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Self-determination in injury rehabilitation: designing a climate for promoting adherence

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SELF-DETERMINATION IN INJURY REHABILITATION:
DESIGNING A CLIMATE FOR PROMOTING ADHERENCE

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Kinesiology

by

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B.S., Salisbury State University, 1997

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December, 2006

DEDICATION

To everyone that believed in me and was that collective hand pushing on my back this whole way, especially Mom, Dad, Elise, and Jill. *Thank you!*

In memory of Grandmom, Grandpop, and Vince. Thanks for watching over me during this journey. I will never give up the fight.

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This doctoral experience has taught me many things about perseverance and truly enjoying what you do. It would not have been possible without many people.

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Sometimes our planned path gets interrupted and we need to look for new “cheese” or find a new route to our destination. The important thing is that we keep pushing, embrace those that want to help us, and *never, never, never give up*. To everyone that I have encountered on my path in one way or another, good or bad, I hope that you **FIND** **A WAY** to enjoy the journey to your destination.

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ABSTRACT

The purpose of this dissertation was to use self-determination as a theoretical framework to investigate factors that influence college athletes' adherence to injury rehabilitation programs. A two-part study, quantitative and qualitative approaches were used to gain insight into athletes' motivation and decisions that they make regarding their engagement in injury rehabilitation. The focus of the quantitative study was to investigate the relationships between personal autonomy, levels of self-determination, perceived autonomy support, and perceived competence in injury rehabilitation. Participants (N=193 college athletes) completed surveys in a retrospective design. Autonomy orientations were positively related to higher levels of self-determination and the perception of an autonomy supportive environment. Findings suggested that a combination of autonomy and control orientations is associated with higher forms of motivation. In the qualitative study, 12 athletes, who had incurred a significant injury, and their athletic trainers, were interviewed about their perceptions of the injury rehabilitation program, health-care climate, and perceived competence. Three themes emerged that represent their views: (a) the powerful role that significant others play in the injury rehabilitation process; (b) the importance of maintaining an open dialogue; and (c) the utility of setting and achieving obtainable goals. Taken together, the results of these studies provide valuable information that can be used by researchers and practitioners to identify strategies that should enable athletic trainers to structure autonomy-supportive environments that will foster higher levels of self-regulation, motivation, and self-determination that ultimately will lead to improved adherence in treatment programs.

CHAPTER 1: INTRODUCTION

Almost one in six athletes in the United States has incurred an athletic injury severe enough to result in time lost from practice and competition (Ballard, 1996). When athletes are injured, they require treatment and rehabilitation to facilitate their return to competition. Because certified athletic trainers (ATC) often have the most recurrent contact with an athlete before and after an athletic injury, they are in a unique position to scrutinize the athlete's physical and mental status and to influence the rehabilitation program. Athletic training is a very dynamic profession that requires a certified athletic trainer to be skilled in a number of different medical areas. Although ATCs must be competent to direct the physical aspects of rehabilitation, simply knowing how to diagnose and treat an injury is not sufficient to insure that athletes are able to recover as quickly and completely as possible. An important aspect of the ATC's role is to address issues of adherence to the rehabilitation program, and to work with injured athletes to insure that they exert the necessary effort to optimize their recovery. Certified athletic trainers recognize the importance of psychological variables in rehabilitation adherence (Fisher & Hoisington, 1993; Board of Certification Role Delineation Study, 2004). Roh & Perna (2000) argue it is critical that ATCs receive structured education in the psychological aspects of athletic injury though most admit that they do not receive this training. However, recognizing the variables that are important in facilitating adherence and integrating strategies to address these variables are complicated matters.

Researchers have explored acute and chronic injury from an orthopedic perspective, but the emotional rehabilitation of athletes has not been adequately addressed (Shuer & Dietrich, 1997). Previous literature, focusing especially on athletic

injury rehabilitation, can be categorized into three broad areas: injured athletes' characteristics (i.e. motivation), rehabilitation setting characteristics, and ATC-athlete interactions (Duda, Smart, & Tappe, 1989; Fisher, 1990; Fisher, Domm, & Wuest, 1988; Fisher, Mullins, & Frye, 1993). Athletes' psychological characteristics have been shown to have an impact on their reactions and perceptions to injury (Wiese & Weiss, 1987). Easy facility accessibility encourages attendance and a demanding, yet unbusinesslike, atmosphere is conducive to treatment adherence (Fisher & Hoisington, 1993).

Athletes' perceptions of the medical delivery personnel also affect the relationship between the athlete and the athletic trainer and influence rehabilitation adherence (Fisher & Hoisington, 1993; Prentice, 1994). Exploring the viewpoints of this professional relationship can enhance the ATCs understanding of the athletes' opinions of and satisfaction with their athletic trainers (Fisher & Hoisington). It has been suggested that the more fulfilled the athlete is with his or her health care, the more confidence the athlete will have in the athletic trainer during injury recovery (Unruh, 1998). Results from studies of patient satisfaction with their health care providers support the premise that the higher the individual's level of satisfaction with the medical professional, the more confidence they will have in their athletic trainer (Fitzpatrick, 1991). Although the importance of the relationship between ATCs and injured athletes has been recognized, researchers have not investigated how ATCs can structure the relationship to foster adherence.

There has been a history of "paternalism" when it comes to medical decision-making (Reidy & Crozier, 1991). Skilled physicians have been left to decide what the best medical intervention is for their patients. However, the decision-making model fails

to take in the goal of rehabilitative medicine of enabling physically disabled patients to get back to the most favorable levels of independence. This self-sufficient functioning begins with the medical team recognizing patients' decision-making autonomy (Caplan, Callahan, & Haas, 1987). Therefore, a theoretical model, that has autonomy as one of its key components, would seem to best serve research in this area.

Though previous investigations have provided insight into the issue of adherence (Byerly, Worrell, Gahimer, & Domholdt, 1994; Fields, Murphey, Horodyski, & Stopka, 1995), a comprehensive theoretical approach that can provide an overarching organizing framework is needed. Self-Determination Theory (SDT) has been used to achieve that purpose in related domains. SDT has the potential to provide a clearer understanding of the rehabilitation issues embedded in injury adherence, and can yield valuable insight for athletic trainers in creating a rehabilitation climate that facilitates adherence. Given that self-determination has been used as a framework to investigate adherence in other health related domains (Ryan, 1995; Williams, Cox, Kouides, & Deci, 1999; Williams, Freedman, & Deci, 1998; Williams, Rodin, Ryan, Grolnick, & Deci, 1998), it also holds promise for further investigation into injury rehabilitation (Ryan & Deci, 2000). To date, self-determination has not been used as a theoretical framework surrounding an examination of adherence in rehabilitation to athletic injuries.

The purpose of this dissertation was to investigate factors that influence college athletes' adherence to injury rehabilitation programs. This two-part study incorporated both quantitative and qualitative methods. In the first study, SDT was used as a framework to guide the research design and to interpret the findings. Quantitative measures were used to assess individuals' motivational orientations in an injury

rehabilitation program, participants' levels of self-regulation, perceptions of the health-care climate by the provider, and perceived competence, and the network of interrelationship of these constructs were examined. The second study consisted of interviews to explore ATCs and athletes' perspectives of issues relevant to injury rehabilitation. Qualitative approaches provide insight into participants' perceptions of the injury rehabilitation climate, and their levels of motivation. This provides an avenue to gain a greater understanding into the complex relationships that occur during injury rehabilitation (Stake, 1995).

CHAPTER 2: RELATIONSHIPS AMONG CAUSALITY ORIENTATIONS, SELF-DETERMINATION, AND PERCEIVED CLIMATE IN INJURY REHABILITATION PROGRAMS

Introduction

Over the last three decades, the incidence of athletic injuries has been a concern for both researchers and sports medicine personnel. In Great Britain, sports/exercise was the single leading cause of injuries in a survey of the general population, accounting for almost 33% of all injuries that occurred (Uitenbrock, 1996). Injuries have a negative effect on an athlete's health, training, and competitive operation (Calvert & Clarke, 1979). Though traditionally the focus has been on the physical aspects of injury and injury rehabilitation, there has recently been increased appreciation of the psychological aspects of injury recovery (Brewer, 2001)

The adherence of collegiate athletes to their injury rehabilitation programs is one aspect of the psychology of sports medicine that frequently puzzles athletic trainers as well as other health care professionals (Brewer, 1994; Byerly, Worrell, Gahimer, & Domholdt, 1994). Some athletes manage to adhere to their scheduled rehabilitation sessions, while others are very inconsistent in their rehabilitation faithfulness. There are more than 200 variables that can affect adherence to a rehabilitation program (Meichenbaum, 1987). One key variable influencing the rehabilitation process is the injured athlete's commitment to his or her program (Fisher, Mullins, & Frye, 1993). Athletic trainers need to know how to engage participants in a thriving rehabilitation program and enhance his or her commitment (DePalma & DePalma, 1989; Fisher, Mullins, et al., 1993).

Many of the early research studies investigating adherence focused primarily on cardiac rehabilitation and exercise of older adults (Andrew, et al., 1981; Hallman & Petosa, 1998; Rhodes, et al., 1999). The scientific study of sport injury rehabilitation adherence emerged as a legitimate field of study more than a decade ago, but according to several researchers (Brewer, 1998; Duda, Smart, & Tappe, 1989; Rhodes, et al., 1999; Hartigan, Rainville, Sobel, & Hipona, 2000), the primary focus of the early investigations was on identifying predictors of adherence, and for the most part, these studies were narrow and atheoretical (Dishman, 1982). Fisher, Mullins, et al., (1993) and others (Fields, Murphey, Horodyski, & Stopka, 1995; Laubach, Brewer, VanRaalte, & Petitpas, 1996), for example, conducted research on athletic trainers' judgments of rehabilitation adherence with no theoretical basis. Furthermore, only a few studies have specifically examined collegiate athletes and their adherence to musculoskeletal injury rehabilitation programs (Byerly, et al., 1994; Duda, et al., 1989; Fisher, Domm, & Wuest, 1988; Fisher, Mullins, et al., 1993; Fisher, Scriber, Matheny, Alderman, & Bitting, 1993).

Rehabilitation Issues

Much of the investigation on exercise adherence has been limited to supervised aerobic exercise programs (Bandura, 1997), but there have been some studies that have focused on the rehabilitation environment. In some of the rehabilitation literature, Fisher, Mullins, et al. (1993) and Fisher, Scriber, et al. (1993) identified five major issues that led to a greater understanding of patient rehabilitation behaviors: social support, self-motivation, scheduling, pain tolerance, and athletic trainer/athlete rapport. It was reported that having an understanding of the barriers that prevented rehabilitation adherence would help implement strategies for more effective rehabilitation.

Social support, reflected by the influence of coaches, teammates, and significant others, has an affect on rehabilitating athletes (Andrew, et al., 1981; Byerly, et al., 1994; Fisher et al., 1988; Fisher, Mullins, et al., 1993). Fisher, Mullins, et al., found athletic trainers were almost unanimous in agreeing that social support was essential to a successful rehabilitation program. Social support has a buffering effect on negative life stress such as injury and injury appraisal (Cohen & Willis, 1985). Several authors suggest that when in distress, athletes may pursue close relationships with an otherwise remote contact such as a sport injury rehabilitation professional (Fisher, 1990; Gordon, Milos, & Grove, 1991). Support from significant others was most influential compared to other factors that differentiated those who adhered to rehabilitation programs from those who did not.

Self-motivation has also been identified as an influential variable on adherence. Self-motivation is the ability to motivate oneself to perform a task. Certain aspects of self-motivation have been identified by ATCs as important factors in injury rehabilitation adherence (Fisher, Mullins, et al., 1993). Athletes who were more self-motivated take more of an interest in their rehabilitation and displayed higher levels of adherence to their programs. Individuals who had the opportunity to participate in the decision making process for various activities were more self-determined, more receptive to learning about rehabilitation techniques, and better able to make adjustments in their programs (Deci, Vallerand, Pelletier, & Ryan, 1991; Koestner, Ryan, Bernieri, & Holt, 1984). Even though these individuals might not have enjoyed the activities, their acknowledgement that the activity was important seemed to increase their levels of self-determination and engagement.

Scheduling and convenience is another factor that consistently emerges as an important influence on adherence. Andrew, et al. (1981) found that the dropout rate in post-coronary patients was considerably higher for those who felt the exercise sessions were inconvenient for them. Similarly collegiate athletes may not attend all their rehabilitation sessions because they feel they have no time between class, studying, and attending practices. It is clear that when individuals perceive scheduling to be convenient, they are more likely to adhere to a rehabilitation program.

Pain is another factor that distinguishes adherers from non-adherers. The pain type and intensity that athletes experienced was inversely related to their levels of adherence (Byerly, et al., 1994; Fisher, et al., 1988; Fisher, Mullins, et al., 1993). According to Fisher, Mullins, and colleagues, reducing pain and physical discomfort may increase the likelihood of adherence to rehabilitation programs.

The fifth major issue that has emerged as a major influence on adherence is the quality of the relationship between the patient and the rehabilitation professional (Brewer, 2003). Establishing a close rapport between those involved in the rehabilitation is important to the long-term adherence of an athlete to his/her rehabilitation program. Creating a strong rapport among participants and implementing program adherence strategies increases an athlete's chance of being effective in a particular rehabilitation program (Fisher, Mullins, et al., 1993).

Self-Determination Theory

Though previous investigations have provided insight into the issue of adherence (Byerly, et al., 1994; Fields, Murphey, et al., 1995), a comprehensive theoretical approach that can provide an overarching organizing framework is needed. Self-

Determination Theory (SDT) has been used to achieve that purpose in related domains, and appears to hold promise for injury rehabilitation research. Using SDT to investigate adherence provides a framework for a clearer understanding of the rehabilitation issues embedded in injury adherence, and can provide valuable insight for athletic trainers in creating a rehabilitation climate that facilitates adherence.

SDT has been used as a framework to study adherence issues in several health domains including addicting behaviors, medication adherence, weight loss, and physical activity (Ryan, 1995; Williams, Cox, Kouides, & Deci, 1999; Williams, Freedman, & Deci, 1998; Williams, Rodin, Ryan, Grolnick, & Deci, 1998). Ryan and Deci (2000) define self-determination as “the investigation of people’s inherent growth tendencies and innate psychological needs that are basis for their self-motivation and personality integration” (pg. 68). The theory stresses the significance of humans’ inner resources for personality development and behavioral self-regulation (Ryan & Deci). According to SDT, autonomy, competence, and relatedness are critical nutrients that are essential to meet an individual’s innate psychological needs.

Autonomy. Autonomy may be the most crucial of nutrients in the motivation continuum. According to SDT, when individuals are autonomous, or acting from their own volition, they are more likely to engage in an activity over a long period of time. A sense of autonomy is rooted in an internally perceived locus of causality (deCharms, 1968). Autonomy is closely linked with self-determined behavior in that both are related to intrinsic motivation. An individual who perceives that his/her own behaviors are autonomous, or that she or he is acting out of choice, is more self-determined and is more likely to be intrinsically motivated.

It is acknowledged in SDT that the levels of extrinsic motivation can vary tremendously with regard to autonomy (Ryan & Deci, 2000). Thompson and Wankel (1980) demonstrated a significant increase in exercise program attendance and intentions to continue to attend among participants who were led to believe that their choice of activities had been taken into account in designing the program. This provides evidence that when individuals feel that they have more volitional control, as reflected by a belief that their choices are considered, their motivation to continue an activity is more internalized and long term.

Competence. Individuals are also more likely to engage in activities that they feel competent in or are efficacious to them in relation to social groups that they value. Competence is a nutriment that involves understanding how to attain various external and internal outcomes and being efficacious in performing the requested actions (Deci, et al., 1991). Markland (1999) defined competence as the perception of one's ability in negotiating the social context. Perceived competence has a significant effect on intrinsic motivation only when mediated by self-determination (Fisher, 1978; Markland & Hardy, 1997; Markland, 1999). That is, even when individuals have a high perception of competence, if they feel that they lack autonomy, their level of motivation is unlikely to be enhanced.

Relatedness. Relatedness comprises developing confident and fulfilling connections with others. Once individuals have developed a secure relationship with others and they are in an autonomy-supportive environment, one where acknowledgment of feelings, choice, and opportunities for self-direction are promoted (Deci & Ryan, 1985), intrinsic motivation is more likely to occur (Ryan & Grolnick, 1986; Ryan &

Deci, 2000). Medical personnel may be more effective when their patients feel as though there is some common thread between therapist and patient. Patients may be more inclined to take on more challenging tasks in their treatment when they have a sense of support from the therapist. This patient behavior can be compared to behavior in infants that had a sense of security and autonomy support from their mothers (Frodi, Bridges, & Grolnick, 1985)

Continuum of Self-Determination. The continuum of self-determination is a key element of this theory. In contrast to other motivational theories where extrinsic and intrinsic motivation are characterized as contrasting conceptions, in SDT they are conceptualized in a hierarchical fashion, where intrinsic motivation is considered to be the highest level of motivation and amotivation the absence of motivation (Deci & Ryan, 2000). As individuals move from amotivation to more motivated states, the regulation of their behavior moves from external toward internalized regulation and is more self-determined. Intrinsic motivation is the highest and most self-determined form of motivation and is defined as engaging in an activity as an end in itself.

Between intrinsic and amotivation, extrinsic motivation has four varying degrees of regulation: external regulation, introjected regulation, identified regulation, and integrated regulation (Deci & Ryan, 2000). External regulation is the least autonomous form of the levels of extrinsic motivation. Individuals at this level engage in a behavior or activity strictly for external reasons and are controlled by rewards or threats. Externally motivated individuals perform an activity not out of interest, but rather because they believe that those actions will bring some independent outcome from the

self. When a behavior is controlled, compliance is the regulatory process. When a behavior becomes more self-determined, the regulatory manner is choice (Deci, et al., 1991).

Introjected regulation involves the initiation of some level of internalization and choice. The behavior may be performed to avoid feelings of guilt and to maintain self-worth as individuals move from engaging in a behavior because they have to, to engaging because they think they should or ought to (Deci, et al., 1991). Although driven from within, individuals at an introjected level still have a perceived external locus of causality and the conduct is not really practiced as part of the self (Ryan & Deci, 2000). Athletes who attend a rehabilitation session because they would feel guilty if they did not are functioning at the level of introjected regulation.

When individuals move from engaging in a behavior because they think that they ought to or should, to a more internalized reason that reflects a sense of wanting to engage, this is classified as identified regulation. Identified regulation involves the deliberate valuing of a behavioral goal or regulation so that the action is viewed as personally significant (Ryan & Deci, 2000). At this point, the individual identifies with and consents to the regulatory process (Deci, et al., 1991). When an athlete attends a rehabilitation session because he or she sees this as a means to remediate an injury and return to competition, this represents identified regulation and higher levels of internalization and self-determination.

Integrated regulation represents the most autonomous form of extrinsic motivation. Integrated regulation bears some relation to intrinsic motivation in that both represent autonomous levels of self-regulation, but the behavior is still focused on

external outcomes. Intrinsic motivation is distinguished by interest in an activity as an end in itself, whereas integrated regulations are characterized by valuing an activity as an individual works toward a specific personal outcome (Deci, et al., 1991). At this level, an individual engages in a behavior because it becomes a part of the self. Athletes who function at a level of integrated regulation have adopted adherence behaviors into their identities.

Autonomy Support. In order to investigate how the nutrients of self-determination theory can be used to move individuals along the continuum toward higher levels of self-regulation, researchers have investigated perceptions of the health care climate (Williams, Gagne, Ryan, & Deci, 2002; Williams, Grow, Freedman, Ryan, & Deci, 1996; Williams, Rodin, Ryan, & Grolnick, 1998). In these studies, climates have been characterized along a continuum from controlling to autonomy supportive.

An autonomy-supportive environment is one in which the health care provider considers the client's feelings and perspectives, offers a range of choices and options, provides a meaningful rationale for decisions, and encourages the individual to assume ownership and responsibility for the program. In contrast, a controlling climate is one in which the health care provider dictates all decisions, and conveys a message that the individual should engage in the program avoid negative consequences or because of external control. These studies have supported the notion that, when an effort is made to provide autonomy support, individuals are more likely to internalize and integrate regulatory process, and ultimately this will promote adherence.

SDT has proven to be a useful framework to investigate health-related behaviors, but it has not been employed as a framework to study collegiate athletes' behaviors

during injury recovery. The psychological aspect of injury rehabilitation has been recognized as an important component in athletic training education (Roh & Perna, 2000). Despite the factors that have been identified as having an influence on rehabilitation adherence (Fisher, Mullins, et al., 1993), there is a lack of research-based information concerning how ATCs can optimize the psychological aspects of rehabilitation to facilitate injury recovery. The purpose of this study was to investigate the relationships among personal autonomy, levels of self-determination, perceived autonomy support, and perceived competence in a rehabilitation setting.

Based on the reviewed literature, it was hypothesized that:

- a) Perceptions of an autonomy-supportive climate would be positively related to autonomous causality orientations and higher levels of self-determination, but negatively related to control causality orientations.
- b) Autonomous causality orientations would be positively related to higher levels of self-determination, while control causality orientations would be associated with lower levels of self-determination.
- c) Causality orientations, self-determination, and perception of the health-care climate would predict levels of perceived competence.

This study represents an initial or exploratory step to examine the usefulness of SDT as a framework in injury rehabilitation. The aim of this line of research is to identify strategies that can be used to structure rehabilitation programs in ways to promote adherence and optimize athletes' motivation to rehabilitate their injuries.

Method

Participants

Participants were recruited from a pool of 323 college athletes (males = 199, females = 124) from a Division I institution in the southeastern United States. They were between the ages of 18 and 24 and were competing or practicing at the varsity level. Club or recreational sport participants were not recruited. One hundred ninety-three athletes had experienced a significant injury that was severe enough to require a treatment regimen or rehabilitation program that was at least three weeks in length and those athletes comprised the sample for this study. The sample was predominately Caucasian (n = 224; 69.3%) with a mean age of 20.15 (SD=1.3) years. The numbers of athletes by sport and gender are reported in Table 1. The study protocol was approved by the Institutional Review Board (IRB) and informed consent was obtained from each participant at the time of the survey administration.

Table 1 - Demographics

	Injured	Not previously injured	Total
Baseball	25	10	35
Football	52	36	88
Gymnastics	13	1	14
Men's Golf	2	9	11
Men's Tennis	6	5	11
Swim/Dive	23	17	40
Softball	10	10	20
Soccer	9	1	10
Track/Field	37	31	68
Volleyball	6	3	9
Women's Golf	3	6	9
Women's Tennis	7	1	8
Total	193	130	323
Gender			
Male	115	84	199
Female	78	46	124

Instruments

A series of four questionnaires was administered that addressed an individual's motivational orientation in a rehabilitation setting, the participant's level of self-regulation as related to a rehabilitation program, their perceptions of the health-care climate by the provider, and perceived competence. A fifth questionnaire was included to assess their tendencies to provide socially desirable responses.

Rehabilitation Causality Orientation. The General Causality Orientation Scale (GCOS) was developed to measure general motivational orientations of individuals across all aspects of life (Deci & Ryan, 1985). The GCOS specifically assessed three causality orientations: *autonomy*, *control*, and *impersonal*. It presents participants with various life scenarios such as relationships or the work atmosphere. The GCOS was then modified to assess individual motivational orientations in an exercise domain as the Exercise Causality Orientation Scale (ECOS) (Rose, Markland, & Parfitt, 2001). The ECOS followed the same format as the GCOS except that it reflected an exercise climate. The ECOS was modified as the RCOS (Rehabilitation Causality Orientation Scale) for this study to be specific for the rehabilitation climate.

An initial modification was piloted to test the reliability. The initial modification was not found to be reliable, and the *impersonal* scale was eliminated, as that subscale was not applicable to a rehabilitation setting. The *autonomous* and *control* subscales were revised based on the pilot data. The instrument was re-administered and the reliability scores were found to be acceptable. Each participant was asked to respond to seven stems representing short scenarios, for example: "You are encouraged by your athletic trainer to complete additional exercises outside of your rehabilitation session.

You are likely to...” Each stem was then followed by two responses representing either a control orientation (“Need support and/or supervision from significant others [friends/teammates] and monitoring by your athletic trainer to comply with the home program”) or an autonomous orientation (“Assume responsibility for the program and regularly complete exercises without supervision”). Participants were asked to rate each orientation response depending upon his or her own causality orientation. The participants answered each statement on a seven-point scale. A seven indicated that the participant was “very likely” to engage in the behavior statement, a four indicated that the participant was “moderately likely” to engage in the behavior statement, and a one indicated that the participant was “very unlikely” to engage in the behavior statement.

Self-Regulation. The Self-Regulation Questionnaire for Exercise (SRQ-E) assesses why an individual regularly engages in an exercise program (http://www.psych.rochester.edu/SDT/measures/selfreg_exer.html, 2005). Participants respond to the stem statement “I try to exercise on a regular basis” and then give ratings of explanations that depicted the distinct levels of regulations. The levels of regulation are external, introjected, identified, and intrinsic motivation (Ryan & Deci, 2000). Each of the four subscales consists of four items. Sample items are presented in Table 2.

Table 2 - Subscale sample items

Subscale	Sample Item
External (ER)	Because others would be angry at me if I did not.
Introjected (INJ)	Because I would feel bad if I did not.
Identified (ID)	Because I feel like it’s the best way to help myself.
Intrinsic (IM)	Because it is important.

To fit the needs of this study, the SRQ-E was adapted into the Self-Regulation Questionnaire for Rehabilitation (SRQ-R) by modifying the stem statement to read “I would work hard in my injury rehabilitation session on a regular basis.” The response scale was a seven-point Likert-type scale ranging from very true to not at all true. The items for the subscales were not altered. These four subscale scores are often analyzed separately, but may also be combined into a Relative Autonomy Index, but that was not used in this study.

Perception of Health-Care Climate. The Health-Care Climate Questionnaire (HCCQ) is a 15-item measure that assessed a patient’s perceptions related to their health-care providers' autonomy-supportive demeanor through various health-care scenarios such as visits with an individual’s doctor (http://www.psych.rochester.edu/SDT/measures/auton_hlth.html, 2005). The original scale used the term “physician.” For this study, “athletic trainer” was substituted for “physician” to make the items applicable to injury rehabilitation. Because a retrospective or recall design was used, all items were also modified to reflect past tense rather than present tense. The instrument was piloted in its modified form and the reliability was found to be acceptable. Participants’ perceptions were measured through various statements such as: “I feel that my athletic trainer provided me with choices and options.” Higher average scores represented a higher level of perceived autonomous support. The response scale is a seven-point Likert-like scale ranging from strongly agree (7) to strongly disagree (1).

Perceived Competence. The Perceived Competence Scale (PCS) consists of four items that assesses participants’ feelings of competence of engaging in a healthier

behavior, participating in a physical activity regularly, or following through on some commitment (<http://www.psych.rochester.edu/SDT/measures/comp.html>, 2005). This scale was modified for use in this study to be applicable to injury rehabilitation by replacing “diabetes” with “rehabilitation.” “I feel able to meet the challenge of my rehabilitation exercises” is representative of the scale. The response scale is a seven-point Likert-like scale ranging from very true (7) to not at all true (1). The PCS was calculated by averaging each participant's responses on the total of the four items.

Social Desirability. The Social Desirability Scale (SDS) was designed to measure the social desirability response bias of participant (Crowne & Marlowe, 1960). Social desirability is one’s inclination to answer questions in more of a socially acceptable manner rather than a straightforward manner. The participants indicate whether or not 10 statements are true or false. A sample item is “There have been occasions when I took advantage of someone.” SDS scores were calculated by summing the scores of the ten items, after the reverse scored items were recoded. Higher values reflected a stronger tendency to provide socially desirable responses.

Procedures

All varsity coaches were contacted to request their teams’ participation in the study. The general purpose of the study was explained and an overview of the procedures was presented. Of the 14 potential teams, 12 coaches agreed to allow their teams to participate. The two teams that were not included in the study were involved in preparation for post-season competition during data collection and were not able to participate due to travel schedules. The research team administered surveys by team or by position/event to create smaller groups and insure proper completion of the surveys.

Since there were a number of surveys to complete, the surveys were explained page by page so that any questions could be addressed before the participants began the surveys. Each packet of surveys took between 20-30 minutes to complete. A participant information sheet was in the packets to record their injury histories and to learn more about the demographics of the participants. On the information sheet, a participant was required to indicate if he or she had been injured before, the type of injury, the duration of the rehabilitation program. Pilot data indicated that when asked to consider a hypothetical situation, athletes who had not experienced an injury responded differently from those who had actually experienced an injury. Therefore, responses of participants that had not been injured were not analyzed.

Data Analysis

Data were analyzed through several methods. Partial correlations controlling for the tendency to provide socially desirable responses were used to assess the relationships between causality orientations, levels of self-regulation, and perceptions of the health-care climate. A canonical correlation was used to examine the multivariate relationship between levels of self-regulation (external, introjected, identified, and integrated regulation) with causality orientations (autonomous and control). A hierarchical regression analysis was employed to determine if causality orientations, levels of self-regulation, and perception of climate predict perceived competence. The tendency to provide socially desirable responses was entered in the first block as a control variable. Causality orientations, levels of self-regulation, and perception of the health-care climate were entered in the second block as predictors of perceived competence using the stepwise method.

Results

Descriptive Statistics

Means, standard deviations, and reliability coefficients for the variables in the study are reported in Table 3. Prior to any analyses, Cronbach's Alpha levels were computed to assess reliability of the instruments.

Table 3 – Means, Standard deviations, Range, and Cronbach's Alpha

	N	Mean	SD	Range	Alpha
Autonomous Orientation	193	5.50	.82	2.71-7.00	.70
Control Orientation	193	4.04	1.01	1.43-7.00	.65
External Regulation (ER)	193	3.70	1.27	1.00-7.00	.67
Introjected Regulation (INJ)	193	5.05	1.31	1.25-7.00	.75
Identified Regulation (ID)	193	6.32	.77	3.00-7.00	.79
Intrinsic Motivation (IM)	193	5.50	.83	3.25-7.00	.70
Health-care climate	193	5.63	1.03	2.27-7.00	.94
Perceived competence	193	5.62	1.06	2.00-7.00	.80

Nunnally (1978) suggests an acceptable range of Cronbach's alpha scores to be between .70 and .90 for research purposes. Two of the scales were slightly below the acceptable criteria: control causality orientation (.66), and extrinsic regulation (.67), and they should be interpreted cautiously.

Two correlation matrixes are found in Table 4. In Table 4, the simple correlations are reported, while partial correlations controlling for socially desirable responses are presented in Table 5. Berg and Latin (1994) outlined general standards established for correlation coefficients as follows: greater than .76 is high, .51 to .75 is fair, .26 to .50 is moderate, and .25 and below are weak. Comparison of the two tables suggests that controlling for socially desirable responses is not a concern with these instruments, as the correlational patterns are very similar.

Table 4 – Simple Correlations

	Autono- mous	Control	ER	INJ	ID	IM	Health- care climate
Autonomous Orientation							
Control Orientation	-.24**						
External Regulation	-.01	.46**					
Introjected Regulation	.22	.29**	.60**				
Identified Regulation	.50**	.00	.05	.34**			
Intrinsic Motivation	.49**	-.03	.08	.33**	.72**		
Health-care climate	.39**	.13	.06	.19**	.43**	.30**	
Perceived competence	.47**	-.07	.15*	.22**	.31**	.39**	.27**

** p<.01

*p<.05

Table 5 - Partial Correlations (social desirability controlled)

	Autono- mous	Control	ER	INJ	ID	IM	Health- care climate
Autonomous Orientation							
Control Orientation	-.22						
External Regulation	.02	.45					
Introjected Regulation	.27	.27	.58				
Identified Regulation	.50	.01	.06	.36			
Intrinsic Motivation	.50	-.03	.09	.34	.71		
Health-care climate	.31	.15	.09	.23	.43	.30	
Perceived competence	.47	-.06	.17	.25	.31	.39	.26

** p<.01

*p<.05

Relationships Between Health Care Climate, Causality Orientations, and Self-Determination

It was hypothesized that perception of an autonomy supportive environment would be positively related to autonomous causality orientations and higher forms of self-determination, but negatively related to control causality orientations. Examination of the correlations reveals partial support for these hypotheses. Moderate positive correlations were found between the perception of an autonomy supportive environment and autonomy orientations, identified regulation, and intrinsic motivation. A control orientation was unrelated to the perception of the climate. A control orientation was moderately related to external and introjected regulations, suggesting that a control orientation is associated with less self-determined motivation.

Relationships Between Causality Orientations and Self-Determination

It was hypothesized that autonomous causality orientations would be positively related to higher levels of self-determination, while control causality orientations would be associated with lower levels of self-determination. The multivariate relationship among these variables was examined using a canonical correlation analysis, which provides support for this hypothesis.

The first function of the canonical correlation analysis was significant, with an observed canonical correlation of .56 (Wilks' lambda = .54, $F(8,632) = 28.36, p < .001$). The second function of the canonical correlation analysis was also statistically significant, with an observed canonical correlation of .46 (Wilks' lambda = .78, $F(3,317) = 29.10, p < .001$). The second function is the linear combination of the variables sets that yields the next highest correlation coefficient, which is not correlated with the first

pair of canonical variables. It is appropriate to interpret the second function when the proportion of variance accounted for by this function is meaningful (Pedhauzer, 1982).

The standardized canonical coefficients for both functions are presented in Table 6.

Table 6.
Canonical correlation between Causality Orientations and Self-regulation indicators

Variables	Standardized canonical coefficients First Function	Standardized canonical coefficients Second Function
Causality Orientations		
Autonomous	.94	-.36
Control	.50	.88
Self-Regulation		
External Regulation	.23	.93
Introjected Regulation	.28	-.01
Identified Regulation	.49	.00
Intrinsic Motivation	.37	-.46

These coefficients indicate the relative contributions of the variables to the multivariate relationships between the linear combinations of the variable sets. According to Pedhauzer (1982), coefficients greater than .30 are considered to be significant. In the first function, both autonomy and control orientations were significant contributors to the canonical variate for causality orientation, with autonomous orientations being the more powerful influence. Identified regulation and intrinsic motivation are significant contributors to the canonical variate for self-regulation, while external and introjected regulations were not significant. The percent of shared variance between the two sets of variables, as indicated by the squared canonical correlation, was 30.94 percent. This function suggests that individuals with higher autonomous orientations were more likely to have higher levels of identified regulation and intrinsic motivation, which is consistent with theoretical predictions.

In the second function, a control orientation was a positive and powerful contribution to the canonical variate representing causality orientation, while autonomous orientations made a smaller, but significant, negative contribution. External regulation was the most powerful influence on the canonical variate for self-determination in this function, with intrinsic motivation making a smaller negative contribution. The percent of shared variance between the two sets of variables, as indicated by the squared canonical correlation, was 21.59 percent. Interpretation of this function suggests that individuals who were high in control orientations and low in autonomy orientations were likely to report high levels of external regulation, accompanied by low levels of intrinsic motivation, which is again, consistent with theoretical predictions.

Predicting Perceived Competence

The third hypothesis stated that levels of perceived competence would be predicted by causality orientations, self-determination, and perception of the health-care climate. A hierarchical multiple regression was used to control for social desirability in the first block. The stepwise entry method was used in the second block, with causality orientations, levels self-regulation, and perception of the health care climate as potential predictors. The results are reported in Table 7.

Table 7

Step	Variables	R ²	Adjusted R ²	R ² Change	SEE	p
Block 1	Social desirability	.01	.00		1.06	.22
Block 2	Auto	.22	.21	21.3%	.94	.00
	IMREG	.26	.24	3.2%	.92	.00
	EXTREG	.28	.26	2.2%	.91	.00

In the first block, social desirability was not a significant predictor ($F_{1,90}=1.490$), accounting for less than one percent of the variance in the model, suggesting that the

tendency to provide socially desirable answers did not affect the results. In the second block, autonomous causality orientation was the first variable to enter ($F_{2,189}=27.061$) accounting for 21.3 percent of the variance in perceived competence. Intrinsic motivation entered next ($F_{3,188}=21.475$), accounting for 3.2% of the variance, while external regulation was the last variable to enter the model ($F_{4,187}=17.888$), adding 2.2 percent to the model. Control causality orientations, identified and introjected regulation, and perception of the health care climate did not make significant contributions to the model. The full model accounted for 27.7 percent of the variance in perceived competence.

Discussion

The purpose of this study was to investigate the relationships among personal autonomy, levels of self-determination, perceived autonomy support, and perceived competence in an injury rehabilitation setting. A retrospective design was used, where athletes who had experienced a significant injury were asked to respond to questionnaires based on their experiences during a treatment program. The discussion section is organized around the three hypotheses that were tested.

Autonomy Supportive Climate

The hypothesis that an autonomy supportive environment would be positively associated with autonomous causality orientations and higher levels of self-determination was supported, in that autonomous causality orientations and higher forms of self-determination (identified regulation and intrinsic motivation) were moderately positively correlated with perceptions of the health care climate. Athletes who perceived the rehabilitation environment to be autonomy supportive (i.e. their ATC allowed them input

into their rehabilitation programs) were more likely to have autonomous orientations and indicated they were more self-determined in their decisions to exert effort during rehabilitation programs.

The positive association between an autonomous orientation and the perception of an autonomy supportive climate is consistent with the findings of several studies that have used SDT as a framework to study the relationship between the climate and motivational constructs. Williams, et al. (1996) used SDT to investigate the relationship between autonomous orientations and perceptions of the climate in a weight loss program. The relationships between an autonomous orientation and higher levels of self-determination mirrors the findings of Grolnick, Deci, and Ryan (1997), where parents who were more autonomy-supportive had children who were more intrinsically motivated. Perceptions of autonomy support predicted autonomous motivation, which in turn predicted long-term medication adherence (Williams, et al., 1998) and smoking cessation (Williams, Gagne, Ryan, & Deci, 2002).

The hypothesis that control causality orientations would be negatively related to perception of an autonomy supportive environment was not supported. It seems in this study that perception of a more controlling environment did not foster controlling orientations. One explanation for this could be the distribution of the perceived climate scores. The mean of 5.63 (SD=1.01) on a 7- point scale indicates that the athletes tended to perceive the climates as autonomy supportive rather than controlling. It is of interest to note that previous studies examining the relationships between causality orientations and an autonomy supportive environment have either not examined the relationship between a controlling orientation and autonomy support (Williams, et al., 1996) or have

reported a non-significant relationship (Black & Deci, 2000), consistent with these results.

Causality Orientations and Self-Determination

The hypothesis that an autonomous orientation would be associated with higher levels of self-determination while a controlling orientation would be related to lower levels of self-determination was supported. The canonical correlation analysis provided a mechanism to explore how autonomous and controlling orientations might interact to affect self-determined forms of motivation. Previous studies have not employed analyses that took both orientations into account simultaneously, and a unique contribution of this study is the use of a canonical correlation to provide this insight.

Individuals with highly autonomous orientations accompanied by moderate controlling orientations functioned at higher levels of self-determination, as their reasons reported for adhering to a rehabilitation program were at the identified regulation and intrinsic motivation levels. That is, individuals who were autonomous, or indicated they would not need constant supervision to adhere to a rehabilitation program, but also indicated that they would, to some degree, adhere to a program when external controls were present, were more self-determined in their motivation. On the other hand, individuals who had low autonomy orientations, accompanied by high controlling orientations, had low levels of self-determination, characterized by high levels of external regulation and low levels of intrinsic motivation.

These findings are consistent with other studies that have examined the relationships between autonomous causality orientations and self-determined motivation.

Autonomous causality orientations were positively related to the relative autonomy index (Black & Deci, 2000) and autonomous reasons for learning chemistry (Williams, et al., 1996).

In both of these studies, control orientations were not related to measures of self-determined motivation, and largely unrelated to other motivational constructs. By examining the interactive effect of autonomous and control orientations in the same analysis, this study provides a unique insight. The findings suggest that the presence of a controlling orientation, that is, the tendency to comply with directives from health care providers, is not necessarily detrimental to an individual's rehabilitation program. The results of this study suggest that it may, in fact, be the absence of autonomy that is problematic.

An analogy is evident here between these findings and the investigation of task and ego orientations using achievement goal theory as a framework. A degree of ambiguity exists with regard to findings relevant to ego orientations (Duda, 2001). There is a consistent body of evidence suggesting that a task orientation, characterized by a focus on mastering a task and demonstrating personal improvement, is positively related with a number of adaptive motivational constructs. The impact of an ego orientation, defined by a focus on outperforming others, has not been as clear. Researchers have begun to examine this by using analyses that take into account the interactive effect of goal orientations, and findings suggest that it is the absence of task orientation, rather than the presence of ego orientation, that places individuals at risk for maladaptive motivational patterns (Solmon, 2006).

Predicting Perceived Competence

The powerful role that perceived competence plays in motivation is clear, so identifying factors that predict perceived competence is an important issue. Consistent with previous studies, an autonomous causality orientation was the most influential predictor of perceived competence (Black & Deci, 2000). Autonomous reasons for behavior were also positively associated with measures of perceived competence in a study of smoking cessation (Williams, et al., 2002). An autonomous orientation was a stronger predictor of motivational constructs than an autonomy supportive climate in a study of the relationships between perceived autonomy support, autonomous causality orientations, and prosocial behavior (Gagne, 2003).

Intrinsic motivation was also a significant predictor of perceived competence, which is consistent with theoretical predictions, and with relationships reported by Williams, et al., (2002). External regulation as a significant predictor of perceived competence has not been reported in previous studies, and is not consistent with theoretical predictions. The simple correlation between external regulation and perceived competence, although statistically significant, was small in magnitude. Though it accounted for a significant portion of the variance in the model, the contribution was relatively small. The regression analysis indicates that, of the variables assessed in this study, an autonomous causality orientation was clearly the most influential predictor of perceived competence.

Summary and Conclusions

SDT has been useful in studying the levels of adherence of such health-care domains as weight loss and addicting behaviors (Ryan, 1995; Williams, et al., 1999).

Results of this study support the notion that SDT is a viable framework to guide the investigation of the effectiveness of rehabilitation programs for athletic injuries. Using these results,, the ATC can formulate strategies to facilitate athletes' progression toward more self-determined forms of motivation. When intrinsically motivated behaviors are fostered, an athlete is more likely to display greater adherence to the rehabilitation exercises because the program is personally important to them.

Although more research is needed, this study is an important first step in establishing the applicability of this framework to the study of injury rehabilitation. The results of this study provide clear evidence that autonomy is a key element in motivation in rehabilitation from injury. Providing an autonomy supportive environment and fostering autonomous causality orientations seem to be key elements in increasing levels of self-determination in an injury rehabilitation setting. The results of this study also suggest that a control causality orientation may not be detrimental to levels of self-determination. When a control orientation is accompanied by a high level of autonomy, it appears that more internalized self-regulation is fostered. In the absence of an autonomy orientation, however, it seems that a control orientation is associated with low levels of self-determination. The interaction of control and autonomy orientations in a rehabilitation setting is an area that needs further study.

CHAPTER 3: PERCEPTIONS OF REHABILITATION FROM ATHLETES' AND ATHLETIC TRAINERS' VIEWPOINTS

When athletes do not adhere to their rehabilitation programs, there is an increased likelihood that complications such as increased scar tissue and risk of re-injury will occur (Heil, 1993). Despite the knowledge that adherence to a rehabilitation program will speed the return to competition and facilitate recovery of full function, sports medicine providers state that non-compliance to rehabilitation is a considerable problem (Fisher, Domm, & Wuest, 1988).

Given the importance of rehabilitation adherence, it is important to investigate psychosocial variables that need to be addressed during rehabilitation (Larsen, Starkey, & Zaichkowsky, 1996). Athletic injury is linked to major psychological distress, which has the potential to impair physical recovery and rehabilitation adherence. To better direct psychological interventions in injury rehabilitation, researchers have focused on identifying the links between post-injury psychological variables and rehabilitation adherence and compliance (Lambert, Lampton, & Yost, 1993; Daly, Brewer, et al., 1995). A number of psychological variables have been identified by therapists and injured athletes as important to rehabilitation adherence (Fisher, Scriber, et al., 1993; Fisher & Hoisington, 1993). Social support, pain tolerance, and self-motivation have been positively linked with rehabilitation adherence (Brewer, 1998). Other psychosocial variables correlated with rehabilitation adherence involve coping strategies, personality traits, motivation, and perception of rehabilitation (McDonald & Hardy, 1990; Duda, Smart, & Tappe, 1989).

Although some researchers have investigated factors that influence motivation in athletic training, much of the work has not been driven by a sound theoretical framework.

Self-Determination Theory (SDT; Deci & Ryan, 1985) has been used as a framework to investigate adherence in a range of health domains (Ryan, 1995; Williams, Cox, Kouides, & Deci, 1999; Williams, Freedman, & Deci, 1998; Williams, Rodin, Ryan, Grolnick, & Deci, 1998). Motivation is conceptualized along a continuum from a lack of motivation to intrinsic motivation. There are four levels of extrinsic motivation between those two extremes. The level of self-regulation or internalization increases as individuals move toward more self-determined forms of motivation. Competence, autonomy, and relatedness are nutrients that facilitate movement toward more self-determined forms of motivation.

Investigations using SDT have supported the idea that an autonomy-supportive environment, as opposed to a controlling environment, is an important influence to consider in interventions at improving adherence to medical regimens (Williams, Rodin, et al., 1998). Deci, et al., (1994) suggested:

When relating to patients about issues of chronic care and prevention, physicians encourage and support initiative, acknowledge feelings, minimize pressure to behave, offer choice about treatment regimens, and provide meaningful rationales for suggested behaviors, they may be able to facilitate more autonomous motivation in patients.

Two key elements in promoting self-determined motivation are autonomy-support and interpersonal involvement, or relatedness. Relatedness involves developing secure and satisfying connections with others in one's social environment (Deci, Vallerand, Pelletier, & Ryan, 1991).

According to SDT, social contexts that support relatedness should promote intentional action. Furthermore, support for autonomy in particular should facilitate motivated actions and foster higher levels of self-determination. Motivation, performance, and development will be maximized within social contexts that provide people the opportunity to satisfy their basic psychological needs for autonomy, competence, and relatedness. It has been suggested that autonomy develops most effectively in situations where individuals feel a sense of relatedness and closeness to significant others, especially those in some position of authority (Ryan, 1991).

A majority of studies that have used SDT as a framework have relied on survey data and self-report instruments. Although results are largely consistent with theoretical predictions, surveys give little insight into the meanings and perceptions that athletes and athletic trainers have about the rehabilitation process. Additionally, the nutriment of relatedness has been virtually ignored in this line of research. One issue may be that valid and reliable instrumentation to measure facets of relatedness has not been established. Williams, Gagne, Ryan and Deci (2002) point out that interviewing can be a useful technique in understanding how an autonomy supportive environment can be structured to facilitate autonomous motivation, and ultimately adherence to treatment programs. Qualitative approaches allow researchers to gain insight into participants' perceptions of the rehabilitation process.

The purpose of this study was to gain insight into participants' perceptions of the injury rehabilitation climate and their own levels of motivation, with a focus on the nutriments of autonomy, relatedness, and competence. This study was qualitative in nature and utilized both athlete participants and athletic trainer participants. Qualitative

research provided an opportunity to gain a greater understanding into the complex relationships of situations, with the goal of providing greater comprehension (Stake, 1995).

Method

Participants

Participants were twelve athletes (five males and seven females), from a Division I institution in the southeastern United States, who were injured during the course of a semester. To be included in the study, the injury incurred had to be severe enough to require a rehabilitation program that lasted at least three weeks. Of the 17 athletes who were potential participants, 12 agreed to participate in this study. Four of the twelve athletes had previously suffered multiple major surgeries that involved rehabilitation programs between two and four months in length. Of the remaining eight athletes, five had been injured to the point that they were held out of competition or practice for some length of time. The remaining three athletes had “minor” injuries that required them to participate in a rehabilitation program, but did not cause them to miss any competitive action. Six certified athletic trainers who treated the athletes were also participants in the study. Three were graduate assistants (two males, one female) and three were professional staff (one female, two males). Their experience as certified athletic trainers ranged from two to ten years, and one ATC was also a physical therapist. Descriptive information about the participant pool is presented in Table 8.

Table 8.

Pseudonym	Sport	Injury	Eligibility year	Gender	Age	Playing status	Supervising ATC
Amy	Gymnastics	Foot fracture	2	F	19	N/A	Mark

Table 8 (cont.)

Alice	Gymnastics	ACL surgery	1	F	18	N/A	Mark
Jeremy	Baseball	Wrist tendonitis	1	M	19	Starter	Bob
Chad	Baseball	Elbow surgery	3	M	22	Starter	Bob
Mary	Track	Minor sprained ankle	3	F	21	Reserve	Kevin
Kris	Softball	Elbow surgery	3	F	21	Starter	Rebecca
Tammy	Softball	Foot fracture	2	F	20	N/A	Rebecca
Lisa	Soccer	ACL surgery	1	F	18	N/A	Kim
Sara	Soccer	Foot fracture	3	F	20	Starter	Kim
Terry	Football	ACL surgery	2	M	21	Starter	Jim
James	Football	Shoulder surgery	4	M	22	Starter	Jim
Ron	Football	Minor sprained shoulder	4	M	22	Reserve	Peg

Interview Protocols

A standardized open-ended guide was used to structure the interviews. The protocol for the athletes focused on three areas: (a) their own effort, motivation and adherence; (b) their perceptions of the health care climate and their relationships with the athletic trainers; and (c) barriers and facilitators in their rehabilitation program. The interview questions for the ATCs centered around three issues: (a) the level of effort, motivation, and adherence of the athlete; (b) the goals the athletic trainer had for the athlete; and c) the type of environment the ATC tried to create for the athlete and the strategies that the ATC used to promote adherence.

Procedures

The athletes and their supervising athletic trainers were interviewed for this study

individually. Both groups were interviewed to obtain information regarding the rehabilitation climate and the behaviors of the participants in the rehabilitation program. Interviews with the injured athletes were conducted by the principal researcher. The interviews took place in a private, quiet area (i.e. a private office or conference room) designated as suitable by the researcher to allow for uninterrupted, honest answers. It was explained to each participant that the answers they gave during the interview would only be reviewed by the investigator and the transcriber. They were aware that their athletic trainers, coaches, and teammates would not have access to their responses. The researcher used a general questioning guide, but also had the independence to delve more deeply into the answers the participant gave to better understand athlete behaviors during injury rehabilitation through rich descriptions of their experiences. The interviews were between 30 and 60 minutes in length and were tape recorded and transcribed for analysis.

The principal researcher had a close professional relationship with several of the athletic trainers who were informants in this study. For that reason, interviews with the athletic trainers were conducted by a member of the research team who had an extensive background in qualitative research and was knowledgeable about self-determination theory. The researcher who conducted the athletic trainer interviews also had a general questioning guide, but, also had the liberty to probe more deeply into answers that each athletic trainer gave about the rehabilitation experience. To ensure accuracy of the participants' interviews, member checks were performed once the interviews were transcribed and before the analysis took place. Participants were encouraged to examine their interview transcriptions to check for accuracy and were given the opportunity to use alternative language (Stake, 1995).

Data Analysis

After each interview was transcribed, the principal researcher read each transcription at least three times to gain a general perception of the interviews. The constant comparative method was then used to examine the data (Lincoln & Guba, 1985). The data were unitized and categorized so that themes could be identified. Unitizing comprised fracturing the data into smaller, discrete sections, which rendered units of information. Categorizing the data involved going through units of information that had emerged and applying a categorical name and definition to each. Decisive themes emerged through the categorizing and unitizing of the interview data (Lincoln & Guba, 1985).

Results and Discussion

In order to provide some validation for the athlete's perceptions of their own adherence and effort to the rehabilitation program, their descriptions are presented for comparison with their ATC's evaluation (Table 9).

Table 9

Athlete	Athlete self-report	ATC report
Amy	As time went on, my effort is stronger.	At times good, at times poor. Depends on what else is on her mind.
Alice	I feel I work hard most of the time.	She is not my best athlete.
Jeremy	Very intense.	It depends on how good of a day he's having.
Chad	If I wasn't intense, it would take longer to come back.	He is usually right on.
Mary	I guess I was pretty intense.	I think she did put forth a good amount of effort.
Kris	I think I really work hard.	She is very intense.
Tammy	I try to take things as seriously as I can.	She was very intense.

Table 9 (cont.)

Lisa	I'll be honest, it changes on days.	She gives a lot of effort; I wouldn't say 100% every day.
Sara	I try to maintain a pretty high level.	She's probably the most intense that I know.
Terry	Right now the intensity levels are kind of low.	You can't really tell because he hasn't gotten there yet.
James	It's pretty hard while I'm doing it.	He tries real hard.
Ron	I'd say I have a good intensity.	It's pretty high.

Three major themes emerged in the analysis of the interview data. The first theme focused on the powerful role that significant others play in the injury rehabilitation process. The importance of maintaining an open dialogue was the emphasis of the second theme. Four subthemes were encompassed in the second theme: (a) offering choices and options in exercise; (b) understanding pain tolerance; (c) scheduling considerations; and (d) education. The third theme representing the perceptions of the participants is the utility of setting and achieving obtainable goals. These themes are supported by evidence gathered during the interviews.

Significant Others

Numerous times during the interviews, all athletes made reference to the importance of having significant others involved during the injury rehabilitation process. Teammates, coaches, athletic trainers, or family members were identified as important influences on effort and performance in rehabilitation. Participants felt that others could “empathize or sympathize” (Sara) “keep me going” (Jeremy), and be an “encouragement and support system” (James) during their rehabilitation programs. Other athletes reported that they felt others increased their motivation when they were around and encouraged

them to work harder with their exercises. Some athletes went into greater detail about the support they received. Terry, who had multiple major knee surgeries, voiced his thoughts about having others near him in his rehabilitation program:

There is a difference between me doing the exercises myself compared to doing them here. Just having someone right beside you there, looking over what you do and making sure you do everything correctly compared to do them at home, sitting on the couch by myself. I mean the machine, I put my leg in the machine and it does it for me. But leg lifts and stuff, I mean, you're not as motivated to do them by yourself then if you were in here.

Jeremy, a freshman baseball player, indicated that “the motivational tool of just them being there kind of motivates me telling me what to do and encourage me to work harder as opposed to me just sitting there by myself.” These findings are like previous studies where the participants felt that significant others could be an important coping resource for recovering athletes (Udry, et al., 1997; Bianco, 2001). The athletes in the Bianco (2001) study indicated that their support system reduced distress and kept them motivated throughout the recovery process.

Although a large portion of the participants felt that significant others positively influenced their rehabilitation, there were some participants who felt that having others present could actually hamper their recovery process. Lisa, a soccer player who had been through an injury rehabilitation program previously, indicated she thought she might “be better off alone” as she could go through the exercises at her own pace and focus. Amy, a gymnast who was experiencing her first significant injury, pointed out “the influences of other sports and other athletes being around can cause you to lose focus.” Athletic

trainers also felt that having significant others around during a rehabilitation session, namely teammates, could be distracting. Mark, in his second year as an athletic trainer, was treating Amy. He commented that if Amy's teammates were around her, "she'll forget what she's doing and start talking."

When discussing the influence of significant others on Amy's rehabilitation, Mark continued to point out that Amy was subject to some negative influences, and this case demonstrates how understanding the social context is important in facilitating rehabilitation. Mark indicated that Amy's mother had also been somewhat of a negative influence in Amy's effort in the rehabilitation process thus far:

Yes, exactly, because mom's going to baby her. Mom's going to give her whatever she needs and take her shopping and buy her something to feel better. So I think part of the show was because her mom was still in town.

This example could suggest that athletes may not give their full effort or full focus to get better in the rehabilitation program because they may be distracted from the task at hand. Mark described his perception of his role when an athlete gets distracted:

Give more effort. Forget about everything else outside. When you come in here let's focus on your foot. Let's focus on it getting better as opposed to telling me all the drama that's going on outside. Athletic trainers kind of serve a lot of roles and I've learned that more this year than any year working with gymnasts. You deal with a lot of psychological stuff, you deal with emotions, you deal with people that cry. It's a lot different so you kind of change who you are sometimes when dealing with certain athletes. You change your personality just to act like you care, act interested, whether your really that interested doesn't really matter,

just give the perception that you are so they feel better. So they feel they can come to you. They can tell you what's wrong. Why they're not giving full effort today.

Another supportive social influence on athlete rehabilitation was the sense of relatedness between that athlete and their athletic trainer. Keeping in mind that relatedness is the interpersonal attachment between individuals (Deci, et al., 1991), athletic trainers who had been athletes previously or had gone through their own injury rehabilitation program were more likely to have athletes that had a sense of relatedness. Kevin, who had been a certified athletic trainer for more than ten years and was also an athlete previously, had this to say about relating to his athletes:

I've played sports before, I injured my knee before, and I had ACL reconstruction. So I had an idea of what someone goes through when they have an injury and they're going through the rehab. So I think my experience and my personal knowledge allows me to have an interaction with the athletes and comfort them a little bit and give them a little guidance as to what to expect. The rehab is always challenging because everyone is different. You have got to tap into their personalities, see what motivates them, how they can be motivated.

Everyone heals differently so sometimes you have to adjust your rehab protocols.

This is consistent with the Ryan and Deci's (2000) conclusion that a confidence in relationships seemed important for participants to display motivated behaviors. Bob, an athletic trainer and physical therapist with almost 10 years of experience, indicated he "injured my knee before...so I had an idea of what someone goes through when they have an injury." Terry stated that "someone that's had a leg injury knows it's going to

hurt sometimes to get it back where it was.” Mary, a track athlete, felt someone “that went through that already and has experience with that already with that injury. I think it would help me talking about it.” This is important because this rapport should make it easier for the athlete and athletic trainer to talk about the injury program. When they talk about the program, the athlete can begin to see the value in remaining consistent in the program and believe that if they adhere to the program, they will fully recover.

Athletic trainers recognized the importance of establishing a close rapport between themselves and their athletes by sharing similar experiences. As Kevin explained:

I think the only way you can appreciate what somebody who had an ACL injury goes through is for you to actually go through that and have that.. Since I had been through it myself, I can provide to the athlete some knowledge as far as what to expect

Athletes also indicated that a strong bond between themselves and their athletic trainers was important in their program. If an athletic trainer was more “like a brother,” “like a friend and also a trainer,” and they “build a relationship, kind of like a friendship to show them you are on the same level” this was viewed as helpful to their injury exercise performance. Support from significant others, particularly autonomy support, has been tied to higher levels of self-determination which has in turn been linked with increased adherence levels (Williams, et al., 1998).

Open Dialogue

Having an open dialogue between the athlete and athletic trainer facilitated participants’ success in their rehabilitation programs was the second theme that emerged

from the interviews. Within this theme, there were four distinct subthemes that were identified.

Choices and Options. The first subtheme revolved around providing choices and options in the rehabilitation program. Athletic trainers felt that athlete input was important and was an integral part of the rehabilitation program. Peg, one of the football athletic trainers who worked daily with Ron, a senior athlete with a shoulder sprain, felt that she could “ask what [the athletes] like and what [the athletes] don’t like” or “let’s try these and see which ones you like” in order to give the athlete the opportunity to provide feedback about the program. This encourages athletes to think independently and begin to take a personal interest and assume a level of ownership in their programs. As Kim remarked concerning her experiences with soccer players she had treated:

If it’s an activity they like to do and they suggested it, they’ll give full effort. And also, if they don’t like a particular exercise and we can do something that achieves the same goals or works the same muscle or area then I ask them, they can tell me that and we can change that.

One of Kim’s athletes, Sara, indicated that Kim gave her choices for her program, “She tends to ask about what I like and what I don’t like. It keeps me from being bored. It lets me feel like I’m being involved in getting myself better too”. These results are consistent with findings about medication adherence behaviors in a study by Williams, et al., 1998. They suggested that interventions should be focused on supporting patient autonomy to enhance autonomous regulation, which increased adherence to their medication regimens. Promoting choice of rehabilitation exercises would enhance rehabilitation success.

Understanding Pain Tolerance. Having an understanding of an athlete's pain tolerance was the second subtheme that emerged as a component of an open dialogue. James felt that "everyone's perception of pain is different" and "if you are in pain, it's not enjoyable." The intensity of pain or the athletes' pain tolerance can have a significant affect on the rehabilitation experience. One athletic trainer, Jim, commented that he could tell in his athlete "the fact that his pain or soreness is still up affects his adherence to his rehab." When Peg was asked how pain tolerance affected her athlete, she replied that she "took into consideration just because we have got to focus on how their going to feel this day." Part of an athletic trainer's job is to "strengthen the muscles and limit the pain" as Jim put it. Getting a clear picture of this aspect can be a crucial element in effective rehabilitation. Tammy, a softball player with a foot fracture, felt that her athletic trainer Rebecca, really took into account her pain level on a daily basis, "I'm sore that day, she'll [Rebecca] base the training around each time." These findings are similar to those of Taylor and Taylor (1998) who indicated that communicating about pain is a tool that is integral to the rehabilitation process.

Facilitating Scheduling. Consideration of the incredibly busy schedules of college athletes emerged as the third subtheme in maintaining an open dialogue. Time is of the essence with injury rehabilitation of collegiate athletes as an athlete's class schedule and other athletic-related commitments can be the biggest obstacles to rehabilitation sessions. Mary, a track athlete, talked about her rehabilitation when it intruded on her daily schedule:

Because I'm very busy and I couldn't give all my time to it. I work, I have an internship, and I have classes before and after practice. So it was hard for me to

make time to come in. I really couldn't come in for as long as I wanted. This is consistent with Fisher and Hoisington's (1993) recommendation that program schedules be tailored to the athletes' schedules and not vice versa. Mary's athletic trainer, Kevin, felt that she was "inconsistent due to class schedule" when he was asked about the biggest obstacle in collegiate athletic training. The soccer athletic trainer Kim, was also a busy person when it came to her athletes, Lisa and Sara. It was difficult for them to compromise on a schedule as "scheduling around her classes and things I need to do" seemed to be a barrier to rehabilitation sessions.

In addition to scheduling times around an athlete, some athletes expressed a desire for more individualized programming. For example, Terry stated it would be nice to set up a time when "you could have one-on-one training with nobody else interrupting and get more work done faster without that interruption." Mary, a track athlete who plans to go to physicians' assistant school after college, also made these comments about time and the importance of her rehabilitation program in her career:

It's important because I like to exercise and I like to be on an exercise program. I like being around all the friends I've made there, but I mean it's not so important that I would miss something else for it just because I had class or a job interview. I would put all of that before track just because I'm not going anywhere in track after. My other life areas, my future is important than my track career in college.

These results demonstrate the need for athletic trainers to take the time to get to know their athletes and their daily schedules to optimize the effectiveness of a rehabilitation session.

Education and Communication. The fourth subtheme that emerged as an important element in an open dialogue was the need for athletes to be educated about their injuries and the injury rehabilitation process. The importance of communication in the success of a rehabilitation program has been identified in previous literature (Fisher, et al., 1993). This communication is also a key component in the education of athletes about their programs. Having athletic trainers “explain the problem, explain the prognosis, and explain the steps in the rehab and allowing them to have some freedom” was a central point to Bob’s feelings about having Jeremy perceive an autonomy-supportive environment. Educating athletes is a critical element in creating an autonomy-supportive environment. Bob commented:

You educate them because it’s going to make them engage with the rehab so it may motivate them to do their rehab with a lot of effort. If you don’t have any motivation, you’re not going to want to be here.

If the athlete is educated about the exercises and the process to get better, they can then make educated choices about their own program. James, a football player with recurring major injuries, indicated that “if you didn’t have a choice then it would be harder to figure out what’s going on and why are we doing this.” Kim talked about communicating with Sara who had major foot surgery:

I think the day-to-day communication builds trust as far as I tell her what I expect from her and she will give me feedback on how she feels about that. If you give them guidelines about where they need to be or where she needs to be, I would set guidelines for that week or for what I expect from her that day. Then she knows the goal that were working towards and that builds trust because it is not just like

a random rehab or a random thing. We also day-to-day communicate on a personal level as we're doing treatment. How are you today, how are classes going, what's going on with your social life. Within the confines, I don't ask too many personal questions. But you know I know who she's dating or what she's doing and that builds kind of a friendship relationship.

Obtainable Goals

The third theme centered on the importance of identifying obtainable goals that can foster a sense of competence and self-motivation in injury rehabilitation programs. Several athletes made references to the importance of setting goals and gaining confidence in their abilities to rehabilitate their injuries and return to full speed. For example, James, a senior-level football player, specified that “depending what your goals are, that's definitely going to determine how quickly you'll be back doing your sport”. Sara, a soccer player who had battled stress fractures in her foot since high school, stated that “if I didn't think I'd be out of the field again, I would have stopped a long time ago. You want to be successful, you'll do whatever it takes and I think rehab is a part of that”. When asked about progress toward goals, Lee, who was recovering from his fourth surgery, talked about how the athlete's perception of the rehabilitation program: “I guess to make you feel better about yourself. I mean knowing that you're making positive steps forward and that you're reaching the goal that you set for yourself.” Jeremy, who was in his first year of NCAA eligibility and was recovering from his first-ever injury that held him out of competition, discussed his progress toward goals and how it can make an athlete feel about their rehabilitation program:

Yeah, because I feel without a challenge you wouldn't have a purpose or you wouldn't have interests of getting better in your rehab sessions. I think a challenge would motivate you more to do more to get more out of it.

Athletic trainers also indicated that goals are an integral part of the rehabilitation process.

Kim, the athletic trainer for Lisa, a soccer player recovering from her third major knee surgery, had this to say about setting goals:

So that's kind of a decision making and I also ask them what their goals are and what do you expect, when do you want to return to playing? Is that, you know, what's the word, in reality is that a real goal for you to set for yourself? Those are the kind of decision making things, because when they set goals for themselves, they are making things decisions where they want to be at a certain point and when.

The importance of having goals during prolonged recovery has been identified previously as an important element in facilitating rehabilitation adherence (Fisher & Hoisington, 1993), and the results from this study support that notion. Previous research has suggested that coaches can be helpful in the goal-setting process of injury rehabilitation (Bianco, 2001).

Summary and Conclusions

The purpose of this study was to employ a qualitative approach to gain insight into the perceptions of injured athletes and their athletic trainers concerning motivation for adherence in an injury rehabilitation program. A majority of the studies that have used SDT as a framework to investigate adherence in health-related domains have employed quantitative techniques, primarily surveys, to investigate how psychosocial

variables influence behaviors such as adherence to treatment programs. Although studies that rely on survey data and other self-report instruments from patients or clients in treatment programs have provide some valuable information, qualitative approaches can make a contribution to the knowledge base by providing a deeper understanding that is not possible to discern from surveys. Interviewing both athletes and their trainers is a methodology that has the potential to increase our understanding of how motivational processes evolve in rehabilitation programs by investigating the meanings that participants attach to their experiences. Qualitative approaches give a voice to the participants to explain the elements of the rehabilitation process that influence decisions and behaviors as athletes strive to recover from injuries.

Three major themes emerged related to injury rehabilitation program adherence: the powerful role that significant others play in the injury rehabilitation process; the importance of maintaining an open dialogue; and that setting and achieving obtainable goals provides an increased sense of competence and self-determination in injury rehabilitation. These three themes can be directly linked back to the three nutriment that are key to self-determination: autonomy, competence, and relatedness (Deci & Ryan, 1985).

The link between the relatedness nutriment and the critical role that significant others play in the rehabilitation process is clear. As compared to the other nutriment of SDT, relatedness has not been studied extensively as competence and autonomy. One reason for this is the availability of valid and reliable instruments to measure relatedness. Analysis of the interviews provided clear evidence that relatedness is an important component in fostering more self-determined forms of motivation. There were

descriptions of both positive and negative influences that document the role that significant others can play in the rehabilitation process. Teammates, coaches, family member, and athletic trainers all emerged as significant others who are important in an injury rehabilitation program. Social support has consistently emerged as an influential factor in predicting success in rehabilitation programs, and the findings in this study are consistent with that premise.

Given that the informants for the study were athletes and their trainers, the role of the trainer as a significant other was a focal point of the analysis. Relatedness is characterized in SDT as a bi-directional concept, in that it consists not only of being cared for, but also of caring and empathizing with others. The influence of the athletic trainer's injury history demonstrates how this bi-directional conceptualization might evolve. When the trainers could give personal testimony concerning the efficacy of the treatment regimen (i.e., I have been through this and it works) they believed that they had more success convincing their athletes to adhere and exert maximal effort in their program. The sense of relatedness or attachment seemed to be strong when athletes find out they have something in common with their ATC. This is not to say that an athlete cannot have a sense of relatedness with their athletic trainer if the trainer had not been injured before, but the bond may be more secure if there is a strong common thread between athlete and athletic trainer like an injury.

Autonomy is the critical nutriment that underlies the second theme of maintaining an open dialogue. A thread through the four subthemes that comprised this major theme was communicating effectively to foster a sense of autonomy by providing choices and options, understanding pain tolerance, facilitating scheduling, and including educational

components in the program. By focusing on these elements of communication, athletic trainers should be able to foster a sense of autonomy that will translate to higher levels of self-determination. Communicating about interpersonal feelings, choices that need to be made for the program, and scheduling of rehabilitation-related events are important elements in efforts to foster athletes' feelings of autonomy in their programs. Open communication gives athletes the chance to have input in the decision making process relevant to their programs, and the increase in autonomy associated with taking ownership and responsibility is associated with higher levels of self-regulation. An athletic trainer may have certain ideas about what they want their athletes to accomplish during a session, but there may be multiple ways to work toward that objective. By having open lines of communication, the athletic trainer can take athletes' feelings or thoughts into consideration when designing the daily program. This enables athletes to feel they have a say in their program design instead of just coming in everyday and doing what their ATC tells them to, which can lead to a controlling environment, as opposed to an autonomy-supportive one. A control orientation has been linked to externally-regulated levels of motivation and maladaptive behaviors in the past (Deci, et al., 1991).

If athletes are discouraged from openly communicating with their ATCs when times are tough, they may choose to discontinue their courses of action and be unable to negotiate barriers they encounter in their rehabilitation programs. In college athletics, that obstacle may be a class scheduling conflict, a social/relationship disturbance, or a pain impediment. But if athletes feel that they cannot talk to their ATC about how to work through these situations, they may choose to forgo their rehabilitation altogether to handle their other issues. Athletic trainers should stress feelings of autonomy with their

athletes so athletes will begin to value their rehabilitation program and continue until it is completed.

There was clear evidence of the importance of competence embedded in the third theme. It was clear from both the athletes' responses, as well as the perceptions of the athletic trainers, that setting attainable goals fostered a sense of competence and self-motivation in injury rehabilitation programs. Setting goals also fostered a sense of autonomy, in that athletes were encouraged to have input into making decisions about the pace of their program and judging their progress. When athletes are involved in making decisions, they may be more likely to remain motivated throughout their programs (Thompson & Wankel, 1980). By setting their own goals, athletes are involved in making a judgment about what is realistic to achieve. They may adjust the goals during the program as they feel is appropriate, based on their progress toward the goals. When an athlete achieves a goal, his or her feeling of competence or efficacy should increase because as they achieved something they set out to do. It could be as simple as walking down stairs without holding a handrail following ACL surgery, or as challenging as returning to full intercollegiate competition after a shoulder sprain, but achieving goals can foster a sense of competence. Once athletes have achieved a goal, they may have a feeling that they can adapt and overcome other obstacles that come their way. In order for an athlete to remain motivated, however, this feeling of competence must be gained through an athlete's feeling of being autonomous in the process (Markland, 1999). When athletes set their own goals for the program, autonomy should be fostered. When they achieve their goals, then competence should be increased. Ultimately, when they feel

competent in achieving that goal, they are more likely to remain motivated to achieve future goals.

The themes that emerged relevant to the findings in this study support the notion that SDT is a framework that can be used to investigate adherence to injury rehabilitation programs. The themes mesh with the nutrients that are identified as the psychological factors that facilitate movement along the continuum of motivation from a lack of motivation to higher levels of self-regulation and higher levels of self-determination that are associated with adherence to a treatment program. Optimizing the role of significant others, maintaining an open dialogue, and setting achievable goals are viable strategies that can be used in rehabilitation programs to address the nutrients of SDT and to structure an autonomy-supportive environment that should foster motivation.

CHAPTER 4: SUMMARY

The purpose of this dissertation was to investigate factors that affect college athletes' adherence to injury rehabilitation programs. A two-part study, quantitative and qualitative approaches were used to gain insight into athletes' motivation and decisions that they make regarding their engagement in injury rehabilitation. Taken together, the results of these studies provide valuable information that can be used by researchers and practitioners to identify strategies that should enable athletic trainers to structure autonomy-supportive environments that will foster higher levels of self-regulation, motivation, and self-determination that ultimately will lead to improved adherence in treatment programs.

The focus of the quantitative study was to investigate the relationships between personal autonomy, levels of self-determination, perceived autonomy support, and perceived competence in injury rehabilitation. As predicted, autonomous orientations were associated with higher levels of self-determination, which were in turn positively associated with the perception of an autonomy supportive health care climate. Perhaps the major contribution of the quantitative study was the insight relevant to the way that autonomous and control orientations may interact to affect levels of motivation. The use of a canonical correlation to investigate the interactive effect of the two orientations, as opposed to the univariate approaches that have been used in previous investigations, suggested that it is the absence of autonomy, rather than the presence of a control orientation, that may be problematic in fostering self-regulation and higher levels of self-determination. This insight helps to explain the ambiguous results that have been reported in other studies that have examined relationships between control orientations,

self-determination, and adherence. Furthermore, the results support the idea that a balance of a control orientation (i.e., complying with mandates and directions in a treatment program) combined with an autonomy orientation (i.e., assuming ownership and responsibility, and adhering to a program out of choice) may be the optimal profile to promote self-determined motivation. The powerful influence of an autonomy orientation was also evident in the prediction of perceptions of competence. These findings are in line with Gagne (2003) where autonomous orientation was a strong predictor of engagement than was the perception of an autonomy-supportive environment.

The analysis of the qualitative data provided in depth insight into how autonomy supportive environments can foster the autonomous orientations that emerged as such a powerful influence in the quantitative study. For athletes to be successful in their rehabilitation programs, they need to be actively participating in the program and remain adherent to optimize recovery. The themes that emerged also provided a basis to recommend strategies that can be used to create and foster an autonomy-supportive environment. Understanding how to structure an environment to promote adherence is a critical aspect of athletic training. The three nutrients of self-determination theory, autonomy, competence, and relatedness, were clearly reflected in the themes that emerged in the analysis of the interview data. Embedded in those themes are strategies that athletic trainers can use to provide autonomy support. The importance of establishing a good rapport with the athlete is the first step toward doing that. By doing this, athletic trainers address the nutrient of relatedness. Individuals need a feeling of relatedness or social connection to be fulfilled in order for them to progress to more self-determined forms of motivation (Deci, et al., 1991).

It was clear that both the injured athletes and their athletic trainers recognized the role that significant others can play in facilitating adherence to a rehabilitation program. Most of the examples that were mentioned were positive, but there were also instances where the influence of significant others seemed to have a negative influence. The importance of understanding how all significant others, including teammates, coaches, and family members can satisfy the need for relatedness that provides a foundation for an autonomy-supportive environment.

One example of how relatedness can be established between the athletic trainer and the injured athlete was the sharing of common experience. Specifically, a bond seemed to be fostered when the athletic trainer had experienced a similar injury. Clearly athletic trainers will not have experienced every injury that they treat, but identifying individuals who have successfully recovered from similar conditions may be an effective strategy in fostering a sense of relatedness during rehabilitation. This is consistent with the previous research that indicates establishing a close connection among individuals promotes intrinsically motivated behaviors (Ryan & Deci, 2000).

Several implications for practice are also evident with regard to the autonomy and competence nutrients. Communication and education are key elements in meeting these needs and fostering self-regulation. Providing a clear explanation of the nature of the injury, and a rationale for the treatment program are ways that athletic trainers can educate athletes. When athletes have a clear understanding of the rehabilitation process, and realistic expectations about the projected rate of recovery, they are more likely to have a sense of competence and autonomy (i.e., that they can successfully recover if they exert effort and adhere to the rehabilitation program.) By sharing this knowledge, the

athletic trainer can reinforce to the athlete the importance of following the program in order to return to competition, and this has been shown to increase internalized forms of behavior regulation (Grolnick & Ryan, 1989).

Equipped with this knowledge about their rehabilitation program, an athlete can then make educated choices about what exercises they think will be most effective in their recovery. These choices can cause foster autonomy and move the athlete toward intrinsic motivation as they place a higher value on their injury recovery (Koestner, et al., 1984; Ryan & Stiller, 1991). An injured athlete's continued feeling of autonomy is crucial to the overall success of their rehabilitation program (Williams, et al., 1998)

Maintaining records of progress and sharing that progress in the form of feedback with the athlete is another strategy that can foster competence and autonomy. Athletes should be more likely to adhere to their rehabilitation program if they are given feedback about that program and they feel more competent in their actions in the program. As medical professionals, it is a part of the athletic trainers' daily duties to document the exercises, treatment, and progress of the injured person. Sharing that information with the athlete participating in the program educates that athlete as to the how and why they are doing some of the things they are doing. Positive feedback that is contingent on effort and performance will enhance the athlete's perceived competence. This feedback can foster increased intrinsic motivation, but only if done so in an autonomy-supportive environment (Vallerand, 1983).

The aim of these studies was to recognize and investigate factors that affect injury rehabilitation adherence. Taken together, the findings in these studies support the notion that intercollegiate injury rehabilitation programs that are framed around enhancing an

athlete's autonomous orientation by providing an autonomy supportive environment should be most conducive for promoting adherence to that program.

This study demonstrates that SDT is a viable framework to guide the investigation of motivation in injury rehabilitation programs. The results of this study yielded valuable information about how to create foster autonomy in injury rehabilitation programs, but further study is needed. In subsequent studies, it seems important to continue the investigation of the role control orientations, and how they interact with autonomy orientations. This quantitative study was retrospective in nature, and athletes' recollections of their perceptions of prior injuries may not be as accurate as data collected during the time frame they are undergoing rehabilitation. The participant pool of injured athletes at a specific location, such as a single university, is relatively small, and that makes collecting data on a large sample very challenging. Using multiple sites is expensive and time consuming, and also presents difficulties with reliability issues, but it is important to investigate more diverse samples. Other than the athletic trainers' perceptions of athlete adherence, there was no measure of adherence behavior in this study. The incorporation of a valid and reliable measure of adherence in the study of self-determination and intercollegiate athletic injury rehabilitation would provide additional insight. Finally, interventions designed to help athletic trainers structure the health care climate to be more autonomous and less controlling need to be tested to determine if the strategies that emerged from this study are effective in improving autonomy support.

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APPENDIX A – EXTENDED REVIEW OF LITERATURE

Self-Determination as a Theoretical Framework to Investigate Sport Injury Rehabilitation Adherence

Over the last three decades, the incidence of athletic injuries has been a concern for both researchers and sports medicine personnel. In 1987, there were over 17 million sports related injuries reported (Booth, 1987) and one study found that almost half of amateur sports injuries prohibited participation (Hardy & Crace, 1990). Though injury rates have decreased since the mid-1980's, there are still a number of areas that need further study for designing interventions for reducing injury risk and enhancing the rehabilitation process. Injuries have a negative effect on the athlete's health, training, and competitive operation (Calvert & Clarke, 1979). During the 2002-2003 season, the National Collegiate Athletic Association (NCAA) administered an Injury Surveillance System (ISS) to provide current and reliable data on injury trends in intercollegiate athletics (NCAA News, 2004). Game injury rates for fall sports remained steady or lowered in four of five sports, whereas spring sports definitely had a reduced rate of injury compared to those fall sports. Men's sports occupied four of the top five spots for the number of injuries per athlete-exposure, with women's soccer taking the fifth position. Among women gymnasts, Kerr and Minden (1988) found that there was a significant rate of injury (83%) and time lost due to injury. Many of these injuries were incurred due to improper landings. These gymnasts reported that a lack of concentration (12%) was the highest cause of injury, whereas their coaches thought that inadequate technique (20%) was the chief determinant of injury (Kerr & Minden, 1988).

Many of the early research studies investigating adherence focused primarily on cardiac rehabilitation and exercise adherence of older adults (Andrew, et al, 1981; Hallman & Petosa, 1998; Rhodes, et al, 1999). The scientific study of sport injury rehabilitation adherence emerged as a legitimate field of study over a decade ago but, according to several noted researchers, (Brewer, 1998; Duda, Smart, & Tappe, 1989; Rhodes, et al., 1999; Hartigan, Rainville, Sobel, & Hipona, 2000) the primary focus of the early investigations was on identifying predictors of adherence and, for the most part, these studies were narrow and atheoretical (Dishman, 1982). Fisher, Mullins, et al., (1993) and others (Fields, Murphey, Horodyski, & Stopka, 1995; Laubach, Brewer, VanRaalte, & Petitpas, 1996), for example, conducted research on athletic trainers' judgments of rehabilitation adherence with no theoretical basis (Fields, et al., 1995). Further, only a few studies have specifically examined collegiate athletes and their adherence to musculoskeletal injury rehabilitation programs (Byerly, et al., 1994; Duda, et al., 1989; Fisher, Domm, & Wuest, 1988; Fisher, Mullins, et al., 1993; Fisher, Scriber, Matheny, Alderman, & Bitting, 1993).

Historically, sport injury rehabilitation has focused on identifying physical factors that will hasten the return to participation (Brewer, 1998). Many athletic trainers have reported that physical treatment is their primary responsibility; however, emotional and psychological assistance (i.e. reinforcement, support, motivation, and demoralization) are recognized as being important as well (Weiss & Troxel, 1986; DePalma & DePalma, 1989). Athlete beliefs concerning the effectiveness of their treatment program may be more of a challenge for athletic trainers (ATC) than the physical stresses of rehabilitation. Therapists should raise the athlete's awareness that the involvement of the rehabilitation

regimen and their ability to follow the recommended program will contribute to their overall recovery (Taylor & May, 1996).

The compliance of collegiate athletes to their injury rehabilitation programs is one aspect of medicine that frequently puzzles athletic trainers as well as other health care professionals (Byerly, Worrell, Gahimer, & Domholdt, 1994). Some athletes manage to adhere to their scheduled rehabilitation sessions, while others are very inconsistent. There are more than 200 variables that can affect adherence to an effective rehabilitation program (Meichenbaum, 1987). It has been expressed that one key variable influencing the rehabilitation process is the injured athlete's commitment to their program (Fisher, Mullins, & Frye, 1993). Athletic trainers need to know how to aid participants in a thriving rehabilitation program and enhance their commitment (DePalma & DePalma, 1989, Fisher, Mullins, et al., 1993).

When addressing athletes and rehabilitation, it is important to point out that many times the terms compliance and adherence are used interchangeably in the literature (Willis & Campbell, 1992) and there does not seem to be clear agreement about precise definitions. Brewer (1998), a recognized authority in sport injury rehabilitation psychology, notes that adherence could include a number of different compliance behaviors, such as participating in all assigned clinic activities, completion of home based exercises, and taking medications as instructed. Further, Brewer (1998) explains that because many types of measures have been used to study compliance or adherence to a rehabilitation program it is difficult to make comparisons of prevalence rates or to categorize athletes based on their level of adherence or compliance. The term adherence is used in this paper to describe the research that has examined the behavioral responses

to a sport injury, since this term indicates a broader class of behaviors that go beyond a simple motivation to comply with a specific assignment.

According to Brewer (1998), the early research identified a number of variables as predictors of sport injury rehabilitation adherence and these were usually categorized as personal and situational factors. Recognizing the need for an organizing framework for the factors associated with adherence to sport rehabilitation programs, several researchers offered theoretical models to help organize the constructs. According to Brewer, et al. (1998, 2003) personal investment theory, (Duda, et al., 1989) cognitive appraisal models (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998), attribution theory (Biddle, 1993) and protection motivation theory (Rogers, 1975) were among the first conceptual frameworks that were used to study sport injury rehabilitation adherence.

Adherence to a prescribed rehabilitation program is considered vital for attaining successful healing from sport injury (Taylor & Taylor, 1997). Emotional responses to injury and cognitive processes during the rehabilitation program play a critical role in the speed of recovery (Taylor & May, 1996). It is important that athletic trainers recognize the relationship between various psychosocial factors and injury risk and consider these in the planning of the rehabilitation strategies and expectations. One of the most frequently studied areas in the psychology of injury is the stress injury relationship.

The focal point of this paper is to explore the status of research on sport injury rehabilitation adherence. Studies identifying variables that are correlated with adherence are synthesized to produce a body of knowledge that will aid in the explanation of individual behavioral responses towards injury rehabilitation programs. Self-Determination Theory (SDT) is offered as a framework for interpreting the available

research with the intention of providing implications for sports medicine practitioners in their efforts to facilitate recovery from injury. The findings from research on self-determination, self-efficacy, self-regulation, and goal-orientation will be integrated for a more complete understanding of compliance behaviors from a motivational perspective. The paper concludes with implications and directions for future research.

Stress-Injury Relationship

Injury Risk

Early research identified both physical and psychological determinants of injury including participant experience level, conditioning level, equipment, competitive passion, personality factors, life stress events, and coaching techniques (Yaffe, 1983; Anderson & Williams, 1988; Hanson, McCulagh, & Tonymon, 1992; Kerr & Minden, 1988). Williams (2001) argued that while psychological factors can create environments that predispose athletes to injury, most of the initial attempts to identify these factors were narrow in scope and atheoretical. Athletic trainers and therapists need to be aware of the stress-injury relationship to design interventions that can treat the athlete more effectively and promote more positive thinking patterns (Rosenblum, 1979; Wiese & Weiss, 1987).

One of the first attempts to develop an explanatory model focused on linking stress and injury is the Stress-Injury Model (Andersen & Williams, 1988). Individual stress, whether positive or negative, and anxiety levels can alter one's concentration on the task at hand leaving them vulnerable to dangerous actions (Smith, 1996; Andersen & Williams, 1988). Williams and Andersen (1998) presented a revised model of the injury-stress theoretical relationship and this schema formed the basis for many research studies

on the psychological response patterns of athletes. The model addresses how stressful situations, history of stressors, personality characteristics, and coping resources can interact to influence an athlete's response to injury.

Kerr and Minden (1988) found that in women's gymnastics, stressful life dealings were directly related to injury occurrence. These stresses were perceived as frightening, traumatic, and conflictual and required a massive amount of energy and adaptive actions to be handled properly. This increased stress can lead to reduced muscle coordination and efficacy that might result in other injuries (Williams & Roepke, 1993). Life stressors may also tax or surpass an athlete's energy supply and leave it susceptible to injury due to fatigue (Kerr & Minden, 1988). In order to manage high stress levels, athletes must have certain personality variables, physical qualities, a suitable learning environment, and appropriate management strategies (Kerr & Minden, 1988).

Stress Response

When injury interrupts an individual's athletic identity, the legitimate outlet for discharging anxiety and aggression is not available, and this has the potential to produce mood disturbance. It has been suggested that coping resources and social support would help to buffer this mood disturbance, but a study by Smith, Smoll, and Ptacek (1990) revealed that those high in athletic identity, low in social support, and low in coping skills only accounted for 19.6% of variance in mood disturbance (Smith, Smoll, & Ptacek, 1990). This may signify that other environmental variables, other than coping skills and social support, may have more of an effect on an individual's reaction to injury.

It is important to understand the role of athletic identity in an individual's stress response. Athletic identity has been defined as one's ability to relate oneself to the role

of an athlete (Brewer, VanRaalte, & Linder, 1993). Individuals, who are intensely involved in their sport or receive encouragement from those that might follow that sport, may concentrate their attention on being identified with that sport (Rotella & Heyman, 1993). Therefore, since their lives are so sport-focused, when an injury interrupts that focus, severe negative mood disturbance may occur (Green & Weinberg, 2001).

Athletic identity has a social role that can affect the self. When a person is situated on a team and is identified by parents, friends, or coaches as an athlete, they are given a certain position in society (Sadalla, Linder, & Jenkins, 1988). They may look at themselves as being evaluated and must live up to others' attitudes about them. As a result of this, athletes may eliminate other extracurricular activities to concentrate solely on their sport (Danish, 1983). This increased effort may escalate their status in society. Therefore, when an injury occurs that causes an athlete to be removed from their sport, the athlete has nothing to identify with and is at risk for emotional disturbance (Pearson & Petitpas, 1990).

Athletic identity has been positively associated with home-based exercise completion, but only in younger adolescent-aged participants (Brewer, et al, 2003). It is thought that athletic identity is pivotal in an adolescent's growth and therefore it is not surprising that athletic identity is prominent in their commitment to a rehabilitation program. This is especially true of the supervision of a medical professional in a clinical setting (Brewer, et al., 2003). Identification of determinants of compliance with athletic injury rehabilitation may offer a basis upon which to design therapist interventions to increase compliance and enhance the rehabilitation process. Interventions have been aimed at reducing the level of athlete arousal to enhance their concentration. Several

techniques have been explored including progressive relaxation, meditation, and breathing exercises (Harris, 1986). These methods are similar to ones suggested to lower an athlete's pain perception during their recovery (Fisher, Mullins, et al., 1993).

When confronted with an injury, participants appraise their situations, judge their abilities to meet the demands, and consider the consequences of meeting/not meeting those demands. If the participant perceives inadequate resources to meet the demands, then the stress response is activated (Williams, 2001). Situations when injuries occur may be perceived as overwhelming, threatening, and unsatisfying. It is important to use a theoretical basis to explore ways that athletic trainers can structure an environment that will foster adherence to rehabilitation programs for athletes who are struggling to deal with the effects of their injuries.

Self-Determination as a Theoretical Perspective

Self-Determination theory (SDT) has been used as a framework to study adherence issues in several health domains including addicting behaviors, medication adherence, weight loss, and physical activity (Ryan, 1995; Williams, Cox, Kouides, & Deci, 1999; Williams, Freedman, & Deci, 1998; Williams, Rodin, Ryan, Grolnick, & Deci, 1998). Since SDT has proven to be an informative theoretical perspective in related areas, it seems to have applicability in the area of injury rehabilitation. Ryan and Deci (2000) define self-determination as “the investigation of people's inherent growth tendencies and innate psychological needs that are basis for their self-motivation and personality integration” (pg. 68). It stresses the significance of humans' inner resources for personality development and behavioral self-regulation (Ryan & Deci, 2000). A theory of motivation and behavior regulation, SDT is based on three assumptions: (a)

individuals are proactive; (b) they are inclined toward growth and development; and (c) they have basic psychological needs that must be met for health and well-being. More self-determined behaviors are internalized, as individuals act out of their own volition, rather than in response to external controls. When individuals' behaviors are self-determined rather than controlled, they are more likely to engage and persist over time.

The continuum of self-determination, presented by Biddle (1999), is a key element of the theory. In contrast to other motivational theories where extrinsic and intrinsic motivation are characterized as contrasting conceptions, in SDT they are conceptualized in a hierarchical fashion, where intrinsic motivation is considered to be a higher level of motivation, rather than simply a different type. The continuum is presented in Table 10.

Table 10. Continuum on Self- Determination

	<u>Extrinsic Motivation</u>				
Amotivation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Motivation
"Self-Determination"					

Amotivation

Amotivation is characterized by little or no motivation to attempt or participate in an activity. Amotivation is often associated with feelings of incompetence and helplessness, or a belief that exerting effort in the activity will not produce positive outcomes. As individuals move from amotivation, or the lack of motivation, to more motivated states, the regulation of their behavior moves from external regulation to more internalized regulation and is more self-determined. Intrinsic motivation is the highest

and most self-determined form of motivation and is defined as engaging in an activity as an end in itself.

Extrinsic Motivation

It was once assumed that extrinsically motivated people had no level of self-determination (Deci, 1971). Any type of motivation that is not intrinsic, or any condition where an individual participates in a task as a means to an end, or for some external reason, is considered to be extrinsic. With SDT, however, it is recognized that different levels of extrinsic motivation exist. As one moves from amotivation on the left of the SDT continuum toward intrinsic motivation at the far right of the continuum, the four levels of extrinsic motivation delineated on the continuum represent higher forms of more internalized motivation and corresponding higher levels of self-determination (Biddle, 1999). Internalization is a proactive development through which individuals alter regulation from external processes toward regulation by internal means (Schafer, 1968). The most advantageous level of internalization is being fully integrated into the self (Deci, Vallerand, Pelletier, & Ryan, 1991). Internalization will progress toward self-determined regulation forms if the following conditions are present: a) people appreciate the individual function of an activity, b) choices are available to them about the activity, and c) their viewpoints and thoughts are acknowledged (Grolnick & Ryan, 1989). A higher level of internalization has been linked with greater adherence in the field of health care for those with chronic illness, long-term weight-loss, diabetic control, and addiction-treatment programs (Williams, et al., 1998; Williams, Grow, Freedman, Ryan, & Deci, 1996; Williams, et al., 1998; Ryan, Plant, & O'Malley, 1995).

External regulation is the least autonomous of the levels of extrinsic motivation. Individuals at this level engage in a behavior or activity strictly for external reasons and are controlled by rewards or threats. An athlete who is injured and attends a rehabilitation session only to avoid punishment is externally regulated. Externally motivated individuals perform an activity not out of interest, but rather they believe that those actions will bring an outcome that is valued less internally and more valued for external reasons (Deci, et al., 1991). Externally regulated individuals typically undergo feelings of disaffection and domination and their exploits have an externally perceived locus of causality (Ryan & Deci, 2000). The individual may relate or want to have a sense of belonging to others that display more motivated behavior than they do. When a behavior is controlled, compliance is the regulatory process (Deci, et al., 1991). When a behavior becomes more self-determined, the regulatory manner is choice.

Introjected regulation involves the initiation of some level of internalization and choice. The behavior may be performed to avoid feelings of guilt and to maintain self-worth as individuals move from engaging in a behavior because they have to, to engaging because they think they should or ought to (Deci, et al., 1991). Although driven from within, individuals at an introjected level still have a perceived external locus of causality and the conduct is not really practiced as part of the self (Ryan & Deci, 2000). An athlete who attends a rehabilitation session because they would feel guilty if they did not, or one that is coerced to attend out of a sense of obligation, is functioning at the level of introjected regulation.

When individuals move from engaging in a behavior because they think that they ought to or should, to a more internalized reason that reflects a sense of wanting to

engage, this is classified as identified regulation. Identified regulation involves the deliberate valuing of a behavioral goal or regulation so that the action is viewed as personally significant (Ryan & Deci, 2000). At this point, the individual identifies with and consents to the regulatory process (Deci, et al., 1991). People can be motivated because they respect an activity and make a personal pledge to complete an endeavor (Ryan & Deci, 2000). Those whose motivation is self-endorsed or authentic will typically have more excitement, self-belief, and interest in an activity. When an athlete attends a rehabilitation session because she or he sees this as means to remediate an injury and return to competition, this represents identified regulation and higher levels of internalization and self-determination. Although the athlete is engaging in the rehabilitation program for more intrinsic reasons (i.e. because they want to be able compete), the behavior continues to be extrinsically motivated, because the target behavior is a means to an end, rather than an end in itself.

The most autonomous form of extrinsic motivation is integrated regulation. Integrated regulation bears some relation to intrinsic motivation in that both represent autonomous forms of self-regulation, but the behavior is still focused on external outcomes. Intrinsic motivation is distinguished by interest in an activity as an end in itself, whereas integrated regulations are characterized by valuing an activity as an individual works toward a specific personal outcome (Deci, et al., 1991). At this level, an individual engages in a behavior because it becomes a part of the self. It refers to the further alteration of that regulation into his or her own so that it will stem from the self (Ryan & Deci, 2000). Individual identifications are assimilated with the individual's other values and needs (Deci, et al., 1991). Athletes who are functioning at a level of

integrated regulation have adopted adherence behaviors into their identities—they attend rehabilitation sessions because that behavior has become a part of whom they are.

Intrinsic Motivation

The most internalized and self-determined form of motivation on the SDT continuum and the highest form of motivation, is intrinsic motivation, defined as engaging in an activity as an end in itself (Deci & Ryan, 1985). When an individual is intrinsically motivated to participate in an activity, there is no external benefit or reward associated with the reason to engage. Rather, the activity itself provides the reward or motivation. Individuals who are motivated to exercise in order to improve or maintain their health, although they may be internally regulated and self-determined, are not intrinsically motivated, because the exercise is a means to achieve an end. To be intrinsically motivated, the exercise itself has to be the motivation to participate. Intrinsic motivation has been characterized by Vallerand (1983) as having three aspects or dimensions: to know, to accomplish, or to experience stimulation. When intrinsic motivation is considering in the context of an exercise setting, and most particularly a rehabilitation setting, intrinsic motivation is most likely to be characterized by an optimal level of challenge associated with knowing and accomplishing.

Flow as a part of intrinsic motivation. An optimally challenging environment is best described in full by Csikszentmihalyi (1975). When people demonstrate their skills in an optimum environment, and there is a balance between demanding tasks and the skills of the challenged individual, this individual will experience “flow.” This “flow” is experienced only when the challenges and skills are in balance. If a task is too difficult, the person will face anxiety and worry and will frequently withdraw from the activity. If

an undertaking is perceived as too easy according to the skill level of the individual, boredom will set in and inactivity may be a result. Therapists can scrutinize athletes' experiences in relation to their activity and determine the level of flow depending on the level of optimum engagement.

The process of choosing preserves or fortifies one's intrinsic motivation (Zuckerman, Porac, Lathin, Smith, & Deci, 1978). With regard to self-motivation, athletic trainers agree that regular monitoring (95% of surveyed certified athletic trainers [ATC]) and supervision (92% of surveyed ATCs) assisted athletes in the process of self-motivation (Fisher, Scriber et al., 1993). The higher the athlete's level of self-motivation, the more likely they are to adhere to their rehabilitation (Duda et al., 1989; Fisher, Scriber et al., 1993; Hartigan, et al, 2000). Athletes who are more self-motivated take more of an interest in their rehabilitation and display higher levels of adherence to their program (Fisher, Scriber et al., 1993). Due to the practical and functional variation between self-motivation and external regulation, SDT focuses on a more distinguishing line to motivation. Using SDT enables researchers to examine what type of motivation or level of motivation is of most importance at a certain time (Ryan & Deci, 2000).

SDT provides theoretical support to better understand compliance behavior among individuals participating in a long-term health-related program (Deci & Ryan, 1985). In the discussion of intrinsic motivation and flow, it is important to delineate the relationship between will and self-determination in the theory. Deci (1980) has described self-determination as the "process of utilizing one's will" and will as the "capacity of the human organism to choose how to satisfy its needs" (pg.26). Since will is the capability for purposeful selections, it is involved in the intrinsic necessity for competence and self-

determination. In order for people to be self-determined and competent, they must make choices. If all drives and choices were inevitably fulfilled, then people would have no reason to be competent and creative in carrying out those choices (Deci, 1980). If a situation is overly taxing and the individual cannot adjust to the challenge, then the individual would likely avoid the task. However, if the mission is fully achievable then the individual will become disinterested in the task. People's will is strengthened by intrinsic motivation, the need to be self-determined and competent. Despite the nature of a task, the self-determining nature of achieving that goal will generate some level of intrinsic motivation.

Nutriments of SDT

Autonomy, competence, and relatedness are identified in SDT as three essential nutriments needed to meet the basic psychological needs that individuals have (Ryan & Deci, 2000, 2001). These nutriments are critical elements in creating climates that foster internalized regulations and self-determination, in effect, moving individuals along the continuum from amotivation and external regulation to more internalized levels. Psychological needs only can be met only by satisfying all three of these nutriments and not just a single one. For example, a situation that satisfies an individual's competence, but neglects relatedness leaves one feeling deprived of happiness. Autonomy may be the most crucial of nutriments in the motivation continuum. According to SDT, when individuals are autonomous, or acting from their own volition, they are more likely to engage in an activity over a long period of time. Individuals are also more likely to engage in activities that are efficacious to them in relation to social groups that they value. Relatedness comprises developing confident and fulfilling connections with

others. Medical personnel may be more effective in helping their patients when the patient feels as though there is some common thread between the two parties.

Autonomy. A sense of autonomy is rooted in an internally perceived locus of causality (deCharms, 1968). Autonomous behavior is closely linked with self-determined behavior in that both are related to intrinsic motivation. An individual who perceives that his/her own behaviors are autonomous, or that she or he is acting out of choice, is more self-determined and more likely to be intrinsically motivated. When individuals have choices and opportunity for self-direction, intrinsic motivation is enhanced due to a greater sense of autonomy. For example, students of autonomy-supportive teachers have higher levels of intrinsic motivation, curiosity, and desire for challenge due to the supportive environment, as opposed to students whose teachers are controlling (Deci & Ryan, 1985). It is acknowledged in SDT that the levels of extrinsic motivation can vary tremendously with regard to autonomy (Ryan & Deci, 2000). Athletes who engage in their rehabilitation program because they see value in it as a means to return to competition are extrinsically motivated. Athletes are also extrinsically motivated when they do their rehabilitation only because it appeases their coaches. The athletes in the first example confront their rehabilitation program with a sense of self-enjoyment and achievement, whereas the latter example portrays a sense of external control over the athlete and is therefore externally regulated. They both represent deliberate behavior, but vary in their level of personal autonomy (Heider, 1958). Thompson and Wankel (1980) demonstrated a significant increase in exercise program attendance and intentions to continue to attend among participants who were led to believe that their choice of activities had been taken into account in designing the program. This provides evidence

that when individuals feel that they have more volitional control, as reflected by a belief that their choices are considered, their motivation to continue an activity is more internalized and long term.

Competence. Competence is a nutriment that involves understanding how to attain various external and internal outcomes and being efficacious in performing the requested actions (Deci, et al., 1991). Markland (1999) defined competence as the perception of one's ability in negotiating the social context. Deci and Ryan (1985) explained, "The need for self-determination is an important motivator that is involved with intrinsic motivation and is closely intertwined with the need for competence . . . it is important to emphasize that it is not the need for competence alone that underlies intrinsic motivation; it is the need for self-determined competence" (pp.31-32). Perceived competence has significant effects on intrinsic motivation only when mediated by self-determination (Fisher, 1978; Markland & Hardy, 1997; Markland, 1999). That is, even when individuals have a high perception of competence, if they feel that they are not autonomous, or that they are controlled by external factors, their level of motivation is unlikely to be enhanced.

Relatedness. Autonomy matures most successfully in instances where children and teenagers feel a sensation of relatedness and closeness to significant adults (Ryan, 1991; Ryan & Lynch, 1989). A child with a greater sense of security from a parent will take on more exploratory tasks and tasks that are seen as more intrinsically motivated due to the support of their caregiver (Ryan, 1991). Relatedness is an attachment aspect of SDT that is theorized to begin when an infant is in the security of a parent (Grolnick & Ryan, 1989). Similar behavior occurs over the lifespan with intrinsic motivation

occurring in individuals with a secure sense of relatedness (Ryan & Grolnick, 1986; Ryan & Deci, 2000). Both the higher the level of support and the security one feels when fostered by that support, are parts of the nutrients that are associated with more exploratory behaviors.

The quality of relationships with others, feeling understood, participating in meaningful dialogue, and having fun with others are all components of relatedness (Ryan & Deci, 2001). There is evidence that when children are denied relatedness, or interpersonal attachments, they lose intrinsic motivation (Anderson, Manoogian, & Reznick, 1976). Because externally driven behaviors are not inherently interesting, most people adopt a behavior because it is initiated by a significant other or by someone to whom they feel related. Some athletes may only participate in a sport or activity because others are participating or have motivated them to do it. It may be important for medical personnel to make a connection with their injured athlete to facilitate positive behaviors toward recovery. Therefore, a feeling of relatedness or connection is important in internalization (Ryan & Deci, 2000). Internalization is a proactive development through which individuals alter regulation from external processes into regulation by internal means (Schafer, 1968). Ryan, Stiller, and Lynch (1994) found that children, who were more internally regulated toward positive school-related behaviors, were more securely associated with and tended to by their parents and teachers.

Cognitive Evaluation Theory

Cognitive evaluation theory (CET) is a sub-theory within SDT that explains factors affecting intrinsic motivation and autonomy (Deci & Ryan, 1985; Ryan & Deci, 2000). This theory suggests that motivation will be enhanced through feelings of

competency gained at levels of challenge optimum for the individual. Feelings of competence will not enhance intrinsic motivation unless they are accompanied by a sense of autonomy associated with an internal perceived locus of causality (deCharms, 1968; Fisher, 1978). The orientation of the perceived locus of causality can be understood by understanding the relationship between an activity and a reward or feedback associated with the activity.

Though there are certain instances where rewards can be beneficial to intrinsic motivation, most research indicates that rewards promote extrinsic motivational behaviors (Deci, 1980). For this to be understood, the two aspects of rewards need to be reviewed: controlling and informational. In situations where the locus of causality is external to the self, the behavior is controlled by the reward (Deci, et al., 1991). When the controlling aspect of the reward is salient, the locus of causality is perceived as externally motivated and the intrinsic motivation decreases. When individuals received monetary payments, good-player awards, or prizes for their behavior in an activity, they seemed to lose interest in the activity even after the rewards were removed (Deci, 1971; Harackiewicz, 1979; Lepper, Greene, & Nisbett, 1973;). Other externally controlling events such as deadlines, imposed goals, and competition also decrease intrinsic motivation (Amabile, DeJong, & Lepper, 1976; Mossholder, 1980; Deci, Betley, Kahle, Abrams, & Porac, 1981). These events are imposed on individuals with the intention of having them behave, think, and act in a specified manner. The perception of the present external influence is that they are being controlled and have a diminished sense of personal autonomy (Deci, et al., 1991).

The second aspect of rewards, the informational aspect, provides information about one's competence in a given task. The level of one's perceived competence depends on an alteration in the perceived locus of causality (Deci, 1980). When the informational aspect of rewards is salient and provides positive feedback about the level of competence, intrinsic motivation is increased. When a behavior is self-determined, the individual perceives that the locus of causality is internal to the self.

In order to determine if a situation is more controlling or more informational, three factors need to be examined: characteristics of the rewardee, characteristics of the rewarder, and characteristics of the reward situation. Deci, Cascio, and Krusell (1975) found that praise enhanced male rewardee's intrinsic motivation by strengthening their perceived competence. Females had a decrease in intrinsic motivation caused from their change of an internally perceived locus of causality to a more externally perceived locus of causality. It appears that the informational aspect of praise is more relevant to males and the controlling aspect of praise is more apparent to females (Deci, et al., 1975).

Administration of the rewards is as important as the reward itself. Teachers' attitudes toward reward usage and children's motivation was measured in public schools (Deci, Nezlek, & Sheinman, 1981). Teachers who had informational orientations toward rewards had children with higher self-esteem and higher levels of intrinsic motivation than for children whose teachers had controlling orientations. Finally, reward situations affected the perceptions of external events and intrinsic motivation. Alterations in intrinsic motivation are caused by changes in perceived competence (Vallerand & Reid, 1984).

Examinations of the cognitive evaluation theory have revealed that performance-contingent rewards and goal setting have generated increases in intrinsic motivation (Rosenfield, Folger, & Adelman, 1980; Bandura & Schunk, 1981). If the informational aspect of an external event is prominent and expresses competence, it will foster intrinsic motivation by boosting one's perceived competence. When an individual is doing an activity and expects a reward for it, it is likely that she or he will perceive the reward as the cause of the activity (Lepper, Greene, & Nisbett, 1973). If this external event is salient and suggests incompetence, it will reduce the level of intrinsic motivation by weakening one's perceived competence and autonomy (Deci, 1980).

People are more self-determined when they recognize the locus of causality to be internal and they feel less self-determined when they perceive an external locus of causality (Deci, 1980). A lowered feeling of competence may result from increased pressure for one to improve at a certain skill, especially when rewards for improvement are perceived as controlling rather than informational. Deci (1975) and Zuckerman, et al. (1978) found that when rewards were given to students for the completion of a puzzle problem, rewarded subjects displayed less involvement in the puzzle activity during free-choice periods than students without the rewards. Lepper, et al., (1973) found "good-player" rewards decreased children's level of intrinsic motivation. Lepper, et al., (1973) also found that rewards decreased intrinsic interest only if subjects expected to receive the rewards. Thus, the rewards seemed to be perceived as controlling only when they were expected. Similar research findings by Deci and Ryan (1980) yielded comparable results.

In summary, CET provides a framework to understand how rewards and feedback affect individual motivation. When feedback and rewards are perceived as informational and are contingent on performance, they can enhance feelings of competence and autonomy and enhance motivation. In contrast, however, when feedback and rewards are perceived as controlling, then they have the potential to decrease an individual's sense of autonomy and to have ultimately decreased intrinsic motivation. It is important to note that it is the individual's perception of the reward, rather than the reward itself, that is the determining factor. The same reward could have a different effect on different individuals, depending on their perceptions of the controlling and informational aspects of the reward.

Role of Self-efficacy in SDT

Self-efficacy, defined as the “beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997a, p. 3) has received much attention in the exercise adherence literature. There is general agreement that individuals who have high levels of efficacy with regard to engaging in an exercise program are those who are able to maintain long term participation (McCauley, Wraith, & Duncan, et al., 1991). Individuals with a high sense of self-efficacy have been reported to remain adherent to their home-based activity programs in studies with follow-up assessments for as long as two years later (Garcia & King, 1991).

It is not whether or not one can perform the necessary physical skills in an exercise program, but rather whether or not an individual has the self-regulatory efficacy to rally oneself to exercise in spite of personal, social, or situational hurdles that seems to be the critical factor in program adherence (Sallis, Pinski, Grossman, Patterson, & Nader,

1988). Bandura (1986) contends that self-efficacy generates individual intrinsic interest in a given activity. Though an individual may have less than pleasant experiences early in an activity, mastery experiences promote efficacy and positive self-evaluation over time (McAuley, et al., 1991).

Competence, one of the three nutrients of the self-determination theory, involves deciding how to achieve various external and internal outcomes and being efficacious in performing the necessary actions to conquer those outcomes (Deci, et al., 1991). The locus of control (LOC) of reinforcements refers to the degree to which groups understand that reinforcements are within their own control, are controlled by others, or are due to fate (Biddle, 1999). This construct stems from social learning theory about personality that is based on prior experiences (Rotter, 1954). Rotter (1966) formalized the LOC construct by suggesting that a relationship existed for internal versus external control of reinforcement. Self-efficacy is agent-means whereas LOC is means-ends (Biddle, 1999). LOC is concerned about what is involved for achieving success (contingency) rather than beliefs about whether one actually possesses such requirements (competence). Deci and Ryan (1985) acknowledged that autonomy involves freedom in initiating behaviors, whereas control is concerned with realizing a contingency between action and outcome.

The influence of a model's characteristics can affect the behavior of an individual. It is easier for individuals to convince themselves that they possess the abilities needed to be successful if they see people comparable to themselves execute demanding physical feats than if they observe those who have skills superior to their own athletic ability (Bandura, 1997b). Women with little athletic experience improved their perceived physical efficacy and authentic stamina after watching a supposedly non-athletic female

display high physical endurance (Gould & Weiss, 1981). If a situation is presented in a more informational manner as opposed to a comparative manner, then a sense of athletic efficacy can be built without a risk of demoralization (Bandura, 1997b). For example, providing information about a successful injury rehabilitation program with a peer athlete is helpful to the newly injured athlete because the new athlete will gain valuable insight from the experienced athlete, which could increase the efficacy beliefs in the treatment program.

Role of Goal-Orientation in SDT

Motivated actions are self-determined to the degree that they are engaged in volitionally and are approved by one's sense of self (Deci & Ryan, 1991). To increase motivation, individuals should become actively engaged in their learning and engage in achievement strategies to enhance their skill development (Gano-Overway & Ewing, 2004). By focusing on designing a supportive learning environment, practitioners can enhance the use of self-regulatory strategies used in practice to improve skill acquisition and improvement. This can also be useful for athletes to work with other athletes that are going through a similar rehabilitation program to enhance their exercise effectiveness. Achievement goal theory acknowledges the influence of both situational factors (motivational climate) and individual factors (goal orientation). This theory not only spotlights one's drive to be competent, but also the individual's assessment of her or his own level of competence based on subjective classifications of success and failure (Nicholls, 1984, 1989). This assessment leads to the adoption of individual achievement goal views that shape motivational processes (Ames, 1992; Duda & Hall, 2001; Dweck, 1999; Nicholls, 1984, 1989). These researchers suggest that climate structures are

involved in shaping one's task- or ego-oriented goals. According to Nicholls (1984, 1989), two dimensions of goals exist: task and ego. Task involved goals are focused on mastery of tasks and personal improvement. Individuals feel successful when they learn new skills and/or demonstrate improvement. A task involved goal perspective is associated with an adaptive motivational pattern, defined as a willingness to exert effort, a desire to work at a challenging level, and persistence in the face of difficulty. A task orientation is associated with a belief in the efficacy of effort. When a task orientation is salient, intrinsic motivation is fostered (Duda, 1993).

Ego involved goals are rooted in social comparison (Nicholls, 1984 1989). Individuals with ego-involved goals feel successful only when they outperform others. Individuals with ego involved goals are deemed to be at risk to withdraw effort in situations where they do not believe that success is a realistic possibility. Because the reference point for success is dependent on others for ego-involved goals, the locus of control is external, and an ego orientation is associated with extrinsic forms of motivation. These dimensions of goals are characterized as orthogonal or independent, meaning that individuals can have goals in both dimensions simultaneously. Individuals who are high in ego-orientation and low in task orientation are considered to be at risk to withdraw effort in the face of difficulty, especially when perceptions of competence are low (Duda, 1993).

Integrating the theoretical constructs of goal theory and SDT can provide valuable information concerning how athletic trainers can structure the environment to foster a task-involved goal orientation, which is associated with higher levels of self-determination and intrinsic motivation. By focusing on personal improvement and

mastery of tasks, specifically exercises that will remediate the injury, as well as fostering a belief in that exerting effort in rehabilitation exercises will facilitate the return to competition, athletic trainers can foster more self-determined forms of motivation.

Rehabilitation Issues

It is important to relate what has already been established in the adherence literature to the constructs of SDT to provide a basis for interpreting existing information and to formulate future study. In much of the adherence literature that has been done in the past, adherence to supervised aerobic exercise programs has been the main focus (Bandura, 1997b). However, some of the adherence literature has focused on adherence in a rehabilitation setting. Fisher, Mullins, et al. (1993) and Fisher, Scriber, et al. (1993) examined five major issues that emerged led to a greater understanding of patient rehabilitation behaviors: social support, self-motivation, scheduling, pain tolerance, and athletic trainer/athlete rapport. The evidence relevant to each of these issues will be examined from a SDT framework next. Additionally, feedback will be examined as a factor that has the potential to be an influential variable.

Social Support

Social support, reflected by the influence of coaches, teammates, and significant others, has an affect on rehabilitating athletes (Andrew, et al., 1981; Byerly, et al., 1994; Fisher et al., 1988; Fisher, Mullins, et al., 1993). An athletic trainer is in a unique position to help orchestrate social support, since most of the time the ATC is aware of all personalities involved in the situation. It is important that the athletic trainer be open, honest, respectful, and considerate as to enhance the likelihood of enhanced rehabilitation adherence (Fisher, Mullins. et al., 1993). This therapist can act as a liaison between

coaches, teammates, or even the injured parties' spouse by disseminating important information and translating medical terminology to all parties involved. Fisher, Mullins, et al., (1993) also found athletic trainers were almost unanimous in reporting that social support was essential to a successful rehabilitation program. Social support has a buffering effect on negative life stress such as injury and injury appraisal (Cohen & Willis, 1985). Some rehabilitation programs have reported a two-time dropout rate in those without individualized attention by program staff as compared to those with exclusive attention (Andrew, et al., 1981).

Athletes tend to experience loneliness, confusion, and anxiety after an injury has occurred. They may also have feelings of isolation and separation from their sport team. As a result of this, athletes may feel as though they are losing control of their lives and their sports. An athlete can experience some sort of normalcy if they have structure reintroduced into their lives (Fisher, Scriber, et al., 1993). Several authors suggest that when in distress, athletes may pursue close relationships with an otherwise remote contact such as sport injury rehabilitation personnel (Fisher, 1990; Gordon, Milos, & Grove, 1991). Fisher, et al., (1988) reported that the quality of the program was not the biggest factor in a successful program, but rather that people were. The dropout rate for individuals whose spouses were unsympathetic or negative toward the rehabilitation program was three times higher than for those who were supported (Andrew, et al., 1981). Support from significant others was most influential in differentiating those who adhered to rehabilitation programs versus those who did not.

Given that social support is an interactive practice, it can be influenced by provider-recipient individuality, the personalities that they share, and the sociocultural context in

which support is given (Bianco & Eklund, 2001). A non-controlling approach of behavior management has contributed to internalization of regulations and to successive autonomous self-regulation (Deci, et al., 1991). Some social situations may provide more support to facilitate the internalization of a behavior and therefore facilitate the behavior becoming more internally regulated. Individuals are more likely to accept endeavors that significant social groups respect when they feel successful with appreciation for those activities (Ryan & Deci, 2000). According to DeCharms (1968), managers of successful behavior control adopt the support recipient's frame of mind and present the behavior management in a manner that does not leave the receiver feeling like a pawn. The participant's perception of being aided, rather than the actual aiding behaviors, was more reliably associated with health outcomes (Sarason, Pierce, & Sarason, 1990). Hobfoll and Vaux (1993) found that close relationships were associated with more encouraging behaviors, more positive support evaluation, and greater life fulfillment. They also found that sociocultural positioning dictated support appropriateness in certain settings amongst specific age groups and genders. This positioning can be a result of significant others giving the athlete a certain status amongst a social group and the athlete identifying with that status level (Sadalla, et al., 1988).

Encouraging messages may enhance feelings of control by helping the beneficiary see sensible options in a stressful setting (Robbins & Rosenfield, 2001). Social support has been described as a multi-dimensional concept (Hardy & Crace, 1993). The eight concepts are: 1) listening support - seemingly accommodating listening; 2) emotional support - the support recipient perceives the provider to be helpful and consoling; 3) emotional challenge - perceived trial to help the support recipient appraise his or her way

of thinking; 4) reality confirmation - a similar person to the recipient helps to confirm the situation's perspective; 5) task appreciation support - showing appreciation of the recipient's hard work; 6) task challenge support - motivating the recipient by challenge their way of thinking; 7) material assistance - assistance in the structure of monetary gifts; and 8) personal assistance support – aid such as everyday jobs or responsibilities (Hardy & Crace, 1993).

Depending on an individual's situation, the support needed may vary. Udry, Gould, Bridges, and Beck (1997) found that 70% of female U.S. ski team members sought out and utilized social support following an injury to cope with their situation. Studies have shown that social support has a buffering effect on negative life stress such as injury and injury appraisal (Cohen & Willis, 1985). In a study by Green and Weinberg (2001), social support and coping skills were not predictors of adherence in the short term. However, coping was a predictor of adherence to long-term injury rehabilitation after nine weeks.

There is strong evidence that social support is an important factor in facilitating rehabilitation (Fisher, Mullins, et al., 1993), and SDT provides a framework to help us understand the mechanism underlying facilitation (Ryan & Deci, 2000). When social support is structured around the nutrients of SDT, the level of self-determination increases and motivation is enhanced. Social support is clearly rooted in the relatedness nutrient in that injured athletes seem to pursue close relationships with rehabilitation personnel. Social support can also foster feelings of competence and autonomy. When injured individuals feel they are losing control of their lives, a support system can

increase one's competence and autonomy by allowing the injured individual to perceive sensible self-discovered opportunities for handling a difficult rehabilitation situation.

Self-Motivation

Athletes who are more self-motivated take more of an interest in their rehabilitation and display higher levels of adherence to their programs (Fisher, Mullins, et al., 1993). Individuals who had the opportunity to participate in the decision making process for various activities were more self-determined, more receptive to learning about rehabilitation techniques, and were better able to make adjustments in their programs (Deci, et al, 1991; Koestner, Ryan, Bernieri, & Holt, et al., 1984;). Though these individuals may not enjoy the activities, having them acknowledge the activity is important and participate in the activity can increase their self-determination. Having them value the respective activities is crucial for individuals to remain engaged in the task presented to them. This valuing comes from internalization and integration (Ryan & Stiller, 1991).

Exercise compliance was demonstrated in studies where patients had the opportunity to practice and master exercise techniques. These subjects were identified with lower levels of "helplessness" as increased levels of compliance (Sluijs, Kok, & VanDerzee, 1993). Additionally, other work has demonstrated greater exercise compliance among individuals with greater perceptions of self-efficacy (McAuley, Lox, Duncan, 1993; McAuley, Courneya, & Rudolph, 1994). Capacity beliefs, autonomous expectancies about the point at which he or she can call on specific behaviors into action, were also found to be predictors of adherence (Dawson & Brawley, 2000). It is sensible

to call behavior intention into play when examining behavior predictions. Therefore, having the proper understanding of the progression of steps that will produce a desired outcome is crucial to predicting individual behaviors towards a goal.

If a person feels that they are in control of a situation or over a behavior, then behavior intention should predict their behavior (Dawson & Brawley, 2000). Individuals more in control of their own programs attributed their speedy recovery to more stable, personal factors than participants who recovered at a slower rate (Laubach, et al., 1996). These stable, controllable factors were also related to greater adherence during rehabilitation sessions (Laubach, et al., 1996). Recovery attributed to personally controllable factors may operate as a behavioral asset inherently found in adherence to an injury rehabilitation program. Participants who are involved in the program's decision-making process may display a higher level of perceived autonomy towards their program. For example, a recovering athlete may have to strengthen his or her quadriceps muscles after a knee surgery. He or she could be given six different quad-strengthening exercises, and of those, be given the option to choose three. Having the option to pick from a number of exercises again gives a sense of control for the injured athlete. An athletic trainer may also present three different two-hour time slots for the athlete to schedule one rehabilitation session pending the class schedule of the individual. These are two examples of situations where offering the injured athlete a sense of control over their feeling of "helplessness" can increase their compliant attitudes and demeanor.

An athletic trainer should make every effort to have a recovered athlete with a similar injury talk with the newly injured athlete. This peer modeling has been a successful supportive strategy for an injury rehabilitation environment (Fisher, Scriber, et

al., 1993; Taylor & May, 1996). This will boost the confidence of the injured athlete by showing that the challenges of the program can be accomplished if it is followed correctly (DePalma & DePalma, 1989). The athletic trainer must also keep in mind that any challenges that seem out of reach to the individual can hamper their progress towards task completion and result in non-compliance. The athlete may feel as though it is not even worth moving forward as that goal is unattainable. However, a challenge that is too easily attainable can also impede adherence as it will be accomplished too quickly. Having the optimal level of challenge from the task and effort from the injured athlete can maintain a person's psychological hardiness when the test is increased.

The issue of self-motivation is clearly linked to SDT, as the premise of the theory is that when individuals are acting of their own volition (i.e., they are self-motivated), they are more likely to engage in a target behavior in a more effortful manner. When strategies to enhance self-motivation are used as an aspect of a rehabilitation program, individuals will be more self-determined and should make good decisions concerning their treatment.

Scheduling/Convenience

Convenience is a third factor that consistently emerges in adherence literature. In their exercise adherence research, Andrew, et al., (1981) found that the dropout rate in post-coronary patients was considerably higher for those who felt the exercise sessions were inconvenient for them. In the Fields, et al., (1995) study, surveyed athletic trainers agreed that accessibility of the rehabilitation facility affected the adherence of their athletes. Collegiate athletes may not attend all their rehabilitation sessions because they feel they have no time between class, studying, and attending practices. In many cases,

athletic training personnel can empathize with these college athletes since they also have many schedule demands. Showing a sense of compassion or relatedness towards the student-athlete can lend towards creating a more compliant patient by working with the athlete and not against them.

Fisher, Mullins, et al., (1993) and Andrew, et al., (1981) also found it increasingly difficult for patients to remain adherent if they encountered parking difficulties and if the facility was inconveniently located for them. Adherers exerted more effort to have their schedules fit around the rehabilitation session and were better able to negotiate exercise facility accessibility (Fisher et al., 1988). Surveyed ATCs agreed that accessibility of the rehabilitation facility affected the adherence of their athletes (Byerly, et al., 1994). Due to greater convenience and flexibility, home-based programs are more likely to keep people physically active than are programs that involve one going outside the home (Garcia & King, 1991). At home plans can increase a patient's sense of autonomy and competence by enhancing their perception of being in control of their program. It has also been suggested that research on physical fitness should investigate methods for integrating activities into one's lifestyle so as not to disrupt daily schedules (Garcia & King, 1991), and the same will likely hold true for rehabilitation programs.

The lens of SDT provides insight into the issue of scheduling and convenience. It is clear that when individuals perceive scheduling to be convenient, they are more likely to adhere to a rehabilitation program. SDT can be useful in regard to this issue when we focus on the influence of individuals' perceptions of convenience and related factors. The construct of convenience is related to the negotiation of barriers to engagement. Giving athletes options so that they can make choices that fit into their schedules can make the

program more convenient, and at the same time increase feelings of autonomy through this decision making process. Of more consequence, however, may be calling all of the SDT nutrients into play to increase feelings of competence, autonomy, and relatedness to empower individuals to successfully negotiate barriers to program involvement that they encounter.

Pain Tolerance

Pain was another factor that distinguished adherers from non-adherers. The pain athletes experienced was inversely related to their levels of adherence (Byerly et al., 1994; Fisher et al., 1988; Fisher, Mullins, et al., 1993). According to Fisher, Mullins, et al., (1993), reducing pain and physical discomfort may increase the likelihood of adherence to rehabilitation programs. An athlete's level of catastrophizing, an extremely negative mental state present during a genuine or expected painful experience, can forecast the pain level of a recovering athlete (Tripp, Stanish, Reardon, Coady, & Sullivan, 2003). Athletes should understand nonpharmacological pain-management strategies as to learn what influences their pain perception, how to distinguish between the types of pain (i.e. exertion pain v. inflammation pain) present during rehabilitation, and the value pain management strategies are to them (Byerly, et al., 1994; Taylor & Taylor, 1997).

By instituting stress-inoculation training (SIT) pain management techniques in an athlete's rehabilitation program, therapists may be able to elicit more cooperation and effort for athletes due to pain control and increased time on task (Fields, et al., 1995). Tripp, et al., (2003) found that SIT was effective in reducing post-operative pain, apprehension, and the time between surgery and return to physical functioning. These

SIT include: relaxation training, attention diversion, and self-talk (Taylor & Taylor, 1997). “Attenders,” those that want to be educated about all aspects of their injury program, and “distractors,” those that prefer to be distracted during their program, both use SIT to cope with pain during their recovery (Tripp, et al., 2003). Adherers seemed to be less concerned with the effect pain has on their program as compared to non-adherers who allow pain to hamper their progress (Field, et al., 1995).

The more athletes are in pain, the less likely they are to want to exert effort and movement during exercises. Under situations in which movement is linked with pain, catastrophizing appears to contribute to a decline in maximal weight participants were able or willing to lift (Tripp, et al., 2003). Medical personnel should progress athletes through their program in a pain-free manner and modify their program based on the athlete’s pain level (Byerly, et al., 1994). By turning their attention to pain management strategies as an integral tool in the rehabilitation process, athletic medical personnel can help recovering athletes to a more complete and successful return to their sport. Athletes should rate their pain and make informed decisions about what methods are to be used to reduce their pain level. These decisions should be based on the pain management methods provided to them. This will offer the athlete a greater sense of control over their discomfort and seemingly better opportunity for rehabilitation continuation.

The nutrients of SDT provide a basis for helping injured athletes contend with pain. Educating athletes about the kinds of pain that they may encounter, and helping them to understand that pain is a part of recovery can empower them to cope with it. Knowledge about pain, and choices concerning options in dealing with pain, can facilitate

a sense of autonomy and competence. The relatedness nutriment can provide social support that is also important in this process.

ATC/Athlete Rapport

Characteristics of the rehabilitation professional and the quality of the relationship between the patient and the rehabilitation professional are extremely relevant to the adherence process of the rehabilitating patient (Brewer, et al., 2003). Establishing a close rapport between the two parties involved in the rehabilitation is extremely important to the long-term adherence of an athlete to his/her rehabilitation program. Creating rapport and implementing compliance strategies increase one's chance of being effective in a particular program (Fisher, Mullins, et al., 1993). An athletic trainer should have a sympathetic or empathetic relationship with their athlete who is born out of mutual respect (Fisher, Scriber, et al., 1993). This relationship can be garnered by the medical personnel demonstrating a working knowledge of the injured athlete's sport and validating their competence with the task at hand. A trusting and supportive relationship can be built on clear communication, cautious optimism, and appropriate rehabilitation education of the athlete (Fisher, Scriber, et al., 1993). This relationship can make an athlete feel as though they have some level of relatedness to their medical personnel. Though this does not guarantee that the athletes will adhere to their programs, it can make the process less challenging and more effective. Threats and scare tactics have not demonstrated positive results towards rehabilitation adherence. It is more advantageous for the athletic trainer to change a threat into a challenge (Fisher, Scriber, et al., 1993).

An important aspect of the athletic trainer/athlete relationship is being able to set goals for the rehabilitation program (Fisher, Scriber, et al., 1993). DePalma and DePalma

(1989) assert that the behavioral approach to goal-setting, use of short-term realistic goals, has been most productive in maintaining adherence to health-related programs. There are several components of the behavioral approach that are important in understanding its theory (DePalma & DePalma, 1989). Long-term goals are important as they are what the program is about or focused upon (Fisher, Mullins, et al., 1993). However, it can be a daily difficulty for a participant to remain adherent to a program if their ultimate goal is 9 to 12 months into the future. Such as is the case when an athlete is recovering from an anterior cruciate ligament (ACL) rupture in the knee. Short-term goals should be established to aid in the completion of the distant long-term goal. Having specific sub-goals within a short-term goal can maximize the benefits of a program (Fisher, Mullins, et al., 1993). For example, knee exercises in a program can be explained into specific components that are easily managed for the participant.

Not only should the goals be specific, but also they should be realistic (Fisher, Scriber, et al., 1993). Goals should be challenging, but not out of reach as that could damage a participant's perceived self-efficacy towards their exercises. Having the athlete attain their task will provide optimal levels of reinforcement and support (DePalma & DePalma, 1989). Reinforcement is a driving force in the successful completion of an injury rehabilitation program. An athlete that has small, yet frequent success can gain motivation or incentive to continue working towards the distant goal (Fisher, Mullins, et al., 1993). Having these small successes can re-establish an athlete's desire for hard work, interaction, satisfaction, and sacrifice as each sub-goal is established. It is also important not to over assess an athlete's performance as it may make the athlete feel less responsible for their outcome of their work (Fisher, Scriber, et al., 1993). Athlete self-

responsibility has been enhanced by having them participate in monitoring and recording of their progress. Rehabilitation adherence was doubled in individuals who achieved their goals (Fisher, Scriber, et al., 1993).

During the recuperation process, program flexibility is imperative to its success; both flexibility of the athlete and athletic trainer (Fisher, Scriber, et al., 1993). If some exercises appear too challenging, too unproblematic, or simply do not do anything for the recovering athlete, the involved parties should be willing to adapt to provide maximum effectiveness of the program. Being forewarned of these possibilities can lead to a reduction or elimination of program problems (DePalma & DePalma, 1989).

Using goal-setting techniques with an athlete is something that is not alien to them. Coaches usually design practices as short-term goals to achieve the long-term goals of the team. There are also other considerations for the athlete and athletic trainer when it comes to setting goals (DePalma & DePalma, 1989). Intervening as soon as possible with answers to athlete questions and instructions for the athlete is important for a smooth rehabilitation program. Having target dates and strategies for managing those goals, as well as having a visual place to see the progress attained, can give the injured athlete the belief that they can achieve their goals (Fisher, Scriber, et al., 1993). Giving detailed explanation of the long- and short-term rehabilitation programs and the setting of short-term subgoals within a certain timeframe can also increase this confidence.

Input from the athlete should be used by the athletic trainer to develop the long- and short-term rehabilitation program (DePalma & DePalma, 1989). This can aid the recovering athlete in feeling some amount of control in the rehabilitation and not merely a pawn in the process. This may even assist in enhancing the athlete's faithfulness to the

rehabilitation plan due to its individualized design. This individualized design should be presented in a clear manner upon which a realistic and specific timetable for subgoals is available (Fisher, Scriber, et al., 1993). A take-home calendar with regular subgoals and space for exactly what is to be achieved at each rehabilitation session. By providing this calendar to teammates, coaches, and significant others, those close to the injured athlete can take an active part in the program by being present during some sessions (Fisher, Scriber, et al., 1993). This can lessen the athlete's feeling of alienation and stress due to injury (DePalma & DePalma, 1989).

It is also important for the athletic trainer to stress the present tense of rehabilitation and what the athlete can do at that moment to get better (Fisher, Scriber, et al., 1993). A positive attitude and focusing on what the athlete wants to do is very influential to a successful program. As each subgoal is accomplished, it is the responsibility of the athletic trainer to provide positive feedback to the athlete as to enhance their commitment to their recovery. The capability to set and reach goals may separate the athletes who successfully return to competition within a certain timeframe from those who will not and is a potential determinant of rehabilitation adherence.

The importance of establishing a positive working rapport with the athlete is accentuated when the rehabilitation context is examined through the lens of SDT. Not only is the athlete-trainer rapport an essential element within the relatedness nutriment, it is also a central concern in creating a supportive environment where feelings of autonomy and competence can be nourished. According to SDT, when motivation is externally regulated, such as when athletes attend rehabilitation sessions only because they are forced to do so, they are unlikely to adhere to treatment protocols, or to exert the

effort necessary to rehabilitate their injuries. If the rapport established between the athlete and the trainer is controlling, then the athlete is unlikely to progress to higher, more internalized forms of motivation and regulation. If, however, rapport is autonomy supportive, then it is more likely that the athlete will move from external regulation to more identified and integrated regulation, demonstrate more autonomy, assume some responsibility for the rehabilitation program, and successfully return to competition.

Feedback

Feedback that signifies or encourages feelings of competence within a self-determination context enhances intrinsic motivation, especially if this feedback is given in an optimally challenging environment (Blau, Reis, & Jackson, 1984; Vallerand, 1983). This creates an optimum environment for increased perceptions of competence and more self-determined forms of extrinsic motivation. It is also important to understand that individual variables, such as effects of perceptions and feelings of competence, may change individual perceptions of feedback and thus intrinsic motivation. If feedback does not change perceived competence, then intrinsic motivation will remain unchanged, as perceived competence is a mediator of intrinsic motivation (Vallerand & Reid, 1984). Analyses further illustrated that the feedback and modification in intrinsic motivation were mediated by perceived competence.

If a positive feedback situation is constructed, an intrinsically motivated individual's behavior will be enhanced. This positive feedback can augment intrinsic motivation whereas negative feedback can weaken intrinsic motivation through a change in perceived competence (Deci, 1980). Several authors discovered that there were higher grades of intrinsic motivation after positive feedback more so than after negative

feedback or no feedback (Deci, 1971; Vallerand & Reid, 1984, 1988). Negative feedback actually decreased intrinsic motivation through decreasing one's feelings of competence and self-determination (Deci, Cascio, & Krusell, 1973).

Implications

Based on conclusions from research in exercise settings (Markland, 1999) and health-care settings (Ryan, et al., 1995; Williams, et al., 1996; Williams, et al, 1998; Williams, et al., 1999), the use of SDT as an organizing framework in athletic injury rehabilitation has the potential to yield information that can help athletic trainers create an environment that will lead towards self-motivation of athletes in a rehabilitation setting. There is evidence is clear to several authors that an autonomy-supportive environment is essential for motivating individuals in exercise settings (Markland, 1999) as well as patients in clinics or employees in the workplace (Ryan & Deci, 2000). Field studies found that teachers who were more autonomy-supportive had students that experienced greater levels of intrinsic motivation, craving for challenge, and curiosity in their tasks (Ryan & Grolnick, 1986). Similar studies reported that autonomy-supportive parents, versus controlling parents, had children who were more intrinsically motivated (Grolnick, Deci, & Ryan, 1997).

From an SDT perspective, creating an optimum environment for motivating an athlete during injury recovery would also be invaluable in providing choices and opportunity for self-management or conveying to them that their own plan for personal well-being and self-regulation is valued. A primary goal for any athletic trainer should be to create an environment that will motivate athletes to transform an externally imposed regimen into a program that is self-authored and self-directed. Every effort should be made to replace threats, directives, and imposed deadlines with feelings of internal

control and opportunities for self-direction (Ryan & Deci, 2000). Courses of action to elicit the needed behaviors without athletes feeling they are being controlled, is essential for positive practical results.

The importance of creating an autonomy-supportive environment with an internal locus of causality cannot be highlighted enough in an injury rehabilitation program. This locus of causality or creating a feeling of being in control will facilitate responses towards the three nutrients needed to fulfill one's basic psychological wishes of autonomy, competence, and relatedness (Ryan & Deci, 2000, 2001). These needs are necessary for self-motivation and personality development and this level of intrinsic motivation can be achieved by providing choices of procedures and deadlines, opportunities for self-direction, and options for personal control.

Autonomy keeps individuals engaged in an activity over a long period of time, which is indeed beneficial for rehabilitation adherence. Even competent athletes need to feel autonomous before their level of intrinsic motivation can be facilitated (Vallerand & Reid, 1984). Fisher (1978) indicated that perceived competence and intrinsic motivation were only correlated when under self-determined or autonomous conditions. Therefore, creating a self-determined environment is critical if the goal is to increase an athlete's intrinsic motivation for rehabilitation. The final nutrient, relatedness, gives an athlete a feeling of being connected to their athletic trainer. This construct has been linked to higher levels of exploratory behaviors and intrinsic motivation (Ryan & Deci, 2000). It may then be important for medical personnel to make a strong, close connection with their injured athletes and this can be accomplished in several ways. First, the athletes must feel a level of closeness with their athletic trainers and view them as caring

individuals who understand the nature of the injury and the frustrations associated with the rehabilitation process. Athletes must always have a feeling of attachment and understand that the relationship is a collaborative one. This environment will promote a sense of security and will more likely support a higher level of intrinsic motivation.

By addressing the psychological as well as the physical side of rehabilitation, sports medicine personnel can develop an all-encompassing plan for athlete healing. Physically optimal environments are designed to allow tissue to heal as efficiently as possible. Wolff's Law states that bone and soft tissue will react to physical stresses placed upon them, causing them to heal and realign in a certain fashion (Prentice, 1999). The human body heals at certain rates under optimal conditions and having the condition remain as perfect as possible can be important.

A person's emotional well-being can be damaged when they are injured. The best possible mental and emotional healing environment is favorable for this repair. The psychological healing of an athlete can best be suited in an autonomy-supportive, task-oriented environment. This environment emphasizes an athlete making their own choices and displaying competent, self-directed behaviors (Deci & Ryan, 1985). Such examples may include giving the athlete various exercises to select from to strengthen a particular body part, allowing them to use their time management skills in their rehabilitation, or show them the importance of technique in each of their individual exercises. If those selections are satisfied too readily, then the athlete has no reason to feel competent and becomes disinterested in those tasks (Deci, 1980). Therefore, the proper balance of testing the individual and allowing them to be successful can give them the perception of being autonomous.

Another implication for athletic training personnel may be that they need to receive more training in the area of psychological rehabilitation of injured athletes. Much of the rehabilitation literature has been focused on the physical aspect of recovery (DePalma & DePalma, 1989; Mainwaring, 1993). By providing encouragement, positive feedback, and strategic mental training, athletic trainers can assist in mending an injured athlete's psychological side (Weiss & Troxel, 1986; DePalma & DePalma, 1989).

Suggestions for Application

Learning about and understanding the injured athlete can aid in the overall enhancement of an athlete's well-being. By really getting to know the athlete they are dealing with, the athletic trainer can then be an effective liaison between the athlete and the other parties involved in the rehabilitation and formulate an ideal plan for athlete recovery. This understanding can facilitate strategies for applying methods of program adherence.

An athletic trainer should take the time to talk to the athletes and learn the athlete's background at the beginning of a rehabilitation program (Brewer, et al., 2003). From this, the rehabilitation professional may be able to determine the athlete's position on the self-determination continuum. They would then be able to better negotiate ways to get the athlete to the far right of the continuum. One way to do this is by creating an autonomy-supportive environment. Providing choices for the athlete allows them to implore opportunities for self-management (Ryan & Deci, 2000). Creating this feeling of internal control over their programs, an external drive can be modified into self-authored, self-directed tactics for the rest of the program.

Taking the time to get to know the injured athlete can establish a feeling of relatedness between the athlete and the therapist. Relatedness, a nutriment in the self-determination philosophy, can be presented several ways. An athletic trainer who puts forth an attitude of compassion, openness, and honesty towards their athletes, enhances feelings of relatedness. Rehabilitation should be a collaborative effort between all parties involved with open lines of communication (Fisher, Mullins, et al., 1993). Injured athletes should not feel as though they are in the program by themselves, but rather connected with their coaches, teammates, and spouses.

Increased education for medical personnel is important in enhancing rehabilitation adherence (Fisher, Scriber, et al., 1993). Determining effective psychological methods for recovery such as self-talk, attention diversion, and relaxation training are helpful in a program. This can allow the athlete to feel in control of their recovery plan and take some responsibility for their actions. The athletic trainer can only do so much to help the injured athlete get over mental obstacles standing in the way of success. The athletes can then install these methods to help themselves, which can be more effective in the long-term.

Future Research

Athletic trainers must be knowledgeable concerning how to treat injuries that occur and to design rehabilitation exercises that will enable athletes to return to competition as quickly as possible. Although that knowledge base is a critical component in the rehabilitation process, knowing how to design a treatment protocol is only one aspect of facilitating injury recovery. The best treatment protocol in the world will not be effective if the athlete does not adhere to the program. It is important for us to gain a

clearer understanding of how athletic trainers can structure rehabilitation in ways to promote adherence and optimize athletes' motivation to rehabilitate their injuries. Previous investigations have provided insight into this issue, and several have employed a theoretical perspective to design studies and interpret results. However, a comprehensive theoretical approach that can provide an overarching organizing framework is needed. SDT has been used to achieve that purpose in related domains, and appears to hold promise for injury rehabilitation research.

Researchers in this area have not explored the application of SDT, so several steps need to be taken to begin a line of research using this perspective. Initially, correlational studies are needed to determine if athletic training environments that are perceived as autonomy supportive are associated with more self-determined forms of motivation and autonomous orientations. Based on the literature reviewed, the following are hypotheses that should be tested to initiate this line of research:

- a) Perceptions of an autonomy-supportive climate will be positively related to autonomous causality orientations and higher levels of self-determination, but negatively related to control causality orientations.
- b) Autonomous causality orientations will be positively related to higher levels of self-determination, while control causality orientations will be associated with lower levels of self-determination.
- c) Causality orientations, self-determination, and perception of the health-care climate will predict levels of perceived competence.

Next, it would be important to determine how well those variables predict adherence in rehabilitation programs. An issue that has not been addressed in this review,

but one that has emerged in several studies is the valid and reliable assessment of adherence as a dependent variable, and that issue needs to be clarified before these relationships can be carefully examined. If it can be established that autonomy supportive environments, self-determined motivations, and autonomous orientations are associated with adherence and that they facilitate recovery from injury, the next steps would be to design theoretically based interventions designed to create autonomy supportive environments to foster self-determination, and then test their effectiveness.

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APPENDIX B – INSTRUMENTS

Rehabilitation Causality Orientation Scale (RCOS)

Below are a series of situations that people can find themselves in with regard to injury rehabilitation. Each situation is followed by two responses (*a* and *b*) that represent different ways in which people could react. Please imagine yourself in each situation and mark the box with YOUR answer for each question to indicate the extent to which each response would represent you in that situation.

1 2 3 4 5 6 7
 very unlikely moderately likely very likely

1. You have been injured and are beginning a new injury rehabilitation program. You are likely to:

a) Attend a structured rehabilitation program when an athletic trainer is telling you what to do.	1	2	3	4	5	6	7
b) Decide for yourself which type of rehabilitation exercise you would like to complete.	1	2	3	4	5	6	7

2. You are encouraged by your athletic trainer to complete additional exercises outside of your rehabilitation sessions. You are likely to:

a) Assume responsibility for the program and regularly complete exercises without supervision.	1	2	3	4	5	6	7
b) Need support and/or supervision from significant others (friends, teammates) and monitoring by your athletic trainer to comply with the home program.	1	2	3	4	5	6	7

3. In order to monitor how well you are doing in your rehabilitation program, you are likely to want to:

a) Be given a lot of praise and encouragement from others.	1	2	3	4	5	6	7
b) Evaluate your own performance and provide yourself with positive feedback.	1	2	3	4	5	6	7

4. You have been rehabilitating your injury for 3 months, but recently you have been missing sessions and are finding it hard to get motivated. You are likely to:

a) Approach someone to help motivate you.	1	2	3	4	5	6	7
b) Employ your own strategies to motivate yourself.	1	2	3	4	5	6	7

5. You have been told that setting goals is a good way to motivate yourself to rehabilitate your injury. You would likely:

a) Set your own realistic, but challenging goals.	1	2	3	4	5	6	7
b) Rely on your athletic trainer to set your goals for you.	1	2	3	4	5	6	7

6. During a discussion with an athletic trainer, he/she presents many options on the best way for you to rehabilitate your injury back to health. It is likely that your first thought would be:

a) What do you (the athletic trainer) think I should do?	1	2	3	4	5	6	7
b) What do I think is the best option for me?	1	2	3	4	5	6	7

7. During an injury rehabilitation session, how hard you are working out is likely to be governed by:

a) The intensity level your athletic trainer tells you to work.	1	2	3	4	5	6	7
b) The highest level of intensity that you can tolerate.	1	2	3	4	5	6	7

8. When you begin your rehabilitation program, you are likely to:

a) Follow exactly what the athletic trainer tells you to do.	1	2	3	4	5	6	7
b) Complete whatever exercises you want to do.	1	2	3	4	5	6	7

9. When you are working out during your rehabilitation program, you are likely to:

a) Work hardest when the athletic trainer is close by.	1	2	3	4	5	6	7
b) Exert maximal effort throughout the session even if you are by yourself.	1	2	3	4	5	6	7

10. When you are involved in a program for an extended period of time, you are likely to:

a) Rely on someone else to get you through each day of your program.	1	2	3	4	5	6	7
b) Find inner strength to get you through the tough times of your program.	1	2	3	4	5	6	7

Health Care Climate Questionnaire (HCCQ)

Think back to the most serious injury you have experienced and your treatment/ rehabilitation for that injury. This questionnaire contains items that are related to your visits with your athletic trainer during that treatment/rehabilitation. Athletic trainers have different styles in dealing with athletes, and we would like to know more about how you have felt about your encounters with your athletic trainer and what would be important to you. Please circle the number in the box that best rates your response to each question according to the scale below. Your responses are confidential. Please be honest and candid.

	1	2	3	4	5	6	7
	strongly disagree			neutral			strongly agree
1. I felt that my athletic trainer provided me with choices and options.	1	2	3	4	5	6	7
2. I felt understood by my athletic trainer.	1	2	3	4	5	6	7
3. I was able to be open with my athletic trainer at our meetings.	1	2	3	4	5	6	7
4. My athletic trainer conveyed confidence in my ability to make changes.	1	2	3	4	5	6	7
5. I felt that my athletic trainer accepted me.	1	2	3	4	5	6	7
6. My athletic trainer made sure I really understood my condition and what I needed to do.	1	2	3	4	5	6	7
7. My athletic trainer encouraged me to ask questions.	1	2	3	4	5	6	7
8. I felt a lot of trust in my athletic trainer.	1	2	3	4	5	6	7
9. My athletic trainer answered my questions fully and carefully.	1	2	3	4	5	6	7
10. My athletic trainer listened to how I liked to do things.	1	2	3	4	5	6	7

Perceived Competence Scale (PCS)

Please respond to each of the following items in terms of how true it is for you with respect to your confidence in dealing with an injury and your ability to be successful in a rehabilitation program. Please put an **X** in the box that best rates your response to each question according to the scale below.

1 2 3 4 5 6 7
 not at all somewhat very
 true true true

1. I feel confident in my ability to manage my rehabilitation.	1	2	3	4	5	6	7
2. I am capable of handling my rehabilitation.	1	2	3	4	5	6	7
3. I am able to do my own rehabilitation routine.	1	2	3	4	5	6	7
4. I feel able to meet the challenge of my rehabilitation exercises.	1	2	3	4	5	6	7

Social Desirability Scale (SDS)

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to your personality.

1. I like to gossip at times.	TRUE	FALSE
2. There have been occasions when I took advantage of someone.	TRUE	FALSE
3. I'm always willing to admit it when I make a mistake.	TRUE	FALSE
4. I always try to practice what I preach.	TRUE	FALSE
5. I sometimes try to get even, rather than forgive and forget.	TRUE	FALSE
6. At times I have really insisted on having things my own way.	TRUE	FALSE
7. There have been occasions when I felt like smashing things.	TRUE	FALSE
8. I never resent being asked to return a favor.	TRUE	FALSE
9. I have never been irked when people expressed ideas very different from my own.	TRUE	FALSE
10. I have never deliberately said something that hurt someone's feelings.	TRUE	FALSE

Athlete Interview Questions

- 1) Tell me about your injury rehabilitation sessions.
 - a) What do you do in your rehab sessions?
 - b) How much do you enjoy your rehab sessions?
 - c) Why?
- 2) How motivated are you in your rehab sessions?
 - a) Why do you think so?
 - b) How much how motivated you are in your activities outside of the athletic training room?
 - c) What kind of activities do you do outside of the athletic training room?
 - d) How important is it for people to be motivated in their rehabilitation sessions?
 - e) Why?
- 3) Do you think you are motivated compared to other people on your team?
 - a) Why do you think so?
 - b) Is there an example of someone that is more motivated than you? How/why is that person more motivated?
 - c) Is there an example of someone that is less motivated than you? How/why is that person less motivated?
- 4) Tell me more about your rehabilitation sessions. Describe your attitude toward rehabilitation.
 - a) What do you do in your rehabilitation that you enjoy?
 - b) Why do you like those activities?
 - c) What activities do you not enjoy?
 - d) Why do you not like those activities?
- 5) What would you change about your rehabilitation sessions so that you would enjoy it more?
- 6) If you were the athletic trainer, what would you change about the rehabilitation sessions to make it better?
- 7) If you do not feel as though you are motivated, what would make you want to be more motivated?
- 8) How much do you value your injury rehabilitation sessions?
- 9) Do you think that your athletic trainer wants you to get better in your rehabilitation sessions or do they just give you exercises to do because that is what they are supposed to do in a rehabilitation session?
 - a) Why do you think so?
 - b) Can you give me an example?
- 10) What do you think is important to your athletic trainer for athletes to do in the rehabilitation sessions?
- 11) Why do you think some people do not enjoy their rehabilitation sessions?
- 12) Do you worry about performing exercises in your rehabilitation session that you are not particularly good at?
 - a) Why do you worry about this?
- 13) How motivated are you during your rehabilitation sessions?
 - a) Why do you think so?
 - b) What would make you want to be more motivated during your rehabilitation sessions?

RCOS

- 1) What was/is your attitude like at the beginning of your injury rehabilitation program?
 - a) Why did/do you feel this way?
 - b) Did/Does anything influence your attitude towards your program?
 - c) How do you feel about your program now?
- 2) How is the intensity of your effort for your exercises?
 - a) Are there certain times when you exert more effort than others?
 - b) Tell me about those intense/non-intense times.
 - c) What effect does the presence of your athletic trainer have on your exercise intensity?
 - d) What effect does the presence of teammates or coaches have on your intensity?
- 3) How well do you follow the directions of your athletic trainer during your rehabilitation sessions?
 - a) Do you tend to stray from the established plan?
 - b) Why do you change what your athletic trainer tells you to do?
 - c) What influence do your own expectations of your program have on your ability to remain focused?

SRO-R

- 1) Do you keep track of your own progress in your rehabilitation sessions or do you let your athletic trainer do this?
 - a) Why do you do this?
 - b) Why is it important to keep track of your progress?
- 2) Why is it important for others to be aware of what you are doing in your rehabilitation sessions?
 - a) What do you tell others about your rehabilitation sessions?
- 3) Do you like being challenged by others during your rehabilitation sessions?
 - a) Why do you like/dislike this?
 - b) Is it important to challenge your self during your rehab?
- 4) Tell me about how you feel if you miss a rehabilitation session.
 - a) Why do you feel this way?
 - b) How do you feel even if your athletic trainer tells you that it is no big deal for missing the session?
- 5) Tell me the importance of your sport in your life.
 - a) Why is it important to you?
 - b) How important is your rehabilitation in your sport?
 - c) Why is it important?

HCCQ

- 1) Does your athletic trainer give you choices about your rehabilitation exercises?
 - a) How do you feel about that?
 - b) Why do you feel that way?
- 2) Do you ask your athletic trainer questions about your rehabilitation program?
 - a) Does your athletic trainer give you adequate answers to the questions that you ask?
 - b) Does he/she encourage you to ask questions about your injury?

- c) Why do you/don't you ask about your rehabilitation program?
- d) Why do you/don't you want to know more about your program?
- 3) Tell me about your relationship with your athletic trainer.
 - a) Why do you think your relationship is like that?
 - b) Does your athletic trainer attempt to understand your feelings/needs when developing the program?
 - c) What type of input for your program does your athletic trainer take from you?
 - d) Do you trust the information that your athletic trainer gives to you about your program?

PC

- 1) How confident are you in your ability to handle your injury rehabilitation program?
 - a) Why do you/don't you feel confident about your ability to handle your injury?
 - b) How confident are you when playing your sport?
 - c) Why do you feel that way?
- 2) Do you feel challenged by your rehabilitation exercises?
 - a) What about your rehabilitation challenges you?
 - b) Tell me how you would feel if you had to do your rehabilitation routine by yourself.

Athletic Trainer Interview Questions

- 1) What is your relationship like with your injured athlete (i.e. give name)?
 - a. Why do you think your relationship is like that?
 - b. What influences your relationship with this athlete (i.e. your/their attitude)?
 - c. What would make your relationship with this athlete better or more productive?

- 2) Tell me about some aspects of athletic training that you enjoy.
 - a. Tell me some aspects that you do not enjoy.
 - b. What are your feelings towards rehabilitation in general?
 - c. Are there other things in athletic training that you would rather do than rehabilitation? What are they and why would you rather do them?

- 3) How is the intensity of your athlete's effort towards their rehabilitation exercises?
 - a. Are there certain times when you exert more/less effort than others during your athlete's rehab?
 - b. Tell me about those times. What causes your effort levels to change?
 - c. What type of effect on an athlete's effort is there depending if the coach or teammates are present? If you are present?

- 4) On a scale of 1 -10 (10 being the highest level), how would you rate your athlete's levels of adherence to their rehabilitation program? By adherence I mean such as participating in all assigned clinic activities, completion of home based exercises, and taking medications as instructed.
 - a. What could they do to be more adherent other than show up more (i.e. attitude change, home exercise commitment)?
 - b. How could you help them be more adherent?

- 5) How do you involve your athlete in the decision-making process of the rehabilitation program?
 - a. Do you feel it is important to include them in the decision-making process? Why or why not?
 - b. Do you solicit input from your athlete when you design their injury rehab program? Why or why not?
 - c. Do you take into consideration your athlete's feelings or psychological needs when you establish their program (i.e. re-injury, lengthy rehab process)? Why or why not?
 - d. Is it more important for an athletic trainer to have an established daily rehab plan **OR** develop the plan once they speak to the athlete? Why?

- 6) How well does your athlete follow the directions you give them during their rehabilitation sessions?
 - a. Why do you think your athlete does/does not follow the directions that you give them for their rehab program?
 - b. What influences your ability to remain focused on your athlete's rehab

program (i.e. Once the athlete is in the athletic training room, what influences...)

- c. Do you think your athlete does/does not follow the directions that you give them for their rehab program when you are not directly supervising them? What makes you think that?
- 7) In general, what are some ways that an athlete can make a rehab program better?
 - a. What things could you do as an athletic trainer to make the program better?
 - 8) What are some challenges that your athlete faces in their rehab program?
 - a. What are some ways that they can overcome those challenges?
 - b. How can you help them overcome those challenges?
 - c. What are some challenges that you face during rehab?
 - d. How do you overcome these challenges?
 - 9) How confident are you in your ability to handle your athlete's injury rehabilitation program?
 - a. How does your confidence change if there is a new injury rehab program (i.e. one that you have never done before) vs. one that you have done previously (even with another athlete)?
 - b. What effect does the age/sport experience level have on your confidence level in that rehab? Why?

Participant Information Sheet

ID (last 4-digits of SS#) _____

1. Name: _____ Age: _____. E-mail: _____
Gender: M / F (Circle one) Date of birth (MM/DD/YYYY): ____ / ____ / _____.
Ethnicity: _____
2. Sport _____
3. If applicable, what position? _____
4. Year of sport eligibility _____ 1 2 3 4
5. Playing status _____ starter reserve
6. Have you ever been injured seriously enough so you had to participate in an injury rehabilitation program? _____ Y N
7. If no, please discontinue answering the rest of the questions on this sheet, but finish the remaining surveys. If yes, what was your most serious injury or the injury that required the most intensive therapy? _____

8. Please describe the injury (example: sprained ankle, major knee surgery, etc). _____

9. How long were you involved in the treatment/rehabilitation program? _____
10. How old were you when you were injured? _____
11. What type of treatment/rehabilitation did you go through? _____

APPENDIX C – RAW QUANTIATIVE DATA

ID	Sport	Age	Gend	DOB	Eth	Elig	Inj.	Auto	Control	ER	IJ	ID	IM	HC	PC	SD
9335	1	4	1	7/28/1984	3	3	1	5.20	2.90	4.5	5.75	6.25	6.50	5.13	7.00	1.3
2433	1	4	1	9/26/1984	3	2	1	4.40	3.50	3	5.25	6.75	6.00	5.53	5.50	1.4
4325	1	4	1	8/28/1984	3	4	1	4.50	4.70	4.75	4.5	6.25	5.75	5.60	5.00	1.4
1947	1	5	1	9/26/1983	3	4	1	5.30	4.70	3.75	4.25	5.75	6.25	3.67	4.75	1.3
0-705	1	3	1	1/22/1986	3	1	1	5.00	4.70	3.5	5.5	6.75	6.50	5.80	5.75	1.3
6578	1	5	1	11/1/1983	3	3	1	5.00	4.60	6	6	6	6.00	5.47	6.00	1.3
5724	1	2	1	10/21/1986	2	1	1	5.40	4.70	3.5	5	5.75	5.50	5.53	5.25	1.3
6626	1	6	1	1/7/1983	3	4	1	4.90	5.30	3	5	6	5.75	4.53	5.75	1.3
4647	1	4	1	1/16/1985	3	2	1	5.30	5.10	3.5	4.5	6.75	6.75	6.00	6.75	1.5
8319	1	4	1	1/7/1985	3	3	1	4.90	4.30	2.75	4.5	6	6.50	5.60	5.00	1.4
7852	1	4	1	10/15/1984	3	2	1	6.00	5.00	4	6	6.5	7.00	6.60	5.50	1.3
9970	1	3	1	12/26/1985	3	1	1	6.00	4.10	3.25	5.75	6.75	7.00	5.80	7.00	1.4
8945	1	5	1	9/13/1983	3	4	1	5.60	3.90	4.5	5.25	3	5.25	2.67	6.75	1.2
3900	1	6	1	1/21/1983	3	4	1	6.00	3.80	3.5	4.5	6	5.50	6.13	5.50	1.2
5326	1	3	1	1/2/1986	3	1	1	5.40	3.90	4.5	6.75	7	7.00	6.60	5.75	1.2
5486	1	2	1	12/18/1986	3	1	1	5.00	3.80	3.5	5.75	7	7.00	6.20	5.00	1.3
3249	1	1	1	4/6/1987	3	1	1	4.70	4.00	3.75	5.75	7	6.75	6.60	5.50	1.4
5914	1	2	1	1/4/1987	1	1	1	5.90	5.90	6.25	7	7	6.75	6.47	4.75	1.2
7855	1	2	1	4/4/1986	3	1	1	5.30	5.00	2.75	4.25	6.25	6.50	6.60	4.50	1.5
1814	1	2	1	4/18/1986	3	1	1	4.30	4.50	2.5	3.75	4.5	5.25	4.53	4.75	1.4
6396	1	3	1	12/18/1985	3	1	1	4.70	4.00	3.5	5	6.5	6.25	4.00	5.75	1.5
4784	1	2	1	2/14/1986	3	1	1	5.10	4.60	3.75	4.75	6.5	6.75	5.93	6.75	1.4
7967	1	1	1	6/10/1987	1	1	1	5.50	3.60	2.25	4.5	5	5.50	4.73	5.00	1.4
5703	1	5	1	8/28/1983	1	1	1	5.10	3.00	5.5	5.75	4.75	6.25	4.53	5.75	1.3
7029	1	5	1	12/13/1983	3	3	1	5.20	4.30	2.75	4.5	6.25	6.00	5.93	5.75	1.6
3287	2	3	1	6/27/1985	3	3	1	4.60	4.20	3	4.75	5.25	4.75	4.33	3.50	1.5
6081	2	3	1	6/20/1985	3	3	1	5.30	3.70	3.75	6	6.75	6.00	5.00	6.50	1.3
5570	2	5	1	9/2/1983	3	4	1	5.20	4.40	2.5	3.25	6	5.75	4.27	5.50	1.3
4057	2	3	1	9/22/1985	1	3	1	5.40	4.40	4.75	6.5	6.5	7.00	6.60	6.00	1.5
7481	2	3	1	8/4/1985	1	2	1	5.60	5.30	6	6.25	7	6.75	6.60	6.50	1.5
8710	2	6	1	1/25/1983	1	4	1	5.80	3.40	4	7	7	7.00	7.00	7.00	1.2
8906	2	4	1	12/26/1984	3	3	1	6.00	4.70	6.25	7	6.5	3.50	6.13	6.25	1.2
3927	2	2	1	5/7/1986	3	2	1	5.10	4.90	4.25	6	7	6.75	6.00	5.25	1.4
4507	2	3	1	12/8/1985	3	2	1	4.40	4.80	1.75	4	6.75	6.25	4.33	5.00	1.4
1143	2	5	1	8/27/1983	3	4	1	4.90	3.80	4.5	5.75	6.75	5.75	5.33	3.75	1.2
7729	2	5	1	7/31/1983	3	4	1	4.30	5.20	5.5	5.5	7	7.00	6.40	6.25	1.3
7503	2	4	1	12/30/1984	3	4	1	4.60	4.00	3.25	3.5	6	5.75	5.27	5.00	1.3
8662	2	4	1	1/29/1985	1	2	1	5.40	5.50	4.75	6.75	6.75	7.00	6.93	7.00	1.4
9292	2	3	1	8/10/1985	3	2	1	5.20	4.90	5.25	5.75	6	6.00	5.53	5.50	1.5
5546	2	3	1	12/11/1985	1	2	1	5.30	5.70	4.75	5	6	6.50	6.47	5.25	1.3
2251	2	5	1	9/17/1983	3	4	1	5.30	6.00	6	5.5	6	5.75	5.67	5.75	1.4

ID	Sport	Age	Gend	DOB	Eth	Elig	Inj.	Auto	Control	ER	IJ	ID	IM	HC	PC	SD
8170	2	1	1	5/19/1987	3	1	1	4.80	4.60	2.75	3.75	6.25	6.25	5.13	4.00	1.5
3435	2	4	1	12/7/1984	1	4	1	5.60	4.60	3	3.5	5.25	5.25	4.73	6.00	1.3
2779	2	4	1	11/7/1984	1	4	1	5.50	3.90	4.25	5.75	6	6.00	5.20	5.50	1.5
5226	2	5	1	11/2/1983	3	4	1	5.00	2.80	2.5	6	7	7.00	4.13	6.25	1.3
6167	2	4	1	9/9/1984	1	3	1	5.70	4.40	5.25	7	7	7.00	6.60	5.50	1.3
1733	2	4	1	4/19/1984	3	4	1	6.10	4.30	5	7	7	6.75	4.80	7.00	1.2
6539	2	4	1	3/1/1985	3	3	1	4.80	4.90	5.25	6	4.75	3.50	4.20	3.25	1.4
4260	2	5	1	5/10/1983	1	4	1	6.40	4.20	3.75	7	7	7.00	6.13	7.00	1.3
2174	2	2	1	11/9/1986	3	1	1	4.80	3.90	3	5.75	7	6.50	6.33	4.25	1.2
5338	2	2	1	9/25/1986	3	4	1	4.20	4.40	4.5	3.75	5	4.75	3.80	4.00	1.2
7501	2	2	1	12/13/1986	3	4	1	5.40	4.40	4	5.75	7	7.00	6.00	6.75	1.3
2624	2	4	1	2/25/1985	1	3	1	5.90	5.70	4.25	6	6.5	6.50	5.93	6.50	1.4
3295	2	3	1	4/7/1986	3	2	1	5.50	4.90	4.75	5.75	6.5	6.75	5.53	5.25	1.5
3384	2	3	1	10/1/1985	3	2	1	5.30	4.30	3.5	5.5	7	7.00	5.27	6.00	1.4
1144	2	3	1	5/8/1985	3	3	1	4.30	3.90	2.75	5.75	5.25	5.50	4.80	5.25	1.3
3593	2	2	1	11/26/1986	1	1	1	5.80	4.00	4	5.5	7	7.00	6.33	7.00	1.4
2302	2	3	1	3/10/1986	3	2	1	6.40	6.90	5.5	7	7	7.00	6.33	7.00	1.1
8547	2	2	1	5/5/1986	3	3	1	5.50	4.20	5	6.5	7	7.00	5.00	6.00	1.1
2401	2	4	1	4/18/1985	1	3	1	5.90	2.90	2	5	7	7.00	5.60	7.00	1.3
2124	2	3	1	8/14/1985	3	3	1	3.70	5.10	4.75	5	6	6.25	5.13	3.00	1.2
2021	2	3	1	4/5/1986	3	1	1	5.40	5.30	7	7	7	6.75	4.20	6.25	1.3
7215	2	1	1	5/15/1987	1	2	1	5.00	3.60	6.5	7	7	7.00	6.60	7.00	1.1
9097	2	4	1	11/22/1984	3	3	1	5.10	4.80	3.75	3.75	5	5.50	5.33	6.00	1.2
8073	2	4	1	9/13/1984	1	4	1	6.00	4.30	3	4.25	7	7.00	5.93	5.00	1.1
7293	2	5	1	1/8/1984	1	4	1	6.20	4.60	2.5	5.25	7	6.75	5.93	5.75	1.7
6535	2	5	1	10/5/1983	3	4	1	3.70	5.30	4	4.5	6.25	5.75	5.53	6.00	1.4
3266	2	3	1	12/30/1985	3	1	1	5.30	4.60	4.75	7	7	7.00	6.60	7.00	1.3
7735	2	5	1	3/24/1984	1	4	1	5.60	4.10	4.25	7	7	6.25	4.80	7.00	1.4
2744	2	3	1	10/28/1985	1	3	1	5.30	5.70	4.5	6.75	6.75	6.75	4.13	5.75	1.1
4978	2	2	1	8/6/1986	3	1	1	6.10	3.90	2.75	6.75	6	5.00	5.53	3.25	1.3
1246	2	3	1	9/19/1985	3	1	1	5.20	3.80	4	4	5.25	5.25	5.60	6.50	1.4
1234	2	2	1	10/29/1986	1	1	1	2.80	4.80	4	4.5	5.25	5.50	4.07	4.75	1.4
7222	2	3	1	11/16/1985	3	2	1	5.00	3.10	2.25	4	6.75	6.50	2.20	5.00	1.6
2160	2	4	1	10/14/1984	1	4	1	5.10	4.00	4.25	5.5	7	6.75	4.93	6.50	1.4
7375	2	4	1	10/21/1984	6	3	1	5.80	4.60	4	5.25	6.75	5.50	4.73	6.00	1.4
1751	2	4	1	10/26/1984	3	2	1	5.10	4.20	4.75	7	7	7.00	5.27	6.75	1.4
6185	3	1	2	8/25/1987	3	1	1	5.30	5.10	1	4.75	7	6.75	5.67	4.75	1.2
1388	3	5	2	12/30/1983	3	4	1	5.40	4.10	3	4.5	6.75	6.50	6.20	5.50	1.5
2328	3	5	2	7/2/1983	3	4	1	5.50	4.70	4.25	5.75	6.25	6.25	5.07	5.00	1.3
2882	3	2	2	4/7/1986	1	2	1	6.20	5.30	2.75	5.5	7	5.50	6.00	6.25	1.4
4293	3	2	2	10/1/1986	3	1	1	5.20	4.00	3.25	5	6.25	5.75	5.00	5.25	1.4
6926	3	4	2	6/4/1984	2	4	1	4.80	4.10	2.75	4.75	6.5	6.50	5.60	5.00	1.3
7907	3	3	2	9/23/1985	3	2	1	5.10	3.70	1.25	4.5	5	4.00	6.33	6.75	1.5

ID	Sport	Age	Gend	DOB	Eth	Elig	Inj.	Auto	Control	ER	IJ	ID	IM	HC	PC	SD
6521	3	4	2	1/10/1985	3	3	1	4.80	4.30	3.75	5	6.75	6.50	4.80	6.00	1.3
1244	3	1	2	6/30/1987	5	1	1	5.60	4.10	1.75	4.75	6.5	6.50	6.13	5.75	1.4
8400	3	2	2	4/4/1986	3	1	1	5.60	5.00	3.25	4	6.25	6.50	6.33	6.50	1.2
3478	3	3	2	6/22/1985	3	3	1	5.50	4.40	4	4.5	6.25	7.00	4.73	5.25	1.5
8498	3	3	2	5/17/1985	3	2	1	4.90	4.80	3.5	5.75	5.75	5.00	6.60	3.25	1.3
4723	3	4	2	11/25/1984	3	3	1	6.50	2.90	5.25	6.25	7	7.00	6.00	7.00	1.3
9331	5	4	1	6/23/1984	3	2	1	5.40	4.70	4.5	4	6	5.25	5.53	4.25	1.3
7507	5	6	1	5/5/1982	3	4	1	5.60	5.10	4	6.75	6.75	7.00	6.13	7.00	1.4
7805	6	4	1	5/31/1984	3	2	1	4.40	4.90	3	4.25	5.75	4.75	5.67	5.00	1.3
4701	6	5	1	4/9/1983	3	3	1	4.80	4.40	3.25	5.5	5.5	6.25	5.67	4.00	1.3
0-837	6	4	1	1/19/1985	3	3	1	5.70	4.80	3.5	5	7	7.00	3.60	5.50	1.4
6544	6	5	1	1/29/1984	3	4	1	3.80	4.60	3.75	4	5.25	4.50	6.00	4.50	1.2
0-778	6	4	1	7/4/1984	3	3	1	4.50	3.60	3	3.5	5	5.25	4.40	4.00	1
7652	6	2	1	8/18/1986	3	1	1	4.50	3.70	3.25	3	6.25	5.00	5.00	2.75	1.5
1589	7	3	2	4/25/1985	3	3	1	3.90	4.50	2.25	2.75	5	4.25	3.33	4.75	1.3
1165	7	1	2	4/3/1987	3	1	1	4.70	4.70	3	4.25	6	5.75	2.67	4.75	1.2
5324	7	1	2	2/2/1987	3	1	1	5.60	4.60	3.75	4.25	6	6.00	5.47	4.50	1.3
8700	7	2	2	7/18/1986	3	2	1	5.00	4.50	6.25	5.5	7	7.00	6.60	7.00	1.3
2661	7	6	1	10/29/1982	3	4	1	4.70	3.60	3	1.5	7	5.75	5.87	5.00	1.4
4150	7	3	1	6/25/1985	3	3	1	5.00	5.50	4.75	7	7	7.00	6.93	7.00	1.5
1381	7	2	2	7/2/1986	3	2	1	5.90	3.40	2.5	1.5	6	6.00	3.73	6.50	1.3
0-765	7	3	2	8/9/1985	3	2	1	5.80	3.60	5.25	6	6.75	6.00	4.60	6.00	1.3
7364	7	2	2	7/13/1986	3	2	1	4.50	4.20	4.25	5.25	5.5	5.75	6.33	5.25	1.7
8999	7	1	2	3/13/1987	3	1	1	4.70	2.90	1	4	6.5	6.00	3.53	2.00	1.6
4232	7	2	2	7/31/1986	3	2	1	5.70	3.80	3.5	4.5	7	7.00	5.60	7.00	1.4
9192	7	1	2	2/4/1987	3	1	1	4.60	4.40	2.75	3	6.25	5.00	5.27	6.75	1.3
1856	7	6	1	8/19/1980	3	2	1	5.30	5.20	4	5.5	4	6.50	5.53	1.25	1.4
5817	7	6	2	11/17/1982	3	4	1	4.20	4.60	3.5	4.5	5.25	5.25	4.00	4.00	1.5
6671	7	1	2	2/13/1987	3	1	1	5.40	3.40	2	4.5	7	6.50	5.60	6.75	1.4
1617	7	2	1	12/22/1986	3	1	1	4.20	4.20	4	5	6	6.00	4.47	5.75	1.5
0-597	7	3	1	8/6/1985	3	2	1	4.80	3.20	2.25	3.75	5.5	5.00	6.27	6.00	1.2
1037	7	2	2	12/9/1986	3	1	1	4.50	4.70	3.75	4	6	5.00	6.60	5.75	1.3
9151	7	2	2	8/26/1986	3	1	1	4.10	3.30	1.5	2.5	4.75	4.50	3.87	5.75	1.4
0-278	7	1	1	3/4/1987	3	1	1	5.50	3.60	3.25	3.75	5.25	5.00	5.60	6.50	1.5
4467	7	3	1	11/4/1985	3	2	1	5.70	4.70	4	4	6.75	6.50	6.00	5.25	1.4
1821	7	3	2	6/12/1985	3	3	1	5.40	3.90	2.75	3.25	6	6.00	5.87	6.25	1.5
1810	7	4	1	1/26/1985	3	3	1	4.80	3.30	3.25	5.25	6.25	5.50	5.67	6.25	1.6
0-389	8	4	2	10/23/1984	3	3	1	5.60	4.70	4	3.5	7	6.75	6.53	5.50	1.4
0-318	8	2	2	5/30/1986	3	2	1	5.60	4.90	3.75	6	7	7.00	6.47	6.25	1.3
6598	8	1	2	2/11/1987	3	1	1	5.40	4.40	5.75	6.75	7	7.00	5.80	6.00	1.3
0-884	8	3	2	12/7/1985	3	2	1	5.70	3.30	2.5	5.25	7	7.00	4.20	5.50	1.2
7364	8	5	2	11/5/1983	3	4	1	4.60	4.60	3.75	4.25	6.5	6.00	5.40	4.75	1.2
4960	8	3	2	8/28/1985	5	3	1	5.10	5.10	5.75	6	6	6.00	3.60	6.00	1.5

ID	Sport	Age	Gend	DOB	Eth	Elig	Inj.	Auto	Control	ER	IJ	ID	IM	HC	PC	SD
1530	8	5	2	9/10/1983	3	3	1	5.70	4.70	4	6	7	7.00	6.53	7.00	1
4794	8	3	2	9/5/1985	3	2	1	4.10	3.90	3.5	5.75	6	5.75	3.87	6.00	1.3
6356	8	4	2	7/31/1984	1	4	1	6.10	4.80	4.75	7	6.75	7.00	6.60	7.00	1.4
9488	8	4	2	3/13/1984	3	4	1	5.10	5.10	4.75	6.5	7	7.00	6.60	7.00	1.6
1696	9	3	2	9/27/1985	3	2	1	4.30	4.60	3.5	3.75	6.5	6.25	4.73	4.75	1.6
7302	9	1	2	8/17/1987	1	1	1	5.50	3.40	3.75	6.25	6.75	7.00	5.93	6.75	1.2
2579	9	1	2	4/3/1987	3	1	1	4.60	3.60	2.25	4.25	7	6.50	5.27	5.25	1.3
5699	9	4	2	11/15/1984	3	3	1	6.10	6.00	4.5	6.25	7	6.50	6.47	5.00	1.5
5865	9	1	2	11/2/1987	3	4	1	5.50	3.60	2.25	6	7	6.25	6.47	6.00	1.3
6853	9	1	2	3/12/1987	3	1	1	5.00	4.60	5.75	6.5	6.75	6.25	5.07	5.50	1.4
5318	9	1	2	5/7/1987	3	1	1	4.90	4.20	2.75	4.75	6.5	6.75	5.87	6.50	1.5
3268	9	2	2	2/27/1986	3	2	1	5.90	4.50	6	7	7	6.50	5.67	6.25	1.4
0-252	9	3	2	7/18/1985	3	3	1	5.00	4.90	5.75	4.25	5.75	5.50	5.13	5.75	1.5
6916	10	1	1	4/21/1987	1	1	1	5.10	3.40	2	6	7	7.00	5.07	6.00	1.5
3285	10	5	2	6/6/1983	3	4	1	5.30	3.90	4	5	5.25	5.25	3.93	5.75	1.3
2964	10	7	1	9/9/1981	1	4	1	5.10	4.80	4.5	5	7	7.00	4.73	6.25	1.1
1831	10	3	1	11/17/1985	4	2	1	5.03	4.92	4.75	6.75	7	6.50	5.07	6.25	1.4
0-831	10	4	2	11/17/1984	1	3	1	5.50	5.50	3	5.5	7	6.25	4.87	5.00	1.4
5471	10	2	1	9/19/1986	1	4	1	6.00	3.10	2.25	2.5	6.25	6.25	5.33	7.00	1.3
3689	10	3	1	11/19/1985	3	2	1	4.90	2.70	1.25	4.75	7	6.75	4.53	5.50	1.5
6591	10	6	1	1/7/1983	1	4	1	5.60	2.60	2	3	7	6.75	4.07	5.50	1.4
0-164	10	5	1	12/17/1983	1	4	1	3.60	4.90	2.5	4.75	6.75	6.75	5.33	5.75	1.5
6300	10	2	1	11/7/1986	4	1	1	4.60	4.30	4.75	5	7	6.50	5.73	5.50	1.3
8554	10	5	1	7/27/1983	3	3	1	3.90	4.70	2	4.25	4.5	5.50	5.67	4.25	1.4
3435	10	6	1	6/14/1982	3	4	1	5.60	5.00	5.25	6	5	6.50	2.13	7.00	1.1
1758	10	4	2	12/25/1984	3	3	1	4.80	2.60	3	5.25	5.25	4.75	3.60	4.75	1.2
5934	10	2	2	6/9/1986	1	2	1	5.30	4.20	3.75	5	5.5	5.00	5.80	5.75	1.6
6776	10	3	2	7/14/1985	1	1	1	4.70	4.00	4.75	4.5	6	5.50	4.67	5.25	1.4
0-356	10	1	2	5/17/1987	1	1	1	5.80	3.40	2.5	5.5	7	7.00	5.47	7.00	1.1
5467	10	3	2	8/25/1985	1	3	1	5.30	3.10	2.75	5.75	7	7.00	5.87	7.00	1.2
2529	10	1	2	8/30/1987	1	1	1	5.20	4.20	4.5	6.5	6.5	6.75	3.93	4.25	1.5
7258	10	2	2	10/14/1986	1	2	1	4.40	5.30	4.5	6	6.25	6.75	5.20	2.00	1.4
3431	10	2	2	12/9/1986	4	1	1	6.40	4.80	4.75	7	7	7.00	5.13	4.50	1.3
2929	10	3	2	9/4/1985	1	2	1	6.20	5.30	6.25	6.5	7	6.75	6.00	7.00	1.6
4995	10	3	2	12/6/1985	1	2	1	4.40	3.80	3.25	3.5	4	5.75	4.60	5.25	1.3
8520	10	2	2	11/17/1986	3	1	1	4.70	4.70	3.75	7	7	7.00	4.93	5.00	1.3
2434	10	5	1	4/3/1984	3	4	1	5.30	4.50	5	7	6.75	6.00	6.27	6.50	1.3
7406	10	5	1	11/28/1983	3	3	1	5.80	3.50	1	5.25	7	5.00	6.27	6.25	1.5
4383	10	5	1	2/11/1984	3	4	1	5.40	4.40	5.75	6.25	6.75	6.75	4.53	5.50	1.2
8803	10	3	1	12/8/1985	1	2	1	5.00	4.90	5.75	6	4.75	5.25	6.40	6.50	1.3
7238	10	4	1	12/4/1984	3	2	1	4.60	5.10	3	4.75	5	4.75	4.87	5.75	1.4
6412	10	4	2	8/3/1984	3	4	1	5.80	4.40	2	5.25	7	7.00	6.00	4.50	1.3
0-026	10	3	1	2/28/1986	3	2	1	3.50	3.30	3.75	2.75	3.75	3.50	3.33	3.25	1.4

ID	Sport	Age	Gend	DOB	Eth	Elig	Inj.	Auto	Control	ER	IJ	ID	IM	HC	PC	SD
4673	10	2	1	9/16/1986	3	2	1	4.40	4.10	1.75	4.5	5.5	5.75	2.93	4.75	1.3
7988	10	2	1	5/4/1986	1	2	1	5.30	2.70	3.25	2.5	5.75	6.50	4.47	5.00	1.6
4234	10	3	1	10/23/1985	1	2	1	5.40	3.90	1.5	1.25	7	5.25	6.33	5.25	1.5
2264	10	2	1	2/17/1987	3	1	1	5.30	3.50	4.25	5.75	6.25	5.75	5.33	4.75	1.3
9946	10	3	1	11/7/1985	3	3	1	6.60	2.40	2.5	2.75	7	7.00	4.53	7.00	1.4
1078	10	4	2	10/17/1984	1	3	1	4.10	3.50	4	4.75	5.25	5.25	4.40	5.25	1.3
7400	10	4	1	9/26/1984	1	3	1	5.70	4.30	3.75	5	6.5	6.25	5.60	5.50	1.6
0-221	11	3	2	8/30/1985	4	3	1	5.40	5.90	3.25	7	7	7.00	5.87	7.00	1.4
5909	11	4	2	1/26/1985	1	2	1	6.10	4.00	2.5	3.25	7	7.00	6.60	7.00	1.3
9588	11	4	2	2/13/1985	3	3	1	5.40	6.00	6.75	6	6.25	5.50	5.87	4.25	1.4
8106	11	4	2	11/30/1984	1	3	1	4.20	5.90	4.5	6	6.25	3.25	5.00	4.25	1.3
4012	11	3	2	9/27/1985	3	2	1	5.10	4.80	5.25	5.25	6	5.50	5.40	7.00	1.2
2642	11	4	2	11/28/1984	3	3	1	5.50	5.10	3.5	6.25	6	6.50	6.00	5.75	1.3
7666	13	3	2	3/2/1985	3	2	1	5.40	4.10	3	3	5	5.50	5.53	6.00	1.4
4934	13	4	2	12/6/1984	3	4	1	5.20	3.40	1.5	3	6.5	6.50	6.00	6.00	1.5
6623	13	2	2	7/10/1986	3	2	1	5.20	4.30	1.5	2	6.75	6.50	5.87	7.00	1.3
3267	14	5	2	1/21/1984	3	1	1	5.80	3.80	4.25	5.5	6.75	7.00	4.60	6.50	1.5
4824	14	6	2	5/25/1982	4	4	1	6.30	2.90	2.5	4	7	7.00	6.27	6.25	1.5
9811	14	4	2	9/6/1984	3	4	1	4.90	4.10	2	4.5	7	6.50	6.40	5.25	1.5
8285	14	2	2	5/22/1986	3	2	1	4.40	4.50	4.75	3.25	5.75	5.00	5.33	5.00	1.4
3174	14	1	2	2/23/1987	3	4	1	6.90	4.90	4	6.25	6.75	6.75	6.07	5.25	1.3
4722	14	3	2	7/19/1985	3	3	1	5.20	3.00	1	2.5	7	7.00	6.60	3.25	1.4
8733	14	1	2	7/25/1987	3	2	1	4.30	4.00	3	4.25	5.5	5.00	6.00	4.25	1.4

APPENDIX D – SAMPLE OF ATHLETE TRANSCRIPT

INT: [REDACTED], why don't we start off with the injury itself. Why don't you tell me a little about it? How long ago? Give as much detail as you can.

ATH: I had surgery four weeks ago today and I hurt my knee three before that. So it's been about seven weeks since my injury. It happened during spring training. We were doing what we call inside drill. It's not really a tackle, it's a live drill. The defensive lineman was making that tackle and slid off the running back and fell into the side of my knee. And I felt it pop. I fell down. I pretty much knew something was wrong. They came over there. They pretty much told me my MCL and my PCL. I mean they pretty much knew right off the bat what it was. When I went to see Dr. [REDACTED] he pretty much said the same thing. The MRI came back and said pretty much what they said.

INT: Now tell me about the injury rehab program that you're going through. You work primarily with which athletic trainer.

ATH: [REDACTED] and [REDACTED] are the ones I work with the most. I mean it's a day-to-day thing. Whichever one's here the time I am here. [REDACTED] and [REDACTED] kind of oversee it. [REDACTED] is in here more around the same time that I am here. So he really looks over it more I guess.

INT: What kind of things are you doing in the program itself?

ATH: Right now I'm doing straight leg raises with the ankle weight on. I'm doing some Russian stim. And I'm doing toe raises. And that's about it right now. They are keeping me limited right now. He said two more weeks and then we'll start pushing the rehab. His main concern, I talked to [REDACTED] yesterday, was he wants to get that MCL to heal down. That was his main concern.

INT: How much do you enjoy your rehab sessions?

ATH: I would say it's kind of moderate enjoyment. The only enjoyment I get out of it is to see progress, which right now progress is slow because I do such little stuff. It kind of gets you down a little bit because you're not seeing a lot of progress at the beginning and things are so slow. But when I do see progress and I get off my crutches, it makes you feel a whole lot better. You get to move around. When you see progress it makes you feel a lot better.

INT: How motivated would you say you are in your rehab sessions?

ATH: I think it goes back to the same thing. Right now it's so tedious. Little stuff, leg raises don't really do a lot of stuff. I think the more I get into it the more motivated I'll get. I'll start seeing more of the progress and it'll make me want to work harder because I'll start seeing more of that progress.

INT: Now if you think of activities you'll do for this outside of the training room, how motivated are you in those activities and what activities might you do?

ATH: I do have a CPM to move my leg for me and I do have ankle weights at home to do leg raises. There is a difference between me doing the exercises myself compared to doing them here. Just having someone right beside you there, looking over what you do and making sure you do everything correctly as compared to do them at home, sitting on the couch by myself. I mean with the machine, I put my leg in the machine and it does it for me. But leg lifts and stuff, I mean, you're not as motivated to do them by yourself then if you were in here.

INT: So does the intensity of effort of your exercise change, say if [REDACTED] or [REDACTED] are around?

ATH: Yes, I would say the intensity does change. The motivational tool of just them being there kind of motivates me telling me what to do and encourage me to work harder as opposed to me just sitting there by myself.

INT: Now how about the presence of a coach or a teammate around. Does that have an effect on your intensity and what does it do to it?

ATH: My personal point, I wouldn't want a specific coach to be in here. It would make me feel uncomfortable. Just because he's not, it would be kind of weird having a coach train a rehab. Coach [REDACTED] would be different because I've been around him more doing strength so I wouldn't mind it he was in. But a different coach, it would be like he was overseeing me too much.

INT: So even them just being around would bother you a little bit.

ATH: Yeah.

INT: What about if you were to talk to somebody else that was going through a rehab program? How important is it for others to be motivated during their rehab program?

ATH: I think the big part of a rehab program is motivation because if you get hurt and you are so depressed about it that you don't want to rehab and you don't want to get better then you are not so I think having somebody that has been through your same injury and you see them and how they have recovered and are back to normal it can motivate you just seeing them knowing that there is a way to get back where you are one hundred percent.

INT: Along that same line, have you had a chance to speak to anybody who has been through and injury similar to this about what they went through and do you think it would make a difference in the outlook of your program if you had.

ATH: I think one of the big things that helped me is in my other leg a couple of years ago I tore my ACL and that's just two years of hard rehab as this and I got through that and seemed like I got back to 100% and another freak injury like this happens and I know I can get back to that point and then there are a lot of guys that have knee injuries and you see them get back so being able to see that and talk to the guys on the football team really does help because you know, it gives you the idea that you can get back.

INT: Do you think you are motivated compared to other people on the team?

ATH: Yes, I do. I think, I mean injury wise and working out wise I am definitely motivated.

INT: Can you think of teammates on your team that may be more motivated than you are? And you don't have to give specific names.

ATH: As far as working out I would say no. As far as football practice I would probably say yes.

INT: Can you think of an example of why you think this?

ATH: I think I enjoy working out more than I do football practice. I like the progress of working out getting strong and all that stuff compared to being out on the practice full pads and all that.

INT: Can you think of a team mate that maybe less motivated than you are?

ATH: Yes definitely both categories.

INT: How so?

ATH: They don't like either progress. They don't like working out on their on time or any extra and some people are out there to be out there.

INT: Can you describe your attitude toward rehab and rehab programs, things of that sort.

ATH: It seems like I ...I mean this is my fourth surgery so I have been around them a lot so it's kind of like now it's something I'm going to have to go through. I know when I am hurt so I have got to through it. I am hurt again; well I have to get through it to get back to where I was. So it's kind of like a process. It happens so I have to deal with it. Now the first injury I had well I was probably depressed because it was one of the first things I ever had. But am I going to be able to come back from this, well now I have had 3 or 4 so what happened again, well I just have to get over it.

INT: You think then that it has been to your advantage that you actually have been through an injury before and been through a pretty serious rehab.

ATH: Definitely think so. I think it is an advantage because I know what I have to do to get back to 100%. I have done this before. It's not my first rodeo. I know I can get back.

INT: Do you think that if this was your first injury it would help you to talk to someone that had been through it. Let's say you were a freshman here at [REDACTED], you had your first injury every. It took place in the fall, your first semester here. Do you think it would help talking with somebody that had this maybe and upper classman, or would it make a difference at all?

ATH: I think it would help being a first injury and seeing someone in the same program as you that went through that already and had experience with that already with that injury, I think it would help talking to me about it.

INT : Think about all the exercises and things that you are doing in your program. Are there certain things in there that you enjoy doing though?

ATH: um...um

INT: It doesn't have to be physical. It can be other parts of the rehab to.

ATH: Okay being in the training room and surrounded by, you doing rehab. Based on what you see you are thinking your going to get better. Things are looking like they are going good. So just positive reinforcement like that kind of makes you feel better and makes you want to work harder because you have got incentive that you want.

INT: What things do you not enjoy doing? What part of rehab do you not enjoy?

ATH: Right now I would say that the things that I don't enjoy doing are the painful exercises, like bending my leg, trying to get more range of motion. That's not enjoyable. If you are in pain it's not enjoyable. You know you have to do that kind of stuff though to get your leg back the way it was.

INT: From your point of view what would you change about your rehab session to make it so you might enjoy it more?

ATH: I would say maybe...sometimes I am in here and there is a lot of people coming in and out, a lot of players. It might be kind of selfish by saying well if I could have somebody personally with me the whole time. Just one person from beginning to end that is pushing me the whole way through and knows what's going on not like I am in here rehabbing and they have to go help somebody else, so I am alone for 30 minutes by myself doing my own stuff. Have somebody with me the whole time.

INT: Now put yourself in either [REDACTED] or [REDACTED]'s shoes. From an athletic training point of view what would you change about the rehab sessions to make them better?

ATH: Probably say the same thing. If they could be with me the whole time besides they have to go answer the phone so they are away for 5 minutes. Relay a message to someone or go find a player go work with a player. If they could work with one athlete they could stay with them the whole time make sure their progress is going right an stuff like that.

INT: So if I understand you correctly almost have it undivided attention for, even if it was for 45 minutes, of uninterrupted attention from the athletic trainer working with you would be better than an hour and a half of kind of scattered attention.

ATH: Yeah, like a set time you know where you could have that one on one training with nobody else interrupting and get more work done faster without that interrupted...you know...time you loose.

INT: Let's say you did not feel as though you were motivated. What would make you want to be more motivated?

ATH: I guess the encouragement from other players, coaches, trainers. The more encouragement you can get I think that would motivated you more and I guess random people talking to you telling you that you can get better. Things are down right know but you know they are going to get better.

INT: So it sounds like you are saying more support.

ATH: Yes. A support stand point of just people talking to you telling you that you can get better.

INT: How much do you value your injury rehab sessions?

ATH: I think they are very important, because just having prior knowledge of the injury is knowing that each day is important. It's a step by step process that you got to go through to get back.

INT: Do you think that your athletic trainer wants you to get better or do you think he or she kind of gives you exercises to do because you are here and that's what they are suppose to do for you. And does it change sometimes?

ATH: I think the people I am working with here want me to get better, but I can say that I have seen situations where different people various people where they might not think your injury is that serious so well go do this. And just give you something to do to make you feel better about yourself and they don't have to worry about you.

INT: What do you think your athletic trainer expects of the athletes to do in the rehab sessions?

ATH: Just do most everything you give. Not complain about they are doing. Give them the respect that they know what they are doing and they have the knowledge that you really don't have that you couldn't do it without them with out them telling you what to do so they want your respect in what to do and you listen and you do everything they say to the best of your ability.

INT: Why do you think some people do not enjoy the rehab sessions?

ATH: Some people might not be as motivated. They might not see it as a big deal if they get back or not. They might not enjoy being out there, well they get hurt and that might be their way out. They don't have to work as hard because they really don't care if they get back or not, if they are 100%, it really doesn't matter to them. It is really not that big of a deal to them.

INT: Do you ever worry about performing exercises during your rehab session that you maybe are not particularly good at?

ATH: I could say it puts a downer on you if you are performing exercises and like you really can't do them real good so you feel kind of like down on yourself because you think well I should be able to do this stuff, but you can't do it just because of your physical abilities is not there yet but it still kind of makes you feel bad because you can't achieve that.

INT: Do you think it depends on the severity of the injury, too?

ATH: No, I don't think so. I mean...well if you have got a severe injury you can't do a leg lift after a bad knee injury it is going to make you feel worse I would think.

INT: What was your attitude like at the beginning of your injury rehab program?

ATH: Hopefully at the beginning is probably the worst because you have not gotten a lot of that motivation yet from other people. It kind of like, I went through like a week or two of I am having another injury and I have to do this all again to get back to where I was. You kind of look down on yourself for a little while but then after you get into it that you are going to progress you know things are going to get better. And also with my injury it was kind of like a question mark or well are we going to do surgery. It was a state where we really didn't know what was going to happen s I think that was even worse. I would rather know here it what is wrong with you here is what you have to do to get better. When it my case it was more like well we are going to try this and see what happens decide if we are going to do surgery or not and that is why it was 3 or 4 weeks before I had surgery because they really weren't sure what they were going to do. I didn't like that at all.

INT: So what would you say influenced our attitude about your program?

ATH: So after I got the news and understood the injury, and get the "here's what it's gonna take, here's the amount of time, you know, a couple of months and you're gonna be better",

so kind of weigh it out for you, you know what you have to do. Well, you gotta do it. So them telling you what you're gonna do and motivating you. That'll get you back to where you want to be.

INT: How do you feel about your program now?

ATH: I feel like it's going good. I saw the doctor two ago and he said progress was looking good, but it's still kind of in the beginning before that six weeks hits. You've got to do a lot of the same things. You can't do a lot of movements yet. You've got to stick to these few things that you can do right now. I think when that point hits, when you get to do more and more stuff and you start feeling better and better. You get to that end of point when you are all the way back.

INT: How is the intensity of your efforts during your exercises?

ATH: Right now the level of intensity is probably low because there are not a lot of exercises that I can get a lot of intensity. It's not like I'm out there sweating doing a lot of leg lifts or anything. It's just low intensity stuff.

INT: Do you find that there are certain times when you exert more effort than others?

ATH: Yeah, I'd say when there is ■■■, ■■■, ■■■, they're all standing around me, I'll probably give more effort than if I was at my house doing leg lifts. Be mentally focused to do things better.

INT: How well do you follow the directions of ■■■ or ■■■ during your rehab sessions?

ATH: To the best of my ability. They know more than I do, so I do whatever they say really. They tell me what to do and I do it.

INT: Do you ever stray from the plan that they have out there for you?

ATH: No, it's really not that much to stray from. Do twenty leg lifts, alright do twenty leg lifts. Can't do anything different you know. So I just do what they say I guess.

INT: Now I would suspect that you have your own expectations about what your program is supposed to do for you. What influence do those expectations have on your ability to stay focused to what happens in here?

ATH: Well, my expectations are probably, my expectations are I want to get back as soon as possible. Work as hard as I can to get back as soon as possible. The expectations are to make sure that everything is alright, you know make sure everything's gonna end up alright. Which I would think that the expectations would be better than mine, going their way is safer, I'll be 100% by the end of the time. Which I kind of just want to go let me do

whatever I can right now to get back, when I need to follow that process to be 100% at the end.

INT: Do you keep track of your own progress at your rehab sessions or do you let your athletic trainer do this?

ATH: I keep up, well, I think my quad's getting stronger and stuff like that, but as far as them keeping my progress for this is your flexion, this is your extension. Numbers like that I don't really pay attention to, but I feel my quad getting stronger, I feel my muscles getting better. I keep checking it out.

INT: Why is it important to keep track of your progress?

ATH: I guess to make you feel better about yourself. I mean, knowing that your making positive steps forward and that you're reaching the goal that you set for yourself.

INT: Are others aware about your rehab sessions?

ATH: Yes, my roommate is definitely aware. My family they call and talk to me about it and want to know how I'm progressing. My roommate, just because we're around each other all the time. A couple other of my friends. As far as a football team as a whole, they see me off crutches and trying to get to a little better. But as far as aware of things that are going on, not really.

INT: Why is it important for others to be aware of what you are doing in your rehab sessions?

ATH: Basically to keep the motivation. To make me feel better and I think them, if they're close to like family or close friends, it makes them feel better they see you're healing. They don't have to worry about you as much I guess.

INT: When others ask about your rehab sessions, what do you tell them?

ATH: It's not like I say exactly everything that's going on, I say I'm feeling better. It's getting better. That's typically how it is, "well how's your leg", oh I feel a little bit better. I don't say my quad's getting stronger, my flexion is this, my extension is this. I don't really get into it. I just say it's getting better. Which really doesn't tell them a lot, but they see you're getting better. Which I would think if someone says, "well how's your leg", I would never say it's terrible. I don't think I would say that just because even if it was people would say well it's doing better. No matter what, even if it not making any progress, you should say it's feeling better.

INT: It sounds like you just tell people sometimes what you think they want to hear.

ATH: I would say people you're not close to. Well, ok my roommate, who I see everyday, "how's your leg?" I was telling him it's killing me. My family, I would probably just tell them it's getting better so they wouldn't worry as much. But as far like my close, my roommate, I'd probably tell them what's wrong. Other players that I really don't know that well, I just say well it's getting better because I can move around.

INT: So sometimes it's just easier to tell, well it's getting better. As opposed to going into a big long story.

ATH: Yeah.

INT: Do you like being challenged by others during your rehab?

ATH: Others as in other players or...

INT: Other players, your athletic trainer, Coach [REDACTED] comes in.

ATH: I think that would definitely benefit me. It's like working out. I like being challenged in the weight room. So I like being challenged rehabbing to. Just to see. It gives you more motivation. Makes you work harder.

INT: Is it important for you to challenge yourself during rehab or just rely on others?

ATH: If you can't challenged yourself you're not going to be well off. It is very important to challenge yourself to work as hard as you can. Have self-motivation, but also have others challenge you just adds onto it.

INT: Tell me how you would feel if you miss a rehab session.

ATH: I feel like a made a big step in the wrong direction to miss a rehab session that was set up. Going back to working out, if I miss a workout I don't think I get any better. And then if I miss a rehab, it is something you have to do. You are hurt so you have to get better. And if you don't do it, it's like well you feel bad about yourself.

INT: How do you feel even if your athletic trainer tells to oh it's no big deal, so you missed a rehab session.

ATH: I would still feel bad and then I would start questioning who was doing my rehab. If they so don't worry about it you missed it well maybe they might not want me to get better. They are not getting onto me about coming in and rehabbing. I think that is a big part of rehab. You want someone who is going to expect you to be there and if you are not there then you need to get some kind of note , you know, them telling you need to get there.

INT: Tell me the importance of football in your life.

ATH: Football is important in my life. I have been playing since grade school. It's a big part of my life. It's important to my family, how well I am doing and other people. I mean I consider it something I like to do and it kind of defines who I am in a way because that is what I have been doing for so long and that's what I was blessed to do to play football so I mean it's getting me through college so that makes it a bigger part of my life.

INT: Your scholarship?

ATH: Yeah, so it's a big part of my life and it gets me through college and so it is a very big part of my life.

INT: How important is your rehab in your sport?

ATH: It's very important. I mean if I don't rehab then I can't come back and play so I mean it is very important.

INT: Let's say football was not as important in your life, do you think your rehab would have the same role in your sport?

ATH: No, if football is not a big part of your life then I don't think you would be as motivated to get better. 'Cause okay I hurt my leg when I getting better. I am getting better so I can walk around, go to work and do whatever I have to do besides get better because it's 90,000 fans. I am going to go play in front of them. That's a big motivation.

INT: Does your athletic trainer give you choices about your rehab exercises?

ATH: No, not a lot of choices.

INT: How do you feel about that?

ATH: I feel fine about it. I mean there are not a lot of choices I could have right now but you know I think they know the specific stuff that you have to do. They are not going to say well you can do this or do this. I think there is a specific set up of things that you have to do so that's what you have to do to get back.

INT: Do you ask your athletic trainer questions about your rehab program?

ATH: Yes, I ask them questions all the time sometimes it annoys them I ask them so many questions. I say well I was doing this when this leg was out and they will say well you can't do that right now. Go do this. Well, when I am working out can I do this? Or ask questions like well what is this doing? If I don't see the benefits right away you know I am like well what is this doing to my leg, you know, why am I doing this exercise.

INT: Do you feel they are giving you answers to all the questions you have?

ATH: They give me adequate answers I mean, sometimes I am playing around and being smart alec and they will give me smart alec answers just to joke around about it and they think I ask so many questions sometimes they say don't worry about it just do it. So that's just having fun. If I am being serious then they will give a serious answer.

INT: Do they encourage you to ask questions about your injury?

ATH: They really don't have to encourage me to ask questions, because I am going to ask questions anyway. That has never really come up, but yeah, when I first hurt my leg they were saying, "Do you have any questions?" or what do you want to know? But know I pretty much know what's going on and they know I am going to ask questions anyway.

INT: Why do you/don't you ask about your rehabilitation program?

ATH: Just to have the knowledge of what's going on what is it helping. Kind of a purpose for why I am doing what I am doing. If I am doing an exercise and I don't know what it is doing then I think if I know what I am doing in an exercise then it kind of well I am doing this to strengthen my quads so I want to get my quad back so that is why I am going to do it. In another case when I didn't know what I was doing it was like this is pointless, what am I doing this for.

INT: Tell me about your relationship with your athletic, lets pick uh, out of [REDACTED] or [REDACTED] who do you probably work with more?

ATH: Probably [REDACTED], I guess.

INT: Tell me about your relationship with her.

ATH: We have a good relationship I guess. We kind of joke around a lot just to make things fun. We have a good time. If it is something that has to be serious we get serious about it, but it's good to have a relationship where you can joke around a bit and it makes rehab more enjoyable I guess.

INT: Does your athletic trainer attempt to understand your feelings or needs when developing the program for you?

ATH: Yeah, at the beginning they are going to ask you how do you feel about what we are going to do, do you feel alright about the surgery we are going to do and after surgery do you feel alright about everything that went on and stuff like that. I think they do care how you feel about the stuff that goes on just because they want you to feel good about it because they feel good about it and they know everything is going to be alright and they want to make sure that you feel good about everything that happened.

INT: What type of input for your program does your athletic trainer take from you when developing the program?

ATH: I think my input as far as tolerances of pain on some exercise maybe well if its it's hurting and it is not suppose to then we might not do that yet. Maybe wait a week or so. But then other things that are supposed to be hurting I may say, well this is hurting so do I have to do this and they say yeah you have to do it. It's something that needs to be done so I think in those two cases it's kind of different.

INT: Do you trust the information that your athletic trainer gives to you about your program?

ATH: Yeah, just because their knowledge is superior to mine. And they are the position they're in because they know what they're doing. Where if I was on my own, I wouldn't know what to do.

INT: You said that with a little bit of doubt at the very beginning though. When I asked you the question, you were like, "Yeah". Do you have any doubts...

ATH: Just because of my prior experience I may have doubts. Well, I remember doing this when I hurt my other leg or, in my case, back when they didn't know what they were going to do. So it's like whether they know, I mean, they didn't know if they were going to do surgery or not, do they really know what's wrong with my leg. So if I'm doing exercises with my leg before my surgery should I be doing this when they really don't know what's wrong with my leg. So I guess there was some doubt in there. If it's not clear cut what's wrong with you I guess.

INT: So do you think prior history plays a major role in rehab program that someone is involved in right now?

ATH: Yeah, it's your first time injury. Every exercise you're doing, you're like, well am I really supposed to be doing this, is it supposed to hurt, is it supposed to feel like this. You have all kind of questions in your head. Well, someone that's had a leg injury they know it's going hurt sometimes to get it back where it was. So they have that knowledge of past experiences of going through that.

INT: How confident are you in your ability to handle your injury rehabilitation program?

ATH: I'm a hundred percent confident in my ability to handle my program. Going back to that prior knowledge of having that knee injury, I know I can through it.

INT: Because you've had that injury before, you feel real confident in getting back.

ATH: I think my confidence would be less like if was when I first hurt my leg. It was probably less because I didn't know if I was going to get back, I didn't know the final outcome. What could happen, how could this be different? Since it's already happened, how

could I get back to a hundred percent. Since it's a different injury though, I'm not going to say it doesn't always come in my head, well is it going to be like it was before. Is it going to feel exactly like it did before? Not loose at all. There is some doubt it might be a little loose, not feel as good as it did in the beginning. Now I'm not going to say that every little play. It's stuck in that back of your head all the time.

INT: How confident are you when you're playing football?

ATH: At the college-level, right now...in spring training I was starting middle-linebacker. But this was my first year to be in that position. And I was doing pretty well, my confidence was building the more and more experience I get, it's building, and I see my confidence at maybe 70-75%. I know I have room to improve. I have that room-to-improve confidence compared to when I first came in to [REDACTED] when my confidence was really low, maybe like 10%.

INT: Do you feel challenged by your rehabilitation exercises or do you think that you will be?

ATH: I definitely think that I will be challenged. I'm challenged right now going through the stuff I have to go through.

INT: What kind of stuff challenges you?

ATH: I mean, like, it might be a little thing, but that CPM machine. They say, we want you to be at 90-degrees flexion by the end of the week. So I feel like I have to get to that point. So it's going to challenge me to bend my leg and get to that point. Or they say we want you to get your quads, that's the main thing we want you to work on and get that back. So it challenges me to do all the leg lifts and stuff like that.

INT: Tell me how you would feel if you had to do your rehabilitation routine by yourself. You had no [REDACTED], no [REDACTED] ...you had the facility to do it, but you had to do it by yourself.

ATH: I think my motivation would go down significantly if I was by myself. Just not having someone there watching what you're doing, making sure you know what you're doing. But if I was in the same situation where I had to do it, if I was still playing football, I had to do it on my own, I think I would still do it, but I would be in a kind of bitter about it because I had to do it on my own. Didn't have someone with the knowledge that they had. I think I'd question myself more. Am I doing this right. I'd have more doubt in my mind I think.

INT: Is there anything, any ideas, any perceptions of rehab that you feel important for me to know with this whole project? Any general feelings or anything like that?

ATH: I could tell you a bunch of positive things about it. Right when I got hurt, everyone wants to know what's wrong. [REDACTED], [REDACTED], all the trainers..."well, we've got to find out

what's wrong". So I kind of felt that when I got hurt, they want to help me because that's their job. But maybe they've got some kind of personal feeling behind it. "We want to know what's wrong with him, we want to get him back". And just the hands-on experience with our trainer, they give me every time I see them, they want to know "well, let me see your leg, how's it going" and stuff like that.

INT: ■■■■■, why don't we start off with the injury itself. Why don't you tell me a little about it? How long ago? Give as much detail as you can.

ATH: I had surgery four weeks ago today and I hurt my knee three before that. So it's been about seven weeks since my injury. It happened during spring training. We were doing what we call inside drill. It's not really a tackle, it's a live drill. The defensive lineman was making that tackle and slid off the running back and fell into the side of my knee. And I felt it pop. I fell down. I pretty much knew something was wrong. They came over there. They pretty much told me my MCL and my PCL. I mean they pretty much knew right off the bat what it was. When I went to see Dr. ■■■■■ he pretty much said the same thing. The MRI came back and said pretty much what they said.

INT: Now tell me about the injury rehab program that you're going through. You work primarily with which athletic trainer.

ATH: ■■■■■ and ■■■■■ are the ones I work with the most. I mean it's a day-to-day thing. Whichever one's here the time I am here. ■■■■■ and ■■■■■ kind of oversee it. ■■■■■ is in here more around the same time that I am here. So he really looks over it more I guess.

INT: What kind of things are you doing in the program itself?

ATH: Right now I'm doing straight leg raises with the ankle weight on. I'm doing some Russian stim. And I'm doing toe raises. And that's about it right now. They are keeping me limited right now. He said two more weeks and then we'll start pushing the rehab. His main concern, I talked to ■■■■■ yesterday, was he wants to get that MCL to heal down. That was his main concern.

INT: How much do you enjoy your rehab sessions?

ATH: I would say it's kind of moderate enjoyment. The only enjoyment I get out of it is to see progress, which right now progress is slow because I do such little stuff. It kind of gets you down a little bit because you're not seeing a lot of progress at the beginning and things are so slow. But when I do see progress and I get off my crutches, it makes you feel a whole lot better. You get to move around. When you see progress it makes you feel a lot better.

INT: How motivated would you say you are in your rehab sessions?

ATH: I think it goes back to the same thing. Right now it's so tedious. Little stuff, leg raises don't really do a lot of stuff. I think the more I get into it the more motivated I'll get. I'll start seeing more of the progress and it'll make me want to work harder because I'll start seeing more of that progress.

INT: Now if you think of activities you'll do for this outside of the training room, how motivated are you in those activities and what activities might you do?

ATH: I do have a CPM to move my leg for me and I do have ankle weights at home to do leg raises. There is a difference between me doing the exercises myself compared to doing them here. Just having someone right beside you there, looking over what you do and making sure you do everything correctly as compared to do them at home, sitting on the couch by myself. I mean with the machine, I put my leg in the machine and it does it for me. But leg lifts and stuff, I mean, you're not as motivated to do them by yourself then if you were in here.

INT: So does the intensity of effort of your exercise change, say if [REDACTED] or [REDACTED] are around?

ATH: Yes, I would say the intensity does change. The motivational tool of just them being there kind of motivates me telling me what to do and encourage me to work harder as opposed to me just sitting there by myself.

INT: Now how about the presence of a coach or a teammate around. Does that have an effect on your intensity and what does it do to it?

ATH: My personal point, I wouldn't want a specific coach to be in here. It would make me feel uncomfortable. Just because he's not, it would be kind of weird having a coach train a rehab. Coach [REDACTED] would be different because I've been around him more doing strength so I wouldn't mind it he was in. But a different coach, it would be like he was overseeing me too much.

INT: So even them just being around would bother you a little bit.

ATH: Yeah.

INT: What about if you were to talk to somebody else that was going through a rehab program? How important is it for others to be motivated during their rehab program?

ATH: I think the big part of a rehab program is motivation because if you get hurt and you are so depressed about it that you don't want to rehab and you don't want to get better then you are not so I think having somebody that has been through your same injury and you see them and how they have recovered and are back to normal it can motivate you just seeing them knowing that there is a way to get back where you are one hundred percent.

INT: Along that same line, have you had a chance to speak to anybody who has been through and injury similar to this about what they went through and do you think it would make a difference in the outlook of your program if you had.

ATH: I think one of the big things that helped me is in my other leg a couple of years ago I tore my ACL and that's just two years of hard rehab as this and I got through that and seemed like I got back to 100% and another freak injury like this happens and I know I can get back to that point and then there are a lot of guys that have knee injuries and you see them get back so being able to see that and talk to the guys on the football team really does help because you know, it gives you the idea that you can get back.

INT: Do you think you are motivated compared to other people on the team?

ATH: Yes, I do. I think, I mean injury wise and working out wise I am definitely motivated.

INT: Can you think of teammates on your team that may be more motivated than you are? And you don't have to give specific names.

ATH: As far as working out I would say no. As far as football practice I would probably say yes.

INT: Can you think of an example of why you think this?

ATH: I think I enjoy working out more than I do football practice. I like the progress of working out getting strong and all that stuff compared to being out on the practice full pads and all that.

INT: Can you think of a team mate that maybe less motivated than you are?

ATH: Yes definitely both categories.

INT: How so?

ATH: They don't like either progress. They don't like working out on their on time or any extra and some people are out there to be out there.

INT: Can you describe your attitude toward rehab and rehab programs, things of that sort.

ATH: It seems like I ...I mean this is my fourth surgery so I have been around them a lot so it's kind of like now it's something I'm going to have to go through. I know when I am hurt so I have got to through it. I am hurt again; well I have to get through it to get back to where I was. So it's kind of like a process. It happens so I have to deal with it. Now the first injury I had well I was probably depressed because it was one of the first things I ever had. But am I going to be able to come back from this, well now I have had 3 or 4 so what happened again, well I just have to get over it.

INT: You think then that it has been to your advantage that you actually have been through an injury before and been through a pretty serious rehab.

ATH: Definitely think so. I think it is an advantage because I know what I have to do to get back to 100%. I have done this before. It's not my first rodeo. I know I can get back.

INT: Do you think that if this was your first injury it would help you to talk to someone that had been through it. Let's say you were a freshman here at [REDACTED], you had your first injury every. It took place in the fall, your first semester here. Do you think it would help talking with somebody that had this maybe and upper classman, or would it make a difference at all?

ATH: I think it would help being a first injury and seeing someone in the same program as you that went through that already and had experience with that already with that injury, I think it would help talking to me about it.

INT : Think about all the exercises and things that you are doing in your program. Are there certain things in there that you enjoy doing though?

ATH: um...um

INT: It doesn't have to be physical. It can be other parts of the rehab to.

ATH: Okay being in the training room and surrounded by, you doing rehab. Based on what you see you are thinking your going to get better. Things are looking like they are going good. So just positive reinforcement like that kind of makes you feel better and makes you want to work harder because you have got incentive that you want.

INT: What things do you not enjoy doing? What part of rehab do you not enjoy?

ATH: Right know I would say that the things that I don't enjoy doing are the painful exercises, like bending my leg, trying to get more range of motion. That's not enjoyable. If you are in pain it's not enjoyable. You know you have to do that kind of stuff though to get your leg back the way it was.

INT: From your point of view what would you change about your rehab session to make it so you might enjoy it more?

ATH: I would say maybe...sometimes I am in here and there is a lot of people coming in and out, a lot of players. It might be kind of selfish by saying well if I could have somebody personally with me the whole time. Just one person from beginning to end that is pushing me the whole way through and knows what's going on not like I am in here rehabbing and they have to go help somebody else, so I am alone for 30 minutes by myself doing my own stuff. Have somebody with me the whole time.

INT: Now put yourself in either [REDACTED] or [REDACTED]'s shoes. From an athletic training point of view what would you change about the rehab sessions to make them better?

ATH: Probably say the same thing. If they could be with me the whole time besides they have to go answer the phone so they are away for 5 minutes. Relay a message to someone or go find a player go work with a player. If they could work with one athlete they could stay with them the whole time make sure their progress is going right an stuff like that.

INT: So if I understand you correctly almost have it undivided attention for, even if it was for 45 minutes, of uninterrupted attention from the athletic trainer working with you would be better than an hour and a half of kind of scattered attention.

ATH: Yeah, like a set time you know where you could have that one on one training with nobody else interrupting and get more work done faster without that interrupted...you know...time you loose.

INT: Let's say you did not feel as though you were motivated. What would make you want to be more motivated?

ATH: I guess the encouragement from other players, coaches, trainers. The more encouragement you can get I think that would motivated you more and I guess random people talking to you telling you that you can get better. Things are down right know but you know they are going to get better.

INT: So it sounds like you are saying more support.

ATH: Yes. A support stand point of just people talking to you telling you that you can get better.

INT: How much do you value your injury rehab sessions?

ATH: I think they are very important, because just having prior knowledge of the injury is knowing that each day is important. It's a step by step process that you got to go through to get back.

INT: Do you think that your athletic trainer wants you to get better or do you think he or she kind of gives you exercises to do because you are here and that's what they are suppose to do for you. And does it change sometimes?

ATH: I think the people I am working with here want me to get better, but I can say that I have seen situations where different people various people where they might not think your injury is that serious so well go do this. And just give you something to do to make you feel better about yourself and they don't have to worry about you.

INT: What do you think your athletic trainer expects of the athletes to do in the rehab sessions?

ATH: Just do most everything you give. Not complain about they are doing. Give them the respect that they know what they are doing and they have the knowledge that you really don't have that you couldn't do it without them with out them telling you what to do so they want your respect in what to do and you listen and you do everything they say to the best of your ability.

INT: Why do you think some people do not enjoy the rehab sessions?

ATH: Some people might not be as motivated. They might not see it as a big deal if they get back or not. They might not enjoy being out there, well they get hurt and that might be their way out. They don't have to work as hard because they really don't care if they get back or not, if they are 100%, it really doesn't matter to them. It is really not that big of a deal to them.

INT: Do you ever worry about performing exercises during your rehab session that you maybe are not particularly good at?

ATH: I could say it puts a downer on you if you are performing exercises and like you really can't do them real good so you feel kind of like down on yourself because you think well I should be able to do this stuff, but you can't do it just because of your physical abilities is not there yet but it still kind of makes you feel bad because you can't achieve that.

INT: Do you think it depends on the severity of the injury, too?

ATH: No, I don't think so. I mean...well if you have got a severe injury you can't do a leg lift after a bad knee injury it is going to make you feel worse I would think.

INT: What was your attitude like at the beginning of your injury rehab program?

ATH: Hopefully at the beginning is probably the worst because you have not gotten a lot of that motivation yet from other people. It kind of like, I went through like a week or two of I am having another injury and I have to do this all again to get back to where I was. You kind of look down on yourself for a little while but then after you get into it that you are going to progress you know things are going to get better. And also with my injury it was kind of like a question mark or well are we going to do surgery. It was a state where we really didn't know what was going to happen s I think that was even worse. I would rather know here it what is wrong with you here is what you have to do to get better. When it my case it was more like well we are going to try this and see what happens decide if we are going to do surgery or not and that is why it was 3 or 4 weeks before I had surgery because they really weren't sure what they were going to do. I didn't like that at all.

INT: So what would you say influenced our attitude about your program?

ATH: So after I got the news and understood the injury, and get the “here’s what it’s gonna take, here’s the amount of time, you know, a couple of months and you’re gonna be better”, so kind of weigh it out for you, you know what you have to do. Well, you gotta do it. So them telling you what you’re gonna do and motivating you. That’ll get you back to where you want to be.

INT: How do you feel about your program now?

ATH: I feel like it’s going good. I saw the doctor two ago and he said progress was looking good, but it’s still kind of in the beginning before that six weeks hits. You’ve got to do a lot of the same things. You can’t do a lot of movements yet. You’ve got to stick to these few things that you can do right now. I think when that point hits, when you get to do more and more stuff and you start feeling better and better. You get to that end of point when you are all the way back.

INT: How is the intensity of your efforts during your exercises?

ATH: Right now the level of intensity is probably low because there are not a lot of exercises that I can get a lot of intensity. It’s not like I’m out there sweating doing a lot of leg lifts or anything. It’s just low intensity stuff.

INT: Do you find that there are certain times when you exert more effort than others?

ATH: Yeah, I’d say when there is ■■■, ■■■, ■■■, they’re all standing around me, I’ll probably give more effort than if I was at my house doing leg lifts. Be mentally focused to do things better.

INT: How well do you follow the directions of ■■■ or ■■■ during your rehab sessions?

ATH: To the best of my ability. They know more than I do, so I do whatever they say really. They tell me what to do and I do it.

INT: Do you ever stray from the plan that they have out there for you?

ATH: No, it’s really not that much to stray from. Do twenty leg lifts, alright do twenty leg lifts. Can’t do anything different you know. So I just do what they say I guess.

INT: Now I would suspect that you have your own expectations about what your program is supposed to do for you. What influence do those expectations have on your ability to stay focused to what happens in here?

ATH: Well, my expectations are probably, my expectations are I want to get back as soon as possible. Work as hard as I can to get back as soon as possible. The expectations are to make sure that everything is alright, you know make sure everything’s gonna end up alright.

Which I would think that the expectations would be better than mine, going their way is safer, I'll be 100% by the end of the time. Which I kind of just want to go let me do whatever I can right now to get back, when I need to follow that process to be 100% at the end.

INT: Do you keep track of your own progress at your rehab sessions or do you let your athletic trainer do this?

ATH: I keep up, well, I think my quad's getting stronger and stuff like that, but as far as them keeping my progress for this is your flexion, this is your extension. Numbers like that I don't really pay attention to, but I feel my quad getting stronger, I feel my muscles getting better. I keep checking it out.

INT: Why is it important to keep track of your progress?

ATH: I guess to make you feel better about yourself. I mean, knowing that your making positive steps forward and that you're reaching the goal that you set for yourself.

INT: Are others aware about your rehab sessions?

ATH: Yes, my roommate is definitely aware. My family they call and talk to me about it and want to know how I'm progressing. My roommate, just because we're around each other all the time. A couple other of my friends. As far as a football team as a whole, they see me off crutches and trying to get to a little better. But as far as aware of things that are going on, not really.

INT: Why is it important for others to be aware of what you are doing in your rehab sessions?

ATH: Basically to keep the motivation. To make me feel better and I think them, if they're close to like family or close friends, it makes them feel better they see you're healing. They don't have to worry about you as much I guess.

INT: When others ask about your rehab sessions, what do you tell them?

ATH: It's not like I say exactly everything that's going on, I say I'm feeling better. It's getting better. That's typically how it is, "well how's your leg", oh I feel a little bit better. I don't say my quad's getting stronger, my flexion is this, my extension is this. I don't really get into it. I just say it's getting better. Which really doesn't tell them a lot, but they see you're getting better. Which I would think if someone says, "well how's your leg", I would never say it's terrible. I don't think I would say that just because even if it was people would say well it's doing better. No matter what, even if it not making any progress, you should say it's feeling better.

INT: It sounds like you just tell people sometimes what you think they want to hear.

ATH: I would say people you're not close to. Well, ok my roommate, who I see everyday, "how's your leg?" I was telling him it's killing me. My family, I would probably just tell them it's getting better so they wouldn't worry as much. But as far like my close, my roommate, I'd probably tell them what's wrong. Other players that I really don't know that well, I just say well it's getting better because I can move around.

INT: So sometimes it's just easier to tell, well it's getting better. As opposed to going into a big long story.

ATH: Yeah.

INT: Do you like being challenged by others during your rehab?

ATH: Others as in other players or...

INT: Other players, your athletic trainer, Coach [REDACTED] comes in.

ATH: I think that would definitely benefit me. It's like working out. I like being challenged in the weight room. So I like being challenged rehabbing to. Just to see. It gives you more motivation. Makes you work harder.

INT: Is it important for you to challenge yourself during rehab or just rely on others?

ATH: If you can't challenged yourself you're not going to be well off. It is very important to challenge yourself to work as hard as you can. Have self-motivation, but also have others challenge you just adds onto it.

INT: Tell me how you would feel if you miss a rehab session.

ATH: I feel like a made a big step in the wrong direction to miss a rehab session that was set up. Going back to working out, if I miss a workout I don't think I get any better. And then if I miss a rehab, it is something you have to do. You are hurt so you have to get better. And if you don't do it, it's like well you feel bad about yourself.

INT: How do you feel even if your athletic trainer tells to oh it's no big deal, so you missed a rehab session.

ATH: I would still feel bad and then I would start questioning who was doing my rehab. If they so don't worry about it you missed it well maybe they might not want me to get better. They are not getting onto me about coming in and rehabbing. I think that is a big part of rehab. You want someone who is going to expect you to be there and if you are not there then you need to get some kind of note , you know, them telling you need to get there.

INT: Tell me the importance of football in your life.

ATH: Football is important in my life. I have been playing since grade school. It's a big part of my life. It's important to my family, how well I am doing and other people. I mean I consider it something I like to do and it kind of defines who I am in a way because that is what I have been doing for so long and that's what I was blessed to do to play football so I mean it's getting me through college so that makes it a bigger part of my life.

INT: Your scholarship?

ATH: Yeah, so it's a big part of my life and it gets me through college and so it is a very big part of my life.

INT: How important is your rehab in your sport?

ATH: It's very important. I mean if I don't rehab then I can't come back and play so I mean it is very important.

INT: Let's say football was not as important in your life, do you think your rehab would have the same role in your sport?

ATH: No, if football is not a big part of your life then I don't think you would be as motivated to get better. 'Cause okay I hurt my leg when I getting better. I am getting better so I can walk around, go to work and do whatever I have to do besides get better because it's 90,000 fans. I am going to go play in front of them. That's a big motivation.

INT: Does your athletic trainer give you choices about your rehab exercises?

ATH: No, not a lot of choices.

INT: How do you feel about that?

ATH: I feel fine about it. I mean there are not a lot of choices I could have right now but you know I think they know the specific stuff that you have to do. They are not going to say well you can do this or do this. I think there is a specific set up of things that you have to do so that's what you have to do to get back.

INT: Do you ask your athletic trainer questions about your rehab program?

ATH: Yes, I ask them questions all the time sometimes it annoys them I ask them so many questions. I say well I was doing this when this leg was out and they will say well you can't do that right now. Go do this. Well, when I am working out can I do this? Or ask questions like well what is this doing? If I don't see the benefits right away you know I am like well what is this doing to my leg, you know, why am I doing this exercise.

INT: Do you feel they are giving you answers to all the questions you have?

ATH: They give me adequate answers I mean, sometimes I am playing around and being smart alec and they will give me smart alec answers just to joke around about it and they think I ask so many questions sometimes they say don't worry about it just do it. So that's just having fun. If I am being serious then they will give a serious answer.

INT: Do they encourage you to ask questions about your injury?

ATH: They really don't have to encourage me to ask questions, because I am going to ask questions anyway. That has never really come up, but yeah, when I first hurt my leg they were saying, "Do you have any questions?" or what do you want to know? But know I pretty much know what's going on and they know I am going to ask questions anyway.

INT: Why do you/don't you ask about your rehabilitation program?

ATH: Just to have the knowledge of what's going on what is it helping. Kind of a purpose for why I am doing what I am doing. If I am doing an exercise and I don't know what it is doing then I think if I know what I am doing in an exercise then it kind of well I am doing this to strengthen my quads so I want to get my quad back so that is why I am going to do it. In another case when I didn't know what I was doing it was like this is pointless, what am I doing this for.

INT: Tell me about your relationship with your athletic, lets pick uh, out of [REDACTED] or [REDACTED] who do you probably work with more?

ATH: Probably [REDACTED], I guess.

INT: Tell me about your relationship with her.

ATH: We have a good relationship I guess. We kind of joke around a lot just to make things fun. We have a good time. If it is something that has to be serious we get serious about it, but it's good to have a relationship where you can joke around a bit and it makes rehab more enjoyable I guess.

INT: Does your athletic trainer attempt to understand your feelings or needs when developing the program for you?

ATH: Yeah, at the beginning they are going to ask you how do you feel about what we are going to do, do you feel alright about the surgery we are going to do and after surgery do you feel alright about everything that went on and stuff like that. I think they do care how you feel about the stuff that goes on just because they want you to feel good about it because they feel good about it and they know everything is going to be alright and they want to make sure that you feel good about everything that happened.

INT: What type of input for your program does your athletic trainer take from you when developing the program?

ATH: I think my input as far as tolerances of pain on some exercise maybe well if its it's hurting and it is not suppose to then we might not do that yet. Maybe wait a week or so. But then other things that are supposed to be hurting I may say, well this is hurting so do I have to do this and they say yeah you have to do it. It's something that needs to be done so I think in those two cases it's kind of different.

INT: Do you trust the information that your athletic trainer gives to you about your program?

ATH: Yeah, just because their knowledge is superior to mine. And they are the position they're in because they know what they're doing. Where if I was on my own, I wouldn't know what to do.

INT: You said that with a little bit of doubt at the very beginning though. When I asked you the question, you were like, "Yeah". Do you have any doubts...

ATH: Just because of my prior experience I may have doubts. Well, I remember doing this when I hurt my other leg or, in my case, back when they didn't know what they were going to do. So it's like whether they know, I mean, they didn't know if they were going to do surgery or not, do they really know what's wrong with my leg. So if I'm doing exercises with my leg before my surgery should I be doing this when they really don't know what's wrong with my leg. So I guess there was some doubt in there. If it's not clear cut what's wrong with you I guess.

INT: So do you think prior history plays a major role in rehab program that someone is involved in right now?

ATH: Yeah, it's your first time injury. Every exercise you're doing, you're like, well am I really supposed to be doing this, is it supposed to hurt, is it supposed to feel like this. You have all kind of questions in your head. Well, someone that's had a leg injury they know it's going hurt sometimes to get it back where it was. So they have that knowledge of past experiences of going through that.

INT: How confident are you in your ability to handle your injury rehabilitation program?

ATH: I'm a hundred percent confident in my ability to handle my program. Going back to that prior knowledge of having that knee injury, I know I can through it.

INT: Because you've had that injury before, you feel real confident in getting back.

ATH: I think my confidence would be less like if was when I first hurt my leg. It was probably less because I didn't know if I was going to get back, I didn't know the final outcome. What could happen, how could this be different? Since it's already happened, how

could I get back to a hundred percent. Since it's a different injury though, I'm not going to say it doesn't always come in my head, well is it going to be like it was before. Is it going to feel exactly like it did before? Not loose at all. There is some doubt it might be a little loose, not feel as good as it did in the beginning. Now I'm not going to say that every little play. It's stuck in that back of your head all the time.

INT: How confident are you when you're playing football?

ATH: At the college-level, right now...in spring training I was starting middle-linebacker. But this was my first year to be in that position. And I was doing pretty well, my confidence was building the more and more experience I get, it's building, and I see my confidence at maybe 70-75%. I know I have room to improve. I have that room-to-improve confidence compared to when I first came in to [REDACTED] when my confidence was really low, maybe like 10%.

INT: Do you feel challenged by your rehabilitation exercises or do you think that you will be?

ATH: I definitely think that I will be challenged. I'm challenged right now going through the stuff I have to go through.

INT: What kind of stuff challenges you?

ATH: I mean, like, it might be a little thing, but that CPM machine. They say, we want you to be at 90-degrees flexion by the end of the week. So I feel like I have to get to that point. So it's going to challenge me to bend my leg and get to that point. Or they say we want you to get your quads, that's the main thing we want you to work on and get that back. So it challenges me to do all the leg lifts and stuff like that.

INT: Tell me how you would feel if you had to do your rehabilitation routine by yourself. You had no [REDACTED], no [REDACTED] ...you had the facility to do it, but you had to do it by yourself.

ATH: I think my motivation would go down significantly if I was by myself. Just not having someone there watching what you're doing, making sure you know what you're doing. But if I was in the same situation where I had to do it, if I was still playing football, I had to do it on my own, I think I would still do it, but I would be in a kind of bitter about it because I had to do it on my own. Didn't have someone with the knowledge that they had. I think I'd question myself more. Am I doing this right. I'd have more doubt in my mind I think.

INT: Is there anything, any ideas, any perceptions of rehab that you feel important for me to know with this whole project? Any general feelings or anything like that?

ATH: I could tell you a bunch of positive things about it. Right when I got hurt, everyone wants to know what's wrong. [REDACTED], [REDACTED], all the trainers..."well, we've got to find out

what's wrong". So I kind of felt that when I got hurt, they want to help me because that's their job. But maybe they've got some kind of personal feeling behind it. "We want to know what's wrong with him, we want to get him back". And just the hands-on experience with our trainer, they give me every time I see them, they want to know "well, let me see your leg, how's it going" and stuff like that.

INT: [REDACTED], why don't we start off with the injury itself. Why don't you tell me a little about it? How long ago? Give as much detail as you can.

ATH: I had surgery four weeks ago today and I hurt my knee three before that. So it's been about seven weeks since my injury. It happened during spring training. We were doing what we call inside drill. It's not really a tackle, it's a live drill. The defensive lineman was making that tackle and slid off the running back and fell into the side of my knee. And I felt it pop. I fell down. I pretty much knew something was wrong. They came over there. They pretty much told me my MCL and my PCL. I mean they pretty much knew right off the bat what it was. When I went to see Dr. [REDACTED] he pretty much said the same thing. The MRI came back and said pretty much what they said.

INT: Now tell me about the injury rehab program that you're going through. You work primarily with which athletic trainer.

ATH: [REDACTED] and [REDACTED] are the ones I work with the most. I mean it's a day-to-day thing. Whichever one's here the time I am here. [REDACTED] and [REDACTED] kind of oversee it. [REDACTED] is in here more around the same time that I am here. So he really looks over it more I guess.

INT: What kind of things are you doing in the program itself?

ATH: Right now I'm doing straight leg raises with the ankle weight on. I'm doing some Russian stim. And I'm doing toe raises. And that's about it right now. They are keeping me limited right now. He said two more weeks and then we'll start pushing the rehab. His main concern, I talked to [REDACTED] yesterday, was he wants to get that MCL to heal down. That was his main concern.

INT: How much do you enjoy your rehab sessions?

ATH: I would say it's kind of moderate enjoyment. The only enjoyment I get out of it is to see progress, which right now progress is slow because I do such little stuff. It kind of gets you down a little bit because you're not seeing a lot of progress at the beginning and things are so slow. But when I do see progress and I get off my crutches, it makes you feel a whole lot better. You get to move around. When you see progress it makes you feel a lot better.

INT: How motivated would you say you are in your rehab sessions?

ATH: I think it goes back to the same thing. Right now it's so tedious. Little stuff, leg raises don't really do a lot of stuff. I think the more I get into it the more motivated I'll get.

I'll start seeing more of the progress and it'll make me want to work harder because I'll start seeing more of that progress.

INT: Now if you think of activities you'll do for this outside of the training room, how motivated are you in those activities and what activities might you do?

ATH: I do have a CPM to move my leg for me and I do have ankle weights at home to do leg raises. There is a difference between me doing the exercises myself compared to doing them here. Just having someone right beside you there, looking over what you do and making sure you do everything correctly as compared to do them at home, sitting on the couch by myself. I mean with the machine, I put my leg in the machine and it does it for me. But leg lifts and stuff, I mean, you're not as motivated to do them by yourself then if you were in here.

INT: So does the intensity of effort of your exercise change, say if [REDACTED] or [REDACTED] are around?

ATH: Yes, I would say the intensity does change. The motivational tool of just them being there kind of motivates me telling me what to do and encourage me to work harder as opposed to me just sitting there by myself.

INT: Now how about the presence of a coach or a teammate around. Does that have an effect on your intensity and what does it do to it?

ATH: My personal point, I wouldn't want a specific coach to be in here. It would make me feel uncomfortable. Just because he's not, it would be kind of weird having a coach train a rehab. Coach [REDACTED] would be different because I've been around him more doing strength so I wouldn't mind it he was in. But a different coach, it would be like he was overseeing me too much.

INT: So even them just being around would bother you a little bit.

ATH: Yeah.

INT: What about if you were to talk to somebody else that was going through a rehab program? How important is it for others to be motivated during their rehab program?

ATH: I think the big part of a rehab program is motivation because if you get hurt and you are so depressed about it that you don't want to rehab and you don't want to get better then you are not so I think having somebody that has been through your same injury and you see them and how they have recovered and are back to normal it can motivate you just seeing them knowing that there is a way to get back where you are one hundred percent.

INT: Along that same line, have you had a chance to speak to anybody who has been through and injury similar to this about what they went through and do you think it would make a difference in the outlook of your program if you had.

ATH: I think one of the big things that helped me is in my other leg a couple of years ago I tore my ACL and that's just two years of hard rehab as this and I got through that and seemed like I got back to 100% and another freak injury like this happens and I know I can get back to that point and then there are a lot of guys that have knee injuries and you see them get back so being able to see that and talk to the guys on the football team really does help because you know, it gives you the idea that you can get back.

INT: Do you think you are motivated compared to other people on the team?

ATH: Yes, I do. I think, I mean injury wise and working out wise I am definitely motivated.

INT: Can you think of teammates on your team that may be more motivated than you are? And you don't have to give specific names.

ATH: As far as working out I would say no. As far as football practice I would probably say yes.

INT: Can you think of an example of why you think this?

ATH: I think I enjoy working out more than I do football practice. I like the progress of working out getting strong and all that stuff compared to being out on the practice full pads and all that.

INT: Can you think of a team mate that maybe less motivated than you are?

ATH: Yes definitely both categories.

INT: How so?

ATH: They don't like either progress. They don't like working out on their on time or any extra and some people are out there to be out there.

INT: Can you describe your attitude toward rehab and rehab programs, things of that sort.

ATH: It seems like I ...I mean this is my fourth surgery so I have been around them a lot so it's kind of like now it's something I'm going to have to go through. I know when I am hurt so I have got to through it. I am hurt again; well I have to get through it to get back to where I was. So it's kind of like a process. It happens so I have to deal with it. Now the first injury I had well I was probably depressed because it was one of the first things I ever had. But am I going to be able to come back from this, well now I have had 3 or 4 so what happened again, well I just have to get over it.

INT: You think then that it has been to your advantage that you actually have been through an injury before and been through a pretty serious rehab.

ATH: Definitely think so. I think it is an advantage because I know what I have to do to get back to 100%. I have done this before. It's not my first rodeo. I know I can get back.

INT: Do you think that if this was your first injury it would help you to talk to someone that had been through it. Let's say you were a freshman here at [REDACTED], you had your first injury every. It took place in the fall, your first semester here. Do you think it would help talking with somebody that had this maybe and upper classman, or would it make a difference at all?

ATH: I think it would help being a first injury and seeing someone in the same program as you that went through that already and had experience with that already with that injury, I think it would help talking to me about it.

INT : Think about all the exercises and things that you are doing in your program. Are there certain things in there that you enjoy doing though?

ATH: um...um

INT: It doesn't have to be physical. It can be other parts of the rehab to.

ATH: Okay being in the training room and surrounded by, you doing rehab. Based on what you see you are thinking your going to get better. Things are looking like they are going good. So just positive reinforcement like that kind of makes you feel better and makes you want to work harder because you have got incentive that you want.

INT: What things do you not enjoy doing? What part of rehab do you not enjoy?

ATH: Right know I would say that the things that I don't enjoy doing are the painful exercises, like bending my leg, trying to get more range of motion. That's not enjoyable. If you are in pain it's not enjoyable. You know you have to do that kind of stuff though to get your leg back the way it was.

INT: From your point of view what would you change about your rehab session to make it so you might enjoy it more?

ATH: I would say maybe...sometimes I am in here and there is a lot of people coming in and out, a lot of players. It might be kind of selfish by saying well if I could have somebody personally with me the whole time. Just one person from beginning to end that is pushing me the whole way through and knows what's going on not like I am in here rehabbing and they have to go help somebody else, so I am alone for 30 minutes by myself doing my own stuff. Have somebody with me the whole time.

INT: Now put yourself in either [REDACTED] or [REDACTED]'s shoes. From an athletic training point of view what would you change about the rehab sessions to make them better?

ATH: Probably say the same thing. If they could be with me the whole time besides they have to go answer the phone so they are away for 5 minutes. Relay a message to someone or go find a player go work with a player. If they could work with one athlete they could stay with them the whole time make sure their progress is going right an stuff like that.

INT: So if I understand you correctly almost have it undivided attention for, even if it was for 45 minutes, of uninterrupted attention from the athletic trainer working with you would be better than an hour and a half of kind of scattered attention.

ATH: Yeah, like a set time you know where you could have that one on one training with nobody else interrupting and get more work done faster without that interrupted...you know...time you loose.

INT: Let's say you did not feel as though you were motivated. What would make you want to be more motivated?

ATH: I guess the encouragement from other players, coaches, trainers. The more encouragement you can get I think that would motivated you more and I guess random people talking to you telling you that you can get better. Things are down right know but you know they are going to get better.

INT: So it sounds like you are saying more support.

ATH: Yes. A support stand point of just people talking to you telling you that you can get better.

INT: How much do you value your injury rehab sessions?

ATH: I think they are very important, because just having prior knowledge of the injury is knowing that each day is important. It's a step by step process that you got to go through to get back.

INT: Do you think that your athletic trainer wants you to get better or do you think he or she kind of gives you exercises to do because you are here and that's what they are suppose to do for you. And does it change sometimes?

ATH: I think the people I am working with here want me to get better, but I can say that I have seen situations where different people various people where they might not think your injury is that serious so well go do this. And just give you something to do to make you feel better about yourself and they don't have to worry about you.

INT: What do you think your athletic trainer expects of the athletes to do in the rehab sessions?

ATH: Just do most everything you give. Not complain about they are doing. Give them the respect that they know what they are doing and they have the knowledge that you really don't have that you couldn't do it without them with out them telling you what to do so they want your respect in what to do and you listen and you do everything they say to the best of your ability.

INT: Why do you think some people do not enjoy the rehab sessions?

ATH: Some people might not be as motivated. They might not see it as a big deal if they get back or not. They might not enjoy being out there, well they get hurt and that might be their way out. They don't have to work as hard because they really don't care if they get back or not, if they are 100%, it really doesn't matter to them. It is really not that big of a deal to them.

INT: Do you ever worry about performing exercises during your rehab session that you maybe are not particularly good at?

ATH: I could say it puts a downer on you if you are performing exercises and like you really can't do them real good so you feel kind of like down on yourself because you think well I should be able to do this stuff, but you can't do it just because of your physical abilities is not there yet but it still kind of makes you feel bad because you can't achieve that.

INT: Do you think it depends on the severity of the injury, too?

ATH: No, I don't think so. I mean...well if you have got a severe injury you can't do a leg lift after a bad knee injury it is going to make you feel worse I would think.

INT: What was your attitude like at the beginning of your injury rehab program?

ATH: Hopefully at the beginning is probably the worst because you have not gotten a lot of that motivation yet from other people. It kind of like, I went through like a week or two of I am having another injury and I have to do this all again to get back to where I was. You kind of look down on yourself for a little while but then after you get into it that you are going to progress you know things are going to get better. And also with my injury it was kind of like a question mark or well are we going to do surgery. It was a state where we really didn't know what was going to happen s I think that was even worse. I would rather know here it what is wrong with you here is what you have to do to get better. When it my case it was more like well we are going to try this and see what happens decide if we are going to do surgery or not and that is why it was 3 or 4 weeks before I had surgery because they really weren't sure what they were going to do. I didn't like that at all.

INT: So what would you say influenced our attitude about your program?

ATH: So after I got the news and understood the injury, and get the “here’s what it’s gonna take, here’s the amount of time, you know, a couple of months and you’re gonna be better”, so kind of weigh it out for you, you know what you have to do. Well, you gotta do it. So them telling you what you’re gonna do and motivating you. That’ll get you back to where you want to be.

INT: How do you feel about your program now?

ATH: I feel like it’s going good. I saw the doctor two ago and he said progress was looking good, but it’s still kind of in the beginning before that six weeks hits. You’ve got to do a lot of the same things. You can’t do a lot of movements yet. You’ve got to stick to these few things that you can do right now. I think when that point hits, when you get to do more and more stuff and you start feeling better and better. You get to that end of point when you are all the way back.

INT: How is the intensity of your efforts during your exercises?

ATH: Right now the level of intensity is probably low because there are not a lot of exercises that I can get a lot of intensity. It’s not like I’m out there sweating doing a lot of leg lifts or anything. It’s just low intensity stuff.

INT: Do you find that there are certain times when you exert more effort than others?

ATH: Yeah, I’d say when there is ■■■, ■■■, ■■■, they’re all standing around me, I’ll probably give more effort than if I was at my house doing leg lifts. Be mentally focused to do things better.

INT: How well do you follow the directions of ■■■ or ■■■ during your rehab sessions?

ATH: To the best of my ability. They know more than I do, so I do whatever they say really. They tell me what to do and I do it.

INT: Do you ever stray from the plan that they have out there for you?

ATH: No, it’s really not that much to stray from. Do twenty leg lifts, alright do twenty leg lifts. Can’t do anything different you know. So I just do what they say I guess.

INT: Now I would suspect that you have your own expectations about what your program is supposed to do for you. What influence do those expectations have on your ability to stay focused to what happens in here?

ATH: Well, my expectations are probably, my expectations are I want to get back as soon as possible. Work as hard as I can to get back as soon as possible. The expectations are to make sure that everything is alright, you know make sure everything’s gonna end up alright.

Which I would think that the expectations would be better than mine, going their way is safer, I'll be 100% by the end of the time. Which I kind of just want to go let me do whatever I can right now to get back, when I need to follow that process to be 100% at the end.

INT: Do you keep track of your own progress at your rehab sessions or do you let your athletic trainer do this?

ATH: I keep up, well, I think my quad's getting stronger and stuff like that, but as far as them keeping my progress for this is your flexion, this is your extension. Numbers like that I don't really pay attention to, but I feel my quad getting stronger, I feel my muscles getting better. I keep checking it out.

INT: Why is it important to keep track of your progress?

ATH: I guess to make you feel better about yourself. I mean, knowing that your making positive steps forward and that you're reaching the goal that you set for yourself.

INT: Are others aware about your rehab sessions?

ATH: Yes, my roommate is definitely aware. My family they call and talk to me about it and want to know how I'm progressing. My roommate, just because we're around each other all the time. A couple other of my friends. As far as a football team as a whole, they see me off crutches and trying to get to a little better. But as far as aware of things that are going on, not really.

INT: Why is it important for others to be aware of what you are doing in your rehab sessions?

ATH: Basically to keep the motivation. To make me feel better and I think them, if they're close to like family or close friends, it makes them feel better they see you're healing. They don't have to worry about you as much I guess.

INT: When others ask about your rehab sessions, what do you tell them?

ATH: It's not like I say exactly everything that's going on, I say I'm feeling better. It's getting better. That's typically how it is, "well how's your leg", oh I feel a little bit better. I don't say my quad's getting stronger, my flexion is this, my extension is this. I don't really get into it. I just say it's getting better. Which really doesn't tell them a lot, but they see you're getting better. Which I would think if someone says, "well how's your leg", I would never say it's terrible. I don't think I would say that just because even if it was people would say well it's doing better. No matter what, even if it not making any progress, you should say it's feeling better.

INT: It sounds like you just tell people sometimes what you think they want to hear.

ATH: I would say people you're not close to. Well, ok my roommate, who I see everyday, "how's your leg?" I was telling him it's killing me. My family, I would probably just tell them it's getting better so they wouldn't worry as much. But as far like my close, my roommate, I'd probably tell them what's wrong. Other players that I really don't know that well, I just say well it's getting better because I can move around.

INT: So sometimes it's just easier to tell, well it's getting better. As opposed to going into a big long story.

ATH: Yeah.

INT: Do you like being challenged by others during your rehab?

ATH: Others as in other players or...

INT: Other players, your athletic trainer, Coach [REDACTED] comes in.

ATH: I think that would definitely benefit me. It's like working out. I like being challenged in the weight room. So I like being challenged rehabbing to. Just to see. It gives you more motivation. Makes you work harder.

INT: Is it important for you to challenge yourself during rehab or just rely on others?

ATH: If you can't challenged yourself you're not going to be well off. It is very important to challenge yourself to work as hard as you can. Have self-motivation, but also have others challenge you just adds onto it.

INT: Tell me how you would feel if you miss a rehab session.

ATH: I feel like a made a big step in the wrong direction to miss a rehab session that was set up. Going back to working out, if I miss a workout I don't think I get any better. And then if I miss a rehab, it is something you have to do. You are hurt so you have to get better. And if you don't do it, it's like well you feel bad about yourself.

INT: How do you feel even if your athletic trainer tells to oh it's no big deal, so you missed a rehab session.

ATH: I would still feel bad and then I would start questioning who was doing my rehab. If they so don't worry about it you missed it well maybe they might not want me to get better. They are not getting onto me about coming in and rehabbing. I think that is a big part of rehab. You want someone who is going to expect you to be there and if you are not there then you need to get some kind of note , you know, them telling you need to get there.

INT: Tell me the importance of football in your life.

ATH: Football is important in my life. I have been playing since grade school. It's a big part of my life. It's important to my family, how well I am doing and other people. I mean I consider it something I like to do and it kind of defines who I am in a way because that is what I have been doing for so long and that's what I was blessed to do to play football so I mean it's getting me through college so that makes it a bigger part of my life.

INT: Your scholarship?

ATH: Yeah, so it's a big part of my life and it gets me through college and so it is a very big part of my life.

INT: How important is your rehab in your sport?

ATH: It's very important. I mean if I don't rehab then I can't come back and play so I mean it is very important.

INT: Let's say football was not as important in your life, do you think your rehab would have the same role in your sport?

ATH: No, if football is not a big part of your life then I don't think you would be as motivated to get better. 'Cause okay I hurt my leg when I getting better. I am getting better so I can walk around, go to work and do whatever I have to do besides get better because it's 90,000 fans. I am going to go play in front of them. That's a big motivation.

INT: Does your athletic trainer give you choices about your rehab exercises?

ATH: No, not a lot of choices.

INT: How do you feel about that?

ATH: I feel fine about it. I mean there are not a lot of choices I could have right now but you know I think they know the specific stuff that you have to do. They are not going to say well you can do this or do this. I think there is a specific set up of things that you have to do so that's what you have to do to get back.

INT: Do you ask your athletic trainer questions about your rehab program?

ATH: Yes, I ask them questions all the time sometimes it annoys them I ask them so many questions. I say well I was doing this when this leg was out and they will say well you can't do that right now. Go do this. Well, when I am working out can I do this? Or ask questions like well what is this doing? If I don't see the benefits right away you know I am like well what is this doing to my leg, you know, why am I doing this exercise.

INT: Do you feel they are giving you answers to all the questions you have?

ATH: They give me adequate answers I mean, sometimes I am playing around and being smart alec and they will give me smart alec answers just to joke around about it and they think I ask so many questions sometimes they say don't worry about it just do it. So that's just having fun. If I am being serious then they will give a serious answer.

INT: Do they encourage you to ask questions about your injury?

ATH: They really don't have to encourage me to ask questions, because I am going to ask questions anyway. That has never really come up, but yeah, when I first hurt my leg they were saying, "Do you have any questions?" or what do you want to know? But know I pretty much know what's going on and they know I am going to ask questions anyway.

INT: Why do you/don't you ask about your rehabilitation program?

ATH: Just to have the knowledge of what's going on what is it helping. Kind of a purpose for why I am doing what I am doing. If I am doing an exercise and I don't know what it is doing then I think if I know what I am doing in an exercise then it kind of well I am doing this to strengthen my quads so I want to get my quad back so that is why I am going to do it. In another case when I didn't know what I was doing it was like this is pointless, what am I doing this for.

INT: Tell me about your relationship with your athletic, lets pick uh, out of [REDACTED] or [REDACTED] who do you probably work with more?

ATH: Probably [REDACTED], I guess.

INT: Tell me about your relationship with her.

ATH: We have a good relationship I guess. We kind of joke around a lot just to make things fun. We have a good time. If it is something that has to be serious we get serious about it, but it's good to have a relationship where you can joke around a bit and it makes rehab more enjoyable I guess.

INT: Does your athletic trainer attempt to understand your feelings or needs when developing the program for you?

ATH: Yeah, at the beginning they are going to ask you how do you feel about what we are going to do, do you feel alright about the surgery we are going to do and after surgery do you feel alright about everything that went on and stuff like that. I think they do care how you feel about the stuff that goes on just because they want you to feel good about it because they feel good about it and they know everything is going to be alright and they want to make sure that you feel good about everything that happened.

INT: What type of input for your program does your athletic trainer take from you when developing the program?

ATH: I think my input as far as tolerances of pain on some exercise maybe well if its it's hurting and it is not suppose to then we might not do that yet. Maybe wait a week or so. But then other things that are supposed to be hurting I may say, well this is hurting so do I have to do this and they say yeah you have to do it. It's something that needs to be done so I think in those two cases it's kind of different.

INT: Do you trust the information that your athletic trainer gives to you about your program?

ATH: Yeah, just because their knowledge is superior to mine. And they are the position they're in because they know what they're doing. Where if I was on my own, I wouldn't know what to do.

INT: You said that with a little bit of doubt at the very beginning though. When I asked you the question, you were like, "Yeah". Do you have any doubts...

ATH: Just because of my prior experience I may have doubts. Well, I remember doing this when I hurt my other leg or, in my case, back when they didn't know what they were going to do. So it's like whether they know, I mean, they didn't know if they were going to do surgery or not, do they really know what's wrong with my leg. So if I'm doing exercises with my leg before my surgery should I be doing this when they really don't know what's wrong with my leg. So I guess there was some doubt in there. If it's not clear cut what's wrong with you I guess.

INT: So do you think prior history plays a major role in rehab program that someone is involved in right now?

ATH: Yeah, it's your first time injury. Every exercise you're doing, you're like, well am I really supposed to be doing this, is it supposed to hurt, is it supposed to feel like this. You have all kind of questions in your head. Well, someone that's had a leg injury they know it's going hurt sometimes to get it back where it was. So they have that knowledge of past experiences of going through that.

INT: How confident are you in your ability to handle your injury rehabilitation program?

ATH: I'm a hundred percent confident in my ability to handle my program. Going back to that prior knowledge of having that knee injury, I know I can through it.

INT: Because you've had that injury before, you feel real confident in getting back.

ATH: I think my confidence would be less like if was when I first hurt my leg. It was probably less because I didn't know if I was going to get back, I didn't know the final outcome. What could happen, how could this be different? Since it's already happened, how

could I get back to a hundred percent. Since it's a different injury though, I'm not going to say it doesn't always come in my head, well is it going to be like it was before. Is it going to feel exactly like it did before? Not loose at all. There is some doubt it might be a little loose, not feel as good as it did in the beginning. Now I'm not going to say that every little play. It's stuck in that back of your head all the time.

INT: How confident are you when you're playing football?

ATH: At the college-level, right now...in spring training I was starting middle-linebacker. But this was my first year to be in that position. And I was doing pretty well, my confidence was building the more and more experience I get, it's building, and I see my confidence at maybe 70-75%. I know I have room to improve. I have that room-to-improve confidence compared to when I first came in to [REDACTED] when my confidence was really low, maybe like 10%.

INT: Do you feel challenged by your rehabilitation exercises or do you think that you will be?

ATH: I definitely think that I will be challenged. I'm challenged right now going through the stuff I have to go through.

INT: What kind of stuff challenges you?

ATH: I mean, like, it might be a little thing, but that CPM machine. They say, we want you to be at 90-degrees flexion by the end of the week. So I feel like I have to get to that point. So it's going to challenge me to bend my leg and get to that point. Or they say we want you to get your quads, that's the main thing we want you to work on and get that back. So it challenges me to do all the leg lifts and stuff like that.

INT: Tell me how you would feel if you had to do your rehabilitation routine by yourself. You had no [REDACTED], no [REDACTED] ...you had the facility to do it, but you had to do it by yourself.

ATH: I think my motivation would go down significantly if I was by myself. Just not having someone there watching what you're doing, making sure you know what you're doing. But if I was in the same situation where I had to do it, if I was still playing football, I had to do it on my own, I think I would still do it, but I would be in a kind of bitter about it because I had to do it on my own. Didn't have someone with the knowledge that they had. I think I'd question myself more. Am I doing this right. I'd have more doubt in my mind I think.

INT: Is there anything, any ideas, any perceptions of rehab that you feel important for me to know with this whole project? Any general feelings or anything like that?

ATH: I could tell you a bunch of positive things about it. Right when I got hurt, everyone wants to know what's wrong. [REDACTED], [REDACTED], all the trainers..."well, we've got to find out

what's wrong". So I kind of felt that when I got hurt, they want to help me because that's their job. But maybe they've got some kind of personal feeling behind it. "We want to know what's wrong with him, we want to get him back". And just the hands-on experience with our trainer, they give me every time I see them, they want to know "well, let me see your leg, how's it going" and stuff like that.

VITA

Ryan Green received his Bachelor of Science degree from Salisbury State University in physical education in the athletic training concentration in 1997. He then attended Louisiana State University where he completed his Master of Science degree in the Department of Kinesiology. While pursuing his master's, Ryan worked as a certified athletic trainer in the LSU Athletic Department working with the women's gymnastic team. In 1999, he was accepted into the doctoral program at LSU where he continued working with the women's gymnastics and football teams. He was an active part of many NCAA championship appearances and the 2002 Sugar Bowl Championship team. While in the doctoral program, Ryan had a chance to work with many U.S. Olympic-level teams including men's bobsled, women's ice hockey, and men's paralympics soccer. Ryan has also been an active member of his professional organizations including the National Athletic Trainers' Association (NATA), Southeastern Athletic Trainers' Association (SEATA), and the Louisiana Athletic Trainers' Association (LATA). Additionally, Ryan has made presentations at the national, regional, and state levels on various athletic training-related topics.