at The Ohio State University, it would need to be offered on a trial basis. Therefore, it is advisable to look at this study as exploring the topic of making an amendment to the minimum requirements of the CAAHEP and
NATA curriculum, and if the results are favorable, the need for a more rigorous multi-campus study will have been established.

A second existing threat was the Hawthorne effect, which affects the results due to the fact that ATSSs who participated in this study knew they were respondents in a research study. This seemed unavoidable given the constraints of Human Subjects Approval. Students must give their consent in order to participate. The novelty effect was also a concern to the external validity. It is possible that once the novelty of the new course wears off, the results will not be the same. However, one of the purposes of this study was to establish the value of a course on the psychological impact of injury. It seemed illogical not to test the outcomes and attitudes of students towards a new course prior to making it part of the established curriculum. Pretest sensitization was the final threat to external validity left uncontrolled. As with posttests, pretests do not usually occur in real classroom experiences. Thus, generalizability is limited to situations where pretests were administered. However, in this case, the advantage created by the pretest’s ability to provide a baseline measure for posttest comparisons outweighed any disadvantage it created.

Respondents

A convenience sample was used to select respondents for the intervention, AMP 694, Psychological Impact of Injury, and was composed of four freshmen, six sophomores, four juniors, four seniors and one graduate student. A list of the respondents was obtained from the class roster provided to instructors at The Ohio State University. The original frame for the study included 20 students (13 females, 7 males), but one female, freshman dropped-out of the course during the third week, which
dropped her from the study, thus $N = 19$. Ten of the participating respondents (three sophomores, two juniors, four seniors, and one graduate student) were currently practicing as student athletic trainers despite the fact that all 19 students were pursuing the athletic training major.

According to the initial class roster, there were no seniors enrolled for the course, AMP 694. As planned, respondents were purposively selected to represent 2 freshmen (male and female), 2 sophomores (male and female), and 2 juniors (male and female). The idea of representing each class rank with one male and one female was intended to balance the perspectives of females and males. It may be that female athletic training students are more perceptive at this age in recognizing psychological distress among student-athletes or vice versa; therefore, I intended to use the interviews to balance the male and female perspectives in order to produce a more accurate analysis of the degree of change. However, several changes to the original respondent selection were made. Following the change from fall to winter quarter, the selected juniors who were interviewed in November had become seniors, so two new juniors were selected to fill the void left by the two previously interviewed ATs who had become seniors. Unfortunately though, there were no male juniors, so both newly selected juniors were females. One additional change occurred; the female sophomore interviewed in November dropped the course due to academic difficulties encountered during the preceding fall quarter. Therefore, I had to interview a new female sophomore to replace the dropout. This posed a different obstacle since there were no other female sophomores who were concurrently pursuing athletic training as a major and practicing as a student athletic trainer. Therefore, the new female sophomore was purposively selected due to
her experience. Although she is not currently practicing as a student athletic trainer at OSU, she does have previous experience at another college and at one internship site. Thus, three additional ATSs (1 sophomore and 2 juniors) were interviewed between January 3rd and 8th, 2001.

INSTRUMENTATION

Questionnaire Scale Development

The questionnaire, Perceptions of Psychological Impact of Injury Questionnaire (PPIIQ), was specifically designed for this study. The PPIIQ's format is based upon Flint's (1998) comprehensive literature review, which produced the Injured Athlete-Injury Scenario Interaction. The modified Injured Athlete-Injury Scenario Interaction originally established five of the eight constructs presented in Chapter 2, (1) personal influences, (2) social influences, (3) sport influences, (4) stress reactions, and (5) injury influences. The three additional constructs, (1) responses to injury, (2) academic impact, and (3) demographics, were added to assess additional information. Responses to injury was included to establish athletic training students' baseline understanding of psychological theory. Academic impact was created to address perceptions of potential academic threat, and the construct, demographics, was included to obtain background information on the respondents. However, following validity and reliability tests on the PPIIQ, three of the original eight constructs were eliminated. Three of the five constructs that survived were outlined by Flint (1998), stress reactions, sport influences, and social influences, and the other two were created especially for this study, academic impact and demographics. A description of the extensive revisions and measures taken to establish the validity and reliability of the PPIIQ is explained in the next section. However, prior
to conducting any scale development or data collection, Human Subjects Approval was obtained in September 2000.

Validity

Three steps were taken in order to establish validity.

(a) **Content and face validity**: Content validity is “the representativeness of the sample of questions included in the instrument” (Henerson, Morris, & Fitz-Gibbon, 1987, p.141). Hence, to collect information relative to establishing content validity, a panel of ten experts was solicited for feedback in September 2000 (table 3.3). Seven of the ten experts were authorities on the psychology of the injured athlete and the remaining three were authorities on the measurement of perceptions. Prior to sending the questionnaires to the experts, an a priori level of 70% agreement was established. Therefore, amendments to the 44 individual items would only be made if three or more experts recommended a change. In order to make the process easier for the experts, additional space was created between items so that feedback and comments could be made.
<table>
<thead>
<tr>
<th>Projected Date</th>
<th>To whom?</th>
<th>Establishing what?</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEPT 1</td>
<td></td>
<td>Human Subjects Approval</td>
</tr>
<tr>
<td>SEPT 20</td>
<td>10 Experts</td>
<td>Questionnaire Content &amp; Face validity</td>
</tr>
<tr>
<td>NOV 9</td>
<td>10 Capital University ATSs</td>
<td>Questionnaire Field Test</td>
</tr>
<tr>
<td>NOV 14</td>
<td>30 Otterbein College ATSs</td>
<td>Questionnaire Internal Consistency</td>
</tr>
<tr>
<td>NOV 16</td>
<td>2 Otterbein College ATSs</td>
<td>Pilot Interview Format</td>
</tr>
<tr>
<td>NOV 21-29</td>
<td>4 OSU ATSs</td>
<td>Pretest Interview</td>
</tr>
<tr>
<td>JAN 3-8</td>
<td>2 OSU ATSs</td>
<td></td>
</tr>
<tr>
<td>JAN 2</td>
<td>15 OSU ATSs</td>
<td>Pretest Questionnaire</td>
</tr>
<tr>
<td>JAN 9</td>
<td>5 OSU ATSs</td>
<td></td>
</tr>
<tr>
<td>MAY 22</td>
<td>1 OSU ATSs</td>
<td>Posttest Interview</td>
</tr>
<tr>
<td>MAY 23</td>
<td>5 OSU ATSs</td>
<td></td>
</tr>
<tr>
<td>MAY 30</td>
<td>11 OSU ATSs</td>
<td>Posttest Questionnaire</td>
</tr>
<tr>
<td>JUNE 1</td>
<td>7 OSU ATSs</td>
<td></td>
</tr>
<tr>
<td>JUNE 4</td>
<td>1 OSU ATS</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.3. Research timeline.

Although ten experts were solicited, only eight returned the questionnaire. Of those returned five were considered authorities on the psychological impact of injury (content authorities), and three were considered authorities on the measurement of perceptions (measurement specialists). Amendments were made to both the scale and to individual items in light of the feedback and comments made by the experts. Each item within the original constructs, responses to injury, stress reactions, sport influences, social influences, and academic impact, was modified in terms of wording. Only the constructs, injury influences and personal
influences, contained items that were not modified. Adding an additional item modified the final construct, demographics.

(b) **Field Test:** Two field tests were conducted. The first was an informal test using three ATCs to develop the content of the original eight constructs. Each ATC was instructed to read a list of the 44 randomized statements, which composed the PPIIQ, and place each statement within one of the eight defined constructs. The results were used to determine whether or not the items within each construct adequately represented that construct. Following analysis of the results, individual items within constructs were eliminated, moved to other constructs, amended, and in some cases entirely new items were added in an effort to represent the constructs more appropriately (see table 3.4). The changes produced three new items and eliminated four items, bringing the new item total to 43.
<table>
<thead>
<tr>
<th>Constructs</th>
<th>Number of Original Items</th>
<th>Number of Correctly Assigned Items</th>
<th>Number of Items Thrown Out</th>
<th>Number of Items Amended</th>
<th>Number Of Items Moved Out</th>
<th>Number of Items Moved In</th>
<th>Number of New Items</th>
<th>Total Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses to Injury</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Stress Reactions</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Sport Influences</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Injury Influences</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Personal Influences</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Social Influences</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Academic Impact</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Demographics</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total Items</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>43</td>
</tr>
</tbody>
</table>

<sup>a</sup>Item originally located within stress reactions was moved to academic impact based feedback provided by ATCs.

<sup>b</sup>Item originally located within injury influences was moved to academic impact based upon feedback provided by ATCs.

<sup>c</sup>Item originally located within personal influences was moved to injury influences based upon feedback provided by ATCs.

Table 3.4. Synthesis of changes made following ATC field test.

The second field test consisted of 14 athletic training students at Capital University who participated in a field test on November 9, 2000 (table 3.3, p.78). Athletic training students did not answer the PPIIQ, but they were asked to provide feedback regarding the clarity of the statements and what they felt the PPIIQ was attempting to measure. Once again, additional space was provided after each item so that feedback could be easily provided.
Based upon comments made by the athletic training students at Capital University a few changes were made in individual wording of items. Within the construct of responses to injury, no changes were made. Three of the four items within stress reactions and three of the six items within social influences were amended. Two of the original four items within sport influences were reworded, and two entirely new items were added in order to gain a different perspective comparing NCAA Divisions I, II, and III and to assess support offered to injured student-athletes by teammates. Only two of the original four items within injury influences were amended, and within personal influences one item was reworded and one new item was added to assess how athletic identity is perceived following injury. Only three of the original ten items within academic impact were amended, and lastly, one item was amended within the demographics construct. The final revision created three new items, which brought the total number of items to 46.

Reliability

In order to establish the “extent to which measurement results are free of unpredictable kinds of error,” the researcher conducted one test administration to a sample of 21 athletic training students at Otterbein College (Hinerson, Morris, & Fitz-Gibbon, 1987, p.147). A final item analysis was conducted and is reported on the actual research pretest sample in chapter 4.

(a) **Internal consistency**: Using the sample of 21 athletic training students from Otterbein College, an item-to-total correlational analysis was
conducted on the pilot test delivered on November 14, 2000 (table 3.3, p.78). A Cronbach’s alpha was used to estimate the reliability of five of the PPIIQ’s constructs measuring the perceptions of athletic training students towards injured student-athletes, one of the PPIIQ constructs assessing knowledge of theory, and one of the PPIIQ constructs measuring athletic training students’ perception of the impact of injury on academic success. An a priori Cronbach’s alpha of 0.70 was set for acceptance of the constructs, and items within a construct with an item-total correlation below 0.25 were considered suspect and analyzed relative to their exploratory and conceptual value to the construct.

Following the item analysis, the 46-item questionnaire was reduced to 29 items (table 3.5). Two constructs, responses to injury and injury influences, were eliminated altogether due to their apparent conceptual overlap with the stress reactions construct (alpha = 0.4181 and alpha = 0.1280). All items within the responses to injury construct were eliminated, and two of the four items within injury influences were relocated to the construct, stress reactions. The items within ‘responses to injury’ did not seem to provide the researcher with a means to explore students’ knowledge of theory; there was little variability, indicating that students may already have a conceptual appreciation for the presence of psychological responses. The third construct, personal influences, and its items were eliminated due to a negative Cronbach’s alpha (alpha = -0.7885). According to Mueller
(1986), items with negative discrimination indices, unless keyed incorrectly, should be removed from the scale.

The remaining five constructs were amended to increase the internal consistency. Stress reactions was amended by eliminating one seemingly confusing item and adding two items from the injury influences construct due to their conceptual similarity addressing "emotional distress, stress, and anxiety" (alpha = 0.6958). Sport influences was amended by eliminating two items, which were judged to be of insignificant importance to the exploratory nature of the study (alpha = 0.7072), and social influences was amended by rewording one item, which was reported to be confusing by respondents. Even though the alpha for social influences without the amended item is 0.7844, the item was not eliminated due to its deemed conceptual and exploratory value in assessing the impact of socioeconomic status on the possible reactions to injury. Academic impact was amended in two separate ways. With four low scoring items eliminated, the alpha is 0.7261; however, only three items were eliminated due to lack of exploratory and conceptual importance. One of the low scoring items, however, was believed to be of critical importance in exploring how ATSs perceive the impact of injury on student-athlete's class attendance, and ultimate academic success. Therefore, this one item was reworded in a more concise manner to
eliminate apparent confusion. Additionally, one new item was added to reduce confusion reported from having to group all NCAA divisions. The new item allows a comparison between NCAA Divisions I and II and NCAA Division I and III. The demographic construct was not tested.
<table>
<thead>
<tr>
<th>Construct Item Number</th>
<th>Item to Total Correlation</th>
<th>Alpha if Item Deleted</th>
<th>Construct Alpha</th>
<th>Decision</th>
</tr>
</thead>
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<td>Responses to Injury</td>
<td></td>
<td></td>
<td>0.4181</td>
<td></td>
</tr>
<tr>
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<td>0.2867</td>
<td>0.2895</td>
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<td>Eliminate item</td>
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<tr>
<td>2</td>
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</tr>
<tr>
<td>3</td>
<td>0.3328</td>
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</tr>
<tr>
<td>4</td>
<td>0.3888</td>
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<td></td>
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</tr>
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<td>Stress Reactions</td>
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</tr>
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<td>5</td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>0.6958</td>
<td></td>
<td></td>
<td>Eliminate item</td>
</tr>
<tr>
<td>Injury 15</td>
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<td></td>
<td></td>
</tr>
<tr>
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<tr>
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<td>0.1481</td>
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<td></td>
</tr>
<tr>
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<td></td>
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<td>-0.1539</td>
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<td>12</td>
<td>0.2461</td>
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<td>14</td>
<td>0.6893</td>
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<td></td>
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<tr>
<td>Injuries Influences</td>
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<td>0.1280</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>-0.2521</td>
<td></td>
<td></td>
<td>Eliminate construct</td>
</tr>
<tr>
<td>16</td>
<td>0.1739</td>
<td></td>
<td></td>
<td>Move item to stress reactions</td>
</tr>
<tr>
<td>17</td>
<td>0.2165</td>
<td></td>
<td></td>
<td>Eliminate item</td>
</tr>
<tr>
<td>18</td>
<td>0.2373</td>
<td></td>
<td></td>
<td>Move item to stress reactions</td>
</tr>
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<td>Personal Influences</td>
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<td>-0.7885</td>
<td></td>
</tr>
<tr>
<td>19</td>
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</tr>
<tr>
<td>20</td>
<td>-1.0909</td>
<td></td>
<td></td>
<td>Eliminate item</td>
</tr>
<tr>
<td>21</td>
<td>-0.4934</td>
<td></td>
<td></td>
<td>Eliminate item</td>
</tr>
<tr>
<td>22</td>
<td>-0.2136</td>
<td></td>
<td></td>
<td>Eliminate item</td>
</tr>
<tr>
<td>23</td>
<td>-1.1754</td>
<td></td>
<td></td>
<td>Eliminate item</td>
</tr>
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Table 3.5. Internal consistency of seven PPIIQ constructs. Continued on next page.
Table 3.5 continued.

<table>
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<tr>
<th>Social Influences</th>
<th>.7844c</th>
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<tr>
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<td>.7677</td>
</tr>
<tr>
<td>25</td>
<td>.5344</td>
</tr>
<tr>
<td>26</td>
<td>.4615</td>
</tr>
<tr>
<td>27</td>
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<tr>
<td>28</td>
<td>.4551</td>
</tr>
<tr>
<td>29</td>
<td>.3014</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Academic Impact</th>
<th>.7261d</th>
<th>Add one new item to clarify item 34</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>.3044</td>
<td>-.0262</td>
</tr>
<tr>
<td>31</td>
<td>.1649</td>
<td>.0874</td>
</tr>
<tr>
<td>32</td>
<td>-.4919</td>
<td>.3744</td>
</tr>
<tr>
<td>33</td>
<td>-.0541</td>
<td>.2076</td>
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<td>.5207</td>
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</tr>
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<td>36</td>
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<td>.5078</td>
</tr>
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<td>-.0442</td>
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</tr>
<tr>
<td>39</td>
<td>.2947</td>
<td>-.0260</td>
</tr>
</tbody>
</table>

aReflects the alpha without item 8.
bReflects the alpha with items 13 and 14.
cReflects the alpha without item 27.
dReflects the alpha without items 32, 33, 37, and 38.

Interview Protocol Development

Interview questions were developed in order to assess how ATSs perceive SAs’ psychological reactions following injury and how ATSs address the psychological component of injury throughout rehabilitation. Questions were strategically sequenced to “warm-up” the interview respondents with basic questions that would paint a picture of each interviewee. Questions then progressed to probe into the process of injury rehabilitation, and ended with the role of psychology in rehabilitation. A complete listing of the interview questions is in Appendix C.

On November 16, 2000, two pilot interviews were conducted at Otterbein College on one male and one female junior level athletic training student. Both respondents were
informed as to the purpose of the research project and the purpose of the pilot interviews. The pilot interviews were not audio-taped, and comments were not recorded. Nonetheless, informed consent was obtained from both respondents prior to beginning the interview process (see Appendix B for consent forms). The purpose of the pilot was to test the flow of the interview format, and make certain that the questions were clear and promoted dialogue. The two respondents were asked to provide any feedback regarding the clarity of questions and the need for additional questions. Based upon the feedback, three changes were made. The first change was in the order of questions; instead of opening with a question concerning their choice of major, a question regarding their class rank was used. The students felt that this order would improve the flow of the interview. The second change was the addition of a new question regarding the different psychological reactions experienced at different stages of rehab. One student felt this might provide more probing into how much athletic training students truly know. The final change involved adding examples to two questions in order to provide more clarity. Overall both students felt that the questions were appropriate and that the interview flowed well.

DATA COLLECTION

Pretest Interview

Pretest interviews were conducted from November 21st to 29th, 2000, with two sophomores and two senior ATSSs, in order to provide additional data to be used in conjunction with the questionnaire results. Two juniors and one additional sophomore were interviewed from January 3rd to 8th, 2001, due to the changes in respondent class rank and attrition. Altogether, six ATSSs were selected from The Ohio State University’s
class roster for AMP 694 in order to participate in the interview process; two sophomore
(one male and one female), two junior (2 females), and two senior (one male and one
female) ATSs were interviewed.

Four of the six interviews were conducted in Biggs training room. One interview
was conducted in the French Fieldhouse training room, and one other interview was
conducted in a study room in Mack Hall. Following an explanation of the interview
format, participating ATSs were told how they were selected and asked to answer
questions as candidly as possible, and were informed that he or she would be contacted
once again in the future for another interview sometime in May 2001. Each respondent
was asked to sign a consent form prior to beginning the audio-recorded interview
(Appendix B), and was assured he or she would be interviewed only once for the pretest.
Completed interviews lasted approximately 45 minutes to an hour and followed the
interview guide found in Appendix C.

The interview format consisted of a pre-determined guide of questions, but a semi-
structured interview was conducted in that the pre-determined interview guide was
modified periodically during individual interviews in order to gain additional clarity and
richer content. I tried to remain neutral, but at times did interject my opinion if the
respondent asked me for such information. I did not want to alter the conversational
nature of the interview by refusing to answer questions posed by the respondent.

Responses by the ATSs were not categorized during the interview. Within two
weeks of the interview, each respondent was given a copy of the entire transcribed
interview in order to provide a member check. Despite being alarmed at the number or
"likes" and "ummmms," no respondent suggested any changes to his or her interview.
Pretest Questionnaire

The pretest administration of the PPIIQ was administered during the first day of class on January 2, 2001 to 15 respondents; however, one respondent later withdrew. The students were welcomed to the course and asked to complete the PPIIQ addressing their individual perceptions of the psychological impact of injury on student-athletes. Three respondents were absent on January 2, 2001, and two respondents added the course following the first class. Therefore, five respondents completed the questionnaire during the second class on January 9, 2001.

All respondents were asked to answer questions honestly and were assured that their names would not appear on the questionnaire, only a predetermined number for pretest-posttest matching. Confidentially was assured to each respondent. Furthermore, respondents were instructed to take as much time as needed to complete the PPIIQ, and that by completing the questionnaire each respondent was indicating his or her consent to participate in the research study. Following two administrations of the PPIIQ, the first and second lectures continued with the planned class material (table 3.4).

Course on Psychological Impact of Injury, AMP 694

Psychological Impact of Injury, AMP 694, was a new course for ATSs at The Ohio State University designed by the researcher who also served as the course instructor. Since the course was not a requirement for the major of Athletic Training and was not a liberal arts requirement, it served as an elective for ATSs. Therefore, to obtain an adequate number of respondents, the researcher met with the academic advisors and the certified athletic training staff at The Ohio State University in order to promote and explain the benefit of the course. Flyers with the course enrollment information were
displayed within the training room, and all freshmen, sophomore, junior, and senior athletic training students were sent e-mails announcing the new course. Additionally, during scheduling for the winter 2001 quarter, academic advisors and the athletic training staff were instructed to suggest AMP 694 to athletic training students in their sophomore, junior, or senior years.

The course met 10 times during a ten-week quarter on Tuesday evenings from January 2, 2001, to March 6, 2001 (table 3.6). A take-home final exam was given and was due by March 13, 2001. The first lecture officially began following the administration of the PPIIQ pretest with an explanation of the syllabus and a review of the rehabilitation process and the sports medicine team. The second lecture presented ATSs with the existing theories and most current literature regarding the psychological impact of injury. For lectures three through nine, Flint’s (1998) Injured Athlete-Injury Scenario Interaction served as the organizational framework with one exception, a midterm examination during lecture five. During lecture three, the first of Flint’s (1998) factors, stress reactions to injury, was addressed. Lecture four addressed sport influences on psychological reactions, lecture five was the midterm examination, lecture six presented injury influences on psychological reactions, and lecture seven and eight addressed personal influences on psychological reactions. The final of Flint’s (1998) factors, social influences on psychological reactions, was presented during lecture nine. During the span from lecture three to lecture nine, class periods were divided into two segments: a lecture and group work. Psychological literature and theory that was related to each of Flint’s (1998) factors was presented during the lecture, and at the conclusion of each lecture students worked in collaborative groups to apply theory and mediation
techniques to “case studies.” During the final class session, the student were required to present a real “case study” that was experienced in their internship experiences and to show application of mediation techniques through medical documentation. The course syllabus is presented in Appendix A for further detail.

<table>
<thead>
<tr>
<th>WEEK OF THE QUARTER</th>
<th>LECTURE CONTENT</th>
</tr>
</thead>
</table>
| Week 1              | Questionnaire given to 15 respondents  
|                     | One respondent dropped-out  
|                     | Review of rehabilitation process  
|                     | Sports medicine team |
| Week 2              | Questionnaire given to 5 respondents  
|                     | Theories and literature on psychological impact of injury |
| Week 3              | Stress reactions |
| Week 4              | Sport influences |
| Week 5              | Mid term examination |
| Week 6              | Injury influences |
| Week 7              | Personal influences |
| Week 8              | Personal influences |
| Week 9              | Social influences |
| Week 10             | Case study presentations |

Table 3.6. AMP 694 course outline.

Posttest Interview

Posttest interviews were conducted from May 22\textsuperscript{nd} to 23\textsuperscript{rd}, 2001. The same six ATSs who were interviewed for the pretest interviews were interviewed for the posttest interviews in the same environment (Biggs training room, French Fieldhouse training room, or Mack Hall study room). Once again, each respondent, prior to beginning the
audio-recorded interview, was asked to sign a consent form (Appendix B). The question and interview format was generally the same as in the pretest. Two “warm-up” questions were eliminated from the pretest format, and three new questions were added to assess how ATSs felt about the course. The entire interview lasted approximately 45 minutes to an hour, and within two weeks after the interview, each respondent’s summarized interview was presented to him or her in order to check the content. No respondent suggested any changes to the content.

Posttest Questionnaire

The posttest administration of the PPIIQ was conducted on May 30th and June 1st, 2001, in the same classroom as the pretest questionnaire. Respondents’ schedules were obtained through the OSU database, and a special meeting was set by the researcher in order to administer the posttest. However, one respondent was unable to attend the special meetings, so a time was set for June 4, 2001 in my office. The same instructions and time limit were given as in the pretest.

DATA ANALYSIS

Attributes

Three major attributes, variables, are presented below.

(1) ATS’s perceptions of student-athletes’ psychological response to injury;

(2) ATS’s perceptions of the impact of injury on a student-athletes’ continued academic success; and

(3) Value of AMP 694, Psychological Impact of Injury

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The first step in establishing the need to amend and improve the current CAAHEP and NATA curriculum for athletic training is to describe (1) ATS’s perceptions of the psychological response to injury and (2) the perceived impact of injury on academic success. If a statistically significant change in perceptions can be established from pretest to posttest administration of the PPIIQ and triangulated with thematic changes from pretest to posttest interviews, then a rationale exists for adding AMP 694 to OSU’s Athletic Training curriculum. The value of the course will be determined by the direction and magnitude of change from pretest PPIIQ scores and interview content to posttest PPIIQ scores and interview content.

**Questionnaire Statistical Analysis**

SPSS, The Statistical Package for the Social Sciences (version 10.0), was used to assess the change in athletic training students’ perceptions of student-athletes from pretest to posttest. The 29-item PPIIQ is divided into five constructs and was administered two times. The first three constructs (15 total items) within the PPIIQ represent athletic training students’ perceptions of student-athletes’ psychological response to injury. For the first three constructs, stress reactions (five items), sport influences (four items), and social influences (six items), scores were summated across respondents within each construct. The fourth construct, academic impact (eight items), represents how athletic training students perceive the impact of injury on a student-athlete’s continued academic success. For academic impact, respondent scores were summated. The final construct (seven items) provides the researcher with background information in order to account for age, gender, race, class rank, year in athletic training program, experience with injured athletes, and the number of weeks of instruction on the
psychology of the injured athlete. Change of perceptions and value of the course was measured by comparing the summated scores for each of the four constructs produced on the PPIIQ pretest to the summated scores for each of the four constructs reported on the PPIIQ posttest.

For the purpose of assessing change, the difference between the summated pretest and posttest constructs was ranked. Statistically significant rank scores reported by the athletic training students at The Ohio State University from pretest to posttest were determined by a nonparametric test, the Wilcoxon Signed Ranks test, with an a priori alpha level of 0.05 (two-tailed). Unlike the t-test, nonparametric tests do not require that the following two assumptions be met, independence and normal distribution. Both assumptions seemed to be unrealistic in light of the small convenience sample ($N = 19$) (Siegal & Castellan, 1988).

Once a rank score existed for the difference between pretest and posttest PPIIQ constructs, four nonparametric tests were run on each of the first four constructs within the PPIIQ to determine if pretest scores statistically differed from posttest scores at an a priori alpha level of 0.05 (two-tailed). In order to assess the value of the course, scores from the PPIIQ administrations, which indicate the number of positive (i.e. summed answers reflect a higher Likert value in posttest) and negative ranks (i.e. summed answers reflect a lower Likert value in the posttest) assigned to the difference scores were used to establish the degree of perception change relative to the psychological impact of injury. For example, more positive ranks in comparison to more negative ranks.
would indicate that more ATSs’ perceptions changed in a positive direction (i.e. more agreement with the statements) than in a negative direction (i.e. less agreement with the statements).

For data analysis purposes, if no more than three items per construct were skipped per respondent, a mean substitution of the respondent’s responses within the respective construct was used (Hair, Anderson, Tatham, & Black, 1998). If more than three items were left blank for any respondent, the construct in which the items were left blank was not calculated. The one respondent who dropped out prior to completing the posttest was not contacted for the posttest. The researcher felt that the respondent’s responses would not provide any additional insight, and was therefore not included in the data analysis.

Descriptive statistics were collected for each of the following background characteristics: (a) age; (b) gender; (c) race; (d) class rank; (e) year in athletic training program; (f) experience with injured athletes; and (g) number of weeks of instruction on the psychology of the injured athlete.

Interviews Analysis

During the interview process, responses were not coded or placed within predetermined categories. The first step towards analysis occurred following the member check of the entire transcribed pretest interview and summarized posttest interview. Interview analysis began by reading the transcribed interviews without coding. During the second reading, the researcher hand-coded themes that emerged from each respondent’s pretest and posttest.

Qualitative pretest and posttest interviews were coded separately prior to comparing the emergent themes from pretest to posttest for each respondent. Emergent
themes were compared for each interviewee in order to determine if perceptions changed. Responses were coded and grouped within eight overarching themes (1) injury classification; (2) what requires rehabilitation; (3) elements of a rehabilitation; (4) psychological responses; (5) psychological techniques; (6) SA time demands; (7) academic resources; and (8) suggested resource changes. The first five themes (injury classification, what requires rehab, elements of a rehab, psychological responses, and psychological techniques) were used to determine the degree of change in ATS’ perceptions of the psychological responses suffered by a SA. SA time demands, academic resources, and suggested resource changes were used to assess the change in ATS’ perceptions concerning the impact of injury on a SA’s academic success. Value of AMP 694 was determined in two ways. One method assessed the degree of change in the ATSs’ perceptions from pretest to posttest interview themes, and the second method analyzed responses generated from three new questions posed at the conclusion of the posttest interview.

ETHICAL ISSUES

Ethical issues in any study revolve around four main issues: harm to respondents, consent, deception, and confidentiality (Guba & Lincoln, 1989). In this study the aforementioned ethical issues were specifically addressed with The Ohio State University’s Office of Research Risks and Protection, which granted approval to the research project in September 2000. Although approval of the research proposal was granted, precautions were taken at each step of the research phase in order to remain compliant with the proposal submitted to the Office of Research Risks and Protections.
Regarding the potential of harm to respondents, no invasive testing was conducted. This project was concerned with evaluating respondents’ perceptions only. Therefore, there was no risk of physical harm to respondents. However, there was some potential for psychological harm in that respondents might have feared that their grade in AMP 694 was dependent upon participating in the research study. As the researcher and instructor for the course, I assured the students that their level of participation in the research study would not affect their end of the quarter grades. Students were told that they did not have to participate, and if they chose to participate, they may withdraw from the study at any time without any consequence to their grades. Grades were strictly based upon a midterm examination, a case study analysis presented in class, and a final examination.

The second ethical issue easily accounted for was deception. At no time was information withheld from respondents. Prior to participation in interviews and questionnaire completion, respondents were informed of the purpose of the research study. Additionally, consent for participation in the interviews was obtained through a written consent form (Appendix B), and consent for completion of the questionnaire was determined through voluntary completion of the instrument.

In order to provide confidentiality and protect identities, questionnaires and transcripts were coded. Only the researcher had access to the codes associated with respondents’ names. The codes were stored off-campus in a locked cabinet with the completed questionnaires, transcribed interviews, and associated audio-tapes. The data and codes were shredded following completion of the research project. Confidentiality was maintained as codes for the questionnaire were only used to link pretest
questionnaires to posttest questionnaires for comparison. Following completion of the posttest, the list of names with associated codes for the questionnaire was shredded. Furthermore, under no circumstances were respondents identified in the results by their answers or responses. Throughout chapters four and five, fictitious names were used to identify the interview respondents and the interview data and dialogue.
CHAPTER 4

RESULTS

This chapter reports the results of the questionnaire \((N = 19)\) and interview analysis \((n = 6)\) for the sample of ATSs enrolled in AMP 694 for winter quarter 2001. The chapter is organized into four sections: (a) internal consistency of pretest; (b) sample descriptives; (c) injured SA’s psychological response; (d) academic impact of injury on a SA; and (e) value of AMP 694.

INTERNAL CONSISTENCY OF PRETEST

An item analysis using Cronbach’s alpha was used to establish the reliability of the PPIIQ prior to conducting the actual research, and the results were reported in chapter 3. However, as a means of reporting an additional measure of reliability for the PPIIQ, the researcher performed another internal consistency measure on the actual pretest questionnaire data. Once again a Cronbach’s alpha was used to estimate the reliability of the PPIIQ’s constructs measuring ATSs’ perceptions of student-athletes’ psychological responses to injury and ATSs’ perceptions of the impact of injury on student-athletes’ academic success. An a priori Cronbach’s alpha of 0.70 or higher was considered acceptable, and items within a construct with an item-total correlation below 0.25 were considered suspect.
Despite success on the pilot test, the internal consistency of the actual research data failed to meet the a prior alpha level (table 4.1). The five items within stress reactions produced an alpha of 0.5455, but with no suspect items. The four items within sport influences produced a slightly higher alpha (alpha = 0.6168), and produced one suspect item (item 9 = .0352). The one suspect item within sport influences was not considered suspect in the pilot test (0.2476). Social influences tested the lowest of all four constructs (alpha = 0.4365), due in part to two suspect items out of five total items (item 11 = 0.0992 and item 13 = 0.1198). As with the last suspect item, item eleven did not test suspect in the pilot test (.7290), but the other item, number 13, was a suspect item that was amended for conceptual reasons following the pilot test. The last construct, academic impact, produced the highest alpha with six total items (alpha = 0.6857) and only one questionable item, which was also suspect in the pilot test (item 21 = 0.1462; .1711 in pilot), but was not eliminated due to its conceptual importance in assessing an ATC's holistic role (i.e. academic and athletic involvement).

The low alphas may be attributable to two phenomena: (1) the small sample size, and (2) the characteristics of the sample. In the pilot testing (N = 21), respondents were members of NCAA Division III schools, where the high profile of athletics is nearly absent. In contrast, the actual sample of respondents (N = 19) is students attending a high profile NCAA Division I school. The differing perspectives of students may have impacted the manner in which respondents answered. As a result, the low alphas produced from the actual research data makes it inappropriate to conclude that the PPIIQ is not reliable. According to Mueller (1986), "coefficients of psychological measures seldom ever approach 1.00 and frequently are below 0.50." Thus, it is plausible to
conclude that the PPIIQ has some measure of reliability, but is less well constructed than other scales.

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<th>Construct Alpha</th>
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</tbody>
</table>

\(^a\)Reflects the alpha without item 13.

\(^b\)Reflects the alpha without items 22 and 23.

Gray shading indicates results from the pilot testing results, not the actual research data.

Table 4.1. Internal consistency of four PPIIQ constructs.
SAMPLE DESCRIPTIVES

Questionnaire

Although 20 students were enrolled in AMP 694 on the first day of class, only 19 completed the course and had their responses analyzed for this study. All 19 completed both the pretest and posttest forms of the PPIIQ. Ages ranged from 18-26 years on the pretest with a mean age of 20.21 (SD = 1.84). Of the 19 students, 63% were female (n = 12) and 36% were male (n = 7). Eighty-nine percent of the sample (n = 17) reported their race as Caucasian, one respondent reported Asian American, and one other respondent reported African American. According to the data gathered on the first day of scheduled classes for winter 2001, 21% of the respondents were freshmen (n = 4), 31% were sophomores (n = 6), 21% were juniors (n = 4), 21% were seniors (n = 4), and only one respondent was a graduate student. However, at the conclusion of spring quarter 2001, when the final data collection occurred, 2 of the respondents who had originally reported being freshmen had become sophomores, and 3 of the respondents who had originally reported being sophomores had become juniors. There were no changes reported from pretest to posttest in the ranks of senior and graduate student. Thus, the final report produced 10% freshmen, 26% sophomores, 36% juniors, 21% seniors, and 5% graduate. Eleven of the students were practicing as ATSs at OSU. The remaining eight had not yet finished the pre-requisite course work to become an ATS; however, each had experience working with athletes at high school or at other colleges or universities.

Two additional background questions were asked in both the pretest and posttest questionnaires in order to estimate how much student experiences had changed from pretest to posttest, which spanned 11-12 weeks. Table 4.2 presents the estimated number
of rehabs each student reported for the pretest and the posttest, and Table 4.3 provides an estimation of the number of weeks of instruction each student reported having on the psychology of the injured athlete for the pretest and posttest periods. Students were not asked to provide an absolute count of the number of rehabs and weeks of instruction. The questionnaire only asked each respondent to estimate the number, which in some cases changed to a lesser estimate in the posttest. Students were specifically instructed to not count basic or introductory psychology courses or AMP 694 in the estimate of weeks of instruction. As shown, there does not appear to be a large percentile change from pretest to posttest in both tables. Although the events spanning from the beginning of winter quarter to end of spring quarter could not be held constant for each respondent, the results shown in tables 4.2 and 4.3 provide a idea of how much the collective experiences of the students changed from pretest to posttest (i.e. January to June).
<table>
<thead>
<tr>
<th>Number of Rehabs</th>
<th>Frequency</th>
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<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
<td>Pretest</td>
</tr>
<tr>
<td>0-5</td>
<td>4</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>6-10</td>
<td>2</td>
<td>3</td>
<td>10</td>
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<td>11-15</td>
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<td>0</td>
<td>5</td>
</tr>
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<td>21-25</td>
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</tr>
<tr>
<td>26-30</td>
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<td>30+</td>
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<td>19</td>
<td>98</td>
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</tbody>
</table>

Table 4.2. Number of rehabilitations in which each respondent was involved.
<table>
<thead>
<tr>
<th>Weeks of Psychology Instruction</th>
<th>Frequency</th>
<th>Percentage</th>
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<tr>
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<td>10+</td>
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<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 4.3. Number of weeks of instruction on the psychology of the injured athlete each respondent reported, independent of basic and introductory psychology.

Interviews

Six of the nineteen students enrolled in AMP 694 were selected to participate in pretest and posttest interviews. These interviewees are identified hereafter by fictitious names in order to protect their identities. The same six ATSs participated in both interview rounds, and five were practicing as OSU ATSs. The researcher purposively selected respondents based on three criteria. Two of the selection criteria were class rank and gender. The researcher selected two sophomores (1 male and 1 female), two juniors (2 females), and two seniors (1 male and 1 female). Ideally the researcher would have
preferred to interview one male and one female per class rank; however, there were no male juniors. Thus, the researcher had to select two females. The third criterion was experience as an ATS within collegiate athletics. Five of the six interview respondents were practicing as OSU ATSs. The only respondent who was not currently practicing as an OSU ATS was the female sophomore, who happened to be the only female, sophomore with experience at the collegiate setting. She was a transfer student, and was finishing her pre-requisite course work to enter into the OSU Athletic Training program; therefore, the researcher felt that this particular student’s experiences would qualify her for a rich interview relative to the psychological impact of injury.

Profile: Bonnie

Bonnie was a sophomore pursuing a major in Athletic Training, not yet accepted into the program at the time of the interviews. Before becoming interested in OSU’s Athletic Training program, Bonnie attended another institution for two years and took a year off. An internship experience in Florida with an OSU alumnus prompted her to pursue the transfer to OSU, and she began her new pre-major in the fall of 2000. She said that she truly missed working with sports prior to transferring to OSU.

She estimated having participated in approximately 30 rehabs prior to taking AMP 694 in the winter quarter, and close to 100 rehabs following the spring quarter. With this experience, she was above average relative to the other interviewees. During the posttest, Bonnie reported having expanded her rehabilitation experiences by volunteering at a nearby independent sports medicine center where she worked with professional athletes, high school athletes, and even some adolescent athletes. Additionally while taking AMP 694, she did some observations in one of OSU’s training
rooms as part of the requirements for the Basic Athletic Training course, and stated that the experience in OSU’s training rooms “put the aspects of what we were learning in class [AMP 694] towards actual people in situations.” Other than AMP 694, Bonnie reported no formal instruction in the psychology of the injured athlete, and enrolled in AMP 694 because the researcher called and recruited her and because AMP 694 “had never been offered before.” Bonnie attended all lectures of AMP 694, and reported approximately one hour of class preparation a week.

Bonnie’s favorite sports for working as an ATS were basketball and football; she found girls’ sports to be “least appealing.” During the pretest interview, Bonnie said she enjoyed caring for injuries and the relationship that ATSs develop with the athletes for which they provide care. She felt that it was important to note that SAs are “not just an injury, and they’re not just an athlete.” She liked to know that her student-athletes are on good academic standing as well as succeeding in their sports and rehabs. Likewise on the posttest, Bonnie mentioned that her favorite part of being an ATS is watching the sports, but disliked watching people suffer through injuries and rehabs, once again staying with the theme of caring for people.

Profile: Steve

Steve was a sophomore at OSU. Although this was his first year in the athletic training major, it was his second year working with OSU varsity athletics as an ATS. Steve claimed to have set his goal to be an ATC early in childhood. His mother told him about the profession following his expressed love for both sports and medicine. According to Steve, athletic training “seemed like a good compromise” between his
interests. Steve admitted to being influenced by his high school athletic trainer, who helped solidify his choice to enter athletic training as a profession.

During the pretest, Steve estimated that he had worked with approximately six rehabs, but his experience with rehab appeared to broaden throughout the time from November to May, as he estimated his experience at 12 rehabs during the posttest interview. His experiences ranked as below average in comparison to the other interviewees. The only formal class Steve had taken on the psychology of injury is the AMP 694 course, for which he claimed to have spent 30-60 minutes a week in preparation, despite taking the course pass/non-pass. During the pretest, he reported no other psychology experience. However, in the posttest, Steve admitted to reading about a half-dozen articles on the psychology of injury. Steve claimed that he took AMP 694 for three reasons. One, he simply needed more credit hours. Two, he thought the course would be interesting and something he could apply everyday in his practice as an ATS. And three he thought he might be able to learn something new as he had no “formal background in it [psychology of injury].” Steve’s only absence in AMP 694 resulted from a traveling assignment to a Big Ten Tournament with one of OSU’s varsity teams.

His sport assignment, at the time of the interviews, was working with a varsity men’s team, which he enjoyed. However, he did prefer to work with women’s sports. Steve explained that he felt that female athletes respected a male’s opinion more than male athletes. His least favorite assignment had been football mainly “because of the fact we were limited in what we were allowed to do based on the nature of the sport, the high profile.” Even though Steve did not enjoy the large time commitment demanded of ATSSs, he did enjoy several aspects of athletic training. Mostly Steve admitted to
enjoying the interaction with people and being close to sports. He also emphasized his love of being outdoors, as opposed to being in an office all day.

Profile: Vickie

As a junior, Vickie had three years of experience as an ATS for OSU; however, she was in her first year of the athletic training major. During the time of the interviews, she was assigned to work with a co-ed varsity athletic team at OSU. Compared to the other interviewees, she had perhaps the most pre-college experience in the field of athletic training, as she was not only a student-aide to her ATC in high school during her senior year, but also took two athletic training courses in high school during her junior year. She credited her high school classroom and training room experiences for introducing her to the profession, and her love of sports and her “need to be needed” for keeping her in the profession.

During the pretest interview, Vickie estimated that she had worked with 30-40 rehabs. Her estimate increased to 50-60 in the posttest. Her experience was above average in comparison to the other interviewees. She claimed to have no formal background in the psychology of injury, but took the course to fill that particular void. Vickie expressed that she understands athletes because she, too, was an athlete, but that “it takes a lot more to be an athlete at the collegiate level.” And, that prompted her interest in AMP 694. According to Vickie, she wanted to “better understand [her] athletes.... And to...better understand maybe where they’re coming from....” Vickie had only one absence during the ten week class, and claimed to have spent approximately two hours a week preparing for the class despite taking the course pass/non-pass.
Vickie appeared to enjoy being an ATS very much. She seemed to appreciate the experiences OSU had given her, and claimed that helping athletes when they are hurt is rewarding. She loved to see them rehabilitate, get better, and return to sport. However, her biggest reward was the trainer-athlete relationship. Vickie explained, “it’s really nice to know that they feel comfortable to come to you, and they can talk to you about anything, and just knowing that they know you’re going to be confidential with it, and that they can trust you and that you’ll be able to help.” In her opinion, the only negative aspect to athletic training was the public perception. She seemed to find it disheartening that the public views ATCs as merely “glorified water people” or just “strength coaches.” Additionally, Vickie did not appear to dislike any sports as she explains, “I don’t know that there are any that I would not want to work…. [Y]ou benefit from each sport. You see different stuff.”

Profile: Reese

Reese was a junior at OSU. Although she had practiced as an ATS for three years, this year was her first year in the athletic training major. She found athletic training in a typical fashion. She was an athlete who suffered a severe injury that altered her career goals of playing at the collegiate level. Through her injury, she found the Athletic Training camp held at OSU for high school students. Reese attended the OSU camp each summer during high school and also became the first student aide at her high school. She claimed to love sports and athletic training; “So, it’s a good fit.”

Reese admitted to an extensive rehabilitation background. As an ATS she had more experience in ACL rehabs than some practicing ATCs. In both pretest and posttest interviews, she claimed to have participated in countless rehabs of varying severities, and
is above average in rehab experience when compared to the other interviewees. Despite her vast experience in physical rehabs, she has never had any formal instruction in the psychology of injury. The only experience she claimed is what she has gathered from the sport psychologist who visited her teams. Therefore, AMP 694 was her first formal course, for which she claimed to have spent two hours a week in preparation despite taking the course pas/non-pass. She jokingly credited taking AMP 694 because her roommate was taking the course. However, she also admitted to finding the material interesting, too. Altogether, Reese missed two classes.

Reese did not seem to dislike any particular sport assignment as an ATS. She found positives and negatives with each experience. However, she loved working football due to its high profile nature, and the number of rehabs she observed. Although she disliked noncontact sports due to the preponderance of chronic injuries and nonproductive rehabs, she was assigned to a noncontact sport at the time of the interviews and claimed to enjoy the autonomy that she did not find working football. Reese continued to explain the difference between working male and female sports, and provided insight into her experiences that no other interviewee seemed to provide. Reese seemed to like working with male athletes because they respected her, but she found the overall environment unsettling. She went on to explain that with female sports she can be herself, and “have such a more bedside manner with them, and you feel for them. Nothing is taken out of context, and they trust you and you can talk about everything.” It appeared that Reese’s outgoing, verbose nature had created situations that were misinterpreted with male athletes, and that she was enjoying the opportunity to be herself with female athletes. Nonetheless, Reese found many wonderful things about being an
ATS. She appreciated the relationships that she had built with the athletes, she enjoyed the interaction with different people, and she loved the traveling. She also spoke professionally about the vast resources, the top-notch staff, and the excellent reputation of the Athletic Training program at OSU. However, like other interviewees, Reese disliked the time commitment and the janitorial type of work that she sometimes had to perform. She provided another bit of insight by stating that she felt that the profession of athletic training suffers because it uses ATSs as “cheap labor.” According to Reese, “sometimes it makes our field a little less respected, like you know, where an 18 year old can do the job of a certified pretty much....”

Profile: Whitney

At the time of the pretest interview in November, Whitney was a junior who was in her fourth year as an OSU ATS. However, by the beginning of AMP 694, Whitney had officially become a senior. She found the profession of athletic training accidentally. Although she claimed she always had an interest in medicine and sports, she did not know about athletic training until she attended a camp for gifted and talented students during her freshmen year in high school. Originally Whitney thought the camp was about sports, but it turned out to be an athletic training camp for high school students. The camp sparked her interest, and she became a student aide at her high school the following year after attending a second summer athletic training camp for high school students.

Prior to taking AMP 694, Whitney estimated that she had participated in approximately 30 rehabs. During the posttest, 11 weeks after AMP 694, she found it difficult to estimate the number of rehabs she had participated in, but claimed that it was
more than 30, which is average compared to the other interviewees. Although she had never taken a psychology course specific to injury, Whitney did have more of a psychology background than the other interviewees. Early in her college career, she thought of pursuing a minor in psychology, but changed her mind after taking an abnormal psychology and a counseling psychology course. The sport psychologist at OSU gave the only material specific to psychology and sports to her, and she claimed to have had one psychology of injury lecture in a physical rehabilitation course. Following the conclusion of AMP 694, Whitney admitted to seeking out more information to read on the subject matter. She found the subject interesting, and claimed that she would “like to do more.” She enrolled in AMP 694 for several reasons. First she credited her interest in how the mind works, and how “the mindset of the athlete can make a rehab as simple as an ankle sprain take forever for one person, where another person is back in two days.” Second, she thought the course would be helpful in her practice as an ATS, and third she needed more credit hours. Whitney did not comment on how much time she spent preparing for class; however, her attendance was good, as she only missed two classes.

Whitney has worked with several sports as an ATS, and claimed to love working with field hockey, gymnastics, football, and synchronized swimming. She found her experience with swimming and diving less appealing, despite the fact that she was a swimmer herself. She was adamant about her love for interaction with people, claiming to be a “people-person.” The only aspect of being an ATS that Whitney did not enjoy was the demanding time commitment.
Profile: Tommie

Tommie officially became a senior following the conclusion of fall quarter 2000. He became an ATS for OSU three years ago as a sophomore. Tommie originally entered OSU as a physical therapy major. In high school he became interested in the field of sports medicine due to his interactions with this high school athletic trainer. However, Tommie was not aware of the internship Athletic Training program at OSU when he entered, so he declared physical therapy as a major. Through students, Tommie discovered Athletic Training at OSU and applied for the program at the end of his freshmen year.

At the time of the pretest, Tommie estimated that he had participated in approximately 10 rehabilitations. That estimate increased to approximately 20 in the posttest. This is below average compared to the other interviewees. He admits to having no formal instruction in the psychology of injury, but he did have some practical experience in rehabilitation with a staff physical therapist who critiqued his work on probing and motivating SAs. Therefore, Tommie wanted to take AMP 694 because he realized he “lacked in a certain aspect in rehabs, and [he] also had a certain case that was challenging [him].” Throughout the course of AMP 694, Tommie had perfect attendance, and claimed to have spent approximately 30 minutes a week in preparation for class.

Although Tommie had worked with three different varsity sports at OSU, he did not have a favorite. In fact, he stated that all of his sport assignments had been “very good experiences.” He enjoyed interacting with people, and helping athletes recover. He felt that the hands-on experience was invaluable, and admitted to still getting a rush when
he was behind the scenes at sporting events. He exuded, “I love the fieldwork. I love the fact that we get to be there at the event working on the inside.” According to Tommie, the only discouraging part of being an ATS was the paperwork, difficult coaches, and strict chain of command that must be followed. He explained, “It feels like our hands are really tied. We can’t do a lot of the things that we know how to do without going to someone first.”

Profile: Summary

Two issues emerged from the individual interview profiles. One is that the experience of the six interviewees did appear to change slightly from pretest to posttest. The average number of rehabs in which each interviewee participated was 22 on the pretest and 45 on the posttest, with a range of 6 to 30 on the pretest and 12 to 100 on the posttest. Two is an interesting phenomena that was revealed through the interviews; all but one of the interviewees, Bonnie, stated that AMP 694 was selected based upon an interest in the subject matter or a need to improve their understanding of the SA. This is particularly important because this is the one element of bias that was left uncontrolled in this study, and could potentially affect the external validity of the results.

INJURED SA’S PSYCHOLOGICAL RESPONSE: DEGREE OF CHANGE IN ATSS’ PERCEPTIONS

Questionnaire

The change in perceptions from pretest to posttest questionnaires in the stress reactions construct was not statistically significant ($p = 0.126$, two-tailed). Five of the respondents changed their summated construct score in the posttest to a lower summated score on the seven point Likert scale (1 = Strongly Disagree; 7 = Strongly Agree). On
the other hand, 11 respondents changed their answers on the posttest to represent a higher summated score, and three respondents remained unchanged from pretest to posttest questionnaire (table 4.4). Two remaining constructs, sport influences and social influences, did show a statistically significant change from pretest to posttest questionnaires ($p = 0.024$, two-tailed; $p = 0.001$, two-tailed). Within the construct of sport influences, 13 of the 19 respondents changed their perceptions to a higher summated score on the posttest, which indicates that most of the respondents recognized the importance of the sport influences (e.g. coaches reactions, time during season, etc) on the degree of psychological distress. Five of the respondents reported lower summated scores on the posttest, and only one respondent remained unchanged from pretest to posttest questionnaire. The social influences construct reported 16 positive ranks (i.e. higher summated scores on the posttest) indicating that all but 3 of the respondents recognized the important of social influences (i.e. social support, ethnic background) on the degree of psychological distress suffered by injured SAs. There were only two respondents who reported lower summated scores on the posttest, and only one respondent remained unchanged on the social influences construct.
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*aStress Reaction, Sport Influences, and Social Influences are constructs that establish the degree of change relative to ATSS’s perceptions concerning a SA’s psychological reaction to injury.

*bAcademic Impact is a construct that establishes the degree of change relative to ATSS’s perceptions of the academic impact of injury on a SA’s continued academic success following injury.

\[ p = 0.126, \text{two-tailed}. \]
\[ p = 0.024, \text{two-tailed}. \]
\[ p = 0.001, \text{two-tailed}. \]
\[ p = 0.003, \text{two-tailed}. \]

Table 4.4. Wilcoxon Signed Ranks distribution of questionnaire constructs.
Interviews

Bonnie’s pretest and posttest interviews

Bonnie’s perceptions of injury did transition slightly from pretest to posttest. However, her classification for minor and major injuries did not change. In both interviews Bonnie classified the severity of injury according to the amount of time missed in sport participation. Furthermore, Bonnie’s idea of the type of injuries that require rehabilitation remained relatively unchanged. In both interview sessions Bonnie stated that ligaments, tendons, muscles, and post-operative injuries require rehabilitation. However, Bonnie’s perception of what elements should be included in rehabilitation changed drastically from pretest to posttest. During the pretest, Bonnie referred to all physical elements (e.g. range of motion, strength, flexibility). Yet, in the posttest Bonnie completely changed her comments. No mention of physical elements was made, but instead elements that address the psychology of rehab were addressed. According to Bonnie, ATCs “need to educate the athlete definitely, so that they [the athlete] understand what you’re doing step-by-step.” Bonnie continued to give examples of “education,” including such techniques as explaining how to perform each exercise so to prevent reinjury, explaining the physiology of the injury, demonstrating the mechanism of the injury, and explaining the progression and timeline of the rehabilitation.

Following the conclusion of AMP 694, Bonnie became more conversant on the potential psychological reactions an SA can experience as a consequence of injury. In the pretest Bonnie mentioned that some SAs might experience depression, fear of reinjury, fear of surgical outcomes, fear of never returning to the pre-injury potential, and anxiety concerning the eventual return to sport. These comments appear quite insightful
for a sophomore; however, the researcher strongly suspects that Bonnie having attended the first class lecture less than 24 hours prior to her pretest interview, may have influenced these comments. Bonnie was invited to participate in the project late. She was chosen to replace the first female, sophomore who was interviewed in November, but dropped the course in January. Nonetheless, despite the possibility that class experience influenced her pretest interview, Bonnie’s posttest comments showed more understanding of the complete process. Bonnie explained the use of DABDA (denial, anger, bargaining, depression, and acceptance) as a “reference point for how athletes take injury” and that some injured SAs go through all the stages of DABDA, while others may skip some. Furthermore, Bonnie gave a detailed example of how each stage of DABDA may present itself in an injured SA and concluded with an insightful collection of comments. According to Bonnie, “there are a lot of things that affect the athletes… So, there’s not just the rehab…. [T]here’s also like, outside life, like have they declared a major and stuff like that. So, it’s not just injury. There’s a lot of psychology to sports other than just injury…. They [ATCs] have to look for psychological problems elsewhere too, and not just in injury situations.”

Prior to taking AMP 694, Bonnie could not provide an example of a technique that an ATC could use to help an injured SA make a healthy psychological adjustment to injury. Twelve weeks following the conclusion of the course, Bonnie cited three techniques: (1) peer modeling; (2) encouragement and reinforcement; and (3) continued team involvement. As far as psychological resources, Bonnie was able to add peers, teammates, coaches, and ATCs to the sport psychologist mentioned in the pretest.
Overall, Bonnie did not think that OSU could provide its SAs with any more resources. Yet, in the posttest she did add that utilization of the available resources could be improved.

**Steve’s pretest and posttest interviews**

Steve’s perceptions of injury changed from pretest to posttest. During his pretest interview, Steve appeared extremely insightful. He mentioned psychology and its affect on rehab on many occasions; however, his posttest interview emphasized psychology’s role less. In the pretest, Steve defined injury severity relative to several characteristics: (a) presence of deformity; (b) location of injury in relation to the sport (e.g. hand in baseball versus a hand in track); (c) history of injury; (d) amount of pain experienced; and (e) “how the athlete is dealing with it.” However, in the posttest, Steve appeared to be more succinct in his descriptions, only mentioning the amount of time missed and the degree of functionality (e.g. can jog versus on crutches). Steve’s idea of what type of injuries require rehabilitation also transitioned. In the pretest, Steve stated “any injury you could probably do psychological rehab for it if it was needed.” He also included some physical injuries such as muscular and overuse injuries as well. In contrast, during the posttest, Steve failed to mention psychology, and stated that only “soft tissue” injuries require rehabilitation. Yet, when Steve was asked what should be included in a rehab, he made a similar transition as Bonnie. On the pretest, Steve stated the importance of identifying problems and designing a rehab centered on the goals to correct the problems. His posttest response was more geared towards the psychology of injury. Steve claimed that “information about the injury” is essential. He explained the importance of informing the injured athlete about (a) why the injury occurred; (b) predisposing
conditions; (c) physical limitations created by the injury; (d) the commitment required during rehab; (e) the type of pain to be expected; and (f) anticipated setbacks during the rehab.

Steve's experience in working with OSU varsity athletics for two years was apparent on the pretest. When Steve was asked to describe the typical psychological reactions injured athletes experience, he mentioned fear of not returning, guilt at letting down the team and coach, frustration, and anxiety near the end of rehab. Steve's posttest responses appeared to be more detailed, and showed greater understanding of the subject matter. Although frustration, fear, and guilt were still mentioned, he continued to expand on his pretest responses by explaining the intense range of reactions felt early on in the rehab. According to Steve, injured athletes often become angry and ask, "Why me?"

Steve contended that this only adds to the amount of stress the athlete feels. He also stated that athletes are prone to depression throughout the rehab.

Steve appeared to have made his biggest transition in the context of psychological techniques and resources used by ATCs. In his pretest, Steve only mentioned comforting, consoling, and supporting the injured athlete. However, in the posttest, Steve appeared to have become more pragmatic. He explained the benefits of education and visualization, and provided an example of how visualization helped one of his athletes this past season. Furthermore, Steve's posttest revealed an expanded idea of possible resources for injured athletes. He included additional resources such as peers and teammates. Steve's only recommendation for improved services for injured athletes was to use the services more often. "I think the difference is just whether the athletes take advantage of those resources."
Vickie’s pretest and posttest interviews

Vickie appeared to have made one of the most drastic changes in perceptions of the psychological response in injured athletes. When discussing the differentiation between minor and severe injuries, Vickie clearly defined injury severity in the pretest relative to the degree of physical functioning (e.g. continues to play versus cannot continue to play). However, in the posttest Vickie claimed not to know what is minor and what is severe because “it depends on the athlete....” She contended, “From our perspective it’s a lot different than from the athlete’s perspective.” She stated that severity is not just a physical issue; it is largely determined by how the athlete perceives the threat of injury. Vickie’s change was also apparent when discussing what type of injuries require rehabilitation. Once again, in the pretest Vickie spoke of the typical physical injuries to muscles, ligaments, and tendons. Yet on the posttest she claimed that in a psychological sense every injury requires rehab. “Anything, especially at this level, with collegiate athletics, anything from...bony things (stress fractures, fractures), any ligamentous stuff, even a pull or tendonitis can severely affect their mentality with what they’re doing, their ability to perform. Or, even their capabilities just within practice alone, so I think psychologically, I think it all requires rehabilitation.” She continued by giving examples of what elements to include in a rehab. Unlike the pretest, where she only mentioned goals aimed at reducing physical ailments such as swelling, decreased range of motion, pain, and loss of strength and coordination, the posttest perspective included only psychological elements. Following the conclusion of AMP 694, Vickie stated that
education is imperative in a rehab. Injured athletes must be given options, must remain connected to the team, must set goals, must have a realistic time frame, must be aware of potential setbacks, and must understand the limitations created by their injury.

Vickie’s understanding of psychological responses in the pretest appeared to be superficial. She felt that psychological responses mainly depended on the talent level of the athlete. In her experience, she recalled that most high school athletes seemed to enjoy their time off created by an injury. However, in contrast, most collegiate athletes tried to hide injuries in an attempt to continue playing. Yet during the posttest, Vickie appeared to take her theory a step further by talking about athletic identity as opposed to the simplistic concept of ‘talent level.’ She explained that at the collegiate level most athletes “identify themselves as being an athlete…. So what comes first and foremost for them, a lot of them that’s why they’re, that’s why they came.” She explained in detail the variety of psychological responses that can occur following injury, (a) denial; (b) depression; (c) anger; (d) acceptance; (e) guilt; (f) frustration; (g) unrealistic expectations; and (h) fear of return. Although depression, unrealistic expectations, and anxiety were described in the pretest interview, the level of comprehension did not appear to match that of the posttest. In her posttest, Vickie gave examples and explained each response; she seemed to have a firm grasp of the concepts.

Perhaps the biggest change occurred in the ability to identify psychological techniques to utilize in rehab. During the pretest, Vickie admitted to using reassurance and empathy as well as the sport psychologist. The number and variety of resources referenced in the posttest seemed to illustrate comprehension of the material taught in AMP 694. Vickie claimed to still reassure her athletes and create an “open door policy”
for them; however, she now takes extra steps to check up on athletes. She gave a specific example of one athlete, about whom she was particularly worried. Vickie admitted to calling this athlete to talk over the phone about “concerns and questions” that seemed to be bothering the athlete. She actively involved the athlete in his recovery by soliciting his input in the rehab. She fully explained the injury, the mechanism, the rehab, and the goals. She also relied on a dissociative strategy to “get him to focus elsewhere” during his treatments, and decrease the amount of stress he placed upon himself. Not only was she able to list techniques to use, but also she was able to illustrate how she used them. Vickie appeared to have changed how she dealt with injured athletes by addressing the psychological component of the injury.

**Reese’s pretest and posttest interviews**

It appeared that Reese might have entered into the pretest with a solid appreciation for the psychological impact injury can have on an athlete, largely due to her personal experience with injury. Therefore, Reese’s classification of injury severity only changed slightly from pretest to posttest. In the pretest she indicated that anything that precludes athletic participation for over one week would be considered severe, and used the exemplars of a hamstring strain versus an anterior cruciate ligament rupture to illustrate her continuum of minor and severe. On the posttest, her classification became more complex as she claimed that severe injuries usually result in a missed game, while minor injuries cause an athlete to miss multiple practices, but not games. She also indicated that minor injuries are usually treated with ice and electrical stimulations, whereas severe injuries can involve a lengthy physical rehab. Reese also mentioned that any minor injury could turn into a severe injury if it is not managed correctly by the ATC. As stated
previously, Reese came into the pretest with an extensive rehab background. Thus, her idea of what requires rehabilitation did not appear to change from pretest to posttest. In both interviews Reese strongly believed that all injuries require rehabilitation. She claimed, “I think it speeds it up, and plus I think it’s good for them because I think that they’ll see that they’re really doing something to try to get better.” Overall, she felt that injured SAs heal more quickly if they take an active role in their recovery (e.g. doing physical rehabilitation as opposed to doing nothing). Despite Reese’s vast experience in rehab, she seemed to change significantly in her perspective of what elements should be included in rehabilitation. In the pretest she spoke clearly and in detail about the physical elements of rehabilitation. For example, she explained the benefit and role of bilateral training of extremities, sport specificity, range of motion exercises, strengthening with Thera-band and free weights, proprioceptive training, and variety in the rehab. However, in the posttest, Reese appeared to have concentrated on elements that address the psychological aspect of rehab. She claimed that it is “really important that they understand what the problem is or what their injury is.” She insisted on the benefit of providing progress charts to the injured SA so that he or she can visually see his or her progress and improvement on paper, as well as keeping the athlete with his or her team as much as possible.

Despite Reese’s apparent appreciation for the psychology of injury and her insightfulness in recognizing reactions as illustrated in the pretest, she still managed to change her perceptions relative to the type of psychological reactions witnessed. During the pretest, Reese seemed to speak knowledgably about the initial shock, denial and depression that injured SAs often experience during the early stages of rehab. She also
mentioned how many athletes “have no concept of, of what they are doing or what has happened to them....” Although she did not talk specifically about injury education in the pretest, it appeared that she realized that most injured SAs are not receiving injury education. She also explained that many injured SAs have unrealistic expectations for their timelines and often become despondent when inevitable setbacks occur. Additional responses such as fear of not returning, anger, frustration, and bargaining were mentioned as well. In the posttest, Reese still seemed to be extremely well versed in explaining the initial psychological reactions experienced in rehab; however, she did seem to become more knowledgeable in the later stages. She was able to explain how anxiety often times becomes an issue when the athlete is almost ready to return, but then experiences an intense fear of returning or can lie about pain or recurrent symptoms in order to return more quickly. She also gave an example of one injured SA who suffered from over-adherence, but also spoke in general terms about the resiliency of other injured SAs who never appeared to react negatively to injury. Although she appeared to have a good grasp of the subject matter in the pretest, she still commented on new experiences on the posttest that might indicate a degree of change in her original perceptions.

Reese, in the pretest, appeared to take the time to get to know her athletes individually as she stated, “I mean there’s so much more that they don’t even wanna deal with, but you keep up with them.... It’s just the fact that you can talk to them as like an individual and not like the injuredness or softball player or whatever.” She also seemed to recognize the benefit of a peer model as she explained that many injured SAs responded positively to her recollections of her past injuries and rehabs. She also spoke
of the need to “make em mad to do it.” It appeared that she sometimes provoked or antagonized her injured SAs in an attempt to get that extra set or rep out of them. All of these comments appeared to paint the picture of an experienced ATS. However, Reese did change some of her perceptions on the posttest. Although she still spoke of the need to communicate and probe into the injured SA’s life outside of athletics, she also spoke of some new techniques. She mentioned the need to communicate with the coaches so that the injured SA is not left in the position to handle or deal with the coach’s tendency to make athletes feel guilty for being injured. She also reiterated the importance of providing the SA with education and information. Additionally, Reese spoke of the benefits of imagery and relaxation techniques as well as collaborating with the injured SA when designing a rehab. From pretest to posttest, she seemed to add more techniques; however, the resources that she identified did not change. As stated previously, Reese came in the interviews as a seasoned ATS, and utilized the plethora of rehabilitation equipment and resources from the beginning.

Whitney’s pretest and posttest interviews

Despite four years of experience as an ATS, Whitney, too, seemed to experience changes in her perceptions towards injured SAs. When defining the characteristics of minor and severe injuries, Whitney initially used the degree of functionality, range of motion, and swelling. However, in the posttest she simplified her answer to time lost from participation. Although in both interviews Whitney stated that all injuries require rehabilitation, the reason given changed. In the pretest Whitney felt that all injuries should be rehabilitated physically so to return the injured SA to the preinjury level of proprioception and function. Although in the posttest she still seemed to believe that all
injuries require a physical rehab, she also added that the mental aspect was just as important. She explained, “I think in a way all injuries need some sort of rehabilitation, whether it be just talking through just to get them back into the game, with their head, or, you know, obviously if it’s a bony injury, they’re going to have muscle atrophy from not using the area.” Additionally, her idea of what should be included in rehabilitations appeared to shift from pretest to posttest. During the pretest, Whitney claimed that range of motion, proprioception, balance, strength, and gait training were all concepts that should be considered in a rehabilitation program. However, on the posttest, she mentioned strength, but quickly shifted her comments away from physical elements and began to speak about “mentally getting them back in the game.”

From pretest to posttest, Whitney made slight changes in what type of psychological reactions she perceived. During her pretest interview, Whitney described frustration, anger, embarrassment, anxiety, acceptance, denial, and unrealistic expectations. Although most of those same reactions were mentioned again in the posttest, she seemed to explain each reaction in more detail than before. She also included a new reaction, bargaining, and gave an example how injured SAs might bargain with the ATS or ATC. Overall, though, Whitney did not change the types of reactions that she noticed; she only changed in the amount of detail used to explain the reactions and the correctness of the terminology (e.g. anger instead of upset or denial instead of can’t believe it).

Perhaps the area where Whitney’s perceptions changed the most was in the area of techniques. During the pretest Whitney claimed to use moral support, peer modeling, and the ATC/Physical Therapist at OSU. She also admitted to doing some exercises with
injured SAs as a way to challenge them. On the other hand, in the posttest, she expanded her previous tools to include listening, imagery, education, and the sport psychologist at OSU. According to Whitney, “I like to educate them now; it makes more sense if they know what muscle is bothering them, where the muscle is located, why, because of what they did it’s irritating it.... I like to listen to my athletes a lot. I think just by letting them get out all their frustrations, even if I don’t understand them all, in some way helps lighten the load because at least they’ve told somebody.”

Tommie’s pretest and posttest interviews

Tommie’s perceptions regarding the psychological impact of injury shifted in some areas from pretest to posttest, but not all. In defining characteristics of a minor and major injury, Tommie’s perceptions did not seem to change drastically. Initially he claimed that the amount of pain reported and the degree of functionality (e.g. can play versus cannot play) could determine whether an injury was minor or severe. In the posttest, he simplified his answer to the degree of functionality. He did not seem to change his perception of what type of injuries require rehab, either. In both interviews, Tommie believed any injury to the musculoskeletal system could be rehabilitated. He explained, “…usually I would say there is some kind of rehab program that would benefit [any] situation.” Nonetheless his perception of what factors and elements should be included in rehab did change. During the pretest, Tommie stated that exercises aimed at strengthening the musculoskeletal and neural systems were important as well as exercises to maintain cardiovascular endurance. He also cited the importance of the commitment of the injured SA to the rehab and the need for the rehab specialist to provide a variety of exercises to increase the SA’s motivation. Although he did not directly state the
importance of patient education, it seemed that he did recognize some aspects of 
education. In the posttest, however, he directly stated, “You have to sit down with them 
and discuss with them where they want to go with [the rehab]. An explanation of how 
and what you are gonna do is a key, and make sure they understand that a progression, so 
that they have an idea of the rehab.” He continued by also stating the importance of 
talking with the athlete to make certain he/she is not having any unnecessary anxiety over 
the interactions with family, teammates, and coaches following the injury.

Following the completion of AMP 694, Tommie seemed to have a better 
understanding of the psychological responses that an injured SA suffers. Although in the 
pretest he did list frustration, despair, impatience, and under adherence, his posttest 
answers appeared to be based more upon theory and personal experience, as opposed to 
experience only. He mentioned the presence of denial and pain early in the rehab, 
compared to impatience in his pretest. He continued by explaining the possibility of 
over-adherence in the middle phases of the rehab, whereas in the pretest he merely stated 
it could be a discouraging or encouraging phase for the injured SA. Tommie concluded 
by explaining acceptance and return to play issues such as fear of reinjury. He did not 
mention either of these issues in the pretest.

When discussing techniques used to address the psychological aspect of rehab, 
Tommie only explained the need to know athletes individually and the importance of 
listening skills in the pretest. During the posttest, he expanded on his techniques by 
adding methods to eliminate the fear of reinjury as well as the importance of 
collaborating with the injured SA when considering the design of the rehab program. 
Furthermore, in the pretest he identified the transportation service and the sport
psychologist as the only additional resources to help injured SAs. In comparison, he added the Student Athlete Support Services, the Athletic Training staff, and the team physicians as resources in the posttest.

ACADEMIC IMPACT OF INJURY ON A SA: DEGREE OF CHANGE IN ATSs’ PERCEPTIONS

Questionnaire

The degree of change in ATSs’ perceptions relative to the construct, academic impact, from pretest to posttest was statistically significant ($p = 0.003$, two-tailed). Sixteen of the 19 respondents scored the posttest questionnaire construct addressing the academic impact of injury with a higher summated score on the seven point Likert scale. There were only two respondents’ whose summated scores reflected a lower score, and there was only one respondent whose posttest answers remained unchanged in comparison to the pretest.

Interviews

Bonnie’s pretest and posttest interviews

Bonnie’s perception of how the SA’s academic life is impacted by injury changed from pretest to posttest. First of all, Bonnie stated in the pretest interview that most SAs are laid off from their sport during injury rehabilitation, so she believed that “they shouldn’t have any problems with the time constraints.” However, following the conclusion of AMP 694 her perspective changed. From her comments in the posttest interview it appeared that Bonnie had reevaluated her original thoughts. She indicated that it was a mistake to remove an injured athlete from their team practices during injury rehabilitation. Bonnie explained “without team involvement they [SAs] kinda like drift
away and say, ‘well, they really don’t care about me; why should I come back to playing with them if it’s during the season; why do I even care; why am I doing this?’” It appears that she now believes that SAs may actually experience “trouble” with the time constraints rehabilitation can create, although she concluded that student reactions vary by individual, saying that most SAs “think that either academics are better or the rehab is better. It’s either one or the other.” Additionally, Bonnie cited more academic resources for the SA during the posttest. Not only were tutors, peers, and the Athletic Training staff cited as potential academic resources, but also academic counselors, teammates, coaches, and professors were mentioned.

**Steve’s pretest and posttest interviews**

When asked about the time demands placed upon injured athletes in the pretest, Steve felt that most athletes handle their time constraints “fairly well” due to the hectic nature of their days. “I think their schedules are more regimented in the sense that they know if they don’t do it now, they’re not gonna have time to do it later.” Although Steve felt much the same in the posttest, he did admit that adding rehab to an injured SA’s day can be a bit frustrating. Steve seemed to have a good grasp of the academic resources available to SAs in both the pretest and the posttest, and answered similarly in both interviews.

**Vickie’s pretest and posttest interviews**

Vickie’s pretest comments seemed to show empathy for the time demands placed upon SAs. Although she felt that most injured SAs manage their time wisely, she did feel that many found the additional commitment of rehab difficult to maintain. Her comments remained the same in the posttest. Her only additional comment was that she
never knows about SA’s grades unless they voluntarily say something. Similarly, she did not seem to change her perceptions of academic resources. In the pretest she mentioned study tables and tutors; she added peers and academic advisors to that list in the posttest.

Reese’s pretest and posttest interviewees

Because Reese’s responses in the pretest showed empathy towards SA’s and their hectic academic and athletic schedules, assessing a change in perception towards empathy is difficult. More so than any other interviewee on the pretest, Reese already seemed to be very tuned into the need to make certain injured SAs were functioning in their lives outside of athletics, including academics. She specifically seemed to be empathetic of freshmen SAs. During both interviews, she spoke of the often unsuccessful transition from a high school to Division I student-athlete. She claimed that freshmen often have difficulty juggling the time demands of classes, practice, mandatory study tables (mandatory for freshmen and those in academic trouble only), and rehabilitation. However, she felt that mandatory study tables probably helped make the transition a little smoother by providing a structured study time. Yet, she claimed that academic success comes down to the individual’s goals. “[I]t depends first of all if they care about the academics or not. A lot of people are here to play sports, and that’s it. And if they weren’t playing sports, they wouldn’t be in college.” There was no apparent change in her ability to identify academic resources. In both interviews, Reese listed the transportation service that takes injured athletes to classes, the Athletic Training staff, the sport psychologist, academic advisors and counselors, tutors, coaches, professors, and the monthly progress academic reports from professors. Reese did recommend two things to improve academic resources to SAs in general. She explained that she often finds herself
sitting with freshmen SAs and mapping out their schedules for them as a means to help them manage time more efficiently. She felt that this is something of which the academic advisors and counselors could do a better job. She also felt that injured SAs should have weekly progress reports from their professors instead of monthly reports. In summary, Reese appeared very insightful regarding the academic side of the SA.

Whitney’s pretest and posttest interviews

Whitney’s perception of the academic demands of the injured SA appeared to change from pretest to posttest, albeit in an atypical manner. During the pretest, she appeared to be empathetic stating that some adjust to the additional time demands of rehab better than others. She claimed that many coaches encourage the use of practice time for rehab, but she tries to avoid this situation. She thought that injured SAs needed to remain with their teammates throughout the injury rehabilitation, and listed peers and academic counselors as resources. During the posttest interview, however, Whitney seemed rather calloused towards the idea that injured SAs may have difficulty with the time demands created by classes, practice, travel, and rehab. It does not seem to be a reflection of her development though. Whitney is already a senior, and appeared to be progressing nicely in her own development. Instead, her calloused comments may be more reflective of her chaotic life at the time of the posttest. She had recently picked up an additional part-time job, and seemed to be stating that injured SAs did not have any right to complain about the amount of time they spend in rehab as compared to the amount of time she has left for rest and relaxation. She claimed, “we’re [ATSs] here
more than they are most of the time....” However, she was able to list more academic resources during the posttest interview. In addition to peers, Whitney listed tutors, study tables, and athlete support services.

**Tommie’s pretest and posttest interviews**

Tommie seemed to be more empathetic than any of the other interviewees when it came to discussing the time demands of a SA. He felt that rehab in some cases could over-tax an already demanding schedule. He stated, “...I have athletes who say I can’t do rehab because I don’t have time.” However, Tommie believed that injured SAs have to make time for rehab, and the best way to help with the time demands is for the ATSs to lead by example. He admitted that rehab was hard for him too, so he knew that it was hard for the injured SA. He added that once a rehab begins and the injured SA can see improvements, then the issue of making time often disappears. Nonetheless, Tommie claimed in the posttest that the issue of making time for rehab was probably dependent upon the individual athlete and the sport. He felt that some sports and some athletes would prioritize athletics and rehab over academics, whereas other athletes and other sports tend to prioritize academics over athletics and rehab. As far as Tommie’s ability to identify academic resources, there was no real change from pretest to posttest. Initially he mentioned peers, tutors, and study tables, and added the Student-Athlete Support Services and professors to his previous list in the posttest. Overall, Tommie made no significant changes in his perceptions of the academic impact of injury. However, he, like Reese and Vickie, came into the pretest with more understanding and empathy than most of the interviewees, so there was perhaps less room to change.
VALUE OF AMP 694: ATSs' PERCEPTIONS

Questionnaire

Following a review of the questionnaire statistical results, there appears to be support for adding a course addressing the psychological impact of injury to the curriculum preparing future ATCs. Of the four questionnaire constructs, only the first construct, stress reactions, did not show a statistically different change in perceptions from pretest to posttest. The questionnaire constructs, sport influences, social influence, and academic impact, all showed a statistically significant change in perception from pretest to posttest. Furthermore, the change in perceptions was predominantly in the positive direction indicating that the respondents answered the questionnaire items identifying potential stressors and additional factors that can exacerbate the psychological distress suffered as a result of injury with a higher degree of agreement on the posttest.

Interviews

Bonnie’s interview

Overall, Bonnie believed that AMP 694 should be made a permanent addition to the Athletic Training curriculum at OSU. She commented that the material on the psychology of injury in other classes was glossed over, and other ATSs, as well, within the major have agreed with her. Bonnie felt that AMP 694 went into depth to provide her with a sincere appreciation for what the student-athlete endures. Bonnie explained, “You realize really what the athlete’s going through. Cause you yourself like, if you’ve gone through rehab, you understand it. But, not to the full extent of having the, like actual, like the training for the team and then actually having to go through the classes too. And
having to manage every single thing.” Bonnie summarized by stating that the ATC almost becomes a psychologist, medical doctor, friend, counselor, and academic advisor all rolled into one. “It’s like they just come to you no matter what the problem is. They’ll just tell you, and you have to kinda like branch out and find someone else who can help you (e.g. referrals), so that you don’t feel overwhelmed.” In conclusion, Bonnie felt that psychology and injury rehabilitation go “hand-in-hand.” According to Bonnie, “You have to watch the psychological in order to fully evaluate the rehab.”

Steve’s interview

The largest benefit Steve claimed to have gained from AMP 694 is a “better understanding of the whole psych of injury rehab process.” Steve explained, in the posttest, that he had more ideas of why some athletes respond to rehab better and how to deal with those who are not responding as well as others. For example, Steve provided an example of one of his athletes, who required a lot of communication. Steve claimed that the lecture on personality types, specifically Introvert versus Extrovert, helped him understand his ‘ needy’ athlete. According to Steve, following the lecture on personality types, “It just made sense why I had to spend so much time talking with him....” Steve strongly believed that the ATC is the most influential person on a SA’s rehab because ATCs tend to spend the most time with injured athletes. Steve emphasized that this is important because the ATC needs to know when there might be a psychological problem so that a referral can be made to a sport psychologist or counselor, who may be able to provide additional help. Lastly, Steve believed education plays the biggest role in the psychology of the rehab. As Steve explained, “...everything we do is based on what your mind tells you to do. So, I’m a firm believer in it’s mind over body, so you know, if you
tell your athlete, and they believe that they can do this and they believe that they can get better, that’s the best thing in the world for them.” With education, Steve believed that ATCs and ATSs can communicate to the injured SA that they will not see improvements everyday, and that there will even be days where SAs feel comparatively worse than the preceding day. But, according to Steve, the important thing to keep telling injured SAs is that this type of progression is normal; “...let them know that they are doing what they need to be and they are doing a good job so they don’t get frustrated.”

Vickie’s interview

In the eleventh week following the conclusion of AMP 694, Vickie stated that the course “really opened her eyes...to stuff that we need to do differently around here.” She further explained, “I think we need to be more sensitive to the athletes sometimes, not necessarily just with their injuries, but psychologically a lot of people have a lot of stuff going on that you would never dream of.” As the first step, she believed that ATCs must start by knowing their athletes on an individual basis. Vickie stated that it is the ATC’s responsibility to know “How they [athletes] react in certain situations, to know their goals, and kinda know mentally where they are as far as, some of them aren’t so developed.” She continued to explain that it is also the ATC’s responsibility to educate injured athletes. According to Vickie, injured SAs need to know what to expect following an injury, and they need to know every treatment option and every resource that is available to them. Throughout Vickie’s interview it appeared that this was perhaps where her perceptions had changed the most. She seemed to truly appreciate the importance of patient education and collaborating with the injured SA in the development of the rehabilitation goals and plans. Vickie contended that the role of psychology in

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rehabilitation is really important because “a lot of it is you can heal from your physical injuries, but not necessarily…from your mentality of it.” Overall when Vickie reflected on her learning experience in AMP 694, she claimed that she “appreciates it.”

Reese’s interview

From the beginning, Reese seemed to have an appreciation for the role of psychology in rehabilitation. Thus, it is difficult to determine how much she gained from the course, if anything. For example in her pretest she claimed, “you can’t group them into a, you know they all should be responding like this. You know, if they aren’t responding, I mean no injury is the same. The athletes aren’t going to handle it the same, either…. [I]t’s so important to know who you are working with everyday. And, to know the things that are going on with them…” Although similar comments were shared in the posttest, Reese only added two new concepts to her posttest comments that may account for learning in AMP 694. First, she seemed to admit that she used to compare SAs’ responses to the career ending injury she suffered in high school. Although she mentioned that people handle problems individually in the pretest, it appeared that she might not have truly reconciled that individual coping mechanics vary until the posttest. When talking about her high school injury Reese stated, “You know I’m fine with it; I dealt. And, you know when you see frustration with an ankle sprain, you’re like, ‘Dude!’ First you’d be like, what is wrong, you know, but I mean I think I learned people are so individual in how they handle their problems.” Second, she appeared to believe that the role of psychology in the rehab is simply to let athletes know that reacting emotionally to injury is normal. “I don’t think that a lot of times that the athletes are aware what they are going through is normal. Or even how they really feel exactly, like they’re tired, and
angry, but why are they frustrated? ...I think it’s also important to let them become aware that they are feeling things, that it’s natural to be emotional about this type of thing.” Overall, Reese felt AMP 694 provided students with an appreciation for the importance of knowing athletes individually, taking the time to talk with them, and expressing the normalcy of emotions, which she felt would be especially applicable to those ATSs who desired to work in a high school setting.

Whitney’s interview

Whitney openly admitted to incorporating techniques she learned in AMP 694 into her practice already. She stated, “I think I’ve used the knowledge I got from the class to expand on how I treat athletes after they get hurt. To kinda teach them more to make sense of the injury, to help them a little bit more. I’ve seen it help....” To further explain, she cited an example of a varsity athlete who did not understand his injury following his visit with the team physician. Whitney claimed to have spent time with him explaining the anatomy and the physiology of the injury, and she stated that he comes in everyday for his treatment and rehab. She also admitted that most ATCs and ATSs do not take psychology’s role in rehab seriously enough. She explained, “I think it could be very helpful to know the athlete a little bit better, and know what kind of responses they might have to injury, know how to deal with their responses to the injury a little bit better.” Moreover, she admitted that following the conclusion of AMP 694 she found the role of psychology in rehab to be “a lot bigger than [she] expected....”

Tommie’s interview

Despite the fact that Tommie did mention the need to know athletes on an individual basis in the pretest interview, he claimed that the course gave him a “better
appreciation for the mental involvement with your athletes. Actually getting to know the individual, so that you can make decisions about the individual.” He explained that he now has a picture of a “more well rounded involvement with the athlete” as he viewed the role of psychology intertwined with the physical aspect of the rehabilitation.

Specifically, Tommie claimed that he now recognizes the importance of including the injured athlete in setting the goals and the design of the rehab as well as the importance of educating the athlete and the utilization of imagery. Tommie’s only concern was the practicality of a holistic rehab. He stated, “The time you have is very limited, and to incorporate a lot of the things that we learned in the class, sometimes doesn’t seem practical.”
CHAPTER 5

DISCUSSION

This chapter discusses the relevance of the questionnaire and interview results pertaining to the change in ATs' perceptions of the psychological and academic impact of injury on SAs. In order to discuss the significant findings and present options for future research, Chapter 5 will be organized into five sections: (a) overview of findings; (b) considerations and implications for athletic training curriculum; (c) limitations of the study; (d) recommendations for future research; and (e) conclusion.

OVERVIEW OF FINDINGS

Questionnaire

The 19 respondents who completed both the pretest and posttest questionnaires seemed to gain more appreciation for the impact both sport and social influences can have on the degree of psychological responses a SA may suffer as a result of injury. Of the three questionnaire constructs used to measure ATs' perceptions of student-athletes' psychological response to injury, two were statistically significant, sport influences and social influences. Stress reactions was not statistically significant. This may be attributable to a theme that emerged during the interviews. During the pretest interviews, all six of the interviewees were able to list and explain psychological responses that they
had observed in injured SAs. Although the correct psychological terminology was not always used when referencing psychological reactions in the pretest interviews, each interviewee appeared to realize that there were some common responses that they were witnessing. In terms of the questionnaire, it would be plausible that the construct, stress reactions, would not change significantly from the pretest to posttest if the phenomenon observed in the interviews was in fact consistent within all the respondents. If this were the case, respondents gained from the course a richer understanding of what can affect the degree of severity of those psychological responses (e.g. sport influences and social influences), and not necessarily what those responses are (e.g. denial, anger, depression, anxiety).

The respondents also appeared to gain a richer appreciation for the impact injury can have on a SA’s academic success. The respondents’ perceptions from pretest to posttest changed significantly on the construct of academic impact. This again is consistent with the interview themes. Although in the interviews, the six interviewees did not change in their ability to identify academic resources from pretest to posttest, in the posttest five of the six interviewees seemed to be empathetic to how injury can complicate an already hectic and time consuming schedule for SAs. Two of the six interviewees became more empathetic (i.e. Bonnie and Steve), while one became less empathetic (i.e. Whitney). The remaining three interviewees did not change (i.e. Vickie, Reese, and Tommie) from pretest to posttest. These three seemed to be empathetic in both the pretest and the posttest. This trend towards empathy may be indicating that the
course provided some of the ATs with a unique understanding of the demands and challenges of being a Division I student-athlete, thus enabling them to become more supportive and effective rehabilitation specialists.

The value of the course seems to be confirmed by the questionnaire results. Collectively the respondents exhibited significantly more agreement on the posttest for three of the four questionnaire constructs. Overall, it appears that the respondents became more empathetic practitioners. As a group, they were able to see beyond the stigma of “athlete” and look into the “person” who is affected by class demands, teammate and coach interactions, as well as family and personal relationships. One questionnaire respondent commented in the open-ended section, “I feel that as a [sic] Athletic trainer, you need basic psyc education. Everyday athletes come to you with not only injuries, but also problems in their social life as well. As a psyc major, I feel that I have an advantage when these situations come up. Although Psyc 100 [Introduction to Psychology] covers a few concepts, a sport psyc or rehab psyc class will be very beneficial for future athletic trainers. I strongly feel that this class [AMP 694] will help me in my future endeavors. Thank you.”

Interviews

Thematically, there were two overarching themes related to perceptions of psychological reactions in which all six interviewees changed from pretest to posttest. Each interviewee changed from a physical focus to include a psychological focus when discussing elements and factors that should be included in rehabilitation (table 5.1). In fact the importance of education was a theme in all six interviewees’ responses in the posttest, compared to only one in the pretest. Additionally, each of the six interviewees
appeared to change thematically when discussing psychological techniques for rehabs (table 5.2). This is especially encouraging. Not only were each of the six respondents able to list psychological techniques, but also all but one of them mentioned the need to make referrals to sport psychologists (i.e. Tommie).

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<th>BONNIE</th>
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**No shading indicates pretest responses.**

**Gray shading indicates posttest responses.**

Table 5.1. Interviewee response summary to “elements of rehab” theme.
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**No shading indicates pretest responses.**

**Gray shading indicates posttest responses.**

Table 5.2. Interviewee response summary to “psychological techniques” theme.
The degree of change in the interviewees' perceptions of the academic impact of injury appeared to be less drastic. Only two of the six interviewees (i.e. Bonnie and Whitney) changed in their ability to identify academic resources. However, three of the six interviewees (Bonnie, Steve, and Whitney) seemed to change their perceptions when discussing the time demands of the injured SA (table 5.3). This is particularly interesting since five of the six interviewees appeared to be empathetic in the posttest regarding the issue of time management when planning rehabs for injured SAs. Three respondents, Vickie, Reese and Tommie, did not appear to change in the posttest; however, their responses were already empathetic in the pretest, and remained that way in the posttest. Only one respondent, Whitney, became less empathetic in the posttest, and it is possible that the effects of history from November to June played a part in her less than empathetic attitude towards time demands in the posttest. This particular respondent picked up a second job following the conclusion of AMP 694, and throughout the posttest interview, she made comments referencing her apparent hectic schedule. It is possible that this respondent became so strapped for time that her stress reaction was to be unempathetic for those she perceived to have more time than she.

When assessing the value of AMP 694, it appears that the interview results are in accordance with the questionnaire results. Most respondents did not change drastically in how they viewed the actual psychological responses. Although each respondent seemed to explain the process of psychological response to injury in more detail, the biggest change occurred in their ability to recall techniques to facilitate the psychological aspect of the rehab. One student commented, "This class made me so much more aware of rehab techniques and the emotional integrity of the SA. Thanks for the insight. It helped
out a lot for me to be a more effective trainer, and I think made the rehab more positive and effective.”

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Pretest Response</th>
<th>Posttest Response</th>
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<tbody>
<tr>
<td>Bonnie</td>
<td>No problem. Use practice time for rehab.</td>
<td>Difficult to find time because injured SA wants to remain with team. Must prioritize athletics or academics first.</td>
</tr>
<tr>
<td>Steve</td>
<td>Handle time demands if they want to return to play. Use practice time for rehab.</td>
<td>Most injured SAs handle time demands fairly well. Time demands can be frustrating b/c often times you cannot use practice time to do rehab.</td>
</tr>
<tr>
<td>Vickie&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Manage time pretty well. Not easy to find extra time. Try to split rehab into before and after practice time.</td>
<td>Manage time pretty well. Amount of difficulty depends on SA’s priorities (e.g. athletics vs. academics). Try to do rehab before practice mostly.</td>
</tr>
<tr>
<td>Reese&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Freshmen have the most difficulty.</td>
<td>Freshmen have the most difficulty. Amount of difficulty depends on SA’s priorities (e.g. athletics vs. academics).</td>
</tr>
<tr>
<td>Tommie&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Difficult to find the extra time for rehab. ATSSs must lead by example---make the time.</td>
<td>Difficult to find the extra time for rehab. Amount of difficulty depends on SA’s priorities (e.g. athletics vs. academics).</td>
</tr>
<tr>
<td>Whitney&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Some handle time demands better than others, but have to make the time if they want to get better. Tries to avoid using practice time for rehab.</td>
<td>Most SAs have it fairly easy. If she has to be there, then SAs should not have difficulty finding the time.</td>
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<sup>a</sup>Respondent was empathetic to SA’s hectic schedules in both pretest and posttest interviews.

<sup>b</sup>Respondent was initially empathetic to SA’s hectic schedules, but became unempathetic in the posttest interview.

Table 5.3. Interviewee response summary to “SA time demands” theme.
Additionally, when students were asked to comment directly on how their attitudes had changed following AMP 694, all six respondents commented in favorable ways (table 5.4). For instance, some commented about how they can now appreciate the need to know each SA individually, while others commented on the importance of education. The only apparent criticism was made by Tommie, who claimed that sometimes the time constraints of an ATC did not make the individual attention that was encouraged in AMP 694 possible.

<table>
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<tr>
<th>Name</th>
<th>Comments</th>
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<tr>
<td>Bonnie</td>
<td>AMP 694 should be added to the Athletic Training curriculum at OSU. She realizes what the athlete is actually going through now. She believes that the mindset of the athlete has to be evaluated in order to fully evaluate the effectiveness of a rehab.</td>
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<tr>
<td>Steve</td>
<td>He realizes why some injured SAs respond to rehab better than others now. He believes that education about the injury and the rehab process is essential.</td>
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<tr>
<td>Vickie</td>
<td>She thinks ATCs need to be more sensitive to the SA, because there is more going on in their lives than injury. She believes it is the ATCs responsibility to know SAs on an individual basis, especially in relation to each individual’s level of psychosocial development. Injuries need to heal physically as well as psychologically.</td>
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<tr>
<td>Reese</td>
<td>She realizes how differently SAs respond to injuries. It is essential for ATCs to know their SAs on an individual basis.</td>
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<tr>
<td>Tommie</td>
<td>He has a better appreciation for the holistic rehab. At time some of the techniques seem impractical in regards to time constraints.</td>
</tr>
<tr>
<td>Whitney</td>
<td>Already used techniques learned in class during rehabs. She believes that education about the injury and rehab process is essential. She was surprised at how the role of psychology can create so much variability in the outcome of rehab.</td>
</tr>
</tbody>
</table>

Table 5.4. Interviewee response summary to “value of AMP 694” theme.

**Summary**

Overall, the ATSs’ perceptions did change following the conclusion of AMP 694. Students were able to grasp the issues within and outside of athletics that can minimize or exacerbate the degree of psychological distressed suffered by an injured SA. These
findings answer the research questions presented in chapter 3. However, there were three findings that were not purposively studied, but nonetheless, seem relevant: (1) social support; (2) selection bias; and (3) self-esteem of ATS. One finding was the preponderance of evidence in the pretest and posttest interviews that seems to paint the ATS as a provider of social support. This is in stark contrast to the findings of two studies investigating sources of social support for SAs (Richman, Hardy, & Rosenfeld, 1989; Rosenfeld, Richman, & Hardy, 1989). Neither study identified ATCs or ATSs as providers of social support. Yet, all six interviewees mentioned empathy, moral support, or ‘checking in’ as techniques for facilitating rehab, and all six interviewees referenced situations where the ATSs can help tutor the SA during times of academic strife. In fact Vickie stated, “...it’s really nice to know that they feel comfortable to come to you, and they can talk to you about anything....” This appears to be social support (i.e. listening, emotional support, shared social reality, and technical appreciation).

The second issue is one that confirms a concern with the research design. The treatment in this study, AMP 694, was a college course. It was an elective; therefore, students who enrolled in the course probably were doing so because of an inherent interest in the material. The concern was that a population of students who were interested in the material could bias the results. All but one of the interviewees, Bonnie, stated that the course was selected based upon an interest in the subject matter or a need to improve their understanding of the SA. This is particularly important because this is the one element of bias that was left uncontrolled in this study, and could have potentially affected the external validity of the results.
The third unanticipated issue that emerged as a theme in the interviews was the increased self-esteem many of the interviewees seemed to gain. Steve is perhaps the best example as he explains the benefit of AMP 694. “I have... more ideas of why certain athletes respond better than others in rehab, and how to deal with those. So, I think I'm just better education [sic] as far as the whole process of how it works, why things are the way they are, and how to fix those problems.” Each ATS seemed to grow throughout the interview process, accepting that the variability of the pace of progress in rehab is not always their fault or their inability to be a “good” ATS. The interview process seemed to give each ATS a chance to reflect on how they were feeling (e.g., failure or guilt) and understand that he or she had limitations. Bonnie explained, “It's like they just come to you no matter what the problem is. They'll just tell you, and you have to kinda like branch out and find someone else who can help, so that you don't feel overwhelmed.”

CONSIDERATIONS AND IMPLICATIONS FOR

ATHLETIC TRAINING CURRICULUM

The ability of the future ATC to not only recognize psychological responses to injury, but to also understand the factors that can heighten or eliminate those responses is imperative. This concept becomes clearer when taking Pearson and Petitpas’ (1990) summary of the SAs who are most likely to have difficulty adjusting to injury into account. According to Pearson and Petitpas (1990), SAs with a strong athletic identity, limited relationships, a discernible gap between athletic ability and aspiration, and lack psychosocial developmental skills will have more difficulty adjusting to injury. An ATC who understands these concepts and also appreciates the benefit of knowing his or her athletes is going to be better equipped to handle problematic psychological reactions that
can impair rehabilitation and psychosocial development. This is especially important in
light of the newly adopted CAAHEP standards and guidelines (2001) and the Athletic
Training Competencies and Proficiencies (1999). Although no specific course is
mandated, the new guidelines and competencies do call for subject matter and
proficiency mastery in the area of “psychosocial intervention and referral.” Specifically
the Athletic Training Clinical Proficiencies (1999) dictate that prospective ATS be able to
“demonstrate the ability to intervene and make the referral to appropriate medical or
allied medical professional,” and “integrate motivational techniques used during
rehabilitation” (p.24). Some examples of motivational techniques recommended are
verbal motivation, visualization, imagery, and desensitization, all of which were covered
in AMP 694. However, despite the validity and usefulness of these techniques, there are
many other aspects to the psychology of injury that are not mandated as necessary subject
matter. For that matter, “professional training and accreditation programs should address
these shortcomings and endeavor to integrate these data with both theoretical and applied
material at all levels of training” (Ford & Gordon, 1998, p.92). Only two proficiency
objectives out of approximately 40 address psychosocial intervention and referral, and
this is a potential problem when considering the preparation of tomorrow’s health care
practitioners. For example, education may be the most critical component of a rehab in
terms of motivation and commitment of the injured SA (Fitzpatrick, 1995; Taylor &
Taylor, 1997). Yet, education of the injury and rehabilitation process is neglected in the
proficiencies. Additionally, there is no recommendation for the presentation of
psychological theory to athletic training students. This appears to be a huge oversight.
Theory not only provides practitioners a basis upon which to develop rehabilitations, but also can create the impetus for future research and improvements in the field of student-athlete health care.

Clinically, the importance of a course dedicated to the psychological impact of injury is apparent when considering the results of two survey studies. Larson, Starkey, and Zaichkowsky (1996) found that less than 25% of surveyed ATCs had access to a sport psychologist, and Voight and Callaghan (2001) found that only 14% of surveyed Division I universities employed a full-time sport psychologist in their athletic departments for SAs. If most ATCs do not have access to a sport psychologist, the holistic health care of the injured athlete will more than likely suffer unless the ATC is trained in the psychology of injury, and is capable of not only facilitating rehab, but also knowing when to make a referral to a more qualified medical practitioner.

The effect a course on the psychology of injury can have on SA retention rates is also a consideration. The results of the questionnaire indicated that respondents who completed AMP 694 gained more appreciation for the effect injury can have on a SA’s academic success. Furthermore, the results of the interviews indicate that the interviewees either were or became empathetic with injured SAs and their unyielding time demands. This is an especially important issue to be delivering to future ATCs, especially those who plan to work for Division I collegiate athletics. Ogilive and Taylor (1993) and Smith, Scott, and Weise (1990) discovered that most Division I student-athletes are at risk for academic failure. In fact most Division I student-athletes enter college with lower SAT (Scholastic Aptitude Test) scores and poorer high school preparation when compared to the general student body (Maloney & McCormick, 1993;
NCAA 1988-89). It becomes imperative that the primary health care provider for
student-athletes not only understand each SA’s physical limitation, but also each SA’s
socioeconomic and educational background so to fully appreciate the individual struggle
academics can pose.

Cognitive Level and AMP 694

One issue that cannot be overlooked is how each interviewee responded to the
course material relative to his or her cognitive development. Although both sophomore
interviewees did change their perceptions towards the psychological distress suffered by
injured SAs, their responses in the interviews represented a more dualistic and
dichotomous level of understanding (Perry, 1970, 1981; cited in Pascarella & Terenzini,
1991). For example, Bonnie responded to the question concerning psychological
reactions from memory. She explained DABDA (i.e. Denial, Anger, Bargaining,
Depression, and Anger) in its exact order as presented in class, and provided an example
of each phase just as in class. The juniors and seniors, on the other hand, seemed to gain
more from the course in terms of being able to deconstruct reality from their own
perspective and look through someone else’s eyes, and this is an essential developmental
issue for AMP 694 to have the impact that it needs to have on preparing future ATCs.
The two juniors were extremely strong students academically, and handled the time
demands of being an ATS and a student without too much difficulty. Yet, both Reese
and Vickie were extremely sensitive to the fact that not every SA has the same academic
background or socioeconomic stability as them, and that their personal privileges enabled
them to develop effective coping skills that SAs with different backgrounds may be
lacking. Developmentally the ability to view reality from multiple perspectives is
imperative for the placement of AMP 694 into an Athletic Training curriculum. Students must be at least in relativism (i.e. Phase 5 and 6) in order to benefit fully from the issues covered in AMP 694 (Perry, 1970, 1981; cited in Pascarella & Terenzini, 1991). A relativistic student realizes that knowledge is contextual, and more important his or her analytical skills allow the student to look at reality from someone else’s perspective. Therefore, AMP 694 is more appropriate for upperclassmen, specifically juniors in at least their last semester or mid to last quarter of their third year.

LIMITATIONS OF THE STUDY

Questionnaire

Perhaps the biggest limitation to this study’s internal validity was the small sample size. Ideally a control group would have presented the best design; however, the limited number of ATSs did not make this an option. Therefore, a pretest had to be used to provide a baseline measurement with which to compare the posttest. This may have sensitized the respondents to the materials that were most important. A second limitation was the type of sample used, a convenience sample. This in hindsight is potentially more of a limitation than expected. Although it was anticipated that some of the respondents initially enrolled in AMP 694 based upon their interest in the subject matter, it was not anticipated how advanced some of the respondents were in the matter of psychological responses to injury. In fact, all six of the interviewees had an understanding of typical psychological reactions encountered through their experiences with SAs. This leaves the researcher to ponder if the results of this study would have
been the same with a group who did not have such an understanding of psychological reactions prior to the beginning of class, and therefore such an interest in learning more about the psychology of injury.

One other limitation to internal validity that is noteworthy includes a location threat. One of the respondents did not attend either of the posttest questionnaire meetings held in the original testing site; therefore, she completed the questionnaire in an academic office instead of the classroom. This is of marginal importance since this same respondent also participated in the interviews, which were held in the same location. It is doubtful that this respondent’s scores were affected by the location change on the posttest questionnaire.

**Interviews**

By the time posttest interviews were conducted, the researcher was faced with an unanticipated dilemma. The same researcher who conducted the pretest interviews was supposed to conduct the posttest interviews as well. However, through the interactions with students as the pretest interviewer and the instructor of AMP 694, the researcher formed a noticeable bond with many of the respondents. This posed the possibility of introducing bias into the posttest interviews. The researcher believed that some interviewees might answer questions based upon their desire to “help” the researcher, instead of answering honestly. Therefore, a change was made that did introduce an implementation threat. A new researcher conducted the posttests in order to avoid the aforementioned bias. Nonetheless, the elimination of potential response bias is considered by the researcher to be more important than controlling the implementation threat introduced by a new interviewer.
Generalizability

This study was conducted in order to investigate the possibility of adding a new course to the Athletic Training curriculum at OSU; therefore, the decision to generalize the results to other institutions rests with the reader. This study is one of the first to investigate the value of a psychology of injury course, thus it is considered exploratory research. As with any new research topic, the initial research is often less rigorous and defined as those studies that will follow. It is anticipated that future studies will try to eliminate some of the limitations that impacted the generalizability of the current investigation. Additionally, readers should keep in mind that qualitative research methods, such as the interviews used in this study, do not aim to generalize results to other populations. In fact, the goal of interview methodology is often to identify ideal or special cases, and illuminate what could be. This is the case with this study.

Two additional considerations that affect the generalizability of the questionnaire results involve the Hawthorne effect and the novelty effect. First, respondents in this study knew they were research subjects. This seemed inevitable given the constraints of Human Subjects Guidelines. However, the results cannot be generalized to those who are not respondents in a research study. Secondly, it is not clear whether the same results would be obtained after the new course, AMP 694, is taught for several years. It is possible that the respondents appeared to learn primarily because this was new and interesting subject matter, and years or months from now AMP 694 may be just another course “they have to take,” thus changing their perceptions.
RECOMMENDATIONS FOR FUTURE RESEARCH

Future studies investigating ATS' perceptions of the psychological response to injury suffered by SAs would benefit from a larger sample that is randomly assigned to control and treatment groups. This would not only improve the internal validity of the study, but would also eliminate the threat created by allowing respondents the option to enroll or not enroll in the course. It is worthwhile to investigate whether or not learning of the current subject matter is influenced by prior experiences and a particular interest in the subject. As stated previously, it is possible the same effect would not be found with a sample who is less familiar with psychological responses.

Additional reliability tests would also increase the sensitivity of the PPIIQ in its ability to detect changes in perceptions. As referenced in Chapter 4, the internal validity results on the actual research pretest were not as promising as the results obtained on the pilot test conducted at Otterbein College. This is perhaps an area that could be strengthened in future research studies. The research design in this study used two NCAA Division III schools to field and pilot test a questionnaire intended for a Division I school. In retrospect, this may have affected the reliability. The perceived circumstances affecting psychological responses encountered by a Division III SA may be entirely different than the circumstances of a Division I SA who has professional sporting aspirations. Future studies may benefit by looking specifically at each respective division, and conducting pilot tests in a division that corresponds with the actual research sample (e.g. Division I pilot test for a Division I study).
CONCLUSION

Student-athletes enter collegiate athletics for a variety of reasons. Some want a degree; some want to play a sport for the love of the game; and some want to make athletics a professional career. Whatever the reason for being a student-athlete, one thing remains the same. ATCs are the primary health care provider for student-athletes, and that means that ATCs are providers of student as well as athlete services. Without a course in the undergraduate preparation of the ATC that addresses the unique development and psychological frame of the student-athlete, it is unlikely that ATCs are qualified to be providers of both student and athlete services. Perhaps Reese, a junior interviewee stated it best, “A lot of them really don’t know as much about the university as you’d think, so I mean, just talk to them about that. Asking them, it’s really easy, it’s not time consuming, I mean it’s just like when you are bouncing the ball with them or whatever, you know, “how are classes going; are you doing OK; are you behind?” It can be as simple as that.
Bibliography


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APPENDIX A

AMP 694 Course Syllabus
AMP 694: Psychological Impact of Injury  
Credit Hours: 3

**Introductory Information**

**Instructor:** Laura L. Harris, ATC/L, MS

**Office Location:** 152 Mount Hall  
1050 Carmack Road

**Office Hours:**  
Monday  1-7  
Tuesday  10-4  
Wednesday (not in office)  
Thursday  10-2  
Friday  1-5

**Contact Information:**  
292-8860 (phone)  
292-0049 (fax)  
harris.670@osu.edu

**Course Description:** A detailed look at the psychological reactions to injury and the subsequent impact on rehabilitation, psychosocial development, academic progress, and other life events.

**Prerequisites:** freshmen, sophomore, junior, and senior athletic training majors only.

**Date and Location:** Tuesday evening 6:30-9:00 PM @ Biggs Classroom

**Purpose:** Since Kubler-Ross' seminal research in the 1970s on the stages of bereavement, sports injury has taken on a more holistic view. Today, a more thorough approach to physical rehabilitation has evolved in order to address not only the physical limitations of injury, but also the psychological impact of injury. "Psychological Impact of Injury" as a course is designed to help student athletic trainers develop an understanding of the grief responses to injury and the importance of good communication skills throughout rehabilitation. With such skills, athletic training students can help the injured athlete to meet and face the cognitive, emotional, and behavioral challenges that arise.

**Rationale:** The course is designed to provide athletic training students with a theoretical background surrounding the psychological impact of injury, so that such theory can be applied in practical settings to facilitate the physical and psychological components of injury rehabilitation. After the theoretical foundation has been presented within the first two weeks of class, each class thereafter will address potential psychological setbacks that can occur throughout rehabilitation and how the athletic trainer can alleviate such setbacks. Thus, weeks one and two will lay the foundation, and weeks three through ten
will address application and medication techniques that may be implemented to enhance the physical and psychological components of rehabilitation.

**Required Textbook Readings:**


**Required Selected Readings (to be provided by instructor):**


**Objectives:**

At the conclusion of “Psychological Impact of Injury,” successful students will be able to:

1. Describe the rehabilitation process in conjunction with the associated stages of healing and potential setbacks.
2. Explain the sports medicine team and referral protocol.
3. Apply the seminal psychological stage theories to rehabilitation settings and protocols.
4. Identify common stress reactions that may occur as a response to athletic injury.
5. Demonstrate mediation techniques for common stress reactions that may occur as a response to athletic injury.
6. Identify sport specific stressors, which may impact the psychological response to athletic injury.
7. Demonstrate mediation techniques for sport specific stressors, which may impact the psychological response to injury.
8. Identify the effect that different injuries may have on psychological reactions.
9. Demonstrate mediation techniques to alleviate pain.
10. Demonstrate mediation techniques to increase the level of understanding relative to the injury and rehab process.
11. Analyze psychosocial development relative to athletic injury.
12. Demonstrate mediation techniques aimed at preserving the athletic identity and progressively complex levels of psychosocial development.
13. Discuss the potential effects of an injury on an athlete’s future occupational and academic success.
14. Identify signs of an inadequate social support system for injured athletes.
15. Demonstrate the ability to provide and network a social support system for injured athletes.
16. Identify the appropriate psychological reactions necessary for advocating a healthy psychological adjustment.
17. Respect the importance of the factors that contribute to the degree and severity of the psychological impact of injury: (a) stress reactions, (b) sport influences, (c) injury influences, (d) personal influences, and (e) social influences.
18. Appreciate the need to develop the skills necessary to become an empathetic rehabilitation specialist for the injured student-athlete.

Policies:

1. Attendance
   I strongly encourage every student to attend class every day. Class attendance is highly correlated with successful completion of college courses. Furthermore, just as an employer needs to be notified when employees are not able to attend, I also expect that students will be responsible enough to notify me of an absence and make the appropriate plans to make-up missed materials.

2. Cheating
   I will monitor both mid term and final exams. Anyone expected of cheating off someone else's paper or using a cheat sheet will be reported to the Committee on Academic Misconduct for further investigation.

3. Assignments
   Assignments are due by the end of class and will not be accepted late. A late paper is one that is not in my hands at the conclusion of class. Make-up tests will be all essay.

4. Tobacco
   Absolutely no tobacco products of any kind are allowed during class.

5. Talking
   Excessive, nonproductive talking is considered to be disruptive. However, I do encourage open, free, and often humorous discussions as long as they are conducive to the learning atmosphere.

6. Disabilities
   To receive services, and/or auxiliary aids, a student with a disability must identify his or her disability, and provide clinical diagnostic documentation from a medical doctor, psychologist, or psychiatrist to Disability Services. Accommodations are provided on an individual basis through Disability Services in Pomerene Hall (292-3307).
Course Outline:

WEEK 1

Lecture Introduction to the course and student expectations
Rehabilitation process and the sports medicine team

Review Syllabus and Assignments
(Read) Introduction (p. xxi-xxviii)
(Read) Chapter 1: Rehabilitation Assessment (p. 3-14)
  • Rehabilitation prescription
  • Rehabilitation profiling
Sports medicine team and referral system
(Read) Chapter 2: Understanding the Rehabilitation Process (p. 15-34)
  • Length of rehabilitation
  • Stages of rehabilitation
  • Potential setbacks in rehabilitation

WEEK 2

Lecture Stage theories on psychology of injury and existing literature

(Read) Chapter 4: Psychological Problems in Rehabilitation (p. 59-82)
  • Types of psychological problems
  • Precursors to psychological distress
  • Identification of psychological distress
Kubler-Ross’ Stages of Bereavement
Passer’s Stress Process Model
Flint’s Conceptual Framework on Injured Athlete-Injury Scenario

WEEK 3

Lecture Stress reactions to injury
Mediation techniques

(Read) Chapter 8: Anxiety (p. 145-175)
  • Symptoms of anxiety
  • Controlling and coping with anxiety
Flint’s Conceptual Framework (Stress Reactions)
  • Life events
  • Coping resources
  • Responses
  • Academics

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WEEK 4

Lecture  
Sport influences on psychological response  
Mediation techniques

(Read) Chapter 7: Motivation (p. 117-144)  
Flint’s Conceptual Framework (Sport Influences)  
  • Athlete’s status  
  • Type of sport  
  • Timing of season  
  • Coach

WEEK 5

Lecture  
Mid term examination over lecture notes and Chapters 1, 2, 4, 7, and 8

WEEK 6

Lecture  
Injury influences on psychological response  
Mediation techniques

(Read) Chapter 11: Pain Management (p. 219-242)  
  • Types of pain  
  • Measurement of pain  
  • Managing pain  
Flint’s Conceptual Framework (Injury Influences)  
  • Pain expression  
  • Macro/microtrauma  
  • Level of understanding  
  • Severity

WEEK 7

Lecture  
Personal influences on psychological response  
Mediation techniques

(Read) Lavallee article on Retirement from Sport and the Loss of Athletic Identity  
Psychosocial Development  
Flint’s Conceptual Framework (Personal Influences)  
  • Age, maturity and gender effects
WEEK 8

Lecture  
Personal influences on psychological response  
Mediation techniques

(Read) Chapter 10: Rehabilitation Imagery (p. 197-217)  
• Types of mental imagery  
• Incorporating imagery into the rehabilitation

Flint’s Conceptual Framework (Personal Influences)  
• Previous injury  
• ATC  
• Mental training

(Read) Larson article on Psychological Aspects of Athletic Injury as Perceived by Athletic Trainers

WEEK 9

Lecture  
Social influences on psychological responses  
Mediation techniques

(Read) Chapter 12: Social Support (p. 243-259)  
• Developing social support systems

Flint’s Conceptual Framework (Social Influences)  
• Emotional Support  
• Technical support  
• Ethnic background

(Read) DeFrancesco and Gropper article on Support services for African American student athletes

WEEK 10

Lecture  
Group assessment of various case studies  
Review for final examination

Evaluation

There will be a total of two exams, a mid term and a final, which will assess the students’ basic level of comprehension. The mid-term shall be comprehensive from the first week through the fifth week, and the final will be comprehensive from the first week through the tenth week.
In addition to the textbook readings, students will also be provided with a total of three supplemental readings. The first article provides students with a summary of the influences of psychosocial development upon reactions to injury. The second article is survey research, which illuminates the need for ATCs to understand the psychology of injury, and the final article addresses the differing factors with which African American student-athletes are faced.

The last evaluation procedure will involve a case study chosen by a group of 3-4 students. This assignment will assess students’ ability to analyze and apply techniques presented in class to a real life situation.

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Grade = Sum of Earned Points

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APPENDIX B

Interview Consent Form
CONSENT FORM FOR INTERVIEWS

Protocol # ________________

CONSENT FOR PARTICIPATION IN RESEARCH

I consent to participating in research entitled: ESTABLISHING THE DEGREE OF CHANGE IN STUDENT ATHLETIC TRAINERS’ PERCEPTIONS OF THE PSYCHOLOGICAL IMPACT OF INJURY ON STUDENT-ATHLETES’ ACADEMIC AND ATHLETIC CAREERS. I understand that I will be asked to answer approximately 20 questions throughout the interview process and that my answers will be audiotaped.

Dr. Ada Demb, Principal Investigator, or her authorized representative, Laura L. Harris, has explained the purpose of the study, the procedures to be followed, and the expected duration of my participation. Possible benefits of the study have been described, as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Furthermore, I understand that I am free to withdraw consent at any time and to discontinue participation in the study without prejudice to me.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: ____________________________________________

Signed: ___________________________________________

(Participant)

Signed: ___________________________________________

(Principal Investigator or his/her authorized representative)

Signed: ___________________________________________

(Person authorized to consent for participant, if required)

Witness: __________________________________________

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APPENDIX C

Pretest Interview Guide
Posttest Interview Guide
PRETEST QUALITATIVE INTERVIEW FORMAT

1. What year are you in the athletic training program?

2. What brought you into this field as a professional?

3. What do you enjoy the most about being a student athletic trainer? And the least?

4. Which sports do you enjoy working in the most as a student athletic trainer? Are there some you find less appealing?

5. What type of instruction about the psychology of the injured athlete have you had? For example, how many weeks of material have you had, or how many different books or articles have you read?

6. How would differentiate a minor injury from a severe injury? For example, what criteria would you use to categorize a minor injury from a severe injury?

7. What type of injuries do you feel require rehabilitation (e.g. bony, muscular, ligamentous, tendonous, head injury, etc.)?

8. What factors and elements do you think should be addressed and included in a student-athlete’s rehabilitation from injury?

9. In how many rehabilitations of injured student-athletes have you participated?

10. In your experience what are some of the typical psychological responses a student-athlete experiences as a result of injury?

11. What psychological reactions have you observed that earmark the different stages of a rehabilitation? (For example, ROM phase, strength and coordination phase, or return to sport phase)

12. What techniques have you used in the past to help injured student-athletes make a healthy psychological adjustment to injury and rehab? Or if not you, what techniques have you observed other trainers using?

13. How do you think most injured student-athletes deal with time demands? (For example, balancing rehabilitation with academic demands)

14. How have you in the past helped injured student-athletes cope with the academic demands? Of if not you, what coping resources have you observed other trainers using?

15. What resources are available at this institution for helping injured student-athletes deal with injury?
16. What resources are available for helping injured student-athletes deal with academic demands?

17. Are there other resources you might suggest this institution make available to their student-athletes?

18. If you could change something about this school’s Athletic Training program, what would you change?

19. Knowing that my goal is to understand how you view student-athlete injuries, are there other comments that you would like to make? What "didn't" I ask?
POSTTEST QUALITATIVE INTERVIEW GUIDE

1. Why did you choose to pursue a career as an ATC?

2. What do you enjoy most about being a student athletic trainer? And the least?

3. What type of instruction on the psychology of the injured athlete have you had? For example, how many courses and/or weeks of material have you had, or how many different book or articles have you read?

4. In how many student-athletes’ rehabilitations have you participated?

5. How would you differentiate a minor injury from a severe injury? For example, what criteria would you use to categorize a minor injury from a severe injury?

6. What type of injuries do you feel require rehabilitation (e.g. bony, muscular, ligamentous, tendonous, head injury, etc.)?

7. What factors and elements do you think should be addressed and included in a student-athlete’s rehabilitation from injury?

8. Why did you choose to take the Psychology of Injury course offered this past winter?

9. In your experience what are some of the typical psychological responses a student-athlete experiences as a result of injury?

10. What psychological reactions have you observed that earmark the different stages of a rehabilitation? (For example, ROM phase, strength and coordination phase, or return to sport phase as outlined in the Diamond Model from class.)

11. What techniques have you used in the past to help injured student-athletes make a healthy psychological adjustment to injury and rehab? Or if not you, what techniques have you observed other ATCs using?

12. How do you think most injured student-athletes deal with time demands? (For example, balancing rehabilitation with academic demands.)

13. How have you in the past helped injured student-athletes cope with their academic demands? Or if not you, what coping resources have you observed other ATCs using?

14. What resources are available at this institution for helping injured student-athletes deal with injury?
15. What resources are available for helping injured student-athletes deal with academic demands?

16. Are there other resources you might suggest this institution make available to their student-athletes?

17. If you could change something about this school’s Athletic Training program, what would you change?

18. Have your perceptions about rehabilitation and injury changed following the conclusion of the Psychology of Injury course, and if so how have your perceptions changed?

19. If you were to talk about the responsibilities and roles of the ATC now, what would you say differently as a result of taking the Psychology of Injury course?

20. If you were to characterize the role of psychology in rehabilitation, what would it be?

21. Knowing that my goal is to understand how you view student-athlete injuries, are there other comments that you would like to make? Basically, what didn’t I ask?
APPENDIX D

Pretest Questionnaire Cover Letter
Posttest Questionnaire Cover Letter
January 2, 2001

Student Athletic Trainer
The Ohio State University
2491 Olentangy River Road
Columbus, OH 43210

Dear Student Athletic Trainer:

As a result of your experience and knowledge as an athletic training major at The Ohio State University, you are being asked to complete the following questionnaire addressing student athletic trainers' perceptions of the psychological impact of injury on student-athletes. Your responses will assist in the data collection for part of Laura Harris's doctoral dissertation research, under the supervision of Professor Ada Demb, at The Ohio State University.

Your responses are confidential and will not be used in conjunction with your name. However, your responses are not anonymous as your name has been coded with a number in order to match your first questionnaire score to your second questionnaire score. At the conclusion of the second questionnaire administration, the names associated with the codes will be destroyed assuring your confidentiality. Neither your responses to the questionnaire nor your decision about participation will have an impact upon your grade in AMP 694.

By completing the questionnaire and handing it back to Ms. Harris, you are indicating your consent to participate in the research study entitled: Establishing the Degree of Change in Student Athletic Trainers' Perceptions of the Psychological Impact of Injury on Student-Athletes' Academic and Athletic Careers. Your participation is voluntary. You may withdraw from participation at any time during administration of the questionnaire. Furthermore, you may refuse to respond to any statement that you do not wish to answer. The entire process of responding to the questionnaire should take 30-45 minutes.

As you work through the questionnaire, read the statements in the order in which they are presented, and answer the statements by circling the appropriate number that
corresponds to the definitions at the top of each questionnaire page. You may use either a pen or pencil to complete this questionnaire. As you answer the questions, please refer to your experience as a student athletic trainer at The Ohio State University, or in high school if you have no experience at The Ohio State University.

We thank you for your time and expertise. Your feedback is genuinely appreciated. If you should have any additional questions or concerns that are not answered during the completion of the questionnaire, feel free to contact Ms. Harris at The Ohio State University by phone (614-292-4487) or by e-mail (harris.670@osu.edu).

Sincerely,

[Signature]
Dr. Ada Demb  
Associate Professor  
Educational Policy & Leadership

[Signature]
Laura L. Harris  
Laura L. Harris, ATC/L, MS  
Doctoral Student  
Educational Policy & Leadership
June 1, 2001

Student Athletic Trainer
The Ohio State University
2491 Olentangy River Road
Columbus, OH 43210

Dear Student Athletic Trainer:

As a result of your experience and knowledge as an aspiring ATC at The Ohio State University, you are being asked to complete the following questionnaire addressing student athletic trainers' perceptions of the psychological impact of injury on student-athletes. Your responses will assist in the data collection for part of Laura Harris's doctoral dissertation research, under the supervision of Professor Ada Demb, at The Ohio State University.

Your responses are confidential and will not be used in conjunction with your name. However, your responses are not anonymous as your name has been coded with a number in order to match your first questionnaire score to your second questionnaire score. At the conclusion of the second questionnaire administration, the names associated with the codes will be destroyed assuring your confidentiality. Neither your responses to the questionnaire nor your decision about participation will have an impact upon your grade in AMP 694.

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As you work through the questionnaire, read the statements in the order in which they are presented, and answer the statements by circling the appropriate number that
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Sincerely,

Dr. Ada Demb
Associate Professor
Educational Policy & Leadership

Laura L. Harris
Laura L. Harris, ATC/L, MS
Doctoral Student
Educational Policy & Leadership
APPENDIX E

PPIIQ
PERCEPTIONS OF PSYCHOLOGICAL IMPACT OF INJURY QUESTIONNAIRE

CONDUCTED BY THE OHIO STATE UNIVERSITY COLLEGE OF EDUCATIONAL POLICY & LEADERSHIP

Dr. Ada Demb
614-292-1865
demb.1@osu.edu

Laura L. Harris
614-292-4487
harris.670@osu.edu

• Thank you for taking the time and effort to complete this important questionnaire.
• Use either a pen or pencil to answer each statement.
• At the conclusion of the questionnaire, please feel free to make additional comments in the space provided.
• When responding,
  • refer to your experience as an athletic training student with collegiate varsity sports at The Ohio State University (or refer to your experiences with injured athletes in general if you have no OSU experience), and
  • consider an injury any physical trauma suffered in athletic participation, which results in a forced absence from athletic practices and/or games, and
  • view the severity of injury in general terms. For instance, unless specified otherwise, consider severity to be in terms of the “typical” injury and not in terms of the extremes (e.g. grade 1 versus career ending injury).
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Stress Reactions

1. Student-athletes tend to report more stress in their daily lives than non-student athletes. ........................................1 2 3 4 5 6 7

2. Regarding non-sport goal accomplishments, student-athletes tend to have higher levels of self-motivation than non-student-athletes. ..................... 1 2 3 4 5 6 7

3. A student-athlete, in your opinion, tends to experience more emotional distress as a result of injury than a non-student-athlete. ...................... 1 2 3 4 5 6 7

4. The pain suffered as a result of injury tends to increase anxiety (e.g. nervousness or worry) for an injured student-athlete. .......... 1 2 3 4 5 6 7

5. Severe injuries tend to increase the amount of emotional distress for injured student-athletes. ............... 1 2 3 4 5 6 7

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Sport Influences

6. Injured starters (e.g. first string) tend to suffer more emotional distress from an injury than non-starters. ........................................... 1 2 3 4 5 6 7

7. Student-athletes who participate in Division I revenue producing sports (e.g. football and basketball) tend to suffer more emotional distress from an injury than those who participate in Division I non-revenue producing sports (e.g. volleyball, track and field, baseball, etc.) .......... 1 2 3 4 5 6 7

8. Student-athletes who participate in Division II and III revenue producing sports (e.g. football and basketball) tend to suffer more emotional distress from an injury than those who participate in Division II and III non-revenue producing sports (e.g. volleyball, track and field, baseball, etc.) .......... 1 2 3 4 5 6 7

9. Injuries suffered by student-athletes in the pre-season tend to create more emotional distress than injuries suffered during the season. ........................................... 1 2 3 4 5 6 7
Social Influences

10. Emotional support provided by family and friends tends to have a positive impact upon rehabilitation adherence..............1  2  3  4  5  6  7

11. ATCs and/or student trainers tend to improve the quality of rehabilitation by providing emotional support for the injured student-athlete.............1  2  3  4  5  6  7

12. During rehabilitation, injured student-athletes will be more likely to adhere to their physical rehabilitation if coaches acknowledge their effort throughout the rehabilitation process.................................................1  2  3  4  5  6  7

13. A parent or parents with a college education will provide more support for their son or daughter continuing his or her college education following injury than a parent or parents without a college education.................................1  2  3  4  5  6  7

14. An ATC and/or student trainer who has completed a course on the psychological impact of injury will tend to be more effective in rehabilitation .................................1  2  3  4  5  6  7
15. An injured student-athlete whose family income is considered at or below the poverty level will tend to suffer more emotional distress as a result of injury. ..........................1

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**Academic Impact**

16. Injured student-athletes tend to become academically ineligible following an injury. .....................1

| 2 3 4 5 6 7 |

17. Injured student-athletes tend to express difficulty getting to class due to the physical limitations imposed by injury. ........1

| 2 3 4 5 6 7 |

18. Division I student-athletes tend to have more academic support services in terms of academic counselors and tutors than Division II student-athletes. ..........................1

| 2 3 4 5 6 7 |

19. Division I student-athletes tend to have more academic support services in terms of academic counselors and tutors than Division III student-athletes. ..........................1

| 2 3 4 5 6 7 |

20. The time and effort an injured student-athlete spends in rehabilitation tends to conflict with time spent on academic study....1

| 2 3 4 5 6 7 |
21. During rehabilitation, ATCs and/or student trainers generally attempt to learn how injured student-athletes are performing in academic courses.  

22. An injured student-athlete is more likely to drop out of school than an uninjured student-athlete.  

23. Injured student-athletes tend to skip college courses more regularly than uninjured student-athletes.
Demographic Information

24. What is your age? ____________

25. What year are you in the Athletic Training Program? (circle one)
   University College  First  Second  Third  Fourth

26. With how many injured student-athletes have you worked? (circle one)
   0-5  6-10  11-15  16-20  21-25  26-30  30 +

27. How many weeks of formal instruction specific to the psychology of the injured
athlete have you received in other courses? This does not include general
psychology courses. (circle one)
   0-1  2-3  4-5  6-7  8-9  10 +

28. What is your class rank? (circle one)
   Freshmen  Sophomore  Junior  Senior

29. What is your gender? (circle one)
   Male  Female

30. What is your race or ethnicity? (optional, circle one)
   African American  Asian American  Caucasian
   Hispanic  Native American  Other
Thank you for your input. Your experiences will undoubtedly have an important impact upon future Athletic Training curriculum designs.

*If there is anything else on which you would like to make additional comments, please feel free to use the remaining space.*