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Adult- and peer-created motivational climates in sport and injury rehabilitation

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ADULT- AND PEER-CREATED MOTIVATIONAL CLIMATES IN SPORT AND INJURY REHABILITATION

An Abstract of a Dissertation

Submitted

in Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

Approved:

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ABSTRACT

The motivational climate is the environment, within an achievement setting, created by influential individuals (e.g., coach, athletic trainer, peers) through situational cues, expectations, feedback, and rewards. The way individuals within the setting interpret the motivational climate influences emotions, values, and behaviors which then directly encourages a specific state of participation. Coaches, athletic trainers, and peers need to be aware of the motivational climate they generate and the potentially constructive and detrimental effects on athletes in sport and injury rehabilitation.

The purpose of this study was to examine the relationships between the motivational climate in sport, sport commitment, and injury occurrence. Additionally, this study investigated the relationships between the motivational climate in rehabilitation, athlete rehabilitation behaviors, and athletes' satisfaction with rehabilitation. NCAA Division II male and female athletes (N = 191) completed Time 1 survey measuring perceptions of the coach- and peer-created motivational climates in sport and sport commitment type. From the initial sample, 88 participants sustained an injury during the on-going data collection period and met the inclusion criteria for the Time 2 survey, which measured perceptions of the athletic trainer-created motivational climate in rehabilitation, satisfaction with rehabilitation, and sport commitment. Results indicated athletes' perceptions of the motivational climate in sport and sport commitment type did not differ based on injury status. Improved patient satisfaction and more productive behaviors during rehabilitation were predicted by an environment where the athletic trainer emphasized improvement, learning, and working hard. Additionally,

more enthusiastic sport commitment was predicted by lower perceptions of unequal recognition and punishment for mistakes by the coach. Furthermore, sport commitment was found to be dynamic in nature with significant changes occurring following injury. Understanding the variables of sport commitment and the influence of the motivational climate will allow coaches, athletic trainers, and peers to assist athletes in having an enjoyable, productive sport career, as well as promote positive rehabilitation behavior and enhanced patient satisfaction.

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INTRODUCTION TO THE STUDY

The motivational climate is the environment, within an achievement setting, created by influential individuals through situational cues, expectations, feedback, and rewards (Ames, 1992b). The influential individuals creating the motivational climate can be authority figures (e.g., teacher, coach, athletic trainer) through more formal organization and feedback in the setting, or peers (e.g., classmates, teammates) through informal cues and expectations. Ames (1992b) described two types of motivational climates. A *mastery* climate emphasizes individualized structure, learning from mistakes, and rewarding effort and self-improvement. A *performance* climate supports a social comparison structure, rewards only ability, and punishes mistakes. The way individuals within the setting interpret the motivational climate influences emotions, values, and behaviors, which then directly encourages a specific state of participation (Ames, 1992b).

In sport, higher perceptions of a mastery motivational climate has been consistently related to more constructive achievement behaviors, such as exerting greater effort, improved satisfaction with the team, lower anxiety, and the belief that success is achieved through effort and improvement (e.g., Cecchini, Fernandez-Rio, Mendez-Gimenez, Cecchini, & Martins, 2014; Seifriz, Duda, & Chi, 1992; Treasure & Roberts, 1998). In contrast, more maladaptive beliefs and behaviors, such as higher pressures and tension, lower enjoyment, and the belief that success comes from ability or cheating, are related to higher perceptions of a performance motivational climate in sport (e.g., Baric, 2011; Newton & Duda, 1999; Pensgaard & Roberts; 2000). Thus, in order to create an

environment in sport that enhances the positive elements of motivation and decreases the negative, coaches and peers should focus on encouragement, learning, and recognition for effort and self-improvement (i.e., mastery climate).

The motivational climate in sport may have an indirect influence on other related aspects of sport, such as injury occurrence. With more than 480,000 National Collegiate Athletic Association (NCAA) student-athletes competing annually (NCAA, 2016), a significant number of injury-exposures and injuries occur. Injury prevention requires identification of injury predictors. Athletic injuries can happen for numerous reasons – athlete pathomechanics, weakness from previous injury, direct trauma, or specifically for this study, psychological factors (Junge, 2000). The motivational climate has shown to alter athletes' affect, beliefs, and values towards sport (e.g., Atkins, Johnson, Force, & Petrie, 2015; Baric, 2011; Curran, Hill, Hall, & Jowett; 2015; Newton & Duda, 1999). Williams and Andersen's (1998) Stress Injury Model theorized the greater stress perceived by an athlete, the higher the chance of injury. A motivational climate that emphasizes competition, winning at all costs, and punishment for mistakes (i.e., performance climate) has been positively related to athlete anxiety, worry, and dissatisfaction with the team (e.g., Baric, 2011; Newton & Duda, 1999; Pensgaard & Roberts, 2000; Seifriz et al., 1992; Trenz & Zusho, 2011; Walling, Duda, & Chi, 1993). In theory, this link suggests an increase in injury occurrence when perceptions of a performance climate are higher.

However, only one study has examined the relationship between the motivational climate and injury, and revealed a climate encouraging improvement, effort, and working

together (i.e., mastery climate) was positively related to injury occurrence, while no relationship was found between performance climate and injury (Steffan, Pensgaard, & Bahr, 2009). Therefore, this discrepancy between theory and empirical research was examined further to determine the motivational climate's influence on injury, and in turn, injury prevention strategies.

Although athletic trainers make injury prevention a priority, the nature of physical activity and sport participation dictates that some individuals will ultimately get injured and need treatment and rehabilitation (Prentice, 2015). The athletic trainer is the influential individual in the athletic training facility creating the motivational climate in rehabilitation during the injury recovery process (Brinkman & Weiss, 2010; Brinkman-Majewski & Weiss, 2015, in press). An athlete's progression through rehabilitation may be influenced by their perception of the motivational climate (mastery vs performance) created by the athletic trainer (Brinkman & Weiss, 2010). The athletes' perceptions of the motivational climate could affect feelings toward rehabilitation, adherence level, behaviors during therapeutic exercise sessions, and satisfaction with rehabilitation and recovery. In turn, these emotional and behavioral responses to the athletic trainer-created motivational climate can either improve or hinder athletes' overall injury rehabilitation outcomes, making this particular research study important to the future of athletic training practice.

This dissertation consists of three interconnected studies specifically related to the coach- and peer-created motivational climates in sport, athletic trainer-created motivational climate in rehabilitation, sport commitment, injury, and athlete rehabilitation

behaviors and satisfaction. The following sections provide an introduction, rationale, purpose statement, and the research questions related to each specific study.

Study 1

The focus of study one was to explore the coach- and peer-created motivational climate in regards to athletic injury occurrence and sport commitment type. The motivational climate in sport, whether created by coaches or peers, influences the athletes' state of involvement by affecting the athletes' emotions, beliefs, and behaviors related to the activity (Ames, 1992b). In sport, research has consistently found an environment that encourages learning, improvement, and self-referenced success (i.e., mastery climate) to be positively related to higher levels of intrinsic motivation, intentions to continue sport participation, and sport commitment compared to an environment that emphasizes outperforming others, unequal treatment, and social comparison determined success (i.e., performance climate; e.g., Alvarez, Balaguer, Castillo, & Duda, 2012; Cecchnini et al., 2014; Fry & Gano-Overway, 2010; Hall, Newland, Newton, Podlog, & Baucom, 2017; Newton & Duda, 1999; Theeboom, DeKnop, & Weiss, 1995). These findings suggest coaches and peers should create a mastery motivational climate to enhance athletes' motivation, engagement, and overall sport commitment to potentially enrich the sport experience and prolong participation.

A performance motivational climate, where the coaches or peers emphasize intra-team rivalry, ability-based success, and punishment for mistakes has been positively related to athlete anxiety, worry, and dissatisfaction with the team (e.g., Baric, 2011; Newton & Duda, 1999; Pensgaard & Roberts, 2000; Seifriz et al., 1992; Trenz & Zusho,

2011; Walling et al., 1993). This higher anxiety and stress could lead to higher injury risk (Williams & Andersen, 1998). However, Steffan et al. (2009) found that a mastery climate, where coaches emphasized working hard, learning from mistakes, and improvement-based success was related to higher injury rates. This discrepancy between theory and empirical findings needed to be examined further.

Rationale: Study 1

An athletic trainer's understanding of the motivational climate in sport and the related emotional, psychological, and behavioral effects it has on athletes is twofold. As injury prevention specialists, athletic trainers make it a primary goal to identify causes and risk factors of injuries and work to remove or minimize the threat. If research can identify a relationship between specific attributes of the motivational climate (i.e., mastery or performance) and higher injury rates, athletic trainers will be able to identify high risk situations and provide interventions. For example, if a performance climate is related to increased injuries and the athletic trainer identifies a performance climate is being generated, the coaches and peers should be educated on the effects of their words and actions, as well as given suggestions to alter the maladaptive climate construction.

Additionally, athletic trainers are healthcare providers who focus on the overall health and well-being of the patient (e.g., athlete). Evidence shows a performance climate in sport is related to more undesirable emotions, thoughts, and actions, whereas a mastery climate is related to more positive beliefs and behaviors (e.g., Cecchini et al., 2014; Curran et al., 2015; Fry & Newton, 2003; Newton & Duda, 1999; Pensgaard & Roberts, 2000; Seifriz et al., 1992; Trenz & Zusho, 2011). Higher perceptions of a

performance climate could cause sport commitment to decrease and lead to eventual burnout in athletes (Raedeke, 1997). Athletic trainers need to be aware of the potentially detrimental effects of the motivational climate, as well as be prepared to provide social support and psychological skill recommendations to help athletes overcome a negative environment.

Purpose: Study 1

The purpose of this study was to examine the relationship between the coach- and peer-created motivational climates, injury occurrence, and sport commitment type.

Research Questions: Study 1

1a. What is the relationship between the coach-created motivational climate and the peer-created motivational climate on the team? It was hypothesized that there would be a positive relationship between the coach- and peer-created motivational climates.

1b. Do injured and non-injured athletes differ on their perceptions of the coach- and peer-created motivational climates in sport? It was hypothesized that injured athletes would have higher perceptions of a performance motivational climate and non-injured athletes would have higher perceptions of a mastery motivational climate.

1c. Does the coach- and peer-created motivational climate in sport predict athletes' sport commitment type? It was hypothesized higher perceptions of a mastery motivational climate would predict enthusiastic commitment, whereas higher perceptions of a performance climate would predict constrained commitment.

Study 2

The focus of study two was to explore the influence of the athletic trainer-created motivational climate on rehabilitation behaviors and athletes' overall satisfaction with rehabilitation. Additionally, this study examined the relationship between the athletic trainer-created motivational climate in rehabilitation and the coach- and peer-created motivational climate in sport. The coach- or peer-created motivational climate in sport may influence other areas of the sport domain, specifically for this study, the motivational climate in rehabilitation. The athletic trainer generates the motivational climate during injury rehabilitation, but perhaps the athletic trainer takes cues from the coach or team and uses similar strategies' with injured athletes during the recovery process. Research has found similarities, but also distinct differences in how athletes perceive the coach-created climate and the peer-created climate on the same team (Atkins et al., 2015; Ntoumanis, Taylor, & Thogersen-Ntoumani, 2012; Vazou, Ntoumanis, & Duda, 2006). The same could be true for the motivational climate in rehabilitation. The motivational climate created by the athletic trainer in the athletic training facility influences the athletes' emotions, beliefs, and actions during recovery (Brinkman & Weiss, 2010; Brinkman-Majewski & Weiss, 2015, in press).

Brinkman-Majewski and Weiss (2015) specifically found differing perceptions of the motivational climate in the rehabilitation setting between starter and non-starter athletes, with non-starters reporting more favoritism by the athletic trainer. Perhaps unequal treatment of athletes in sport by the coach carries over to the athletic training facility. Research examining the motivational climate and intrinsic motivation revealed

higher perceptions of a mastery climate positively predicted enjoyment and perceived competence and negatively predicted tension and pressure in rehabilitation (Brinkman-Majewski & Weiss, in press). Unexpectedly, Brinkman-Majewski and Weiss (in press) found higher perceptions of a performance climate in rehabilitation predicted effort and importance intrinsic motivation. This indicates both perceptions of mastery and performance climates can lead to positive psychological states during the injury recovery process. Similar to findings in the sport setting, the motivational climate in rehabilitation could influence rehabilitation behaviors (e.g., Boyce, Gano-Overway, & Campbell, 2009; Cecchini et al., 2014; Ntoumanis et al., 2012; Vazou et al., 2006). The athletic trainer should use motivational climate strategies to create the most favorable environment, both psychologically and physically, to produce the best possible outcomes for the athlete (Brinkman & Weiss, 2010).

Rationale: Study 2

The athletic trainer is an influential individual in the rehabilitation setting creating the motivational climate (Brinkman & Weiss, 2010). The athletic trainer is in control of the type of environment generated. The primary justification for exploring the athletic trainer-created climate in rehabilitation is because the majority of athletic trainers and other injury rehabilitation therapists are unaware of the role their words and actions play in generating a climate, and in turn, affecting the patients. Once aware of the motivational climate, the athletic trainer has the ability to structure the environment to create the most conducive atmosphere for the injured athlete to progress through rehabilitation. Tailoring the type of instruction, evaluation, and recognition to

individualize the athletes' rehabilitation program could enhance commitment, effort and persistence during therapeutic exercise sessions, overall satisfaction with rehabilitation, and ultimately ensure improved patient outcomes (Brinkman & Weiss, 2010).

Purpose: Study 2

The purpose of this study was to investigate the influence of the motivational climate in rehabilitation on athletes' behaviors in rehabilitation and overall satisfaction with rehabilitation. Additionally, this study explored the relationship between the athletic-trainer-created motivational climate in rehabilitation and the coach- and peer-created motivational climate in sport.

Research Questions: Study 2

2a. What is the relationship between the perceived motivational climate in rehabilitation and the coach- and peer-created motivational climate in sport? It was hypothesized that higher perceptions of coach- and peer-created mastery climates in sport would be related to an athletic trainer-created mastery climate in rehabilitation. It was also hypothesized that higher perceptions of performance coach- and peer-created climates in sport would be related to higher perceptions of a performance climate in rehabilitation.

2b. Does the motivational climate in rehabilitation predict rehabilitation behaviors? It was hypothesized that higher perceptions of a mastery climate in rehabilitation would predict higher rated behaviors in rehabilitation.

2c. Does the motivational climate in rehabilitation predict patients' satisfaction with injury treatment/rehabilitation? It was hypothesized that higher perceptions of a

mastery climate in rehabilitation would predict greater satisfaction with injury rehabilitation.

Study 3

The focus of study three was to explore the relationship between sport commitment type, injury occurrence, and subsequent injury rehabilitation behaviors. Also, study three investigated if there was a change in sport commitment type following an injury. Sport commitment is the psychological desire and resolve to continue sport participation (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993). Sport commitment research has found that athletes can be grouped into distinct sport commitment types based on varying profiles of commitment sources (e.g., enjoyment, benefits, investments; Raedeke, 1997; Scanlan, Chow, Sousa, Scanlan, & Kinfsend, 2016; W. M. Weiss & Weiss, 2003). Past research has revealed both similarities and differences in the types of sport commitment that emerged (Raedeke, 1997; Scanlan et al., 2016; W. M. Weiss & Weiss, 2003, 2006). For this study, two types of sport commitment were used. *Enthusiastic* sport commitment is a functional component of commitment or the athlete "wanting to" persist in sport, whereas *constrained* sport commitment is an obligatory component of commitment or the athlete "having to" continue sport (Scanlan et al., 2016).

Research exploring sport commitment type and psychological related outcomes revealed that athletes who were profiled as constrained had higher burnout, lower levels of intrinsic motivation, and lower coach-rated effort and persistence compared to enthusiastic sport commitment types (Raedeke, 1997; W. M. Weiss & Weiss, 2003).

Perhaps these constrained athletes could be at a higher risk of injury. With the already present negative thoughts and perceptions of sport, along with the high demands of practice and competition, these athletes could experience greater stress, which in turn, increases the risk for injury. Also, if constrained athletes put forth less effort and energy in practice (W. M. Weiss & Weiss, 2003), then they may be less focused and physically prepared for the intensity and rigors of sport, leading to injury. W. M. Weiss (2011) examined the relationship between sport commitment types and injury occurrence, however no significant findings emerged.

Sport commitment type may also affect how an athlete responds to injury rehabilitation and the recovery process. W. M. Weiss and Weiss (2003) found enthusiastic athletes, as compared to constrained athletes, displayed higher effort and persistence during training as rated by a coach. Thus, the athlete's commitment type may also affect the behaviors and dedication to the injury rehabilitation process. An athlete who sustains an injury and is enthusiastically committed to sport has a desire to continue sport participation and return to activity as soon as possible. This mentality will most likely be displayed through the athlete's responses and behaviors in rehabilitation. Research has also shown that sport commitment type can change over time (W. M. Weiss, 2011; W. M. Weiss & Weiss, 2006). Numerous factors could be influential in this change, one of which may be sustaining an injury. An enthusiastic athlete may feel constrained following an injury or perhaps the opposite could be true. Determination of change in sport commitment type post-injury has not yet been examined, lending to the current research purpose.

Rationale: Study 3

Athletic trainers are always working to identify injury risk factors to provide preventative care. If sport commitment type (i.e., enthusiastic vs constrained) influences injury occurrence, then athletic trainers need to be able to recognize the at-risk athletes. Athletic trainers can then provide either psychological or practical approaches to alter the athletes' commitment sources, or suggest psychological skill strategies to assist the athlete in safe participation or determine if discontinuation of sport is necessary. The constrained athlete who sustains an injury may also hinder their own rehabilitation and recovery. An athlete that is only committed to sport through obligation may see injury as a "way out." These athletes may not want to return to sport, and therefore may skip rehabilitation sessions, put forth less effort at therapeutic exercise, and give up when faced with a challenge during injury recovery. This type of mindset toward sport and injury rehabilitation may potentially lead to poor outcomes. The athletic trainer needs to be aware of commitment types because this allows athletic trainers to provide individualized motivational strategies and support.

Purpose: Study 3

The purpose of this study was to examine the influence of athletes' sport commitment type on injury occurrence and athlete behaviors during rehabilitation. Also, this study investigated changes in sport commitment type following an injury.

Research Questions: Study 3

3a. Do injured and non-injured athletes differ on sport commitment type? It was hypothesized that injured athletes will have higher constrained commitment, whereas non-injured athletes will have higher enthusiastic commitment.

3b. Does sport commitment type (enthusiastic vs. constrained) predict behaviors during injury rehabilitation? It was hypothesized that higher enthusiastic sport commitment type would predict higher-rated rehabilitation behaviors.

3c. Is there a change in athletes' sport commitment following an injury and rehabilitation? It was hypothesized that there will be a significant difference between pre-injury sport commitment and post-injury sport commitment for both enthusiastic and constrained athletes.

Although the research questions for this dissertation were divided into three individual studies, the variables of interest are closely related within the sport domain. The motivational climates created in sport influence athletes' beliefs and actions, and in turn, may affect injury occurrence and sport commitment. Additionally, athletes' sport commitment type (enthusiastic vs. constrained) may also be related to injury occurrence. Once an athlete sustains an injury, the injury rehabilitation process follows. Numerous factors may influence the athletes' behaviors during rehabilitation sessions and satisfaction with the rehabilitation process. The motivational climate created by the athletic trainer during rehabilitation or the athletes' sport commitment type are possible factors that may predict rehabilitation actions and overall patient outcomes. Understanding the variables of interest and how they are related to one another should

improve the overall athlete experience in sport, and enhance patient-oriented outcomes for injury rehabilitation.

Delimitations

The study was delimited to:

1. 191 participants.
2. College athletes competing at a small, Midwestern NCAA Division II institution.
3. A survey designed to determine athletes' perceptions of the coach- and peer-created motivational climates in sport and athletes' sport commitment type.
4. A second survey designed to determine athletes' perceptions of the athletic trainer-created motivational climate in rehabilitation, athletes' type of sport commitment post-injury, and satisfaction with rehabilitation.
5. A rating form for athletic trainers and upper level athletic training students to rate athletes' behaviors in rehabilitation.

Limitations

The following limitation was been identified for this study:

Participants were selected from one NCAA Division II, collegiate institution within the state of Iowa. These participants' perceptions and responses may not accurately reflect the total population of NCAA athletes across the country.

Assumptions

The study was conducted with the following assumptions:

1. The participants answered the surveys honestly.
2. The measures utilized in the survey were reliable and valid instruments.

Definition of Terms

For this study, the following definition was used:

Injury – (1) requires attention from an athletic trainer or physician, and (2) results in at least three weeks of treatment/rehabilitation with the athletic trainer.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The current research project has three interwoven purposes. First, this study explored the athletes' perceptions of the motivational climate in sport as created by coaches and peers, and examined how the motivational climate related to injury occurrence and sport commitment type. Second, this study investigated the relationship between the motivational climate in sport and rehabilitation, and the role of the motivational climate in rehabilitation in regards to athletes' rehabilitation behaviors and satisfaction with rehabilitation. Third, the role of the athletes' sport commitment type (enthusiastic vs. constrained) was examined in relation to injury and rehabilitation. The following literature review is organized to provide an overview of the literature related to the motivational climate in sport and sport rehabilitation, outcomes related to the motivational climate, injury occurrence, and rehabilitation behaviors following injury. Additionally, literature was reviewed related to the types of sport commitment and psychological and behavioral outcomes.

Motivational Climate in Sport

Grounded in Nicholl's (1984) achievement goal theory, the motivational climate can be described as the cues and expectations put forth by influential individuals within a structured context which encourages particular motivational responses (Ames, 1992b). The influential individuals' methods for organizing a task, evaluation and recognition, the extent of social comparison, and autonomy support is where differing perceptions of the motivational climate originate (Ames, 1992b). Ames and Archer (1988) termed a climate

which is perceived as emphasizing learning from one's mistakes, putting forth effort, and self-improvement as *mastery*, and a climate perceived to focus on ability, out-performing others, and norm-referenced comparison for evaluation as *performance*. The motivational climate is created by the influential individual's techniques used for evaluation, feedback, and organization of a task in a particular setting. Perceptions of a mastery climate view the authority figure as structuring assignments which allow practice and cooperative learning. Assessment in a mastery climate is based on individual effort and self-improvement. Feedback is positive and informational to assist in learning from mistakes to improve. The opposite is perceived with a performance motivational climate. Influential individuals typically encourage competition and use norm-referenced criteria, or social comparison, for evaluation. Performance climates also emphasize ability, and recognition is given to the *best*. Punishments are often given when a mistake is made.

Although the foundational research in the motivational climate was specific to the educational setting, Ames (1992b) argued that the motivational climate applies to sport, as both settings are characterized by authority and reward structures which are defined by an influential adult. Also, because both classroom and sport settings have a basis of grouping by skill level, using social and norm comparisons, and performing both individually and publicly, the motivational climate can be generalized from the classroom to sport. An extensive amount of research has investigated the motivational climate in sport (e.g., Cecchini et al., 2014; Fry & Gano-Overway, 2010; Hall et al., 2017; Newton & Duda, 1999; Seifriz et al., 1992; Treasure & Roberts, 1998).

Coach-Created Motivational Climate in Sport

In sport, the coach is one of the primary figures who structures the environment and thus creates the motivational climate. Chaumeton and Duda (1988) investigated whether coaches' behaviors, that influence the motivational climate, vary at different levels of competition. Coaches at higher levels (i.e., high school) were more likely to enforce a performance motivational climate rather than a mastery climate. Specifically, these higher level coaches were reported to ignore mistakes, use punishments at practice, and fail to reinforce positive athlete actions. The opposite was seen with lower level (i.e., elementary) coaches, who implemented mastery behaviors (e.g., provide informational instructions, encourage athletes following mistakes) into the climate.

van de Pol, Kaussanu, and Ring (2012) were interested in whether perceptions of the motivational climate and motivational outcomes differed based on sport season (i.e., training vs competition). Athletes reported higher perceptions of a performance climate during the competitive season than during off-season training. Effort and enjoyment were positively related to perceptions of a mastery climate, while perceptions of a performance climate were positively associated with tension. Also, Fry and Newton (2003) examined sportspersonship, and attitudes toward tennis, coach, and teammates in relation to the athletes' perceptions of the motivational climate. As hypothesized, the athletes, who perceived the climate of tennis practice as higher in mastery, indicated they liked their coach, enjoyed playing for the coach, and also wanted to play for their coach the following year. Higher perceptions of a mastery climate was also related to a more positive sportspersonlike attitude. However, higher perceptions of a performance climate

were negatively associated with sportspersonship, and athletes' with higher performance climate perceptions reported unsatisfactory feelings toward the coach because of the competitive and rivalry nature of the setting. Thus, in order to foster positive attitudes toward sportspersonship and team and coach relationships, sport programs should place emphasis on a mastery motivational climate.

Similar findings support that a mastery motivational climate promotes satisfaction and positive beliefs about success (Newton & Duda, 1999; Seifriz et al., 1992; Treasure & Roberts, 1998). Seifriz et al. (1992) explored the relationship between the perceived motivational climate of the basketball setting and intrinsic motivation, goal orientations, and goal structures. Athletes who perceived the basketball environment as primarily mastery had significantly higher levels of enjoyment as well as higher intrinsic motivation compared to those athletes with lower perceptions of a mastery climate. Also, higher perceptions of a performance climate was related to higher anxiety in relation to competition, negative consequences for mistakes, and lower perceptions of reinforcement for athletes. Treasure and Roberts (1998) found a related pattern in their assessment of how the perceptions of the motivational climate predict the athletes' ideas for causes of success and sources of satisfaction. Athletes with higher perceptions of a mastery climate attributed success to effort, while those with higher perceptions of a performance climate believed ability and deceptions were involved in success. Also, as perceptions of a mastery climate increased so did the feeling that self-improvement was the reason for satisfaction. However, as performance climate perceptions increased, the source of satisfaction was more likely derived from normative success.

Newton and Duda (1999) examined the interaction between the motivational climate and goal orientations with volleyball athletes' perceived ability and beliefs about causes of success, and predicted intrinsic motivation. For beliefs about success, a pattern emerged in that an ego-involved orientation and perceptions of a performance climate were related to ability-focused ideas of success, whereas effort-centered beliefs of success were predicted by an interaction between task-involved orientation and a mastery climate. Specifically, for intrinsic motivation predictors, mastery motivational climate predicted enjoyment and interest, while perceptions of a performance climate predicted feelings of pressure and tension.

Along with predicting pressure and tension in athletes, perceptions of a performance motivational climate in sport have been linked to performance anxiety, increased levels of stress, and sources of distress (Baric, 2011; Pensgaard & Roberts, 2000; Walling et al., 1993). Baric (2011) was interested in determining if perceptions of the motivational climate within football and handball teams related to levels of psychological stress. Findings revealed a performance climate creates a negative psychosocial environment (e.g., higher pressures and tension) for athletes in comparison to a mastery climate. That is, athletes who perceived attributes of a performance climate had higher levels of psychological stress, while athletes who perceived characteristics of a mastery climate had lower levels of psychological pressure. Pensgaard and Roberts (2000) also examined sources of distress in Olympic athletes and how they relate to the motivational climate and athlete goal orientations. The motivational climate was the primary predictor of athletes' total distress in sport. Specifically, perceptions of a

performance climate was a positive predictor of the coach and team being a source of distress along with internal sources of distress, such as worry and anxiety. On the other hand, perceptions of a mastery climate was negatively related to these factors. Likewise, Walling et al. (1993) found that international amateur athletes who perceived their sport as having a performance climate reported significantly greater concerns of failing and inadequacy and were less satisfied as a team member in comparison to those who athletes perceived a mastery climate. Thus, to reduce levels of stress and anxiety the coach should create a mastery motivational climate.

Overall, research has shown that athletes with differing perceptions of the motivational climate had different levels of enjoyment, intrinsic motivation, attitudes toward the coach, sources of satisfaction, and stress (e.g., Baric, 2011; Chaumeton & Duda, 1988; Newton & Duda, 1999; Pengsgaard & Roberts, 2000). Therefore, if the environment is manipulated, changes in these factors should occur. Both Theeboom et al. (1995) and Cecchini et al. (2014) implemented intervention studies by manipulating the motivational climate. Theeboom et al. (1995) examined the effectiveness of a performance versus a mastery instructional martial arts program on children's enjoyment, perceived competence, intrinsic motivation, and motor skill development over a three week study. The traditional teaching program (i.e., performance climate) used performance outcomes and skill as the means for evaluation and recognition, and progressed through extensive skill sets. The mastery teaching program that was implemented used a developmental skill progression with a variety of different and challenging tasks. The evaluation process and recognition in the mastery program used

self-evaluation or competence, and effort and improvement. Also, the children in the mastery martial arts program were involved in the decision making process, whereas those in the traditional or performance program only followed the decisions of the instructor.

Theeboom et al. (1995) reported a greater level of intrinsic motivation and motor skill performance among the mastery climate program children following the three week intervention, however differences did not emerge in relation to the children's perceived competence. Children in the mastery climate group enjoyed the training sessions significantly more than the performance group. They reported feeling excited and accomplished about their development of new skills, which may have influenced the mastery climate group to perform at a higher level than the performance climate group. These findings demonstrate that instruction in differing motivational climates can lead to different outcomes (i.e., mastery climate resulted in more enjoyment, as well as a higher level of motor skill performance compared to the performance climate; Theeboom et al., 1995).

Almost two decades later, Cecchini et al. (2014) reported similar findings from their longitudinal (12 week) intervention study specifically assessing the long-term effects of implementing a mastery motivational climate on social and psychological variables. Coaches of high school, male and female, football and basketball teams (10 basketball; 10 football) were randomly assigned to either the intervention or control group. Coaches assigned to the intervention group implemented a mastery climate structure at practices and competitions: allowing athletes to actively participate in the

decision making process, focusing on the process of improving rather than the outcome, providing evaluations based on self-referenced criteria, and giving recognition privately so as to not encourage competition. Coaches of the control group used their same coaching style and feedback system, making no changes over the 12 week intervention period. The results of the intervention showed that the mastery motivational climate had a moderate to strong positive effect on athletes' social relations, competence, autonomy, self-determined motivation, cooperative learning, effort, and persistence. The intervention mastery climate also significantly decreased the athletes' boredom levels. Additionally, six months after the intervention, these positive effects were retained for social relations, competence, autonomy, effort, and persistence. The Cecchini et al. (2014) findings suggest that coaches can create an environment that has a positive effect on social and psychological factors of athletes. Furthermore, the maintenance of these positive outcomes six months later suggests that coaches trained to use mastery motivational climate strategies continued to implement methods even after the intervention period has ended.

A mastery motivational climate has continually been related to positive athlete emotions, cognitions, and affect, while more negative responses are reported in athletes viewing the motivational climate as performance centered (e.g., Baric, 2011; Cecchini et al., 2014; Newton & Duda, 1999; Pensgaard & Roberts, 2000; Seifriz et al., 1992). Therefore, one would assume perceptions of a mastery motivational climate would positively correlate to athlete engagement, commitment to sport, and intentions to continue sport participation (Alvarez et al., 2012; Curran et al., 2015; Hall et al., 2017).

Curran et al. (2015) examined the relationships between the motivational climate and athlete engagement, which is determined by vigor, dedication, confidence, and enthusiasm. These engagement dimensions can provide athletes with a rewarding and positive experience which contributes to continued sport participation. In a sample of recreational soccer athletes, higher perceptions of a mastery climate were positively related to all dimensions of athletes' engagement, while higher perceptions of a performance climate were negatively related to vigor and enthusiasm and positively related to confidence and dedication.

Similar findings were reported in relation to athletes' intentions to continue sport participation and sport commitment (Alvarez et al., 2012; Hall et al., 2017). Alvarez et al. (2012) hypothesized perceptions of a mastery motivational climate would predict competence, autonomy, and relatedness (intrinsic motivation), and in turn, would be positively related to soccer athletes' intentions to continue participation in the future. As predicted, perceptions of a mastery motivational climate positively predicted satisfaction with competence, autonomy, and relatedness needs, which in turn was a positive predictor of intrinsic motivation. Lastly, intrinsic motivation was a strong, positive predictor of intentions to continue (e.g., sport commitment) soccer participation in the future. In contrast, performance climate was a significant negative predictor of intrinsic motivation.

Hall et al. (2017) surveyed 400 high school athletes on their perceptions of the motivational climate in sport as well as their sport commitment or psychological desire to continue. Analysis included individual-level and team-level perceptions of the

motivational climate in relation to sport commitment. Findings revealed that higher perceptions of a mastery climate positively predicted sport commitment, whereas higher perceptions of a performance climate did not. Hall et al. (2017) specifically found that individual-level perceptions of a mastery motivational climate and collective team-level perceptions of a mastery motivational climate both predicted greater sport commitment compared to athletes who perceived a performance climate. Fry and Gano-Overway (2010) also found that a mastery or caring motivational climate was positively related to levels of sport commitment with youth soccer athletes. These studies' findings suggest that when a mastery climate is created and observed, athletes are more likely to be committed to sport and continue participation (Alvarez et al., 2012; Fry & Gano-Overway, 2010; Hall et al., 2017).

Although the primary intention of sport is to positively promote and develop desirable psychological, social, and physical attributes and skills among the participants, at times intense training and competition can lead to stress and burnout (Raedeke & Smith, 2004). Coaches who emphasize winning-at-all-costs and encourage competition and social comparison in training (i.e., performance climate) may create an environment which increases pressures, anxiety, and potentially burnout in athletes. Vitali, Bortoli, Bertinato, Robazza, and Schena (2015) were interested in the motivational climate's influence on burnout in youth athletes. Results indicated that perceptions of a mastery motivational climate were strongly and negatively related to sport devaluation and athlete's reduced sense of accomplishment. Overall, the study advocates that a mastery

motivational climate created by the coach in sport will have a protective effect against burnout, while implementation of a performance climate structure will lead to burnout.

Studies exploring the coach-created motivational climate in sport have consistently demonstrated positive associations between perceptions of a mastery climate and adaptive emotions, beliefs, and strategies in athletes, whereas perceptions of a performance climate were positively related to negative values, thoughts, and behaviors in sport (e.g., Alvarez et al., 2012; Cecchini et al., 2014; Curran et al., 2015; Fry & Newton, 2003; Hall et al., 2017; Newton & Duda, 1999; Seifriz et al., 1992; Vitali et al., 2015). When coaches emphasize intra-team rivalry and winning-at-all-costs, evaluate based on social comparison, and give punishments for mistakes, athletes are more likely to experience higher levels of pressure, tension, stress, and anxiety. The Stress Injury Model (Williams & Andersen, 1998) theorized higher stress predicts greater injury occurrence, therefore, indicating a performance motivational climate in sport may influence injury rate. If this injury risk factor can be identified, athletic trainers can identify the high-risk environments and individuals within the setting. Coaches could be educated of the potential harmful effects of their words and actions on the athletes in an attempt to prevent injury occurrence.

Athletes have shown higher competence, intrinsic motivation, engagement, and commitment in sport when coaches generate practice and competition structures focused on learning from one's mistakes, working together, and determining success from self-improvement and effort (i.e., mastery climate; Alvarez et al., 2012; Fry & Gano-Overway, 2010; Hall et al., 2017; Newton & Duda, 1999; Seifriz et al., 1992; Treasure &

Roberts, 1998). Perhaps the mastery motivational climate would influence athletes' emotions and behaviors in other aspects of the sport domain, such as injury recovery and rehabilitation, in a similar way. An injury recovery environment, generated by the athletic trainer, that encourages cooperative learning, provides informational feedback for improvement, and rewards athletes for effort, potentially would improve the athletes' engagement and commitment to rehabilitation. In turn, enhancing athlete effort during therapeutic exercise sessions, and ultimately improving patient success and satisfaction. Not only could the motivational climate in sport be transferred to other aspects of the sport domain, but also, individuals other than the authority figure in the setting could be influential.

Peer-Created Motivational Climate in Sport

Just as Ames (1992b) transferred the idea of the teacher creating the motivational climate in the classroom to the coach generating the motivational climate in sport, Vazou, Ntoumanis, and Duda (2005) proposed that peers can also be influential in creating the motivational climate in sport. Teammates provide motivational cues as well as evaluative feedback to one another during practices and competitions, potentially creating another motivational climate, which is either similar or very different from that of the coach-created environment. Vazou et al. (2005) conducted in-depth interviews to examine how athletes perceived the peer-created motivational climate. Eleven dimensions of peer climate emerged. Many of these dimensions corresponded to the coach-created motivational climate: improvement, equal treatment, effort, cooperation, intra-team competition, mistakes, normative ability, and evaluative competence.

However, new dimensions, intra-team conflict and relatedness support, specifically related to peer exchanges, emerged making the peer-created motivational climate unique.

Vazou et al. (2006) and Atkins et al. (2015) confirmed the importance of peers in creating the motivational climate in sport. That is, the peer-created motivational climate was a better predictor than the coach-created motivational climate for certain adaptive motivational outcomes (Atkins et al., 2015; Vazou et al., 2006). More specifically, Vazou et al. (2006) reported that perceptions of both coach and peer mastery climates positively predicted athlete enjoyment, yet only perceptions of a peer-created mastery climate was able to predict self-esteem. Atkins et al. (2015) examined the association of peer- and coach-created motivational climates on youth athletes' task goal orientation and the subsequent relationship of a task orientation with self-esteem, sport competence, enjoyment in sport, and intentions to continue playing sport. Results indicated only a peer-created mastery climate, not coach-created, was related to higher levels of task orientation, which correspondingly were related to higher self-esteem, competence, enjoyment, and intentions to continue playing.

Also interested in both the peer- and coach-created motivational climates in sport, Ntoumanis et al. (2012) investigated the climates' predictive value on athletes' moral attitudes, emotional well-being, and behavioral investments from the middle of one sport season to the beginning of the next. Although the predictive effects of the peer- and coached-created motivational climates varied slightly as a function of time and outcome variables (i.e., cheating, gamesmanship, commitment, burnout, intentions to continue), overall the results revealed that perceptions of peer and coach mastery climates predicted

more adaptive outcomes than did perceptions of peer and coach performance motivational climates. The findings indicate that peers and coaches both create an influential climate in sport when investigating sport outcomes, thus both environments should be highlighted (Atkins et al., 2015; Ntoumanis et al., 2012; Vazou et al., 2006).

Just as the coach-created motivational climate was found to predict athletes' intrinsic motivation (e.g., Alvarez et al., 2012; Seifriz et al., 1992; Newton & Duda, 1999), Joesaar, Hein, and Hagger (2011, 2012) reported similar findings for the peer-created motivational climate in sport. Joesaar et al. (2012) examined both the temporal stability of the peer-created mastery motivational climate in sport and the relationship between athletes' intrinsic motivation and perceptions of the peer-created mastery climate in youth athletes. As predicted, the peer-created mastery climate had a significant direct effect on athletes' intrinsic motivation. Also, perceptions of the peer-created mastery climate demonstrated stability over a one-year period, indicating that these perceptions of the climate do not change substantially across a training season. Additionally, Joesaar et al. (2011) examined the relationship between the peer-created motivational climate and basic psychological needs on intrinsic motivation. In line with the hypothesized model, the higher the perceptions of a peer-created mastery climate in sport, the greater level of satisfaction for autonomy, competence, and relatedness needs. Furthermore, the more autonomous, competent, and related the athletes were, the higher their intrinsic motivation for sport. Alternatively, higher perceptions of a peer-created performance climate, or an environment with intra-team conflict and competition, was related to lower satisfaction with relatedness. Similar to the self-determination dimension of relatedness,

team cohesion has also been linked to the peer-created motivational climate. Garcia-Calvo et al. (2014) examined the relationship between the motivational climate and team cohesion with semi-professional soccer athletes (*M* = 24.51 years of age) and found perceptions of a peer-created mastery climate to be positively associated with three cohesion variables: social attraction to the group, task group integration, and satisfaction with participation.

While the majority of the research on the peer-created motivational climate in sport has found that the environment generated by teammates was influential and predictive of outcome variables, Atkins, Johnson, Force, and Petrie (2013) found no significant relationships between perceptions of a peer mastery motivational climate and sport competence, self-esteem, sport enjoyment, or intention to continue among youth athletes in recreational and competitive sport. Although this finding was not postulated, Atkins et al. suggested that due to the age (*M* = 12.7 years of age) of participants, parents were potentially viewed as more influential in the development of the related variables in comparison to peers. Perhaps as these individuals get older and continue sport, they will spend more time with teammates and experience an increasing amount of influence by the peer-created motivational climate on their thoughts, feelings, and behaviors toward sport.

Just as the peer-created mastery motivational climate was related to adaptive affect and behaviors in athletes (e.g., Atkins et al., 2015; Garci-Calvo et al., 2014; Joesaar et al., 2011, 2012), a performance peer-created motivational climate was related to negative thoughts and actions in sport. Smith, Gustafsson, and Hassmen (2010) explored

the relationship between athlete perceptions of the peer-created motivational climate and burnout in high school athletes. Results indicated that peer-created motivational climate predicted burnout. More specifically, lower perceptions of improvement, relatedness support, and effort dimensions of the peer climate, along with higher perceptions of peer climate intra-team conflict, was associated with higher sport devaluation, emotional and physical exhaustion, and reduced sense of accomplishment.

Research has revealed the peer-created motivational climate on the team influences athletes' thoughts, values, and behaviors in sport (Atkins et al., 2015; Garcia-Calvo et al., 2014; Josesaar et al., 2012; Ntoumanis et al., 2012; Smith et al., 2010; Vazou et al., 2006). Specifically, higher perceptions of a mastery peer-created climate related to greater enjoyment, self-esteem, competence, and intrinsic motivation, whereas higher perceptions of a performance peer-created motivational climate was related to lower satisfaction in sport and higher burnout and sport devaluation. Perhaps if the team climate focuses on effort, equal treatment, and support for one another (i.e., mastery climate), athletes will have greater enjoyment and subsequently higher sport commitment or intentions to continue. If the environment created by peers in sport includes social comparison, higher levels of intra-team competition, and conflict among teammates (i.e., performance climate), conceivably athletes would have lower levels of satisfaction and enjoyment with sport, and in turn lower levels of commitment. Furthermore, athletes who perceive higher peer-created performance climates may also experience greater stress and anxiety, potentially leading to injury (Williams & Andersen, 1998).

Motivational Climate and Injury Occurrence

The motivational climate can alter an individual's perceptions, feelings, and behaviors related to sport and its corresponding goals and tasks (Ames, 1992b). One area with little research is the motivational climate's effect on injury risk and occurrence. A sport environment that fosters high levels of rivalry, competitiveness, and punishment for mistakes (i.e., performance climate) may result in different injury occurrence rates compared to an environment that encourages learning from mistakes, and focuses on personal improvement and putting forth effort (i.e., mastery climate). Research has linked athletes' perceptions of a performance climate to higher levels of anxiety, stress, and psychological pressures compared to those who perceived more of a mastery climate (Baric, 2011; Newton & Duda, 1999; Newton, Duda, & Yin, 2000; Pensgaard & Roberts, 2000; Seifriz et al., 1992; Trenz & Zusho, 2011; Walling et al., 1993). Considerable research has explored the relationship between stress/anxiety and injury occurrence, with some research reporting no relationship between general personal anxiety and injury (Kerr & Minden, 1988; Lysens et al., 1989), whereas other studies have shown a direct positive relationship between competitive anxiety and sport injury occurrence (Blackwell & McCullagh, 1990; Hanson, McCullagh & Tonymon, 1992; Kolt & Kirkby, 1994; Petrie, 1993). Perhaps, the presence of a performance motivational climate increases athletes' anxiety, and potentially, their risk for injury.

Steffen et al. (2009) examined female soccer players' injury occurrence, over an eight month competitive season, in relation to their perceptions of the motivational climate. Unexpectedly, results revealed that the athletes who perceived the motivational

climate on the team as more mastery had a significantly higher injury occurrence than those athletes with higher performance climate perceptions. As unforeseen as the findings were, potential explanations could be related to the mastery climate's emphasis on improvement and effort. Perhaps athletes within a mastery climate have a stronger desire to perform more repetitions, with greater intensity, and continue training for longer periods of time in order to develop and enhance skills. This type of "drive" in an athlete leads to an increased number of injury-exposures, as well as overtraining, which could lead to more chronic, over-use type injuries. Currently, Steffen et al. (2009) is the only available literature investigating the relationship between the motivational climate and injury occurrence, lending to the present need for further research in this area.

Theoretically, one would expect to find higher perceptions of a performance motivational climate in sport related to greater injury rates. However, Steffen et al. (2009) found that athletes who perceived more of a mastery motivational climate in sport had significantly higher injury rates than those athletes who had higher perceptions of a performance motivational climate. Therefore, further investigation is needed to determine if athletes' perceptions of a performance or mastery motivational climate is related to sport injury occurrences. Additionally, the motivational climate may also have an effect on athletes' behaviors after the injury has occurred, specifically behaviors during the rehabilitation process.

Motivational Climate and Training Behaviors

Athlete training behaviors is one particular area of interest in relation to perceptions of the motivational climate. Previous research has shown a mastery

motivational climate to predict greater levels of enjoyment and intrinsic motivation in sport (Joesaar et al., 2011, 2012; Newton & Duda, 1999; Seifriz et al., 1992; van de Pol et al., 2012). Thus, if an athlete enjoys sport and has higher levels of intrinsic motivation, then one would expect that athlete will be more likely to be engaged at practice and display high quality training strategies. Boyce et al. (2009), Ommundsen, Roberts, and Kavussanu (1998), and Trenz and Zusho (2011) examined practice strategies among athletes in relation to their perceptions of the motivational climate. Boyce et al. (2009) specifically investigated middle school athletes' self-regulatory strategies used during practice sessions. Findings indicated that athletes with higher perceptions of a mastery motivational coach-created climate were more likely to use goal setting and positive self-talk during practice, practice on their own time, as well as attempt to incorporate coach feedback into future skill repetitions.

Ommundsen et al. (1998) reported college-level athletes who perceived more attributes of a coach-created performance climate in sport were more likely to display practice avoidance behaviors and report negative attitudes toward practice sessions and drills. Trenz and Zusho (2011) also examined athletes' practice avoidance behaviors and persistence at practice in relation to the coach-created motivational climate. Results revealed that greater perceptions of a climate emphasizing learning, effort, and personal improvement (i.e., mastery) were negatively related to practice avoidance behaviors and positively related to practice persistence. These findings support the creation of a mastery motivational climate to enhance adaptive practice strategies and prevent maladaptive behaviors.

Coach-rated effort has also been used as a means of assessing athlete training behaviors in relation to the motivational climate (Cecchini et al., 2014; Ntoumanis et al., 2012; Vazou et al., 2006). The majority of findings support the hypothesis that a mastery motivational climate predicts higher effort, and a performance climate predicts lower levels of effort. Specifically, Vazou et al. (2006) reported higher levels of coach-rated athlete effort when the athlete was faced with a challenge when athletes perceived a mastery climate in comparison to a performance climate. Cecchini et al. (2014) showed that athletes in a mastery climate intervention group displayed greater effort and persistence in practice compared athletes in a performance climate control group. Ntoumanis et al. (2012) found a negative relationship between perceptions of a peer-created performance climate and coach-rated effort, however greater perceptions of a coach-created performance climate predicted higher levels of coach-rated effort. Although this last finding was not anticipated, perhaps coaches who emphasize norm-referenced criteria to determine success may not be as aware to accurately evaluate athletes' level of effort, a self-referenced criterion.

The motivational climate influences athletes' practice strategies, persistence, and effort in sport (e.g., Cecchini et al., 2014; Ntoumanis et al., 2012; Vazou et al., 2006), therefore, it is conceivable the motivational climate could be prominent in affecting individual behaviors in related settings, such as injury rehabilitation. Just as athletes in sport need these adaptive training behaviors as they work toward goals of refining skills and winning competitions, injured athletes also require constructive rehabilitation behaviors while working toward the goals of progressing through therapeutic exercise

and returning to competition. Although little is known of the relative influence of the coach- and peer-created motivational climates on rehabilitation behaviors, once an athlete sustains an injury a large portion of their time is spent in a new environment during treatment and rehabilitation – the athletic training facility, where the athletic trainer creates the motivational climate.

Athletic Trainer-Created Motivational Climate in Rehabilitation

The athletic trainer is the primary healthcare provider guiding an injured athlete through treatment, rehabilitation, and recovery following an injury. By Ames' (1992b) description, injury rehabilitation and recovery can be characterized as an achievement environment because the overall objective is to accomplish a task, and influential individuals (e.g., athletic trainers) impart a particular structure through information delivery, evaluation methods, and a system of rewards and punishments. Although returning to play is a common, overarching goal of most injury recoveries, rehabilitation involves working toward and accomplishing smaller tasks on a daily basis in order to ensure progress to the final goal. If the athletic trainer can create a climate which enhances effort and persistence in rehabilitation, athletes' should be able to reach their goals, make progress, and have a successful rehabilitation.

Based upon research on the motivational climate in sport, Brinkman and Weiss (2010) theorized a climate emphasizing individual improvement, effort, and learning (i.e., mastery) would increase the injured athlete's motivation, enjoyment, and competence in rehabilitation, while decreasing anxiety and stress. Brinkman and Weiss (2010) presumed a mastery motivational climate created by the athletic trainer during

rehabilitation would produce a positive psychological response to the injury and recovery process, and in turn lead to optimal rehabilitation outcomes. Specific strategies using Ames' (1992a) TARGET dimensions (i.e., task, authority, recognition, grouping, evaluation, time) were provided for practicing athletic trainers to implement to enhance the mastery motivational climate in the rehabilitation setting.

Currently, only one published study (Brinkman-Majewski & Weiss, 2015) in the literature specifically explores the athletic trainer-created motivational climate in the athletic training setting. Brinkman-Majewski and Weiss (2015) found a relationship between NCAA Division I athletes' perceptions of the athletic trainer-created motivational climate and individual athlete characteristics. Athletes with higher ego orientation (i.e., athletes who use normative comparison to determine success), males, and athletes describing themselves as non-starters on the team overall had higher perceptions of a performance motivational climate in the athletic training setting. In contrast, female athletes and athletes with greater task goal orientation (i.e., athletes who believe self-improvement determines success) were more likely to perceive the athletic training setting emphasizing mastery motivational climate attributes. More specifically, male athletes were more likely than females to perceive the athletic trainer as showing favoritism and punishing athletes when they made a mistake, while females had significantly higher perceptions of each athlete in the athletic training facility as having an important role. Non-starter athletes reported observations of athletic trainers showing favoritism significantly more than did starter athletes. Brinkman-Majewski and Weiss (2015) also investigated the motivational climate's ability to predict athletes'

psychosocial beliefs (i.e., enjoyment and perceived competence) in rehabilitation. The motivational climate in the athletic training setting failed to predict either enjoyment or perceived competence in rehabilitation, lending to the current study's replication and extension purpose of investigating the motivational climate's influence on athletes' satisfaction with rehabilitation.

Comparable examination and findings were reported by Brinkman-Majewski and Weiss (in press) in their investigation of NCAA Division II athletes' perceptions of the motivational climate in the rehabilitation setting. Brinkman-Majewski and Weiss (in press) found gender differences in perceptions of the motivational climate in rehabilitation. Male athletes had significantly higher perceptions of unequal recognition, punishment for mistakes, and intra-team member rivalry (i.e., performance climate features) compared to female athletes. Also, female athletes perceived significantly greater emphasis placed on effort and improvement in comparison to males. Brinkman-Majewski and Weiss (in press) also examined the athletic trainer-created motivational climate as a predictor of athletes' intrinsic motivation. Analyses indicated that mastery climate perceptions positively predicted interest/enjoyment and perceived competence, and negatively predicted tension-pressure in rehabilitation. Unexpectedly, findings also revealed that higher perceptions of a performance climate was positively related to effort/importance intrinsic motivation. These findings indicate that the athletes in the rehabilitation setting believe rehabilitation is important and are motivated to put forth effort when the athletic trainer creates an environment highlighting competition, unequal recognition, and reprimands for mistakes. This finding could be explained using

Nicholls' (1984) achievement goal theory. Individuals are naturally motivated to display demonstrations of success and avoid demonstrations of failure, therefore explaining the athletes' motivation and effort in rehabilitation to avoid punishment or being viewed as having lesser ability.

Currently, a gap in the literature exists regarding the athletic trainer-created motivational climate in rehabilitation and outcomes (Brinkman & Weiss, 2010; Brinkman-Majewski & Weiss, 2015, in press). Athletic trainers need to be able to create an environment that encourages the injured athletes to commit and persevere during the rehabilitation and recovery process. Previous research (Johnston & Carroll, 2000; Levy, Polman, & Borkoles, 2008) investigating rehabilitating patients' adherence rates indicated increased commitment and adherence in rehabilitation is associated with higher reports of emotional, practical, and autonomy support from their therapist. Thus, if providing these types of support is indicative of generating a mastery motivational climate, then perhaps the athletic trainer can create a climate which enhances the athletes' level of commitment towards the recovery process. The athletes' behaviors and effort during rehabilitation will lead to greater success, improved injury rehabilitation outcomes and patient satisfaction with rehabilitation. The injured athlete's commitment to sport may also influence rehabilitation behaviors. Perhaps, the higher commitment the athlete has to sport, the greater desire to return to practice and competition, and in turn, give more effort in rehabilitation.

Sport Commitment

Sport commitment is the "psychological construct representing the desire and resolve to continue sport participation" (Scanlan et al., 1993, p. 6). Thus, the athlete's actions and attitudes toward practice and competition may be influenced by sport commitment. In the same way, perhaps the athlete's sport commitment influences injury rehabilitation thoughts and behaviors during the recovery process, with varying responses based on the athlete's desire to return to competition. According to the Sport Commitment Model (SCM, Scanlan et al., 1993; Scanlan, Russell, Wilson, & Scanlan, 2003) higher levels of enjoyment, involvement opportunities, personal investments, social support, and social constraints, and lower levels of attractive alternatives lead to greater sport commitment. Involvement opportunities are the perceived positives associated with sport which are thought to only be possible through continued participation (e.g., association with team, staying in shape, travel). Personal investments are the resources, such as time, money, and effort, which are put in to sport and cannot be returned if participation ended. Social constraints are the pressures from others which create obligatory feelings to continue, while attractive alternatives are other desirable activities to participate in outside of the sport.

The concept of varying types of sport commitment was first introduced by Schmidt and Stein (1991) by applying Rusbult's (1980, 1983) investment model of personal relationships to athletes in sport. Schmidt and Stein (1991) proposed three different types of sport commitment and theorized predictors of commitment would vary between groups: athletes who enjoy sport (i.e., attracted), athletes who lack enjoyment in

sport, but continue to participate (i.e., entrapped), and athletes who leave sport because of no enjoyment (i.e., low committed). Specifically, Schmidt and Stein (1991) suggested that athletes with attraction-based commitment perceived higher enjoyment, benefits, and investments along with lower costs and attractive alternatives in sport. On the other hand, entrapped athletes perceived higher costs and investments, and lower enjoyment and benefits. The entrapped athlete also believes sport investments are too great to leave sport, and perceived few attractive alternatives, thus sport participation is continued. Lastly, the low committed athlete perceives lower enjoyment, benefits, and investments as well as higher costs and attractive alternatives. These athletes are likely to end sport participation.

Raedeke (1997) and W. M. Weiss and Weiss (2003) empirically tested Schmidt and Stein's (1991) theory of the three sport commitment types: attracted, entrapped, and low-committed. Raedeke (1997) examined competitive youth swimmers and found similar, but not identical, profiles to the proposed attracted, entrapped, and low-committed categories. The enthusiastic (attracted) swimmers displayed the projected profile, with higher enjoyment, benefits, and investments, as well as fewer attractive alternatives and lower perceived costs. Raedeke's (1997) malcontented group of swimmers differed from Schmidt and Stein's (1991) entrapped group as they perceived lower enjoyment, benefits, and investments, and higher costs and attractive alternative options. The indifferent or low-committed swimmers aligned with the hypothesized profile with lower enjoyment, benefits, and investments, along with higher costs and

attractive alternatives. Raedeke's (1997) findings indicated that attracted, entrapped, and low-committed athletes could be differentiated in sport.

W. M. Weiss and Weiss (2003) replicated and extended Raedeke's (1997) study to further test Scmidt and Stein's (1991) theorized sport commitment profiles in elite female gymnasts. Analyses revealed three different commitment profiles. Supporting Schmidt and Stein's (1991) hypothesis and Raedeke's (1997) findings, attracted gymnasts perceived higher enjoyment, benefits, and personal investments, and lower costs and attractive alternatives. However, the entrapped gymnasts differed from previous findings, as they were characterized by lower enjoyment and benefits, and higher costs, personal investments, and attractive alternatives. The third commitment profile that emerged was unique to previous research and theory, being characterized by moderately lower enjoyment and benefits, average costs, moderately higher attractive alternatives, and higher personal investments. W. M. Weiss and Weiss (2003) termed this last profile "vulnerable" because they appeared to be weighing the positives and negatives of gymnastics and could become either attracted or entrapped commitment gymnasts. In a follow-up study one year later, W. M. Weiss and Weiss (2006) revealed an uninterested commitment (i.e., low committed) group in addition to the original attracted, entrapped, and vulnerable commitment groups.

Most recently, Scanlan et al. (2016) offered and tested an updated version of the original SCM (Scanlan et al., 1993). Scanlan et al. (2016) included two distinct types of sport commitment in the model: enthusiastic and constrained. Enthusiastic commitment, similar to attraction-based commitment, is a functional component of commitment or

"wanting to" persist in sport, whereas constrained commitment is an obligatory component of commitment or "having to" continue in sport (i.e., entrapped-based commitment). The Sport Commitment Quesionnaire-2 was developed and confirmatory factor analysis supported the enthusiastic and constrained commitment types (Scanlan et al., 2016). Results specifically revealed that enthusiastic sport commitment was positively related to enjoyment, valuable opportunities, and desire to excel-mastery, and negatively related to other priorities. As hypothesized, constrained sport commitment was negatively related to enjoyment and valuable opportunities, and positively related to personal investments, other priorities, and social constraints.

With the expanded support of distinct sport commitment types, research has also examined the relationship between the varying sport commitment types and burnout, intrinsic motivation, and training behaviors (Raedeke, 1997; Scanlan et al., 2016; W. M. Weiss & Weiss, 2003, 2006). Raedeke (1997) examined high level adolescent swimmers' sport commitment types, and if these swimmers differed on burnout perceptions. Results revealed that the malcontented (i.e., entrapped) swimmers perceived higher levels of physical and emotional exhaustion and swim devaluation in comparison to the other commitment groups. In contrast, the enthusiastic (i.e., attracted) swimmers reported the lowest scores on all burnout dimensions. W. M. Weiss and Weiss (2003) studied sport commitment types, intrinsic motivation, and training behaviors in elite level female gymnasts. Findings indicated that entrapped gymnasts were significantly lower on intrinsic motivation compared to attracted and vulnerable gymnasts. Furthermore, attracted gymnasts were rated by the coach as demonstrating significantly higher effort

and persistence training behaviors as compared to vulnerable and entrapped gymnasts. Vulnerable gymnasts' coach-rated effort was also significantly higher than entrapped gymnasts. These outcomes indicate that sport commitment type is related to differences in sport perceptions and athletes' behaviors.

Another outcome that may be related to sport commitment type is injury occurrence and rehabilitation behaviors following injury. W. M. Weiss (2011) examined Division I male and female athletes' sport commitment types, change in commitment type over time, injury occurrence, and rehabilitation behaviors. Results revealed no significant differences between commitment types and injury occurrence, however low committed athletes had lower athletic trainer-rated effort, intensity, and persistence in rehabilitation compared to the other commitment types. Low sport commitment athletes may not want to return to sport participation, and therefore, put less effort into rehabilitation. Decreased energy and effort at rehabilitation could slow the recovery process which in turn would lengthen the athlete's time away from sport. In regards to changes in sport commitment type over time, W. M. Weiss (2011) found variations in commitment type profiles between time 1 data collection and one year later. A total of 68% of the athletes changed their type of sport commitment in the one year period. These altered commitment profiles indicate that athletes' sport commitment type is dynamic. Numerous factors could lead to changes in sport commitment – one of which could be the motivational climate in sport.

The mastery motivational climate has been linked to higher enjoyment (e.g., Atkins et al., 2015; Theeboom et al., 1995), and currently enjoyment is the strongest

predictor of sport commitment (e.g., Carpenter & Coleman, 1998; Scanlan et al., 1993; M. R. Weiss, Kimmel, & Smith, 2001). Thus, the motivational climates created by both coaches and peers in sport may influence an athlete's sport commitment. W. M. Weiss (2015) examined high school and collegiate level, male and female athletes' sport commitment and perceptions of the motivational climate in sport. Although no differences emerged in terms of sport commitment, enjoyment, or social constraints (coach, teammate, best friend) between high school and college athletes, college athletes had higher perceptions of performance climate along with higher perceptions of investments, involvement opportunities, and costs in sport than did high school athletes. In contrast, high school athletes reported higher perceptions of a mastery motivational climate and parent social constraints. Even though W. M. Weiss (2015) did not find a direct link between the perceptions of the motivational climate and sport commitment, the results indicate that the longer an athlete continues sport participation, and perhaps with the advanced competition level, more negatives (e.g., time commitment, injuries, pressure) of sport materialize.

Sport commitment literature (e.g., Raedeke, 1997; Scanlan et al., 1993; Scanlan et al., 2016; W. M. Weiss & Weiss, 2003, 2006) has revealed that many sources (e.g., enjoyment, valuable opportunities, investments, costs, attractive alternatives) influence commitment in sport. Higher perceptions of certain sources and lower perceptions of others can lead to an enthusiastic or constrained sport type commitment. Perhaps injury or injury rehabilitation is another factor or event that can influence sport commitment. When an athlete sustains an injury and is unable to participate in sport, the perceived

enjoyment, benefits, costs, and attractive alternatives to sport could be altered, in turn affecting the athlete's level of commitment in sport.

Conclusion

Analysis of the literature has revealed key concepts related to the motivational climate in the sport domain and the current research study (see Appendix A for literature review table). Perceptions of a mastery motivational climate in sport is related to greater enjoyment among athletes (e.g., Atkins et al., 2015; Theeboom et al., 1995). Enjoyment is currently the greatest predictor of sport commitment (e.g., Carpenter & Coleman, 1998; Scanlan et al., 1993; M. R. Weiss et al., 2001). Thus, it could be theorized that a climate focused on learning, effort, and self-referenced success (i.e., mastery climate), increases enjoyment, which in turn, enhances sport commitment.

Alternatively, a motivational climate centered on ability, outperforming others, and punishment for mistakes (i.e., performance climate) has consistently been related to higher reported levels of tension, anxiety, stress, and pressure among athletes in sport (e.g., Baric, 2011; Newton & Duda, 1999; Newton et al., 2000; Pensgaard & Roberts, 2000; Seifriz et al., 1992; Trenz & Zusho, 2011; Walling et al., 1993). Williams and Andersen's (1998) Stress Injury Model theorized that higher levels of stress leads to greater risk of injury. Research examining this model in adolescent and young adult athletes supports the Stress Injury Model indicating that athletes with higher life stress and sport-specific stress were more vulnerable to injury (e.g., Dunn, Smith, & Smoll, 2001; Krasnow, Mainwaring, & Kerr, 1999; Williams & Andersen, 1998). Therefore, one could postulate a stress inducing performance motivational climate could lead to

greater injury occurrence. Yet, despite this plausible link between the performance climate and injury, the only study (Steffen et al., 2009) testing the relationship between the motivational climate and injury revealed a sport environment that emphasizes learning from mistakes, self-improvement, and effort put forth (i.e., mastery climate) predicted new injuries. This inconsistency in the literature supports the current research study's purpose.

Once an athlete sustains an injury and begins the rehabilitation and recovery process, the athlete is then introduced to the athletic trainer-created motivational climate in the rehabilitation setting (Brinkman & Weiss, 2010; Brinkman-Majewski & Weiss, 2015, in press). During the injury recovery and return-to-play progression, the athlete will undergo regular treatments and therapeutic exercise sessions with the athletic trainer. A certain amount of effort and commitment is needed from the athlete for rehabilitation to be successful. Research in sport has shown a mastery motivational climate to be linked to greater effort and improved practice strategies among athletes (Cecchini et al., 2014; Ntoumanis et al., 2012; Vazou et al., 2006). Perhaps injured athletes' behaviors in rehabilitation, such as effort and persistence with therapeutic exercises, could also be improved by the athletic trainer creating a mastery motivational climate. The literature also indicated that patients going through rehabilitation had greater commitment and adherence rates when they perceived higher emotional, practical, and autonomy support from their therapist (Johnston & Carroll, 2000; Levy et al., 2008). Providing these types of support is suggestive of the therapist creating features of a mastery motivational climate. As a result, this mastery motivational climate may enhance the injured athletes'

diligence and effort during injury recovery, and in turn lead to improved satisfaction and outcomes with the rehabilitation process. Therefore, the purpose of this study was to examine the relationship between the motivational climate in sport, sport commitment, and injury occurrence. Additionally, this study investigated the relationship between the motivational climate in rehabilitation, injured athlete rehabilitation behaviors, and athletes' overall satisfaction with rehabilitation.

CHAPTER 3

METHODS

Participants

To determine the relationship between the coach- and peer-created motivational climates in sport, as well as the relationship between perceptions of the motivational climate in sport and sport commitment type, 191 intercollegiate male (n = 127) and female (n = 64) athletes competing at one NCAA Division II university volunteered to complete the Time 1 survey. All 15 intercollegiate sports at the institution had athletes participate: baseball, men's and women's basketball, cheer, women's cross country/track & field, football, men's and women's golf, men's and women's soccer, softball, women's tennis, volleyball, and wrestling. Participants identified themselves as either a starter (55%) or non-starter (45%) on the team. Participants ranged in age from 18 to 23 years (M = 19.90, SD = 1.20), and were predominantly Caucasian (83.8%) with black or African American (7.9%), two or more races (3.1%), Asian (1.6%) and 'other' (3.7%) races also represented.

To examine the relationships between athletes' perceptions of the motivational climate in sport and rehabilitation, sport commitment, rehabilitation behaviors, and patient satisfaction with rehabilitation, a Time 2 data collection occurred with a subsample of the original 191 participants. To be included in the subsample, the athlete needed to have sustained an injury that met the following criteria: (1) an injury that required attention from an athletic trainer or physician, and (2) resulted in at least three weeks of treatment/rehabilitation with the athletic trainer. This subsample consisted of

88 male (n = 58) and female (n = 30) injured athletes. Of the 88 injured participants that met Time 2 criteria, 78 chose to participate and complete the Time 2 questionnaire. These participants ranged in age from 18 to 23 years (M = 20.00, SD = 1.30), and identified themselves as either a starter (62.5%) or non-starter (37.5%). All participating sport groups had at least one participating athlete sustain an injury with the exception of women's golf. The majority of the 88 injured athletes participated in football (n = 34), women's soccer (n = 10), men's soccer (n = 8), and women's cross country/track & field (n = 7). The injured participants were predominately Caucasian (78.4%) with black or African American (10%), two or more races (3.4%), Asian (3.4%) and 'other' (4.5%) races also represented.

Lastly, to explore the relationship between the athletic trainer-created motivational climate in rehabilitation and rehabilitation behaviors, seven certified, male (n = 4) and female (n = 3) athletic trainers, and eight upper level, male (n = 4) and female (n = 4) athletic training students also participated in Time 2 data collection. The athletic trainers and athletic training students rated the rehabilitation behaviors of the injured athletes progressing through injury rehabilitation and recovery.

Measures

Coach-Created Motivational Climate in Sport

The Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Newton et al., 2000) was used to measure the coach-created motivational climate in sport. Newton et al. (2000) designed the PMCSQ-2 to have two principle scales (mastery and performance involving climates) with each of these composed of three subscales: (a)

perceptions of a mastery climate include cooperative learning, effort/improvement, and important role, and (b) perceptions of a performance climate include intra-team member rivalry, unequal recognition, and punishment for mistakes. For this measure, athletes were instructed to think of the environment in their sport created by the coach and then were asked to rate their agreement on 33 items related to the six subscales of the motivational climate (see Table 1). A 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) was used. Adequate reliabilities (α >.70) for the scales and subscales have been established (e.g., Baric, 2011; Fry & Newton, 2003; Trenz & Zusho, 2011).

Peer-Created Motivational Climate in Sport Measures

The Peer Motivational Climate in Youth Sport Questionnaire (PeerMCYSQ, Ntoumanis & Vazou, 2005) was used to assess athletes' perceptions of the peer-created motivational climate in sport. The 21-item PeerMCYSQ consists of mastery and performance scales with each having distinct subscales. The mastery motivational climate subscale includes improvement, relatedness support, and effort constructs, while the performance motivational climate subscale is comprised of intra-team competition/ability and intra-team conflict constructs. Athletes were instructed to think about the atmosphere on the team and relationships among teammates, and then were asked to rate their agreement on each item using 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*; see Table 2). The PeerMCYSQ has shown adequate validity and reliability in previous sport research (e.g., Hein & Joesaar, 2015; Joesaar et al, 2011; Ntoumanis & Vazou, 2005; Vazou, 2010).

Table 1

Coach-Created Motivational Climate in Sport Items

Stem: "On this team…"

Mastery Climate – Cooperative Learning

1. Players help each other learn
2. The coach encourages players to help each other
3. The players really 'work together' as a team
4. The players help each other to get better and excel

Mastery Climate – Effort/Improvement

5. The coach wants us to try new skills
6. Players feel good when they try their best
7. The coach makes sure players improve on skills they're not good at
8. Players feel successful when they improve
9. Trying hard is rewarded
10. The coach emphasizes always trying your best
11. Players are encouraged to work on their weaknesses
12. The focus is to improve each game/practice

Mastery Climate – Important Role

13. Each player contributes in some important way
14. The coach believes that all of us are crucial to the success of the team
15. Players at all skill levels have an important role on the team
16. Each player has an important role
17. Each player feels as if they are an important team member

Performance Climate – Intra-team Member Rivalry

18. The coach praises players only when they outplay teammates
19. Players are encouraged to outplay the other players
20. Players are 'psyched' when they do better than their teammates

Performance Climate – Unequal Recognition

21. The coach gives most of his or her attention to the stars
22. The coach has his or her favorites
23. Only the players with the best stats get praise
24. The coach makes it clear who he or she thinks are the best players
25. If you want to play in a game you must be one of the best players
26. Only the top players 'get noticed' by the coach
27. The coach favors some players more than others

Performance Climate – Punishment for Mistakes

28. The coach gets mad when a player makes a mistake
29. The coach thinks only the starters contribute to the success of the team
30. Players are taken out of a game for mistakes
31. The coach yells at players for messing up
32. Players are punished when they make a mistake
33. Players are afraid to make a mistake

Table 2

Peer-Created Motivational Climate in Sport Items

Stem: "On this team, most athletes…"

Mastery Climate – Improvement

1. Help each other improve
2. Offer to help their teammates develop new skills
3. Work together to improve the skills they don't do well
4. Teach their teammates new things

Mastery Climate – Relatedness Support

5. Make their teammates feel value
6. Make their teammates feel accepted
7. Care about everyone's opinion

Mastery Climate – Effort

8. Encourage their teammates to try their hardest
9. Praise their teammates who try hard
10. Are pleased when their teammates try hard
11. Set an example on giving forth maximum effort
12. Encourage their teammates to keep trying after they make a mistake

Performance Climate – Intra-Team Competition/Ability

13. Encourage each other to outplay their teammates
14. Care more about the opinion of the most able teammates
15. Try to do better than their teammates
16. Look pleased when they do better than their teammates
17. Want to be with the most able teammates

Performance Climate – Intra-Team Conflict

18. Make negative comments that put their teammates down
19. Criticize their teammates when they make mistakes
20. Complain when the team doesn't win
21. Laugh at their teammates when they make mistakes

Sport Commitment

The athletes' type of commitment in sport was assessed using the 6-item Enthusiastic Commitment subscale and the 5-item Constrained Commitment subscale from the Sport Commitment Questionnaire-2 (SCQ-2; Scanlan et al., 2016). For this

measure, the athletes were asked to think of only their primary sport. Athletes rated their level of agreement with each item on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*; see Table 3). Scanlan et al. (2016) provided evidence for the content and construct validity of the SCQ-2, as well as its internal consistency and reliability.

Table 3

Sport Commitment Items

Enthusiastic Commitment Items
1. I am dedicated to keep playing this sport.
2. I am willing to overcome any obstacle to keep playing this sport
3. I am determined to keep playing this sport.
4. I am very attached to this sport.
5. I will continue to play this sport for as long as I can.
6. I am willing to do almost anything to keep playing this sport.
Constrained Commitment Items
7. Staying in this sport is more of a necessity than a desire.
8. I feel trapped in this sport.
9. Although I think about quitting this sport, I feel I must keep playing.
10. I feel I am forced to keep playing this sport.
11. I feel I have to keep playing this sport, even though I don't want to.

Injury Occurrence

Athletic trainers for each intercollegiate team were emailed an injury reporting form (see Appendix B) on a weekly basis. If an athlete, from the original subsample who had agreed to participate in the study, sustained an injury, the athletic trainer completed the injury reporting form providing information related to the injury: type of injury, onset

of injury, days missed from practice/competition, information regarding the treatment and rehabilitation received, and time of planned rehabilitation progression. This information was be used to determine athletes' eligibility and appropriate timing for Time 2 data collection.

Athletic Trainer-Created Motivational Climate in Rehabilitation

An adapted and modified version (Brinkman-Majewski & Weiss, 2015, in press) of the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Newton et al., 2000) was used to measure injured athletes' perceptions of the motivational climate in rehabilitation as created by the athletic trainer. The modified PMCSQ-2 has two higher order scales (mastery climate and performance climate) comprised of three subscales each. Cooperative learning, effort/improvement, and important role subscales reflect perceptions of a mastery climate, while intra-team member rivalry, unequal recognition, and punishment for mistakes mirror perceptions of a performance climate. Athletes were asked to think of the general atmosphere in the athletic training facility during rehabilitation, and were then asked to rate their agreement on 33 items. Athletes rated their level of agreement on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*; see Table 4). Previous research in the athletic training setting (Brinkman-Majewski & Weiss, 2015, in press) have shown adequate reliabilities (α >.70) for all subscales.

Behaviors in Rehabilitation

Athletic trainers and upper level athletic training students were asked to rate participating injured athletes' rehabilitation behaviors related to their energy, effort, and

Table 4

Athletic Trainer-Created Motivational Climate in Rehabilitation Items

Stem: "In the athletic training facility…"

Mastery Climate – Cooperative Learning

1. Athletes help each other learn
2. The athletic trainer encourages athletes to help each other
3. The athletes really 'work together' as a group
4. The athletes help each other to get better and excel

Mastery Climate – Effort/Improvement

5. The athletic trainer wants us to try new rehab skills
6. Athletes feel good when they try their best
7. The athletic trainer makes sure athletes improve on rehab skills they're not good at
8. Athletes feel successful when they improve
9. Trying hard is rewarded
10. The athletic trainer emphasizes always trying your best
11. Athletes are encouraged to work on their weaknesses in rehab
12. The focus is to improve each rehab session

Mastery Climate – Important Role

13. Each athlete contributes in an important way
14. The athletic trainer believes that all athletes crucial to the success of the team
15. Athletes at all skill levels have an important role on the team
16. Each athlete has an important role
17. Each athlete feels as if they are an important team member

Performance Climate – Intra-team Member Rivalry

18. The athletic trainer praises athletes only when they 'out-perform' others
19. Athletes are encouraged to 'out-perform' others
20. Athletes are 'psyched' when they do better than others

Performance Climate – Unequal Recognition

21. The athletic trainer gives most of his or her attention to the 'star-athletes'
22. The athletic trainer has his or her favorites
23. Only the athletes with the best 'stats' get praise
24. The athletic trainer makes it clear who he or she thinks are the best athletes
25. If you want to receive treatment/rehab you must be one of the best athletes
26. Only the top athletes 'get noticed' by the athletic trainer
27. The athletic trainer favors some athletes more than others

Performance Climate – Punishment for Mistakes

28. The athletic trainer gets mad when an athlete makes a mistake in rehab
29. The athletic trainer thinks only 'starters' are successful in rehab
30. Rehab sessions may be ended if an athlete makes a mistake
31. The athletic trainer yells at athletes for messing up
32. Athletes are punished when they make a mistake
33. Athletes are afraid to make a mistake

persistence. For this study, we used the modified version (W. M. Weiss, 2011) of the W. M. Weiss and Weiss (2003) training behavior assessment. Athletic trainers and upper level athletic training students independently scored items on a 5-point Likert scale, ranging from 1 (*not at all true for him/her*) to 5 (*completely true for him/her*; see Table 5). This scale has demonstrated adequate reliability and validity in previous research when assessing athlete behaviors (W. M. Weiss, 2011; W. M. Weiss & Weiss, 2003).

Table 5

Rated Behaviors in Rehabilitation Items

1. Following setbacks, he/she continues to try and put for effort during rehabilitation sessions.
2. He/She puts forth his/her best effort on a consistent basis during rehabilitation sessions.
3. Under adverse conditions, he/she continues to work hard.
4. He/She rarely misses rehabilitation sessions due to conflicting activities.
5. He/She consistently completes his/her rehabilitation workouts/assignments.

Patient Satisfaction with Rehabilitation

The athletes' satisfaction with rehabilitation was assessed using the Overall Satisfaction with Rehabilitation Scale (OSWRS; Cressman & Dawson, 2011). The instrument includes five items assessing athletes' personal feelings and satisfaction surrounding the rehabilitation and recovery process. Athletes rated their level of agreement on a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly*

agree; see Table 6). Previous research (Cressman & Dawson, 2011) has demonstrated adequate reliability for the scale.

Table 6

Overall Satisfaction with Rehabilitation Items

1. I believe my progress through rehabilitation has gone well
2. I am satisfied with the length of time the recovery process is taking
3. I am enthusiastic to attend rehabilitation sessions
4. I feel positive about the rehabilitation process.
5. I am satisfied with the rehabilitation process.

Demographics

Several demographic questions were included in the survey: sport, athlete's playing status, year of eligibility, scholarship status, previous injury history, gender, race, and age.

Procedures

Upon receiving the University of Northern Iowa's Institutional Review Board's approval, the head athletic trainer at a small, Midwestern, NCAA Division II university was contacted about participating in this study. He was provided with background information and an overview of the planned study. After discussing with the athletic training staff, the head athletic trainer confirmed their agreeance to participate and provided the researcher with a letter of cooperation (See Appendix C).

Time 1 Data Collection

The researcher was allowed to set up a data collection station during spring athletics pre-participation physical day. As athletes completed the various stations on their assigned physical day, student-athletes were given the opportunity to participate in the research study. Coaches and athletic trainers were not present at the data collection station. The researcher gave a brief description of the research project with an explanation of the procedures. Athletes were informed participation was voluntary and responses would be kept confidential. The survey and informed consent was distributed, and athletes were instructed to read and sign the informed consent if interested in participating in the study. Athletes were then given adequate time to complete the survey and ask questions of the researcher when necessary. Time 1 questionnaire consisted of the measures for coach-created motivational climate in sport, peer-created motivational climate in sport, sport commitment type, and demographics. The questionnaire took approximately 10-15 minutes to complete.

Time 2 Data Collection

Prior to the start of the fall pre-season athletic camps and practices, the researcher met with the athletic training staff to discuss the ongoing nature of Time 2 data collection. Once team practices began, the researcher emailed weekly injury reporting forms to the team athletic trainers as a method of determining potential participants for Time 2 data collection. The injury reporting forms included the names of only the athletes who had already consented to participate in the study. Upon receiving information that an injured participating athlete met the inclusion criteria, the researcher

met with the athlete before or after a rehabilitation session at approximately the mid-point of their rehabilitation. The injured athlete was given a brief explanation of the study and then asked to complete Time 2 measures. Coaches and athletic trainers were not present when participants completed the questionnaire. The Time 2 questionnaire consisted of the measures for athletic trainer-created motivational climate in rehabilitation, sport commitment, and satisfaction with rehabilitation. Participants completed the questionnaire in approximately 5 minutes.

Additionally, at Time 2 data collection, athletic trainers and upper level athletic training students were asked to rate the injured athletes' rehabilitation behaviors during the current period of injury treatment/rehabilitation. Staff athletic trainers and upper level athletic training students completed their ratings of each injured athlete independently at the approximate mid-point of the athlete's rehabilitation. The overall research questions, participants, data collection instruments, and analyses for this study can be found in the research map (see Figure 1).

Data Analysis

Preliminary analyses included frequencies, descriptives, reliabilities, and correlations. The data was then analyzed to answer each research question. A significance level of $p \leq .05$ was set for all analyses.

Study 1

To examine the relationship between the coach-created motivational climate and the peer-created motivational climate on the team, a Pearson correlation was conducted. To determine if injured and non-injured athletes differ on perceptions of the coach-

created and/or peer-created motivational climate, two MANOVAs were conducted. For the first MANOVA, the independent variable was non-injured athletes and injured athletes (i.e., group), and the dependent variables were the coach-created motivational climate subscales (i.e., important role, effort/improvement, cooperative learning, intra-team member rivalry, unequal recognition, punishment for mistakes). In the second MANOVA analysis, the independent variable was the non-injured athletes and injured athletes (i.e., group), and the dependent variables were the peer-created motivational climate subscales (i.e., improvement, relatedness support, effort, intra-team competition/ability, intra-team conflict). To determine if perceptions of the motivational climate created by the coach and peers predicted type of sport commitment, two separate multivariate multiple regressions were conducted. In the first analysis, the predictor variables were the six subscales of the coach-created motivational climate: important role, effort/improvement, cooperative learning, intra-team member rivalry, unequal recognition, punishment for mistakes. In the second analysis, the predictor variables were the five subscales of the peer-created motivational climate: improvement, relatedness support, effort, intra-team competition/ability, intra-team conflict. The criterion variables for both analyses were the two sport commitment types: enthusiastic and constrained.

Study 2

To explore the relationship between the athletic trainer-created motivational climate in rehabilitation and the coach- and peer-created motivational climates in sport, two separate Pearson correlations were conducted. Only the data for the injured

participants' perceptions of coach- and peer-created climate when exploring the relationship to the athletic trainer-created motivational climate in rehabilitation were included. To determine if the motivational climate in rehabilitation predicted athlete rehabilitation behaviors, two multiple regression analyses were conducted. The decision was made to split the mastery and performance subscales for the regression analysis due to the small sample (n = 78). For the first regression analysis, the predictor variables were the three mastery subscales of the motivational climate in rehabilitation (i.e., important role, effort/improvement, cooperative learning), and for the second regression analysis, the predictor variables were the three performance subscales of the motivational climate in rehabilitation (i.e., intra-team member rivalry, unequal recognition, punishment for mistakes). The criterion variable for both multiple regression analyses were the athletes' rated rehabilitation behavior score.

Two multiple regression analyses were also conducted to determine if the motivational climate in rehabilitation predicted overall patient satisfaction with rehabilitation. The three mastery subscales of the athletic trainer-created motivational climate (i.e., important role, effort/improvement, cooperative learning) were the predictor variables for the first multiple regression analysis, while the three performance subscales of the athletic trainer-created climate (i.e., intra-team member rivalry, unequal recognition, punishment for mistakes) were the predictor variables for the second multiple regression analysis. For both multiple regression analyses, the criterion variable was the athletes' overall satisfaction with rehabilitation score.

Study 3

To determine if injured and non-injured athletes differ on sport commitment type, a MANOVA was conducted. For the analysis, group (i.e., non-injured athletes and injured athletes) was the independent variable and sport commitment type (i.e., enthusiastic, constrained) was the dependent variables. A multiple regression analysis was conducted to determine if sport commitment type predicted athlete behaviors during rehabilitation. Enthusiastic commitment and constrained commitment were the predictor variables and athletes' rated rehabilitation behaviors was the criterion variable for the analysis. To explore if there is a significant change in athletes' sport commitment following an injury, two separate paired sample *t*-tests were conducted. For both paired sample *t*-tests, the independent variable was time (i.e., Time 1 vs Time 2 [injured] data points). For the first paired sample *t*-test the dependent variable was enthusiastic commitment subscale and for the second analysis, the dependent variable was constrained sport commitment subscale.

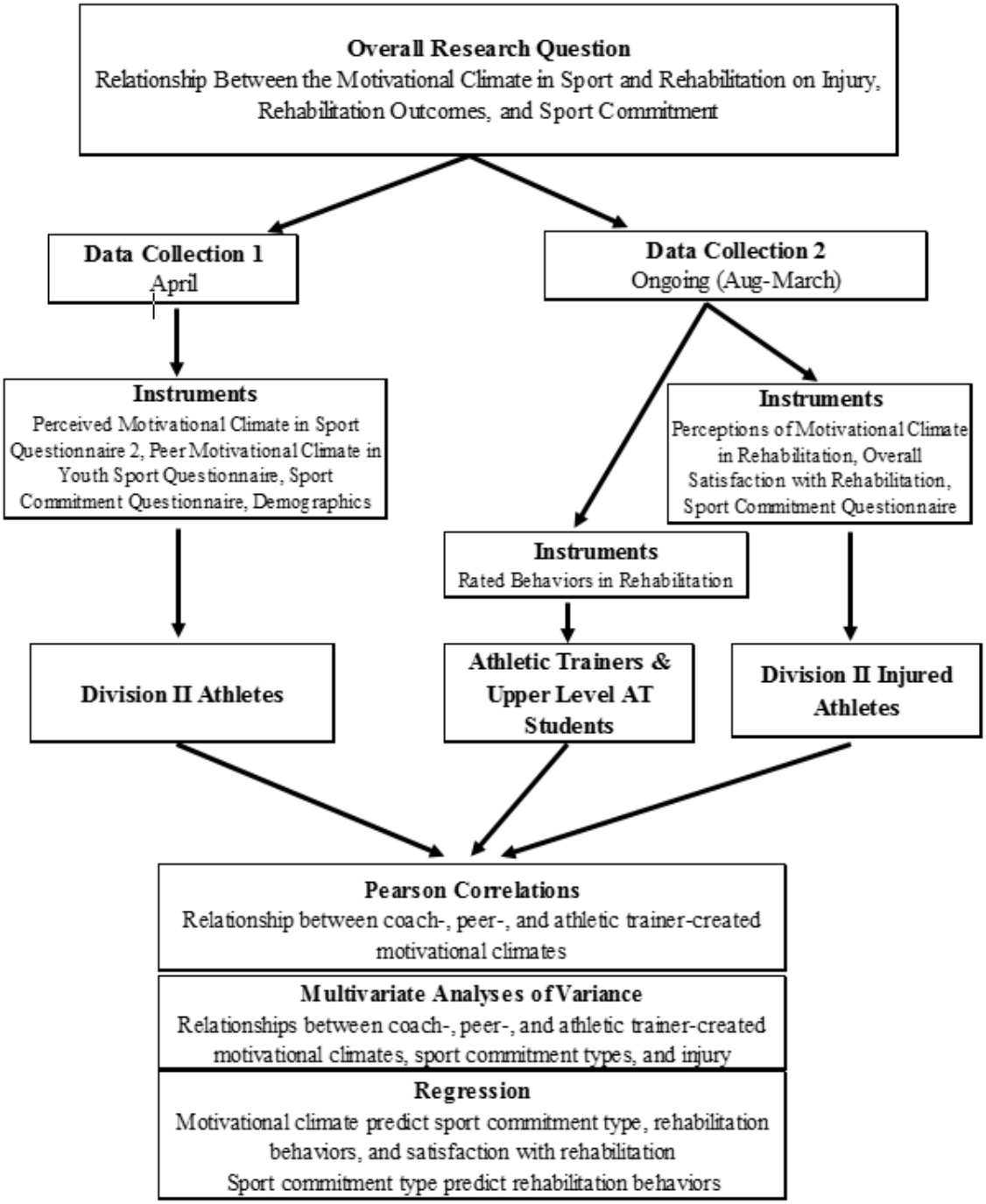

Figure 1. Research map

CHAPTER 4

RESULTS

Reliability Analyses

Time 1 Data Collection

Cronbach alpha values were calculated to determine internal consistency for all measures used during Time 1 data collection. Table 7 shows alpha values for each variable along the diagonal. All original measure subscales achieved adequate reliability (α = .77 - .92), with the exception of the intra-team member rivalry subscale for PMCSQ-2 measure. The intra-team member rivalry subscale exhibited an alpha of .45, and evaluation of intra-class coefficients and inter-item reliability did not indicate adequate reliability would be met by removing any subscale items. Therefore, the intra-team member rivalry subscale was removed from further analyses for the primary research study questions.

Time 2 Data Collection

Cronbach alpha coefficients were calculated to determine internal consistency for all measures for Time 2. All measures achieved adequate reliability, with the mastery subscale for athletic trainer-created motivational climate alphas ranging from .80 to .85, and performance climate subscale alphas ranging from .73 to .94. Tables 8 and 9 display alpha levels along the diagonal. Alphas for the enthusiastic sport commitment, constrained sport commitment, and satisfaction with rehabilitation measures were .88, .86, and .88, respectively.

Table 7

Correlations, Descriptive Statistics, and Alpha Coefficients for Coach and Peer Motivational Climates

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Cooperative Learning	.83											
2. Effort/ Improvement	.62*	.81										
3. Important Role	.63*	.61*	.86									
4. Unequal Recognition	-.33*	-.43*	-.46*	.86								
5. Punishment for Mistakes	-.17*	-.38*	-.32*	.63*	.83							
6. Improvement	.77*	.51*	.50*	-.21*	-.12	.90						
7. Relatedness/ Support	.70*	.36*	.46*	-.22*	-.12	.76*	.77					
8. Effort	.68*	.51*	.43*	-.18*	-.13	.73*	.80*	.85				
9. Intra-team Competition	.09	.05	-.05	.33*	.24*	.20*	.09	.10	.77			
10. Intra-team Conflict	-.27*	-.22*	-.29*	.41*	.34*	-.26*	-.29*	-.34*	.43*	.77		
11. Enthusiastic Commitment	.07	.17*	.06	-.15*	-.15*	.05	.09	.09	.07	.01	.92	
12. Constrained Commitment	-.00	-.12	-.03	.30*	.29*	.02	.01	.05	.10	.12	-.59*	.84
M	4.03	4.02	3.81	3.18	3.12	5.55	5.26	5.73	5.13	4.04	4.01	2.32
SD	0.61	0.48	0.66	0.71	0.69	1.03	1.12	0.87	0.90	1.21	0.72	0.80

Notes. Alpha coefficients are presented along the diagonal.

* indicates significant correlations, $p < .05$

Table 8

Correlations, Descriptive Statistics, and Alpha Coefficients for Coach and Athletic Trainer Motivational Climates

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Cooperative Learning[a]	.83										
2. Effort/Improvement[a]	.64*	.81									
3. Important Role[a]	.56*	.60*	.86								
4. Unequal Recognition[a]	-.28*	-.33*	-.38*	.86							
5. Punishment for Mistakes[a]	-.16	-.36*	-.27*	.61*	.83						
6. Cooperative Learning[b]	.32*	.42*	.35*	-.08	-.02	.84					
7. Effort/Improvement [b]	.30*	.38*	.23*	.06	.12	.66*	.80				
8. Important Role [b]	.26*	.36*	.27*	-.16	-.06	.70*	.77*	.85			
9. Intra-team Rivalry [b]	.04	.01	-.02	-.03	.10	-.14	-.27*	-.29*	.73		
10. Unequal Recognition [b]	-.10	-.10	-.11	.14	.01	-.50*	-.63*	-.67*	.59*	.94	
11. Punishment for Mistakes [b]	-.15	-.18	-.13	.02	.05	-.45*	-.55*	-.62*	.59*	.81*	.84
M	4.08	4.03	3.77	3.19	3.21	3.88	4.23	4.20	2.19	1.88	2.04
SD	0.57	0.46	0.63	0.64	0.65	0.64	0.41	0.52	0.73	0.73	0.71

Notes. Alpha coefficients are presented along the diagonal.
* indicates significant correlations, $p < .05$; [a] Coach motivational climate subscales; [b] Athletic trainer motivational climate subscales

Table 9

Correlations, Descriptive Statistics, and Alpha Coefficients for Peer and Athletic Trainer Motivational Climates

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Improvement	.90										
2. Relatedness/Support	.74*	.77									
3. Effort	.70*	.78*	.85								
4. Intra-Team Competition	.41*	.27*	.23*	.77							
5. Intra-Team Conflict	-.09	-.17	-.17	.49*	.77						
6. Cooperative Learning	.36*	.24*	.21	.21	.15	.84					
7. Effort/Improvement	.30*	.27*	.29*	.26*	.20	.66*	.80				
8. Important Role	.22	.18	.19	.10	.13	.70*	.77*	.85			
9. Intra-team Rivalry	.14	.12	.07	.19	.03	-.14	-.27*	-.29*	.73		
10. Unequal Recognition	-.13	-.14	-.16	-.01	-.12	-.50*	-.63*	-.67*	.59*	.94	
11. Punishment for Mistakes	-.14	-.21	-.17	-.07	-.12	-.45*	-.55*	-.62*	.59*	.81*	.84
M	5.55	5.28	5.75	5.21	4.15	3.88	4.23	4.20	2.19	1.88	2.04
SD	1.03	1.08	0.84	0.85	1.10	0.64	0.41	0.52	0.73	0.73	0.71

Notes. Alpha coefficients are presented along the diagonal.
* indicates significant correlations, $p < .05$

Inter-Rater Reliability

To assess inter-rater reliability between the two athletic trainers and/or athletic training students, intraclass correlation coefficients (*R*) were calculated for each of the five items. Adequate reliabilities were obtained for all items (*R* = .93 - .96).

Study 1

To determine the relationship between the coach-created motivational climate and the peer-created motivational climate, a Pearson correlation was conducted. All of the coach-created mastery motivational subscales (cooperative learning, important role, and effort/improvement) were positively related to the peer-created mastery motivational climate subscales (improvement, relatedness/support, and effort), with moderate to strong associations (*r* =.38 - .78). Likewise, the performance subscales for coach-created climate (unequal recognition and punishment for mistakes) and peer-created climate (intra-team competition and intra-team conflict) were positively related (*r* = .24 - .42). See Table 7 for results of correlation analyses. Overall, athletes perceived that the climate created by their teammates was related to the motivational climate generated by the coach.

To determine if injured and non-injured athletes differed on perceptions of the coach-created and/or peer-created motivational climate, two MANOVAs were conducted. The first MANOVA examined injured and non-injured athletes' perceptions of the coach-created motivational climate in sport. The MANOVA was not significant: Wilks' λ = .95, F (5, 184) = 1.87, p = .10. Similarly, the second MANOVA investigating

perceptions of the peer-created motivational climate by athletes' injury status was not significant: Wilks' $\lambda = .99$, F (5, 184) = 0.56, $p = .74$. Thus, athletes' perceptions of the motivational climate generated by the coach and teammates in sport did not differ based on injury status. Table 10 displays the means and standard deviations for motivational climate subscales by injury status.

Table 10

Means and Standard Deviations by Injury Status on Motivational Climate

Variables	Non-Injured Athletes (n = 103)		Injured Athletes (n = 87)	
	M	*SD*	*M*	*SD*
Coach-Created Climate				
Cooperative Learning	3.99	0.64	4.09	0.58
Effort/Improvement	3.99	0.51	4.04	0.46
Important Role	3.85	0.68	3.77	0.63
Unequal Recognition	3.18	0.77	3.18	0.64
Punishment for Mistakes	3.04	0.71	3.21	0.66
Peer-Created Climate				
Improvement	5.58	1.04	5.56	1.03
Relatedness/Support	5.25	1.15	5.28	1.09
Effort	5.71	0.91	5.76	0.84
Intra-team Competition	5.06	0.94	5.21	0.85
Intra-team Conflict	3.94	1.29	4.15	1.10

To examine the third research question for Study 1 (i.e., determine if perceptions of the motivational climate created by the coach and peers predicted type of sport commitment), two separate multivariate multiple regressions were conducted. In the first analysis, the athletes' perceptions of the coach-created motivational climate were the

predictor variables and the two sport commitment types (enthusiastic and constrained) were the criterion variables. The relationship between these variables was significant: Wilks' $\lambda = .85$, F (10, 366) = 3.11, $p < .001$. One canonical function emerged as significant. The canonical correlation for Function 1 was $Rc = .36$, indicating a moderate association between the two sets of variables. Loadings for the predictor variables indicated that the two performance motivational climate subscales, unequal recognition and punishment for mistakes, contributed to the relationship. Both enthusiastic and constrained commitment type criterion variables contributed significantly in the function. More specifically, lower perceptions of unequal recognition and punishment for mistakes by the coach were positively related to higher enthusiastic commitment and lower constrained commitment. See Table 11 for loadings.

For the second multivariate multiple regression, the athlete's perceptions of the peer-created motivational climate were the predictor variables and the two sport commitment types were the criterion variables. The relationship between these variables was not significant: Wilks' $\lambda = .92$, F (10, 366) = 1.60, $p = .11$. Perceptions of the peer-created motivational climate did not predict athletes' sport commitment type.

Study 2

To explore the first question in Study 2 (i.e., determine the relationship between the athletic trainer-created motivational climate in rehabilitation and the coach- and peer-created motivational climate in sport), two separate Pearson correlations were conducted. Multiple significant relationships emerged between the athletic trainer-created climate in rehabilitation and the coach-created climate in sport. All of the coach-created mastery

Table 11

Canonical Loadings for Relationship between Coach-Created Motivational Climate Subscales and Sport Commitment (N=191)

Variables	Canonical Loadings Function 1
Predictor Variables	
Cooperative Learning	- .04
Effort & Improvement	.25
Important Role	.05
Unequal Recognition	-.84*
Punishment for Mistakes	-.80*
Criterion Variables	
Enthusiastic Commitment	.42*
Constrained Commitment	-.98*

* indicates significant contributor

subscales in sport (cooperative learning, important role, and effort/improvement) were positively related to the athletic trainer-created mastery subscales in rehabilitation (cooperative learning, important role, and effort/improvement) displaying moderate associations (r = .23 - .42). Higher perceptions of a coach emphasizing cooperative learning, everyone having an important role, and putting forth effort and improving in sport was related to higher perceptions of the athletic trainer highlighting the importance of athletes learning, taking on an important role, and working hard to improve in

rehabilitation. Similarly, all three of the peer-created motivational climate mastery subscales (improvement, relatedness/support, and effort) were positively related to the mastery motivational climate subscales in rehabilitation (cooperative learning and effort/improvement) with moderate associations (r = .24 - .36). More specifically, higher perceptions of improvement, relatedness and support, and effort emphasized by peers in sport was related to higher perceptions of cooperative learning and effort/improvement in the athletic trainer-created climate in rehabilitation. Interestingly, higher perceptions of peer intra-team competition in sport was related to higher perceptions of effort and improvement in rehabilitation. Unexpectedly, no significant relationships emerged between performance climate perceptions in rehabilitation and the motivational climates in sport. It appears athletes perceived the climate in rehabilitation to be similar to the mastery components of the sport climates, however the performance aspects of the climate were perceived differently. Tables 8 and 9 display correlations amongst coach, peer, and athletic trainer motivational climate subscales.

Two separate multiple regression analyses were conducted to determine if the mastery or performance motivational climate subscales in rehabilitation predicted athlete rehabilitation behaviors. A significant relationship emerged for mastery climate predicting rehabilitation behaviors, F (3, 74) = 4.45, p < .01. The strength of the relationship was R = .39, with 15% of the variance or rehabilitation behaviors predicted by mastery motivational climate. Important role (β =.50, p < .01) was the significant predictor in the model. Thus, greater perceptions of everyone in rehabilitation having an important role predicted higher rehabilitation behaviors as rated by the athletic trainers.

The multiple regression analysis for the performance climate subscales predicting rehabilitation behaviors was also signification, F (3, 74) = 4.90, $p < .01$. The strength of the relationship was $R = .41$, with 17% of the variance explained by performance climate perceptions. Further investigation revealed that unequal recognition ($\beta = -.39$, $p > .05$) was the significant predictor, with higher perceptions of athletic trainers favoring some athletes more than others in rehabilitation predicted lower positive rehabilitation behaviors.

To examine the third question of Study 2, separate multiple regression analyses were conducted to determine if overall patient satisfaction with rehabilitation was predicted by mastery or performance perceptions of the motivational climate in rehabilitation. Results of the first analysis indicated that there was a collective significant effect for important role, effort/improvement, and cooperative learning predicting satisfaction with rehabilitation, F (3, 74) = 7.41, $p < .001$. The strength of the relationship was $R = .48$, with 23% of the variance of satisfaction with rehabilitation explained by perceptions of the mastery motivational climate. Together, the mastery climate subscales predicted patient satisfaction with rehabilitation, however, no single subscale emerged as a significant predictor. Therefore, higher perceptions of the mastery motivational climate predicted greater patient satisfaction with rehabilitation.

The relationship between the performance motivational climate perceptions in rehabilitation and patient satisfaction with rehabilitation was also significant, F (3, 74) = 5.92, $p < .001$. The strength of the relationship was $R = .44$, with 19% of the variance of satisfaction with rehabilitation predicted by perceptions of the performance motivational

climate. Punishment for mistakes (β = -.39, p < .05) was the significant predictor. Thus, lower perceptions of being punished for mistakes during the rehabilitation process predicted greater patient satisfaction with rehabilitation.

Study 3

To investigate the first question in Study 3, a MANOVA was conducted to determine if injured and non-injured athletes differed on sport commitment type (i.e., enthusiastic vs. constrained). The MANOVA was not significant: Wilks' λ = .99, F (2, 188) = .194, p = .82. Injured and non-injured athletes did not differ on enthusiastic or constrained commitment. Table 12 displays the means and standard deviations for sport commitment types by injury status.

Table 12

Means and Standard Deviations by Injury Status on Sport Commitment Type

Variables	Non-Injured Athletes (n = 103)		Injured Athletes (n = 88)	
	M	*SD*	*M*	*SD*
Enthusiastic Commitment	4.08	0.72	4.12	0.72
Constrained Commitment	2.31	0.81	2.34	0.81

To determine if sport commitment type predicted behaviors during injury rehabilitation, a multiple regression analysis was conducted. The regression was not significant, F (2, 75) = 1.02, p = .37. Thus, enthusiastic and constrained commitment

types did not predict the athletic trainer rated rehabilitation behaviors during the injury recovery process.

To examine the third question in Study 3, two separate paired sample *t*-tests were conducted to determine if there was a significant change in athletes' sport commitment following an injury. Analysis revealed a significant difference in enthusiastic commitment pre-injury ($M = 4.14$, $SD = 0.71$) and enthusiastic commitment post-injury ($M = 4.29$, $SD = 0.74$); $t(77) = -2.23$, $p < .05$. The effect size was calculated using Eta Squared (Rosnow & Rosenthal, 2005). The strength of the relationship was $r = .25$, indicating a low to moderate effect, explaining 6% of the total variance. These results suggest that sustaining an injury and going through the rehabilitation and recovery process may increase enthusiastic commitment levels in already enthusiastically committed athletes.

When specifically examining the athletes' constrained commitment, a significant relationship resulted: $t(77) = 3.15$, $p < .01$. Significant differences in scores for constrained commitment levels pre-injury ($M = 2.30$, $SD = 0.81$) and constrained commitment scores post injury ($M = 1.98$, $SD = 0.77$) emerged. The strength of the relationship was $r = .34$, with 11% of the variance explained by whether or not the athlete sustained an injury and went through the rehabilitation process. This is a moderately large effect. These findings indicate that athletes' constrained sport commitment may decreased following injury and going through the rehabilitation process. Table 13 displays the change in sport commitment scores from pre- to post-injury.

Table 13

Means and Standard Deviations for Sport Commitment by Time

Variables	Time 1 Pre-Injury (n = 78)		Time 2 Post-Injury (n = 78)		
	M	*SD*	*M*	*SD*	*t*
Enthusiastic Commitment	4.14	0.71	4.29	0.74	-2.23*
Constrained Commitment	2.30	0.81	1.98	0.77	3.15*

* indicates a significant difference, $p < .05$

CHAPTER 5

DISCUSSION

The overall purpose of this research was to examine the relationships between the motivational climate in sport, sport commitment, and injury occurrence. Once participating athletes had sustained an injury, the relationships between the motivational climate in rehabilitation, rehabilitation behaviors, and athletes' overall satisfaction with rehabilitation were investigated. Furthermore, this research explored injury occurrence and injury rehabilitation's relationship with athletes' sport commitment types. Three interrelated, yet distinct studies were conducted to accomplish the goals of this dissertation. In this chapter, the results of the three studies will be discussed and compared to previous research findings. In addition, future research directions and practical implications will be described.

Study 1

For question one of the first study, the hypothesized positive relationship between perceptions of the coach- and peer-created motivational climates in sport was supported. Athletes perceived the motivational climate created by their teammates as similar to the climate generated by their coach. Specifically, findings indicated that all of the coach-created mastery motivational subscales (i.e., cooperative learning, important role, and effort/improvement) were positively related to the peer-created mastery motivational climate subscales (i.e., improvement, relatedness/support, and effort). Additionally, performance climate subscales for the coach-created climate (i.e., unequal recognition and punishment for mistakes) were positively related to the peer-created performance

motivational climate subscales (i.e., intra-team competition and intra-team conflict). Previous literature (Atkins et al., 2015; Garcia-Calvo et al., 2014; Vazou, 2010; Vazou et al., 2006) comparing athletes' perceptions of coach- and peer-created climates in sport reported similar relationships among mastery and performance subscales. The recurrent finding of positive relationships between perceptions of coach- and peer-created motivational climates in the literature is expected. Coaches are one of the primary influential individuals for athletes during sport participation. The way athletes interpret the coaches' expectations, feedback, and values directly encourages a specific state of participation (Ames, 1992b). It is likely that athletes replicate the words and actions that were initially modeled by the coaches' behavior. For example, an athlete who receives regular positive feedback from the coach for working hard and making improvements may be more likely to encourage and support teammates in the same way. On the other hand, if athletes perceive favoritism from the coach, athletes may feel a sense of jealousy, which could instill conflict or competition among teammates.

The hypothesis for the second question in Study 1 was not supported. It was hypothesized that injured athletes would have higher perceptions of performance motivational climates, and non-injured athletes would have higher perceptions of a mastery climate. Findings revealed perceptions of the motivational climate did not differ based on injury status. Williams and Andersen's (1998) Stress Injury Model theorized that the greater the stress perceived by an athlete, the higher the chance of injury. Previous literature indicated higher reports of stress and anxiety when athletes perceived a performance climate in sport (e.g., Baric, 2011; Newton & Duda, 1999; Pensgaard &

Roberts, 2000; Seifriz et al., 1992; Trenz & Zusho, 2011; Walling et al., 1993). Therefore, in theory, higher perceptions of a performance climate may be more likely to lead to injury. The current results do not support this premise. Steffan et al. (2009) reported conflicting results with the postulated theory. Findings indicated newly injured athletes actually had significantly higher perceptions of a mastery motivational climate in sport as compared to non-injured athletes (Steffan et al, 2009). Although the findings were not expected, potential explanations could be related to the mastery climate's emphasis on improvement and effort. Perhaps athletes within a mastery climate have a stronger desire to perform more repetitions, with greater intensity, and continue training for longer periods of time in order to develop and enhance skills. This type of "drive" in an athlete leads to an increased number of injury-exposures, as well as overtraining, which could lead to more chronic, over-use type injuries. Although the current study's results did not support either theory or previous research findings related to athletes' perceptions of the motivational climate and injury occurrence, the discrepancy among theory, previous literature, and present findings calls for further examination in the future.

Additionally, it was hypothesized that higher perceptions of a coach- and peer-created mastery motivational climate in sport would predict enthusiastic sport commitment, whereas higher perceptions of a performance climate would predict constrained commitment in sport. This hypothesis was partially supported. Findings indicate that perceptions of the coach-created motivational climate in sport predicted sport commitment, however perceptions of the peer-created motivational climate did not.

Athletes with lower performance climate perceptions of unequal recognition and punishment for mistakes by the coach had higher enthusiastic commitment and lower constrained commitment. Previous literature is divergent in findings with reports of greater sport commitment and intentions to continue participation being related to higher coach-created mastery climate perceptions (Alvarez et al., 2012; Fry & Gano-Overway, 2010; Hall et al., 2017) while other research indicated no significant relationships between athletes' perceptions of the motivational climate and sport commitment (Atkins et al., 2013; W. M. Weiss, 2015). Interestingly, the current research found lower perceptions of the performance climate to predict higher enthusiastic commitment, rather than the commonly seen higher mastery perceptions related to greater sport commitment.

Perhaps the simple belief of being on the same playing ground as everyone else with the coach not showing favoritism, and lower concern for being punished for making mistakes provides athletes with a certain level of ease or enjoyment in their sport. With knowing that enjoyment is the strongest predictor of sport commitment (e.g., Carpenter & Coleman, 1998; Scanlan et al., 1993; M. R. Weiss et al., 2001), and the current study's results, it seems apparent that if coaches want athletes to enjoy sport and be enthusiastically committed, then coaches should decrease the amount of verbal and unspoken cues that generate a performance motivational climate.

Study 2

Higher perceptions of coach- and peer-created mastery motivational climates in sport were positively related to the mastery motivational climate created by the athletic trainer in rehabilitation, which partially supports the hypothesized higher mastery

climates in sport being related to higher mastery climate in rehabilitation and higher performance climates in sport being related to higher performance climate in rehabilitation. However, there was not a significant relationship between coach- or peer-created performance climate perceptions and athletic trainer-created performance motivational climates, as had been predicted. The current research is the first to explore the relationship between athletes' perceptions of the motivational climate created in sport and the motivational climate created in injury rehabilitation. The positive relationship between mastery climates in sport and in rehabilitation indicates that athletes perceive coaches, peers, and athletic trainers as highlighting the importance of working hard, encouraging one another, and believing that everyone has an important role whether that be on the playing field or during injury rehabilitation. Interestingly, higher perceptions of peer intra-team competition was related to higher perceptions of effort and improvement in rehabilitation. Conceivably, injured athletes may feel a greater need to work hard and improve during rehabilitation to ensure they do not lose their starting position. If athletes are unable to practice due to injury, then they cannot compete with teammates to maintain playing status. Putting forth effort and making improvements during rehabilitation is the avenue athletes envision as a means of returning to play and competition.

Unexpectedly, no significant relationships between performance climate perceptions in rehabilitation and the motivational climate perceptions in sport emerged. Examination of the performance climate subscales' means revealed athletes' overall perception of unequal recognition, punishment for mistakes, and intra-team member

rivalry put forth by the athletic trainer during rehabilitation was quite low. It is encouraging to find athletic trainers are not generating a competitive and stressful environment for athletes going through the injury rehabilitation process. Brinkman and Weiss (2010) theorized that athletic trainers should create a climate during rehabilitation that decreases athletes' stress and anxiety, and increases motivation and competence. This climate would, in turn, lead to optimal rehabilitation outcomes (e.g., adherence, patient effort, rehabilitation progression).

For the second question in Study 2, findings supported the hypothesis of higher perceptions of a mastery climate in rehabilitation predicting higher athletic trainer-rated behaviors in rehabilitation. More specifically, findings indicate that the higher the athlete's perception of everyone in rehabilitation having an important role, the higher rated athlete adherence, effort, and perseverance with rehabilitation. This finding aligns with previous research results in the sport domain (Boyce et al., 2009; Cecchini et al., 2014; Ntoumanis et al., 2012; Trenz & Zusho, 2011). Athletes that perceived more of a mastery motivational climate in sport were rated as putting forth greater effort, persistence, and practice strategies during sport. Injured athletes going through the recovery process, who believed they had a significant role in rehabilitation, appeared to have a greater desire to work hard, persist, and adhere to the rehabilitation program. If, through their creation of the motivational climate in rehabilitation, athletic trainers can convince athletes of this important role in rehabilitation, then improved athlete behaviors should follow.

The current research also found a significant relationship between higher perceptions of unequal recognition in rehabilitation and lower rated behaviors by the athletic trainer. Ommundsen et al. (1998) reported similar findings in the sport domain, with higher perceptions of a performance climate in sport related to practice avoidance behaviors and negative attitude toward practice. The same seems to be true for that athletic training setting. Athletes who perceived the athletic trainers as showing favoritism were rated as having poorer behaviors by their athletic trainer. Brinkman-Majewski and Weiss (2015) found non-starter athletes had significantly higher perceptions of unequal recognition by the athletic trainer compared to starter athletes. Although the current research did not investigate differences in perceptions of the motivational climate based on demographics, perhaps athletes perceived a similar bias from the athletic trainer based on athlete-ability or playing status which affected rehabilitation behaviors. One rationale for this finding could be that the athlete believed they were not receiving treatment equal to that of a more favored teammate. Thus, in turn, that athlete either did not put forth as much effort during rehabilitation or simply did not attend rehabilitation sessions at all. This justification displays the importance of why athletic trainers must provide the same treatment and recognition to all patients, regardless of playing status, if they desire favorable adherence, effort, and perseverance by the patient.

The hypothesis for the third purpose in Study 2 (i.e., higher perceptions of a mastery climate in rehabilitation will predict greater satisfaction with injury rehabilitation) was supported. Findings indicate that athletes with higher overall

perceptions of a mastery motivational climate in rehabilitation had higher satisfaction with rehabilitation. Also, athletes with lower perceptions of being punished for mistakes during rehabilitation had higher satisfaction. Previous literature in the area has reported a variety of findings. No significant relationships were found between athletes' perceptions of the motivational climate in rehabilitation and enjoyment and competence in rehabilitation (Brinkman-Majewski & Weiss, 2015). Brinkman-Majewski and Weiss (in press) reported higher perceptions of a mastery motivational climate in rehabilitation being positively related to interest and enjoyment (intrinsic motivation), and negatively related to tension and pressure during rehabilitation.

The current findings indicate that an athlete will have greater satisfaction with the specific process, length of time, rehabilitation sessions, and overall progress of rehabilitation if they perceive the athletic trainer creating an environment that emphasizes learning, rewards individuals for putting forth effort, and encourages athletes to be a central part in their rehabilitation. Furthermore, athletes seem to be more satisfied with rehabilitation when they are not punished for making mistakes. Athletic trainers need to understand that the rehabilitation process and activities are unfamiliar for many athletes. When mistakes occur, rather than punishing or yelling at athletes, athletic trainers should view this as an opportunity to assist the athlete, so further improvements can be made.

Study 3

Injured athletes were hypothesized to have higher constrained commitment, whereas non-injured athletes would have higher enthusiastic commitment. This hypothesis was not supported. The current research findings are similar to previous

research (W. M. Weiss, 2011), which also reported no significant differences between sport commitment type and injury status. Although theory (Scanlan et al., 1993; W. M. Weiss, 2011) seems to imply that athletes would be more likely to sustain an injury when they perceive less enjoyment and valuable opportunities in sport, along with greater social constraints and attractive alternatives to sport (i.e., constrained commitment), it appears this model did not hold true with the current research sample. Differences in athlete playing time may provide one explanation for the findings being inconsistent with theory. Perhaps athletes with more constrained commitment were non-starters or non-players and therefore had fewer overall injury exposures. Whereas more enthusiastically committed athletes were in starting positions on the team and experienced more playing time. Furthermore, athletes who enjoy sport and perceive sport's valuable opportunities (i.e., enthusiastic commitment) will naturally put in more practice time and take extra repetitions. Conceivably, enthusiastic commitment athletes had more playing time, leading to greater injury exposures, which ultimately resulted in similar injury rates among both enthusiastic and constrained commitment athletes.

Additionally, higher enthusiastic sport commitment was hypothesized to predict higher-rated rehabilitation behaviors. Results revealed no significant relationships between sport commitment (enthusiastic or constrained) and rehabilitation behaviors. This conflicts with previous literature (W. M. Weiss, 2011) which reported low committed athletes as significantly lower in effort, persistence, and intensity during rehabilitation. In the sport domain, W. M. Weiss and Weiss (2003) found that sport commitment types differed in training behaviors. Specifically, attracted sport

commitment athletes were rated higher in effort and persistence by the coach compared to vulnerable and entrapped athletes. Previous studies (W. M. Weiss, 2011; W. M. Weiss & Weiss, 2003) used cluster analysis to create sport commitment types (e.g., attracted, vulnerable, entrapped, etc.). The five constructs of sport commitment (e.g., enjoyment, benefits, costs, attractive alternatives, and investments) were used in the cluster analyses to generate sport commitment types. Whereas the current research used one measure (SCQ-2; Scanlan et al., 2016) to assess two types of commitment (i.e., enthusiastic and constrained). Perhaps the cluster analysis creates a more accurate representation of sport commitment. Future research should consider whether creating sport commitment types through cluster analysis will provide more accurate findings and insight in comparison to using measures specifically designed to assess different commitment types.

The third hypothesis was supported in that a significant difference emerged between pre-injury sport commitment and post-injury sport commitment for both enthusiastic and constrained athletes. Results indicated a significant change in levels of commitment for both enthusiastic and constrained commitment after experiencing an injury and subsequent rehabilitation. Post-injury enthusiastic commitment was significantly greater than pre-injury commitment, while constrained commitment was significantly lower at post-injury assessment. W. M. Weiss (2011) research reported athletes' sport commitment changed over a one year period, therefore indicating sport commitment is a dynamic construct. Numerous variables (e.g., costs, enjoyment, social support, benefits) can a play a role in altering athletes' sport commitment. Specifically, for this study, sustaining an injury and going through the subsequent rehabilitation

process seemed to have altered the athletes' perception of sport, and in turn, sport commitment. For example, through their increased interactions with the athletic training staff, athletes may find a new source of social support. During time away from sport participation due to injury, athletes could more clearly see the involvement opportunities of sport and may even come to understand that they were not as pressured by coaches, peers, and parents (socials constraints) as they had perhaps previously believed. And although most athletic trainers attempt to make treatment and rehabilitation sessions enjoyable, in comparison to their sport, rehabilitation may be boring. Enjoyment and satisfaction with sport would improve, and subsequently constrained commitment would decrease and enthusiastic commitment would increase.

Future Research

The methodology of the current research has its limitations and therefore creates additional opportunities for future research. The participants for the current study were limited to NCAA Division II athletes. Future research should explore the motivational climate, sport commitment, injury occurrence, and rehabilitation outcomes with a variety of participants at multiple levels of sport involvement, such as youth, high school, differing collegiate levels (NCAA Divisions I, II, and III; National Junior College Athletic Association (NJCAA) Divisions I, II, and III; National Association of Intercollegiate Athletics (NAIA)), elite, professional, and recreational levels. With the purpose of sport participation varying at the different levels of competition, results related to perceptions of the motivational climate, sport commitment, and rehabilitation outcomes are likely to fluctuate. This additional research would provide further

information to create individualized practical recommendations for coaches, athletes, and athletic trainers at all levels.

Future research examining injury occurrence, rehabilitation outcomes, and changes in sport commitment should also be more longitudinal in nature. The current study limited the ongoing data collection period to eight months to identify eligible injured participants. Research examining these constructs over an entire year's time would allow for all sports to complete both in- and out-of-season time frames. The varying competitive seasons may allow for more fluctuation in sport commitment levels, as well as an opportunity to examine differences in coach- and peer-created motivational climates during traditional championship seasons and off-seasons. Additionally, the longer time frame would naturally increase the number of injury exposures for each athlete, in turn, increasing the likelihood of injury.

For the current research, patient satisfaction with rehabilitation and rehabilitation behaviors were the only patient-centered outcomes examined. Future research investigating the motivational climates created by coaches, peers, and athletic trainers should broaden the use of patient-oriented outcomes (Valovich McLeod et al., 2008). Motivational climates in the sport domain could affect overall health or specific conditions of the athletes, and should therefore be further explored. Use of patient reported outcome instruments, such as the Short Form-12 (SF-12), Disablement in the Physically Active Scale, Global Rating of Change, Foot and Ankle Ability Measure (FAAM), and Disability of the Arm, Shoulder, and Hand (DASH), would provide important patient perspectives. This information could then be used to further educate

coaches, athletes, and athletic trainers on the positives and negatives related to the mastery and performance climates created.

The current research was quantitative in design and provided a vast amount of data and information answering descriptive or "what is" research questions. Future research should cross over into qualitative methodology or perhaps mixed methods design. Further qualitative research exploring the motivational climate, sport commitment, and rehabilitation outcomes would assist in understanding the "why" behind the athletes' perceptions and actions. Research including in-depth interviews and observations of athletes', coaches', and athletic trainers' experiences in sport and rehabilitation would provide a deeper appreciation of the relationships among the constructs of interest.

Practical Implications

The findings of this dissertation provide insightful information that can improve clinical practice. Coaches, teammates, and athletic trainers are all influential individuals that generate a motivational climate within their setting. As the current research found, the words and actions of these individuals is related to and influential in predicting athletes' sport commitment, effort, persistence, and adherence during injury rehabilitation, and satisfaction with the rehabilitation process. The following provides specific recommendations for coaches, athletic trainers, and teammates to enhance injury rehabilitation outcomes and improve sport commitment.

In general, coaches need to be educated on how expectations, feedback, and coaching structure creates a motivational climate that directly influences the athletes'

beliefs, values, and actions within that sport (Ames, 1992b). More specifically, the results of this study indicate that coaches need to decrease the amount of performance motivational climate cues in sport to improve athletes' enthusiastic commitment. For example, the coach should refrain from showing favoritism among athletes. Displaying equal recognition to all athletes, along with eliminating punishments when athletes make errors, should increase enthusiastic commitment and decrease constrained commitment in athletes. By removing the performance climate cues used to create the motivational climate, the coaches may see improved enthusiastic commitment, and in turn, lower burnout levels (Raedeke, 1997), and higher intrinsic motivation and training behaviors from the athletes (W. M. Weiss & Weiss, 2003).

Just as coaches need to be educated on how words and actions create an environment that affects athletes in sport, athletic trainers also need to be educated on the motivational climate created during injury rehabilitation. Improved patient outcomes in rehabilitation seem to occur when the athletic trainer creates a rehabilitation environment focused on working hard, learning, and making improvements. Undesirable patient outcomes emerge when the athletic trainers show preference to certain patients and punish patients for making mistakes. Rehabilitation, similar to sport, is an achievement setting where individuals need to put forth effort, persist during setbacks, and follow the initial plan to accomplish goals. The current research found that athletic trainers are able to create a particular climate that predicted constructive athlete behaviors during rehabilitation. Athletic trainers should educate patients on the injury and recovery process, and allow patients to make choices during rehabilitation sessions when possible.

By getting the patient engaged in the rehabilitation, a sense of having an important role emerges, which ultimately enhances adherence, effort, and perseverance. On the contrary, if patients perceive athletic trainers as showing favoritism, positive rehabilitation behaviors decrease. To prevent low effort, giving up, and skipping rehabilitation sessions in patients, athletic trainers need to provide equal treatment and attention to all patients.

In the same way, athletic trainers should strive to create patient-centered care for the athletes recovering from injury. Patient satisfaction is a way to assess rehabilitations' outcome from the patient's point of view. Athletic trainers should engage patients in the rehabilitation process, encourage learning and working together, and reward hard work and improvements to increase the level of patient satisfaction with rehabilitation. Currently, athletic trainers are not the only healthcare providers injured patients have to choose from to receive care. Patients could choose to complete the injury rehabilitation process with an athletic trainer, physical therapist, or chiropractor. Therefore, athletic trainers need to strive to increase patients' satisfaction with the rehabilitation process, specific rehabilitation sessions, length of recovery time, and overall progress of injury recovery in order for patients to continue treatment. Higher patient satisfaction also provides a method of earning positive referrals to future patients. A typical patient is not going to freely choose to go through injury rehabilitation with a healthcare provider that punishes rehabilitation errors. The current research shows higher perceptions of punishment during rehabilitation predicted lower patient satisfaction. Athletic trainers

should use errors as a learning opportunity, so patients can understand how to improve on weaknesses.

Sport commitment is dynamic (W. M. Weiss, 2011). More specifically, it was identified that sport commitment changed, and specifically improved, following injury. Coaches, teammates, and athletic trainers need to be aware of the dynamic nature of commitment, and recognize that the injury and recovery process may be one opportunity to help change an athlete's commitment type from constrained to enthusiastic. The variables that influence sport commitment are ever changing. It is apparent that the simple act of sustaining an injury alters athletes' perceptions of social support, enjoyment, benefits, attractive alternatives, and personal investments in sport, which in turn, changes sport commitment (W. M. Weiss, 2011). Perhaps, coaches, teammates, or athletic trainers could manipulate some of these variables during rehabilitation to enhance an athlete's sport commitment. For example, coaches should attempt to make practices, games, and team activities fun for the athletes as this would increase enjoyment. Also, coaches must emphasize the benefits athletes receive (e.g., association with the team, travel, staying in shape) through continued participation in sport. Teammates and athletic trainers should provide social support to the athletes. Teammates should include all athletes on the team during sport and social activities to build team cohesion. Athletic trainers should provide support to athletes related to injury prevention and rehabilitation as well as emotional and psychological support related to sport, personal life, and overall health. These enhancements in enjoyment, involvement opportunities, and social support

could improve sport commitment, and in turn boost athletes' psychological well-being and enhance positive behaviors in sport.

Conclusion

The motivational climate generated by influential individuals in the sport domain plays a prominent part in shaping athletes' values, dedications, and actions toward sport and injury rehabilitation (Ames, 1992b, Brinkman & Weiss, 2010). The findings of the current research indicate that if an environment focused on individual improvement, learning, and working hard (i.e., mastery climate) is created by an athletic trainer during rehabilitation, then improved patient satisfaction and productive behaviors during rehabilitation should be expected. Athletic trainers should be educated on how to best create a mastery motivational climate during rehabilitation (Brinkman & Weiss, 2010). Similarly, coaches and peers should also find value in understanding the effects of the motivational climate created during sport. The current study's results found higher sport commitment was predicted by lower perceptions of unequal recognition and punishment for mistakes by the coach. Coaches, peers, and athletic trainers should also understand sport commitment is dynamic. Situations, such as injury as identified in the current research, can occur and sport commitment level can change (W. M. Weiss, 2011). If coaches, peers, and athletic trainers understand the variables of sport commitment and the influence of words and actions on creating a motivational climate, important individuals in the sport domain are better positioned to assist athletes in having an enjoyable, productive sport career, as well as promote positive behaviors in rehabilitation and greater satisfaction with rehabilitation.

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APPENDIX A

LITERATURE TABLE

Coach Created Motivational Climate in Sport Outcomes	
Adolescent and High School Setting Research	
Alvarez, M. S., Balaguer, I., Castillo, I., & Duda, J. L. (2012). The coach-created motivational climate, young athletes' well-being, and intentions to continue participation. *Journal of Clinical Sport Psychology, 6*, 166-179.	Soccer athletes with higher perceptions of a mastery climate in sport was a positive predictor of satisfaction with competence, relatedness, and autonomy, which in turn was a predictor of intrinsic motivation and intentions to continue soccer participation.
Baric, R. (2011). Psychological pressure and athletes' perceptions of motivational climate in team sports. *Review of Psychology*, *18*(1), 45-49.	Athletes who perceived higher levels of a performance climate in football and handball had higher levels of psychological stress compared to athletes perceiving a mastery climate.
Boyce, B. A., Gano-Overway, L. A., & Campbell, A. L. (2009). Perceived motivational climate's influence on goal orientations, perceived competence, and practice strategies across the athletic season. *Journal of Applied Sport Psychology, 21*, 381-394.	Athletes with higher perceptions of a mastery motivational climate were more likely to use goal setting and positive self-talk, practice on their own, and incorporate coach feedback into future skill repetitions.
Cecchini, J. A., Fernandez-Rio, J., Mendez-Gimenez, A., Cecchini, C., & Martins, L. (2014). Epstein's TARGET framework and motivational climate in sport: Effects of a field-based, long-term intervention program. *International Journal of Sports Science & Coaching*, *9*(6), 1325-1340.	Male and female, football and basketball high school athletes that were a part of the mastery intervention group reported positive effects on social relations, competence, autonomy, self-determination, cooperative learning, effort, and persistence compared to the athletes in the traditional performance climate group.
Chaumeton, N. R., & Duda, J .L. (1988). Is it how you play the game or whether you win or lose?: The effect of competitive level and situation on coaching behaviors. *Journal of Sport Behavior, 11*, 157-174.	Coaches at the high school level were more likely to create a performance climate, whereas elementary level coaches created a mastery climate in sport.
Curran, T., Hill, A. P., Hall, H. K., Jowett, G. E. (2015). Relationships between the coach-created motivational climate and athlete engagement in youth sports. *Journal of Sport & Exercise Psychology*, *37*, 193-198.	Higher perceptions of a mastery climate in recreational soccer athletes were positively related to vigor, dedication, confidence, and enthusiasm, while higher perceptions of a performance climate were negatively related to vigor and enthusiasm and positively related to confidence and dedication.

Coach Created Motivational Climate in Sport Outcomes	
Adolescent and High School Setting Research	
Fry, M. D., & Gano-Overway, L. A. (2010). Exploring the contribution of the caring climate to the youth sport experience. *Journal of Applied Sport Psychology, 22*(3), 294-304.	Mastery motivational climate was positively related to levels of sport commitment with youth soccer athletes.
Fry, M.D. & Newton, M. (2003). Application of achievement goal theory in an urban youth tennis setting. *Journal of Applied Sport Psychology, 15*, 50-66.	Athletes with higher perceptions of a mastery climate in tennis liked their coach and had a more positive sportspersonship attitude. Athletes with higher perceptions of a performance climate had unsatisfactory feelings toward the coach and were negatively related to positive sportspersonship.
Hall, M. S., Newland, A., Newton, M., Podlog, L., & Baucom, B. R. (2017). Perceptions of the social psychological climate and sport commitment in adolescent athletes: A multilevel analysis. *Journal of Applied Sport Psychology, 29*(1), 75-87.	Higher perceptions of a mastery climate positively predicted sport commitment, whereas higher perceptions of a performance climate did not.
Seifriz, J. J., Duda, J. L., & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. *Journal of Sport & Exercise Psychology, 14*, 375-391.	Athletes who perceived the basketball climate as more mastery had higher levels of enjoyment and intrinsic motivation. However, basketball athletes with higher perceptions of a performance climate was related to increased anxiety and negative consequences for mistakes.
Steffan, K. Pensgaard, A. M., & Bahr, R. (2009). Self-reported psychological characteristics as risk factors for injuries in female youth football. *Scandinavian Journal of Medicine & Science in Sports, 19*, 442-451.	Athletes who perceived the motivational climate on the team as more mastery had significantly higher injury occurrence than those athletes with higher performance climate perceptions.
Theeboom, M., DeKnop, P., & Weiss, M. R. (1995). Motivational climate, psychological responses and motor skill development in children's sport: A field-based intervention study. *Journal of Sport & Exercise Psychology, 17*, 294-311.	Children in the mastery climate martial arts group reported higher levels of intrinsic motivation, enjoyment, and motor skill performance compared to the performance climate group.

Coach Created Motivational Climate in Sport Outcomes	
Adolescent and High School Setting Research	
Treasure, D. C., & Roberts, G. C. (1998). Relationship between female adolescents' achievement goal orientations, perceptions of the motivational climate, belief about success and sources of satisfaction in basketball. *International Journal of Sport Psychology, 29,* 211-230.	Athletes with higher perceptions of a mastery climate attributed success to effort, while those with higher perceptions of a performance climate believed ability and deceptions were involved in success. Also, as perceptions of a mastery climate increased so did the feeling that self-improvement was the reason for satisfaction. However, as performance climate perceptions increased, the source of satisfaction more likely derived from normative success.
Vitali, F., Bortoli, L., Bertinato, L., Robazza, C., & Schena, F. (2015). Motivational climate, resilience, and burnout in youth sport. *Sport Sciences for Health, 11,* 103-108.	Higher perceptions of a mastery climate were strongly and negatively related to sport devaluation and athlete's reduced sense of accomplishment (burnout).
Collegiate Setting Research	
Newton, M., & Duda, J. L. (1999). The interaction of motivational climate, dispositional goal orientations, and perceived ability in predicting indices of motivation. *International Journal of Sport Psychology, 30,* 63-82.	Volleyball athletes who perceived the climate higher in performance and had an ego orientation were focused on ability-centered success, whereas task oriented athletes perceiving higher mastery climate in sport had effort-centered ideas of success and higher levels of enjoyment and interest in their sport.
Ommundsen, Y., Roberts, G. C., Kavussanu, M. (1998). Perceived motivational climate and cognitive and affective correlates among Norwegian athletes. *Journal of Sports Sciences, 16*(2), 153-164.	Athletes who perceived higher performance climate in sport were more likely to display practice avoidance behaviors and report negative attitudes toward practice sessions.
van de Pol, P. K. C., Kavussanu, M. & Ring, C. (2012). Goal orientations, perceived motivational climate, and motivational outcomes in football: A comparison between training and competition contexts. *Psychology of Sport and Exercise, 13,* 491-499.	Athletes had higher perceptions of a performance climate during the competitive season than during the off-season. Perceptions of mastery climate were positively related to effort and enjoyment, while perceptions of a performance climate were positively related to tension.

Coach Created Motivational Climate in Sport Outcomes	
Elite Competitive Setting Research	
Pensgaard, A. M., & Roberts, G. C. (2000). The relationship between the motivational climate, perceived ability and sources of distress among elite athletes. *Journal of Sports Sciences, 18,* 191-200.	Perceptions of a performance climate by Olympic athletes was a positive predictor of the team and coach being a source of distress, such as worry and anxiety.
Walling, M. D., Duda, J. L., & Chi, L. (1993). The perceived motivational climate in sport questionnaire: Construct and predictive validity. *Journal of Sport & Exercise Psychology, 15,* 172-183.	International athletes that perceived their sport as having a performance climate reported significantly greater concerns of failing and inadequacy as well as being less satisfied as a team member in comparison to athletes perceiving a mastery climate.
Trenz, R. C., & Zusho, A. (2011). Competitive swimmers' perceptions of motivational climate and their personal achievement goals. *International Journal of Sports Science and Coaching, 6*(3), 433-443.	Higher perceptions of mastery climate in competitive swimming were negatively related to practice avoidance behaviors and positively related to practice persistence.

Peer Created Motivational Climate in Sport Outcomes	
Adolescent and High School Setting Research	
Atkins, M. R., Johnson, D. M., Force, E. C., & Petrie, T. A. (2013). "Do I still want to play?" Parents' and peers influences on girls' continuation in sport. *Journal of Sport Behavior, 36*(4), 329-345.	No significant relationships between perceptions of a peer-created mastery motivational climate in youth sport and competence, self-esteem, enjoyment, or intention to continue participation in sport.
Atkins, M. R., Johnson, D. M., Force, E. C., & Petrie, T. A. (2015). Peers, parents, and coaches, oh my! The relation of the motivational climate to boys' intention to continue sport. *Psychology of Sport and Exercise, 16,* 170-180.	Higher perceptions of a peer-created motivational climate was positively related to higher levels of task orientation, self-esteem, competence, enjoyment, and intentions to continue sport participation.

Peer Created Motivational Climate in Sport Outcomes	
Adolescent and High School Setting Research	
Joesaar, H., Hein, V., & Hagger, M. S. (2011). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. *Psychology of Sport and Exercise, 12*, 500-508.	Higher perceptions of a mastery climate in youth sport were related to higher levels of satisfaction with autonomy, competence, and relatedness needs. Alternatively, higher perceptions of a peer-created performance climate was related to lower satisfaction with relatedness.
Joesaar, H., Hein, V., & Hagger, M. S. (2012). Youth athletes' perception of autonomy support from the coach, peer motivational climate and intrinsic motivation in sport setting: One-year effects. *Psychology of Sport and Exercise, 13*, 257-262.	The peer-created mastery climate in sport had a direct effect on youth athletes' intrinsic motivation level.
Smith, A. L., Gustafsson, H., & Hassmen, P. (2010). Peer motivational climate and burnout perceptions of adolescent athletes. *Psychology of Sport and Exercise, 11*, 453-460.	Peer-created performance motivational climate in high school level sport predicted burnout in athletes.
Vazou, S., Ntoumanis, N., & Duda, J. L. (2006). Predicting young athletes' motivational indices as a function of their perceptions of the coach- and peer-created climate. *Psychology of Sport and Exercise, 7*, 215-233.	Peer created mastery climates positively predicted youth athlete enjoyment and self-esteem.
Elite Competitive Setting Research	
Garcia-Calvo, T., Leo, F. M., Gonzalez-Ponce, I., Sanchez-Miguel, P. A., Mouratidis, A. & Ntoumanis, N. (2014). Perceived coach-created and peer-created motivational climates and their associations with team cohesion and athlete satisfaction: Evidence from a longitudinal study. *Journal of Sport Sciences, 32*(18), 1738-1750.	Perceptions of peer-created mastery climate were positively associated with three team cohesion variables: social attraction to the group, task group integration, and satisfaction with participation.

APPENDIX B

PARTICIPANT MATERIALS

UNIVERSITY OF NORTHERN IOWA- HUMAN PARTICIPANTS REVIEW
INFORMED CONSENT INITIAL SAMPLE - ATHLETES

Project Title: Motivational Climate in Sport and Rehabilitation and Related Injury Occurrence, Sport Commitment, Rehabilitation Behaviors, and Satisfaction

Name of Investigator(s): Rachel E. Majewski and Dr. Windee M. Weiss

Invitation to Participate: You are invited to participate in a research project conducted through the University of Northern Iowa. The University requires that you give your signed agreement to participate in this project. The following information is provided to help you made an informed decision about whether or not to participate.

Nature and Purpose: The purpose of this study is to examine athletes' perceptions of the motivational climate in sport and rehabilitation and related sport commitment, injury occurrence, rehabilitation behaviors, and satisfaction.

Explanation of Procedures: You are being asked to complete our questionnaire, which will take approximately 20 minutes. Coaches and athletic trainers will not be present during data collection. The questionnaire contains several items concerning perceptions of motivational climate in sport and sport commitment. You will also be asked to answer demographic questions. Results from this study will be submitted for publication in a refereed journal. All results will be reported for the entire sample. Some of you may be recruited to participate in an optional follow-up study, focusing on injury and rehabilitation. By providing your contact information at the end of this questionnaire, you are allowing your athletic trainer to provide me with injury information (see next section) to determine eligibility for follow-up study. Once you are eligible for time 2 participation (due to injury) you will provide consent to participate. Participation includes a short follow-up questionnaire and your athletic trainer rating your effort and energy in rehabilitation.

Information to be Collected: To recruit participants for the follow-up study, the primary investigator will need to collect injury/rehabilitation information about you. This will include: injury type, date of injury, treatment/rehabilitation received, and anticipated length of treatment/rehabilitation program. This information will be obtained from the certified athletic trainer to determine your eligibility for Time 2 data collection. For eligible and consenting participants, the athletic trainer will complete a form rating your energy and effort at rehabilitation sessions. In addition, the primary investigator may share collected information with the research advisors, however your name would not be associated with the information disclosed.

Discomfort and Risks: Risks are minimal and include a minor inconvenience and use of the participant's time.

Benefits and Compensation: There are no direct benefits to you for participating in this research study. The study may help us understand the motivational climate's influence on injury occurrence, sport commitment, and rehabilitation behaviors.

Confidentiality: The information obtained during this study which could identify you will be kept confidential. There is a minimal potential for your responses to become lost or visible to others. The questionnaires will be kept in a locked file cabinet in a locked office. The generalized results may be published in an academic journal or presented at a scholarly conference.

Right to Refuse or Withdraw: Your participation is completely voluntary and will not affect your status with your team or coach, nor will it change the services provided to you by the athletic trainer. You are free to withdraw from participation at any time or choose not to participate, and by doing so, you will not be penalized or lose benefits to which you are otherwise entitled.

Questions: If you have questions or desire information in the future regarding your participation or the study, you can contact (Rachel Majewski) at majewskir@uiu.edu or the project investigator's faculty advisor Dr. Windee Weiss at the University of Northern Iowa, at 319-273-2011. You can also contact the office of the IRB Administrator, University of Northern Iowa, at 319-273-6148, for answers to questions about rights of research participants and the participant review process

Agreement:

I am fully aware of the nature and extent of my participation in this project as stated above and the possible risks arising from it. I hereby agree to participate in this project. I acknowledge that I have received a copy of this consent statement. I am 18 years of age or older.

_____	_____	_____	_____
(Signature of participant)	(Date)	(Signature of investigator)	(Date)
_____		_____	_____
(Printed name of participant)		(Signature of instructor/advisor)	(Date)

Please think about how it has felt to play on your team through the most recent *competitive season*. What is it usually like on your team? Respond to each item in terms of how you view the typical atmosphere on your team. Perceptions naturally vary from person to person, so be certain to take your time and answer as honestly as possible. Please **circle the response** that best represents how you feel.

"On this team,"

The coach wants us to try new skills	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach gets mad when a player makes a mistake	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach gives most of his/her attention to the stars	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Each player contributes in an important way	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach believes that all of us are crucial to the success of the team	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach praises players only when they outplay teammates	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach thinks only the starters contribute to the success of the team	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players feel good when they try their best	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players are taken out of a game for mistakes	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players at all skill levels have an important role on the team	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players help each other learn	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players are encouraged to outplay the other players	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach has his/her own favorites	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach makes sure players improve on skills they're not good at	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach yells at players for messing up	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players feel successful when they improve	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Only the players with the best 'stats' get praise	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players are punished when they make a mistake	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Each player has an important role	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Trying hard is rewarded	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree

"On this team,"

The coach encourages players to help each other	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach makes it clear who he/she thinks are the best players	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players are 'psyched' when they do better than their teammates	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
If you want to play in a game you must be one of the best players	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach emphasizes always trying your best	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Only the top players 'get noticed' by the coach	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players are afraid to make mistakes	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players are encouraged to work on their weaknesses	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The coach favors some players more than others	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The focus is to improve each game/practice	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The players really 'work together' as a team	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Each player feels as if they are an important team member	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The players help each other to get better and excel	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree

Please think about the primary sport you participate in. Read the following statements carefully and rate your level of agreement. **Circle the response** that best represents how you feel.

Staying in this sport is more of a necessity than a desire	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am dedicated to keep playing this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I feel trapped in this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am willing to overcome any obstacle to keep playing in this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Although I think about quitting this sport, I feel I must keep playing	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I feel I am forced to keep playing this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I feel I have to keep playing this sport, even though I don't want to	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree

I am determined to keep playing this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am very attached to this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I will continue to play this sport for as long as I can	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am willing to do most anything to keep playing this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree

Select the main sport that you play for and answer the following questions thinking about the *environment in this team and the relationships among your teammates*. **Circle the response** that best represents how you feel.

On this team, most athletes…

Help each other improve	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Encourage each other to outplay their teammates	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Offer to help their teammates develop new skills	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Care more about the opinion of the 'most able' teammates	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Make their teammates feel valued	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Work together to improve the skills they don't do well	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Make negative comments that put their teammates down	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Try to do better than their teammates	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Criticize their teammates when they make mistakes	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Teach their teammates new things	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Encourage their teammates to try their hardest	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Look pleased when the do better than their teammates	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Make their teammates feel accepted	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Want to be with the 'most able' teammates	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Praise their teammates who try hard	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree

Complain when the team doesn't win	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Are pleased when their teammates try hard	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Care about everyone's opinion	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Set an example on giving forth maximum effort	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Laugh at their teammates when they make mistakes	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
Encourage their teammates to keep trying after they make a mistake	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree

Demographic Questions

1. **Age:** _____

*For the following questions, **circle** the answer that best describes you:*

2. **Gender:** Male Female

3. **Race:** White Black or African-American Asian
   Two or more races American Indian or Alaska Native Other

4. **Year of Eligibility:** Redshirt/ Medical Hardship Freshman Sophomore
   Junior Senior 5th Year Senior

5. **Sport:** Baseball Women's Basketball Men's Basketball Cheer
   Cross Country Men's Golf Women's Golf Football
   Women's Soccer Men's Soccer Softball Tennis
   Volleyball Track & Field Wrestling

6. **Which of the following best describes your playing status:**

   Starter Non-starter Non-player Redshirt/ Medical Hardship

7. **Which of the following best describes your athletic scholarship status:**

   No Athletic Scholarship Partial Athletic Scholarship Full Athletic Scholarship

8. Have you experienced an athletic injury during your time at Upper Iowa University?

NO YES If YES, approximately how many? _____

9. Have you received treatment/rehabilitation from an athletic trainer at Upper Iowa University?

NO YES

Please provide your name and either your email address and/or cell phone number if you are interested in participating in the second portion of the study (Fall 2017) related to injury occurrence and rehabilitation.

Name: _____

Email or Cell phone #: _____

THANK YOU FOR TAKING THE TIME
TO PARTICIPATE IN THIS STUDY!

UNIVERSITY OF NORTHERN IOWA- HUMAN PARTICIPANTS REVIEW
INFORMED CONSENT TIME 2 DATA COLLECTION SAMPLE – ATHLETIC TRAINERS

Project Title: Motivational Climate in Sport and Rehabilitation and Related Injury Occurrence, Sport Commitment, Rehabilitation Behaviors, and Satisfaction

Name of Investigator(s): Rachel E. Majewski and Dr. Windee M. Weiss

Invitation to Participate: You are invited to participate in a research project conducted through the University of Northern Iowa. The University requires that you give your signed agreement to participate in this project. The following information is provided to help you made an informed decision about whether or not to participate.

Nature and Purpose: The purpose of this study is to examine athletes' perceptions of the motivational climate in sport and rehabilitation and related sport commitment, injury occurrence, rehabilitation behaviors, and satisfaction.

Explanation of Procedures: You are being asked to assist in determining participant eligibility and the recruiting process of the follow-up portion of the study. You will be asked to provide weekly (from Aug 2017-Jan 2018) injury report forms on athletes who have already consented to be part of the study. The primary investigator will ask you to provide injury information (injury type, injury onset, days of practice/competition missed, treatment/rehabilitation provided, and anticipated length of treatment / rehabilitation) for the participating athletes. You will also be asked to complete a form, rating the rehabilitation behaviors for athletes participating in Time 2 data collection, which should take less than 5 minutes. The athletes will not be present during data collection. The form will consist of five items concerning your views of the athletes' effort, energy, and persistence during rehabilitation. Results from this study will be submitted for publication in a refereed journal. All results will be reported for the entire subsample of injured participants.

Discomfort and Risks: Risks are minimal and include a minor inconvenience and use of the participant's time.

Benefits and Compensation: There are no direct benefits to you for participating in this research study. The study may help us understand the motivational climate's influence on injury occurrence, sport commitment, and rehabilitation behaviors.

Confidentiality: The information obtained during this study which could identify you will be kept confidential. There is a minimal potential for your responses to become lost or accessible to others. The injury reporting forms and rehabilitation rating forms will be kept in a locked file cabinet in a locked office. The generalized results may be published in an academic journal or presented at a scholarly conference.

Right to Refuse or Withdraw: Your participation is completely voluntary and will not affect your status with your athletes or coaches. You are free to withdraw from participation at any time or choose not to participate, and by doing so, you will not be penalized or lose benefits to which you are otherwise entitled.

Questions: If you have questions about the study or desire information in the future regarding your participation in the study, you can contact (Rachel Majewski) at majewskir@uiu.edu or the project investigator's faculty advisor Dr. Windee Weiss at the University of Northern Iowa, at 319-273-2011. You can also contact the office of the IRB Administrator, University of Northern Iowa, at 319-273-6148, for answers to questions about rights of research participants and the participant review process

Agreement:

I am fully aware of the nature and extent of my participation in this project as stated above and the possible risks arising from it. I hereby agree to participate in this project. I acknowledge that I have received a copy of this consent statement. I am 18 years of age or older.

_____	_____	_____	_____
(Signature of participant)	(Date)	(Signature of investigator)	(Date)
_____		_____	_____
(Printed name of participant)		(Signature of instructor/advisor)	(Date)

Injury Reporting Form

The following list of athletes have agreed to participate in this research study and have given consent for the athletic trainer to release the following information to the primary investigator. This information will be accessible by only the primary investigator and will be kept confidential throughout the entire research process.

Please mark if the below athletes have sustained an injury during this past week or if they are receiving treatment/rehabilitation. If you mark 'Yes' for an athlete, please answer the questions in the following columns. Return to Rachel Majewski via email (majewskir@uiu.edu) once completed or call with questions/concerns (563-380-5145).

Participating Athlete	**Injured?**	**Type of Injury**	**Injury Onset (Date)**	***Days* Missed from Practice/ Competition**	**General Overview of Treatment/ Rehab Received**	**Anticipated *Length* of Treatment/ Rehabilitation**
Jane Example	*Yes* *No*					
Sue Example	*Yes* *No*					
Holly Example	*Yes* *No*					
	Yes *No*					

UNIVERSITY OF NORTHERN IOWA- HUMAN PARTICIPANTS REVIEW
INFORMED CONSENT TIME 2 DATA COLLECTION SAMPLE - ATHLETES

Project Title: Motivational Climate in Sport and Rehabilitation and Related Injury Occurrence, Sport Commitment, Rehabilitation Behaviors, and Satisfaction

Name of Investigator(s): Rachel E. Majewski and Dr. Windee M. Weiss

Invitation to Participate: You are invited to participate in a research project conducted through the University of Northern Iowa. The University requires that you give your signed agreement to participate in this project. The following information is provided to help you made an informed decision about whether or not to participate.

Nature and Purpose: The purpose of this study is to examine athletes' perceptions of the motivational climate in sport and rehabilitation and related sport commitment, injury occurrence, rehabilitation behaviors, and satisfaction.

Explanation of Procedures: You are being asked to complete a short questionnaire, which will take approximately 15 minutes. Coaches and athletic trainers will not be present during data collection. The questionnaire will contain several items concerning your perceptions of the motivational climate in rehabilitation, sport commitment, and satisfaction with rehabilitation. Your athletic trainer will also be completing a rating form regarding your effort and energy during rehabilitation sessions. Results from this study will be submitted for publication in a refereed journal. All results will be reported for the entire subsample of injured participants.

Discomfort and Risks: Risks are minimal and include a minor inconvenience and use of the participant's time.

Benefits and Compensation: There are no direct benefits to you for participating in this research study. The study may help us understand the motivational climate's influence on injury occurrence, sport commitment, and rehabilitation behaviors.

Confidentiality: The information obtained during this study which could identify you will be kept confidential. There is a minimal potential for your responses to become lost or accessible to others. The questionnaires and athletic trainer rating forms will be kept in a locked file cabinet in a locked office. The generalized results may be published in an academic journal or presented at a scholarly conference.

Right to Refuse or Withdraw: Your participation is completely voluntary and will not affect your status with your team or coach, nor will it change the services provided to you by the athletic trainer. You are free to withdraw from participation at any time or choose not to participate, and by doing so, you will not be penalized or lose benefits to which you are otherwise entitled.

Questions: If you have questions about the study or desire information in the future regarding your participation or the study generally, you can contact (Rachel Majewski) at majewskir@uiu.edu or the project investigator's faculty advisor Dr. Windee Weiss at the University of Northern Iowa, at 319-273-2011. You can also contact the office of the IRB Administrator, University of Northern Iowa, at 319-273-6148, for answers to questions about rights of research participants and the participant review process

Agreement:

I am fully aware of the nature and extent of my participation in this project as stated above and the possible risks arising from it. I hereby agree to participate in this project. I acknowledge that I have received a copy of this consent statement. I am 18 years of age or older.

_____	_____	_____	_____
(Signature of participant)	(Date)	(Signature of investigator)	(Date)
_____		_____	_____
(Printed name of participant)		(Signature of instructor/advisor)	(Date)

Please think about how it has felt to be in the athletic training room during your treatment/rehabilitation. What is it usually like during treatment and rehabilitation sessions? Read the following statements carefully and respond to each in terms of how you view the typical atmosphere of this athletic training room. Please **Circle the response** that best represents how you feel.

"In the athletic training room,"

The athletic trainer wants us to try new rehabilitation techniques	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer gets mad when an athlete makes a mistake	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer gives most of his/her attention to the stars	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Each athlete contributes in an important way	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer believes that all athletes are crucial to the success of the team	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer praises athletes only when do better than others in rehab	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer thinks only the starters contribute to the success of the team	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes feel good when they try their best	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes are removed from the athletic training room for making mistakes	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes at all skill levels are important	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes help each other learn	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes are encouraged to outperform other rehabbing athletes	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer has his/her own favorites	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer makes sure athletes improve on skills they're not good at	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer yells at players for messing up	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes feel successful when they improve	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Only the athletes with the best 'rehab ability' get praise	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes are punished when they make a mistake	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Each athlete has an important role	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree

"In the athletic training room,"

Trying hard is rewarded	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer encourages players to help each other	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer makes it clear who he/she thinks are the best athletes	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Players are 'psyched' when they do better than other rehabbing athletes	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
If you want to be in the athletic training room must be one of the best players	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer emphasizes always trying your best	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Only the top players 'get noticed' by the athletic trainer	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes are afraid to make mistakes	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Athletes are encouraged to work on their weaknesses	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletic trainer favors some players more than others	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The focus is to improve each rehabilitation session	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletes really 'work together' during rehabilitation	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Each athlete feels as if they have an important part during rehabilitation	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
The athletes help each other to get better and excel at rehabilitation return-to-play	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree

Please think about your **current injury treatment/rehabilitation**. Read the following statements carefully and rate your level of agreement. **Circle the response** that best represents how you feel.

I believe my progress through rehabilitation has gone well	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
I am satisfied with the length of time the recovery process is taking	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
I am enthusiastic to attend rehabilitation sessions	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
I feel positive about the rehabilitation process	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree
I am satisfied with the rehabilitation process	Strongly Agree	Agree	Slightly Agree	Neutral	Slightly Disagree	Disagree	Strongly Disagree

Please think about the primary sport you participate in. Read the following statements carefully and rate your level of agreement. **Circle the response** that best represents how you feel.

Staying in this sport is more of a necessity than a desire	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am dedicated to keep playing this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I feel trapped in this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am willing to overcome any obstacle to keep playing in this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
Although I think about quitting this sport, I feel I must keep playing	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I feel I am forced to keep playing this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I feel I have to keep playing this sport, even though I don't want to	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am determined to keep playing this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am very attached to this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I will continue to play this sport for as long as I can	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree
I am willing to do most anything to keep playing this sport	Strongly Agree	Agree	So-So	Disagree	Strongly Disagree

THANK YOU FOR TAKING THE TIME TO PARTICIPATE IN THIS STUDY!

APPENDIX C

LETTER OF COOPERATION

Peacock Athletic Training
Upper Iowa University Athletics

March 9, 2017

Rachel Majewski, MS, LAT, ATC
Doctor of Education Student
University of Northern Iowa
Cedar Falls, IA 50614

Dear Rachel Majewski,

The Upper Iowa University Athletic Training Department is pleased to collaborate with you on your research study "The Motivational Climate In Sport and Rehabilitation and Related Injury Occurrence, Sport Commitment, Rehabilitation Behaviors and Outcomes."

We understand that participating in this research will include allowing the investigators access to student-athletes for the completion of a short questionnaire, communicating with investigators related to injuries of those athletes agreeing to participate in the study, and rating participants' rehabilitation behaviors. We had ample opportunities to discuss the research with you and ask for clarifications. Furthermore, we understand the investigators will maintain confidentiality of all information related to research participants in all phases of this research study.

According to our agreement, research study activities will be carried out as described in the research plan reviewed and approved by the University of Northern Iowa Institutional Review Board.

We look forward to working with you, and please consider this communication as our Letter of Cooperation.

Sincerely,

MA, LAT, ATC

Matthew Rueckert, MA, LAT, ATC
Head Athletic Trainer
Upper Iowa University

NSIC
Northern Sun Intercollegiate Conference

NCAA Division II