Wright State University

CORE Scholar

2016

Levels of Self-Compassion among Injured Division I Athletes

Samantha Sanderson
Wright State University Professional Psychology Program

Follow this and additional works at: https://corescholar.libraries.wright.edu/etd_all

Part of the Psychology Commons

LEVELS OF SELF-COMPASSION AMONG INJURED DIVISION I ATHLETES

PROFESSIONAL DISSERTATION

SUBMITTED TO THE FACULTY

OF

THE SCHOOL OF PROFESSIONAL PSYCHOLOGY
WRIGHT STATE UNIVERSITY

BY

SAMANTHA SANDERSON, PSYM

IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE
OF
DOCTOR OF PSYCHOLOGY

Dayton, Ohio

JULY, 2017

COMMITTEE CHAIR: Robert A. Rando, PhD, ABPP

Committee Member: Jeffery B. Allen, PhD, ABPP

Committee Member: Julie Williams, PsyD, ABPP

WRIGHT STATE UNIVERSITY

SCHOOL OF PROFESSIONAL PSYCHOLOGY

May 6, 2016

I HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER MY SUPERVISION BY **SAMANTHA SANDERSON** ENTITLED **LEVELS OF SELF-COMPASSION AMONG INJURED DIVISION I ATHLETES** BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PSYCHOLOGY.

_____

Robert A. Rando, PhD, ABPP
Dissertation Chair

_____

Jeffrey B. Allen, PhD, ABPP
Associate Dean

Abstract

While there are numerous health benefits that result from engaging in athletics, sport participation also comes with an intrinsic risk of injury. In order to understand the injury process (i.e., injury risk factors and recovery variables), researchers have used various models to conceptualize preinjury risk factors and postinjury response. Although personality factors, stress, coping skills, emotional response, and other factors have been studied, self-compassion is a relatively new construct to the western world that has not been examined in the injured athlete population. Self-compassion requires being kind to oneself and taking a nonjudgmental approach to one's suffering. High self-compassion is related to cognitive flexibility and low levels of anxiety, depression, and stress. In addition, social support has been found to be a moderating factor of negative life stress and promotes psychological well-being, variables that may impact injury recovery. The current pilot study examines the level of self-compassion and its relationship to level of social support of injured athletes. The two hypotheses are as follows: injured athletes will have a lower level of self-compassion in comparison to the overall athlete population and among injured athletes there will be a positive relationship between level of self-compassion and perceived social support. Through electronic distribution to Division I athletes at a Midwest university, seven injured and 31 non-injured athletes completed the Self-Compassion Scale and the Multidemensional Scale of Perceived Social Support. The results indicated no significant difference in level of self-compassion between injured and non-injured athletes. In addition, self-compassion and perceived social support of injured athletes was not significantly correlated, but were significantly correlated for non-injured athletes and combined injured and non-injured athletes. Although the hypotheses of this

pilot study were not supported, the significant relationship between self-compassion and

perceived social support found in the non-injured and combined groups support future

research with injured athletes as the results were likely limited by the small sample size.

Table of Contents

Chapter 1

Thousands of athletes participate in collegiate sports every year (NCAA, 2015). While there are numerous health benefits that result from engaging in athletics, sport participation also comes with an intrinsic risk of injury. The drive to compete sometimes leads athletes to play through injuries which often leads to repeat injures and may have long-term implications (Brooks, 2012). There are many factors that impact injury recovery including pre-injury risk factors, response to injury, and rehabilitation adherence. Continuing to gain knowledge about the sport injury process is important in understanding the entire athlete experience and provides an avenue for improving overall short- and long-term health. The terms "student-athlete" and "athlete" in this document will refer to the collegiate population.

Athletes and Injury

Athletic injury recovery is of great interest to the psychology community, especially as it relates to resilience. Although the immediate focus after injury is to return the athlete to sport participation, one should recognize that the sport injury process is complicated and involves a number of physical, psychological, social, and environmental factors. These variables interact with one another to impact injury and recovery. The focus of this paper will be on the psychological aspects of the sport injury process, which encompasses preinjury vulnerabilities to full recovery. A brief overview is provided here and a detailed review of the literature will be presented later.

Models of Preinjury Factors

In order to better understand the complexities of the injury process, researchers have applied existing models (e.g., grief and cognitive appraisal) to sport injury and developed new conceptual models specific to sport injury. Andersen and Williams (1988) developed a stress model in order to conceptualize sport injury through preinjury factors that are largely related to the athlete's characteristics and skills. Later, Wiese-Bjornstal (2010) expanded on the athlete's personal factors and skills in the Sport Injury Risk Profile. They separated personal factors into biological and psychological factors and added external variables that include sociocultural and physical environment.

Stress and athletic injury. Andersen and Williams (1988) presented a model that conceptualizes injury as it relates to the athlete's stress response. They define preinjury risk factors as personality and coping resources that interact with the athlete's history of stressors to create a stress response that may increase injury risk. The two assumptions that underlie the relationship between stress response and injury are that stress results in an increase in muscle tension and a decrease in attention. An injury occurs when this stress is present in a potentially stressful athletic situation.

Sport injury risk profile. The Sport Injury Risk Profile developed by Wiese-Bjornstal (2010) conceptualizes preinjury risk factors as coming from internal and external variables. The internal variables include biological and psychological characteristics of the athlete. The external variables originate from the physical and sociocultural environment. All of these sources of injury risk interact to either increase or decrease an athlete's susceptibility to injury and injury occurrence.

Preinjury Factors

Preinjury factors are individual variables that may increase or decrease the chances of an athlete suffering an injury. One risk factor is a history of injury; athletes who have experienced previous injury are more likely to experience future injuries (Kleinert, 2002b; Steffen, et al., 2009; Jacobsson, et al., 2013). For example, a football player who has experienced a concussion is more susceptible to incurring another concussion. However, the risk of repeat injury stems from a complex foundation that includes personality variables, coping skills, and the degree of physical recovery from the initial injury before returning to sport. How these variables interact with one another and the degree to which they are impacted by the environment will determine injury risk.

Personality factors such as hardiness and trait anxiety have been examined as potential protective factors for sports injury. Perry (2015) defines "hardiness" as "the capacity to remain healthy under life's stressors" (p. 65). Wadey, Evans, Hanton, and Neil (2012) found that injury occurrence decreased as hardiness of the athlete increased. Further, hardiness has been found to mediate the impact of factors that can increase recovery time (Ford, Eklund, & Gordon, 2000). Additionally, "trait anxiety" is a predisposition that an individual has to interpret certain situations as dangerous, whereas state anxiety is transient and situation specific (Perry, 2015). Trait anxiety has been found to be a moderator of positive life stress (Petrie, 1993). Anxiety may serve as a protective factor against subsequent severe injury; however, it may also put athletes at a higher risk for less severe injury (Kleinert, 2002b). Although relatively few studies have examined the impact of hardiness and trait anxiety on sports injury and recovery, results thus far suggest that these variables serve as protective against sport injury to some degree.

Another preinjury factor is the history of life stressors (Andersen & Williams, 1988). Throughout the literature, life stress is defined, measured, and operationalized in different ways. This incongruence may be one reason that research outcomes on the relationship between life events and athletic injury risk is variable. For example, Petrie, Deiters, & Harmison (2014) did not find a significant relationship between life events and injury, but other studies have found life stressors to be a risk factor for new injuries (Steffen, Pensgaard, & Bahr, 2009; Johnson & Ivarsson, 2011; Rogers & Landers, 2005). One interesting finding by Sibold and Zizzi (2012) suggested that high negative life event stress may actually delay the onset of sports injury. The researchers acknowledge that this finding was unexpected. According to them, possible reasons for this outcome may be due to the way "life stressors" was measured and the presence of possible buffers to injury that they did not measure, such as social support. This result exemplifies the need to better define "life stress", understand the impact of life stress on sports injury, and determine what may mediate life stress that results in an increase or decrease risk of sports injury. Careful attention should be given to how studies operationalized life stressors to ensure accurate interpretation and application of research outcomes.

Injury risk may also be affected by daily hassles which are as equally difficult to consistently operationalize across studies as life stressors. Further, daily hassles vary based on the demands of the day which makes it challenging to accurately measure them over time. Therefore, it is not surprising that research outcomes range from no significant relationship between daily hassles and sports injury to a significant relationship such that more daily hassles leads to an increase in injury occurrence (Hanson, McCullagh, & Tonymon, 1992; Ivarsson & Johnson, 2010; Ivarsson, Johnson, & Podlog, 2013). These

4

findings need to be clarified through future research that targets the definition of daily hassles and controls for time by using daily hassle measurements closer to the time of injury. Overall, even though the findings for history of stressors are mixed, there is evidence that certain forms of stress positively and negatively impact sports injury.

Finally, coping resources (or coping skills) are a preinjury factor that may serve to reduce injury occurrence. According to Andersen and Williams (1988), "coping resources comprise a wide variety of behaviors and social networks that help the individual deal with the problems, joys, disappointments, and stresses of life" (p. 302). Some examples of coping skills include consistent sleep patterns, relaxation techniques, and social support. Hanson, et al. (1992) found that perceived coping resources are a protective factor for sports injury, as athletes with higher perceived coping resources were injured less frequently. A few studies found a significant negative correlation between coping resources and perceived stress; therefore, coping resources may act as a buffer to mediate the impact of life stress on sports injury (Andersen & Williams, 1988; Surujlal, Van Zyl, & Nolan, 2013). Finally, some studies have not found a significant relationship between coping resources and sports injury occurrence (Petrie, 1992; Steffen, et al., 2009; Johnson & Ivarsson, 2011). Perhaps, the timing and repeated measures of coping resources during recovery would help determine effective coping for different stages of the injury process.

Even though research in this area is not conclusive, there is evidence that personal and situational preinjury factors can positively and negatively impact the sport injury process. Additionally, there is evidence that some factors, such as coping resources and stress, interact to impact injury occurrence and recovery. Determining how to

5

consistently operationalize each variable will be important in moving forward with research.

Models of Response to Sport Injury

Once an athlete has been injured some preinjury factors continue to impact recovery, like trait anxiety and injury history, and additional variables may have a role in the length of the recovery process. Similarly to the conceptualization of preinjury risk factors, researchers have used different models to understand the response to sport injury. Unlike the preinjury models, most of the response to injury models were pre-existing models created for broad concepts and have been applied to sport injury including the grief stage model, the cognitive appraisal model, and the transtheoretical model (Evans & Hardy, 1995; Wiese-Bjornstal, 1998; DiClemente, 2005).

Grief stage model. A few researchers have applied the five-stage grief model proposed by Kübler-Ross (1969) to the sport injury recovery process. Hardy and Evans (1995) suggest that the stage model is a misnomer as grief is not linear; rather it is a dynamic process that is dependent upon the individual. Van Der Poel and Nel (2011) found the presence of all five of the grief stages in athletes who were in the process of rehabilitation for sport injuries with evidence of the stages overlapping.

Cognitive appraisal model. Cognitive appraisal models are used to conceptualize response to sport injury with an emphasis on cognitions as a determining factor for how the athlete will respond to injury (Brewer, 2007). Although there are a number of cognitive appraisal models, the integrated model proposed by Wiese-Bjornstal, Smith, Shaffer, and Morrey (1998) will be discussed as it was developed for the sport injury and rehabilitation process. This model highlights the contributing factors to the cognitive

6

appraisal process that occurs following sport injury including personal factors (i.e., injury variables and individual differences) and situational factors (i.e., sport, social, and environmental). Further, the model proposes behavioral and emotional responses to injury that are mediated by the cognitive appraisal process. Research on the application of this model is limited, but there is evidence that a relationship exists between cognitive appraisal and mood disturbance, as well as cognitive appraisal and coping skills (Albinson and Petrie, 2003).

Transtheoretical model. The transtheoretical model is a way of determining intentional behavior change (DiClemente, 20005). There are five stages in this model that are much like the grief stages in terms of being dynamic in nature. The five stages include: precontemplation, contemplation, preparation, action, and maintenance. Unlike the grief stages, there is a certain degree to which the transtheoretical stages must be met in order to support and maintain behavior change (DiClemente, 2005). The two applications of this model to sport injury thus far consist of determining readiness for surgery to repair the anterior cruciate ligament and determining readiness for rehabilitation following sport injury (Udry, Shelbourne, & Gray, 2003; DiClemente, 2005).

Emotional Response to Sport Injury

Regardless of how the sport injury response is conceptualized, the common assumption is that there is an emotional response to the injury, which varies based on mood state, type of injury, coping skills, and social support. Mood changes have been found to occur throughout the course of injury with an initial response that is more negative, but improves as recovery progresses (Quinn & Fallon, 1999). Also, the type of

sports injury affects the emotional response. For example, athletes who suffer musculoskeletal injuries often respond with anger while athletes who incur a concussion often experience fatigue and decreased vigor (Hutchison, et al, 2009). Understanding the different emotional responses that may occur based on injury type may allow for more effective interventions.

Although coping skills and sports injury are present throughout the literature, the lack of research on coping skills postinjury is notable. Smith, Schutz, Smoll, and Ptacek (1995) created the Athletic Coping Skills Inventory to measure postinjury coping, but it has not been widely used. In terms of coping related to different injury types, one study found that athletes who suffered a concussion used significantly less coping resources than athletes with musculoskeletal injuries (Kontos, Elbin, Appaneal, Covassin, & Collins, 2013). The authors suggest that perhaps these results reflect the passive nature of concussion recovery compared to the active process of musculoskeletal rehabilitation.

Finally, social support has been examined in relation to athletic injury. Although social support has a significant presence in sport injury research, there remains a lack of consensus on a definition. As reported by Arvinen-Barrow and Pack (2013), a common theme among the proposed definitions of social support is that people act "as a provider of resources when needed" (p. 118). Most social support before injury comes from family and friends while postinjury support tends to be athletic trainers, physicians, and coaches (Yang, Peek-Asa, Lowe, Heiden, & Foster, 2010). Overall, athletes tended to rely more on athletic trainers during recovery and there was evidence that male and female athletes have different social support needs that can be capitalized on during recovery. Finally,

8

social support has been shown to mediate the impact of stress level and injury severity on life satisfaction (Malinauskas, 2010).

Self-Compassion

Self-compassion is a nonjudgmental view of oneself regardless of acknowledged mistakes, failures, or flaws (Neff, 2003b). Although this concept has long-standing tradition in Buddhism, this concept is fairly new to the United States as the cultural values in this country often rely on being in competition with one another. While competition requires self-evaluation to be based on comparison to other people, self-compassion requires a nonjudgmental acceptance of one's location in life (Neff, 2003b). Self-compassion is composed of three components: showing kindness to oneself (self-kindness), acceptance of suffering as part of the human condition (common humanity), and being present in the moment (mindfulness) (Neff, 2003b). These components and the requirement of a nonjudgmental attitude differentiate self-compassion from self-esteem. For example, self-esteem contains a self-evaluation component and comparison to others, whereas self-compassion is void of evaluation and competition (Neff, 2003b).

Research indicates that self-compassion is an important factor in emotional well-being. For example, self-compassion has been found to be correlated to lower levels of anxiety (Neff, Kirkpatrick, and Rude, 2007; Costa & Pinto-Gouveia, 2013). There are multiple studies that have shown self-compassion serves as a mediator of depressive symptoms (Raes, 2010; Raes, 2011; Terry, Leary, & Mehta, 2012; Van Dam, Sheppard, Forsyth, & Earleywine, 2011). Further research found that a significant negative correlation exists between depressive symptoms and self-compassion (Johnson & O'Brien, 2013; Krieger, Altenstein, Baettig, Doerig, & Holtforth, 2013). In addition, self-

9

compassion has been shown to buffer depression and the use of self-compassion interventions can decrease depressive symptoms (Raes, 2010; Johnson & O'Brien, 2013).

As mentioned previously, stress level often impacts emotional well-being. Self-compassion has been found to be negatively correlated with stress and mediates the effect of negative life events (Leary, Tate, Adams, Allen & Hancock, 2007; Birnie, Speca, & Carlson, 2010). Also, the self-kindness component of self-compassion has been shown to positively correlate with and predict physical well being (Neff, 2003a). Finally, self-compassion is positively correlated with cognitive flexibility and negatively correlated to negative cognitive style (Martin, Staggers, & Anderson, 2011; Zhou, Chen, Liu, Li & Su, 2013). Although research on self-compassion is relatively new, the findings suggest numerous psychological benefits to having high self-compassion. Further research on self-compassion has a wide array of possibilities, one of which will be addressed in this current study.

Current Study

The research conducted on athletic injury is vast with room for growth. The same can be said about research on self-compassion. The preinjury risk factors as conceptualized through the stress model by Andersen & Williams (1988) complement the benefits of self-compassion as it has the potential to reduce stress and mediate the impact of negative life events (Leary, Tate, Adams, Allen & Hancock, 2007; Birnie, Speca, & Carlson, 2010). Since negative life events often increase stress and high stress correlates with low-self compassion then perhaps low-self compassion could serve as an indicator of risk for athletic injury. In reference to preinjury, this information could be used for injury prevention.

In regard to postinjury, self-compassion levels are of interest due to the emotional response that can follow injury. If self-compassion is found to be low in injured athletes while negative affect and emotional response are high, then self-compassion interventions may be beneficial. Moreover, cognitive responses may be impacted by self-compassion as negative cognitive style decreases as self-compassion increases (Zhou, Chen, Liu, Li & Su, 2013). The cognitive flexibility that has been shown to have a relationship with self-compassion will likely be beneficial for athletes who have been injured in order for them to adapt as the stages of recovery progress (Martin, Staggers, & Anderson, 2011). Self-compassion has the potential to be used to prevent injury and improve recovery.

In addition, social support has shown to buffer the negative impacts of stress level and injury severity (Malinauskas, 2010). The type of social support may vary based on the severity of injury, the status of the athlete (starter vs nonstarter), and gender. Through the literature, social support appears to be a complex construct that may serve to improve an athlete's response to injury. If a relationship between social support and level of self-compassion can be determined, building social support may be one way to impact an athlete's level of self-compassion.

The current study is a pilot study that examined the level of self-compassion of injured athletes compared to the overall athlete population in order to determine if self-compassion is relevant to the injury process from pre- to post-injury. It is expected that injured athletes will have lower levels of self-compassion as compared to the overall athlete population. Also, it is expected that injured athletes with a high level of perceived social support will have high levels of self-compassion.

Chapter 2

Review of the Literature

Sports play an important role in the social culture in America. According to a report conducted by the National Collegiate Athletic Association (NCAA) (2015) around 482,553 male and female student-athletes participate annually in collegiate sports under the umbrella of the NCAA. The benefits of being a student-athlete include building or strengthening individual characteristics (e.g., dedication, discipline, commitment, and problem solving), as well as learning how to function in a group (e.g., teamwork and communication) (Larimore & Chitiyo, 2007). There are social advantages such as built-in support and friendships with teammates. The most prominent benefit is promotions of physical health and well-being (Larimore & Chitiyo, 2007).

While the benefits of playing sports are well-researched and interest in enhancing sport performance is at an all-time high, the reality remains that there are negative consequences that exist from participating in sport. There is a lot of stress and strain on the body as well as risk of injury, from minor to catastrophic.

Brooks (2012) surveyed 257 former Division I college athletes to examine the long-term physical effects of participating in collegiate sport. Athletes completed a self-report survey and underwent physiological measurements during their last year of college sport. Five years later, a follow-up survey and self-report of physiological information was collected. The majority of the athletes competed for four years in collegiate sport and

did not continue into professional sports. The number of years each athlete participated in sport before college ranged from four to 13 years. Approximately half of the athletes reported major injuries while performing in college and half of the athletes reported having a chronic injury during collegiate competition. Based on the five-year follow-up, 33% of athletes experienced limitations in daily living and 44% experienced limitations in physical activity. Not surprisingly, 79% of athletes reported that during participation in collegiate sport, they engaged in practice while injured. While the purpose of the Brooks (2012) study was not to link playing with an injury to long-term symptoms, it casts light on an important aspect of the athlete mentality that is fostered in sport culture, playing through pain without regard for long-term ramifications. These results provide supporting evidence for the need to better understand the sports injury process.

Athletes and Injury

Participating in athletics comes with a natural risk of injury that not only halts participation in sport, but also disrupts the daily life of the injured athlete. This disruption may cause psychological distress or other difficulties for the injured athlete that can hinder the recovery process. When an injury occurs, the goal is to return the athlete to preinjury status as soon as possible. Research is imperative to safely achieve this goal. The variables that impact the recovery process typically fall into one of two categories: preinjury factors and response to injury. Preinjury factors are important to understanding possible ways to predict and prevent injury while variables that impact the response to injury are central to understanding what factors may promote or hinder the recovery process. Continued research on both sets of factors is imperative to have a better understanding of the injury process and determine effective interventions.

Models of Preinjury Factors

As mentioned previously, researchers have used models of sport injury to better understand the complexities of the injury process. The model of stress and athletic injury developed by Andersen and Williams (1988) and the Sport Injury Risk Profile developed by Wiese-Bjornstal (2010) are two common models used to conceptualize preinjury factors for sport injury.

Stress and athletic injury. The stress-injury model proposed by Andersen and Williams (1988) focuses on how psychological stress impacts sport injury occurrence with consideration of common stressors. There are two main mechanisms that underlie the stress-injury relationship in this model: negative cognitive appraisal and enhanced physiological response and decreased attention. First, athletes experience a number of stressful situations (e.g., competition, practice) that require certain abilities to be successful. In order to determine if the athlete's resources are adequate, s/he must engage in cognitive appraisal and reappraisal of the situation. If the appraisal results in a perception that the demands of the situation exceed his/her ability then the stress response will increase significantly. The appraisal process may also include consideration of the consequences if the athlete is not successful in a given situation. Concerns around the possible outcomes can increase the stress response, especially if the consequences impact their athletic career or self-esteem.

Second, when stress is heightened the chance of injury is more likely due to the body's increased physiological response and the reduced capacity for attention. Physiological response has been proposed as one mechanism underlying the stress-injury relationship as" generalized muscle tension can disturb motor coordination and reduce

flexibility, thus contributing to strains, sprains, and other musculoskeletal injuries"

(Andersen & Williams, 1988, p. 299). Further, stress alters capacity for attention such

that athletes attend to stimuli that are not important to the situation and their visual field

may be narrowed. If the visual field decreases and the ability to rely on peripheral vision

is jeopardized, then it is likely that important cues for decision-making will be missed

and injury may occur.

Finally, in order to understand the stress-injury relationship it is important to

consider individual factors that contribute to the stress response which include the

athlete's personality, history of stressors, coping resources. Personality factors (e.g.,

hardiness, trait anxiety) influence the athlete's perception of a situation which informs

his/her cognitive appraisal. Certain personality may factors increase negative cognitive

appraisals and result in injury. Likewise, the history of stressors (i.e., life events, daily

hassles, and previous injury) an athlete experiences may heighten stress levels and

increase the chance of injury occurrence. Lastly, coping resources are ways in which an

athlete deals with stressors, disappointments, challenges, and successes that are inherent

in life. Effective coping skills reduce injury occurrence by acting as a buffer for life

stress; therefore, an athlete with ineffective coping skills is more likely to be injured.

Individual factors will be explored in-depth below.

Sport injury risk profile. Wiese-Bjornstal (2010) introduced a biopsychosocial

model of sport injury called the Sport Injury Risk Profile that is based on previous work

by Wiese-Bjornstal (2009). Within this model, the athlete's behavior and risk

vulnerability (i.e., exposures, choices, and hazards) interact with internal and external

factors to determine sport injury risk. Internal factors are comprised of biological (e.g.,

performance mechanics, prior injury, nutrition, and body composition) and psychological

(e.g., coping, attitude, life event stress, and mood state) factors. External factors are

comprised of physical (e.g., weather, sport type, and intensity of play) and sociocultural

(pressure from others, cultural context, and coaching quality) factors. While some of the

variables in this model are similar to the stress-injury model, the Sport Injury Risk Profile

includes sociocultural factors which are an important consideration for injury risk. For

example, the social expectation that athletes are "tough" and should play through pain

interacts with internal factors and injury risk may increase based on their resulting

behavior. For the purposes of this study, the internal factors will be the focus, but future

research should consider incorporating sociocultural influence on sport injury.

Preinjury Factors

In order to best understand the injury process, it is important to consider

individual and environmental factors as well as how they interact to predispose an athlete

to injury. Preinjury factors are variables that decrease or increase the likelihood that an

injury will occur (Andersen & Williams, 1988).

Personality factors. Throughout the sport psychology literature there has been an

interest in the potential for a set of personality traits that together lead to optimal athletic

performance. Although no specific profile has been determined, certain personality

factors have been identified as beneficial for athletic success based on their mediating

effect on stress. Two of these personality factors are hardiness and trait anxiety, which

are important in the model of stress and athletic injury (Andersen & Williams, 1988).

Hardiness. One personality factor that is examined as a protective factor related

to stress response in the literature is hardiness (Andersen & Williams, 1988; Kobasa,

Maddi, & Courington, 1981). As described by Wadey, et al. (2012), hardiness is comprised of three components: commitment, control, and challenge (Kobasa, et al., 1982). Commitment means being an active participant in one's own life by being involved in situations and challenges that one encounters. Control is feeling and acting in an influential manner in one's life regardless of circumstances. Challenge refers to the belief that change is normal and is viewed as an opportunity for growth.

Using this conceptualization of hardiness, Wadey, et al. (2012) followed 694 athletes for two years. The Dispositional Resilience Scale was administered to all participants to measure hardiness and its components: commitment, control, and challenge. During the two years 104 athletes met the inclusion criteria for the study as they incurred an injury that excluded them from competition for at least two weeks. Results indicate that injury occurrence decreased as hardiness increased. Additionally, hardiness reduced the impact of negative life events on injury status. One limitation of this study was that the preinjury measures were only administered one time. The researchers acknowledged that it is recommended to assess preinjury factors on multiple occasions. Ideally there would be minimal time between when the preinjury factors were measured and when injury occurred to limit the influence of other factor.

In another study, Ford, et al. (2000) collected data on hardiness over a three-week period using the Personal Views Survey, which is a 50-item inventory that provides scores for three subcomponents of hardiness and a composite score. Based on the results, hardiness was significantly correlated with faster recovery time. For example, athletes who were experiencing high positive life stress and were low in hardiness experienced longer recover time. Wadey, et al. (2012) cautioned those consulting the research to be

17

particularly attentive to how hardiness is defined (i.e., single construct or multifactorial) and how it is measured as it is defined and operationalized in different ways throughout the literature.

     Trait anxiety. Andersen and Williams (1988) identify trait anxiety as a factor that can increase injury risk. Research that has examined the impact anxiety has on injury is mixed in determining if it is a significant predictor of injury. Petrie (2014) found that Division I football players who experienced anxiety and high stress missed significantly more days of sport participation than those who did not report anxiety. In addition, trait anxiety has been found to account for 11% of total variance of injury occurrence in high school athletes (Johnson & Ivarsson, 2011). In contrast, Devantier (2011) collected data from 87 professional soccer players in Denmark and results indicated that trait anxiety did not serve as a predictor of injury. Likewise, Ford, et al. (2000) found that trait anxiety did not impact the stress and injury relationship in athletes ages 16 to 34. Alternatively, the results from Hanson, et al. (1992) indicate that trait anxiety in Division I and II collegiate track and field athletes did not relate to frequency of injury but did provide a weak discrimination of injury severity.

     Kleinert (2002a) defines sport injury trait anxiety as, "a widely indefinite concern or worry to sustain an injury in different sport situations" (p. 5). To explore this construct, Kleinert (2002b) administered a questionnaire to 251 university athletes and repeated the questionnaire four months later with 206 athletes. The questionnaire included the Sport Injury Trait Anxiety Scale, as well as additional questions about injuries including severity of injury ("severe" was more than one week and "less severe" was less than one week). Based on the findings, there was a main effect of sport injury trait anxiety in

relation to injury experience. When high injury experience and high sport injury trait anxiety were present together, they served as a protective factor for future severe injuries; however, these individuals suffered less severe injuries more frequently than any other group. In addition, low sport injury trait anxiety with high injury experience resulted in a higher rate of severe injury. This suggests that sport injury trait anxiety may serve as a protective factor to severe injury but may be a risk factor for less severe injury. Trait anxiety was not included in the analysis due to the lack of evidence in past research for an existing linear relationship between trait anxiety and injury. This should be taken into consideration as sport injury trait anxiety seems to be a different construct than trait anxiety outside of sports. The manner in which sport injury trait anxiety is measured should be compared to how trait anxiety is measured to determine the distinction between these constructs and their impact on sport injury.

History of stressors. Since the response to stressors impact injury risk, Andersen and Williams (1988) recommended assessing history of stressors such as life events, daily hassles, and previous injury.

Life events. Petrie, et al. (2014) defined life stress as "the extent to which major life events (e.g., death of a loved one, losing a job) have been experienced during a set period of time (e.g., year)" (p. 14). Using this definition, they examined the effects of positive and negative life events on injury outcome in Division I-A football players. Neither positive nor negative life stress were significantly related to time loss due to injury. In contrast, Steffen, et al. (2009) conducted a questionnaire with 1430 teenage female soccer players over an 8-month period. In this sample, high life stress was identified as a risk factor for new injuries. Further, among a group of 82 high school

19

athletes, Johnson and Ivarsson (2011) found negative life event stress contributed to injury occurrence.

Another study, Sibold and Zizzi (2012) surveyed 177 male and female Division II athletes across multiple sports. The results indicated that as negative life event stress increased, the time until an injury occurred became longer. There may be multiple reasons for this outcome. First, there is a possibility that coping mechanisms may have acted as a moderator, but these were not measured in this study. Additionally, the use of retrospective life stress instead of current stress may be problematic as humans are generally poor historians. Future research should control for coping mechanisms and focus on current life stressors to increase the incidence of accurate reporting.

Using the idea presented by Andersen and Williams (1988) that stress can reduce the visual field, Rogers and Landers (2005) studied life stress and injury in 171 varsity high school soccer players. Based on the results, injury occurrence increased as total life event stress and negative life event stress increased. Additionally, narrowed peripheral vision predicted injury occurrence. This supports Andersen and Williams (1988) proposal that life stress contributes to injury risk and that one mechanism is through changing peripheral vision. Although some studies did not find a relationship between life stress and injury, there appears to be more evidence that supports a stress-injury relationship.

Daily hassles. Andersen and Williams (1988) included daily hassles as a source of stress that may increase the risk of injury; however, it does not appear to be a well-researched construct. Wiese-Bjornstal (2010) indicated that daily life hassles have been implicated in contributing to injury risk, but no sources were cited. This researcher found

only a few examples of studies in which daily hassles were examined to determine the possible impact on risk of athletic injury.

Hanson, et al. (1992) conducted a questionnaire with 181 Division I and II track and field athletes. The researchers used a modified version of the Everyday Problem Scale that consisted of 20 items and measured daily hassles from seven areas: schoolwork, employment, finances, family, living situation, romantic relationships, and other social relationships. Each athlete was asked to indicate if s/he experienced the item in the last two weeks. No significant relationship between daily hassles and risk of athletic injury was established; however, this result may have been confounded by the amount of time between when the measure was administered during preseason and when injury occurred. Since daily hassles change over time, it is likely that the endorsed items in preseason are different from daily hassles in-season. This procedural decision may have impacted the results. Another consideration is to determine if there is another questionnaire that is a better measure of daily hassles for athletes. Either way, it would likely have been beneficial to account for the variability of daily hassles by administering the measurement multiple times and closer to the time of injury.

A second study compared daily hassles of injured and non-injured elite male soccer players ages 16 to 36 (Ivarsson & Johnson, 2010). The 18 participants completed the Daily Hassles Scale over a 12 week period. The Daily Hassles Scale is a 53-item inventory with a 4-point Likert scale (0 - not at all to 3 - very much). The scale was used to determine if various situations were experienced as a hassle or uplifting. If an injury occurred, the athlete was not asked to complete the questionnaire during rehabilitation. Although the difference between athletes who did not suffer an injury and those who did

21

was not significant, there was a tendency for injured athletes to report a higher level of daily hassles. The rationale for excluding injured athletes from continuing to report their daily hassles was not provided. Including this information may have contributed to postinjury information, but it is congruent with the purpose of the study. Further, the small sample size may have contributed to the lack of significance in the results.

Finally, Ivarsson, et al. (2013) examined daily hassles and injury in male and female elite soccer players. The Hassle and Uplift Scale was used to determine daily hassles on a 4-point Likert scale (0 - not at all to 3 - very much) across a 13 week period. As previously mentioned, daily hassles change over time; Ivarsson, et al. (2013) took this into account and administered the Hassle and Uplift Scale multiple times. They used scores two weeks prior to injury for analysis to better account for stress impacting injury. Results indicated daily hassles had a direct, positive relationship with injury occurrence serving as a moderator between negative-life-event stress and injury occurrence. In addition to repeatedly measuring daily hassles, this study had a larger sample size (n=56) than the study conducted by Ivarsson and Johnson in 2010. The results support the argument that daily hassles need to be examined in relation to sport-related injury. The fluidity of daily hassles can result in an acute change of stress level for the athlete and increase his/her susceptibility of injury, whereas life stress research examines longer period of time before injury. Comparing these two could be advantageous in future research, especially to inform specific interventions.

Previous injury. Kleinert (2002b) addressed a question about stress and injury posed by Andersen and Williams (1988): "Do personality factors interact with the history of stressors?" (p. 301). As mentioned previously, Kleinert (2002b) examined the

relationship between sport injury trait anxiety and injury occurrence in 206 male and female university athletes. The results indicated that individuals with high injury experience and high injury anxiety are more apt to suffer a less severe injury but experience a protective factor against severe injuries. In addition, when using represented injury (retrospective report rather than current injury), athletes who were less than one year removed and who had high injury anxiety were at higher risk of injury. Further, those who were five years removed from their injury experienced a protective factor when they experienced high injury anxiety while low injury anxiety made the athletes more susceptible to injury. Perhaps the length of time removed from the injury allowed for adjustment to high injury anxiety which resulted in protective effects against severe injury. Regardless, it is apparent that injury history interacted with anxiety to impact injury occurrence. Although these results are not based on current injury which may be a limitation, the consideration of previous injury experiences is important when assessing injury risk.

Other studies have examined previous injury as a possible risk factor for future injury without considering personality factors. In a study conducted by Steffen, et al. (2009), teenage female soccer players experienced an increased risk of suffering a new injury as the number of previous injuries increased. Likewise, Jacobsson, et al. (2013) followed 292 youth and adult elite athletes over a one year period. Youth male athletes (age 17) who suffered a severe injury the previous year were four times more likely than youth female athletes to endure an injury. Adult males ($\bar{x}$ age = 24) were also more likely to suffer an injury. Overall, research supports previous injury as a risk factor for future injury. Future research should continue to examine if psychological factors, incomplete

rehabilitation, or other variables contribute to the increased risk of injury when previous injury is indicated.

Coping resources. Collegiate athletes face a number of stressors within and outside of competition. They have the unique demands of performing as an elite athlete while simultaneously maintaining their status as a college student in good standing. Therefore, coping strategies that address stress management may be beneficial for student-athletes to reduce their stress and risk for injury.

Andersen and Williams (1988) define coping behaviors as ways in which an athlete deals with stressors, disappointments, challenges, and even successes that are inherent in life. They differentiate components of coping behaviors as general (e.g., sleep patterns, time management, and study skills), social support, and stress management techniques. From their perspective, coping resources not only reduce injury occurrence indirectly by acting as a buffer for life stress but directly impact the stress response and injury outcome. Additionally, Wiese-Bjornstal (2010) presented proactive coping, or development of coping skills, as a buffer to life stress and a moderator to reduce injury occurrence.

Surujlal, et al. (2013) examined five coping skills as they relate to perceived stress and life satisfaction in 281 college-age student-athletes. The coping skills were identified as coping with adversity, goal setting/mental preparation, freedom from worry (i.e., level of concern about performance), confidence and achievement motivation, and coach-ability. A significant negative relationship was found between all five coping skills and perceived stress such that as coping skills increased, perceived stress decreased. In addition, perceived stress accounted for 13.4% of the variance in life satisfaction: as

perceived stress increased, life satisfaction decreased. The coping skills of freedom from worry and goal setting/mental preparation accounted for 7.6% of the variance in life satisfaction. Specifically, athletes who worry less about their performance and set specific goals to achieve experience an increase in life satisfaction and a decrease in perceived stress. This study highlights that adequate coping skills moderate stress in the uniquely demanding life of a college student-athlete.

Although, injury was not a variable in the Surujlal, et al. (2013) study, it stands to reason that if stress is a risk factor for injury then coping resources to reduce stress likely have an indirect impact on the reduction of injury risk. Along these lines, Hanson, et al. (1992) studied 181 college athletes to determine the relationship between life stress, coping resources, and athletic injury. Results indicated that coping skills serve as a protective factor from injury as athletes with higher coping resources were less likely to suffer an injury. However, the authors caution that there needs to be further research in this area that uses sport specific measures and measures variables over time as v=coping skills and other variables can change.

Other studies have attempted to determine if there is a direct relationship between coping resources and injury occurrence. Petrie (1992), Steffen, et al. (2009), and Johnson and Ivarsson (2011) conducted studies along this line and failed to find a significant relationship that suggested coping resources may be a predictor of injury or injury outcome. Interestingly, Steffen, et al. (2009) found that previously injured athletes were more likely to use emotion-focused coping strategies; however, the use of emotion-focused coping did not predict future injury. As with all research, inherent limitations exist in each of these studies such as sample size, self-report, and limitations of available

measures; however, it appears reasonable to conclude that coping skills likely do not have a direct impact on injury occurrence.

Reflecting on the research so far, the study conducted by Surujlal, et al. (2013) provides the best foundation for researching coping skills. Rather than there being a direct relationship between coping skills and injury, it is more likely that coping skills serve as a mediating factor on other variables that directly impact injury. For example, coping resources may buffer the impact of stress on injury occurrence and prediction such that better coping skills reduce stress and result in fewer injuries (Surujlal, et al., 2013). Future research should focus on the mediating role coping skills have on variables that impact injury, such as stress, as well as provide additional information about types of coping skills that are effective.

Response to Injury

When an injury occurs, the priority of the athletic system (e.g., athletic department, coaches, and teammates) is to return the athlete to play as soon as possible. In order to minimize recovery time and better understand response to injury, researchers have applied pre-existing psychological models that address grief, cognitive processes, and behavior to sport injury. In addition, researchers have examined the emotional response to injury through studying mood states, type of injury, and coping skills. Finally, social support has surfaced as a key psychosocial variable that has been studied to determine its role in sport injury recovery. All of the research taken together provides a broader picture of the injury process and how different variables may impact recovery.

Models of response to sport injury. As mentioned previously, researchers have attempted to better understand the complexity of sport injury and the recovery process by

applying pre-existing psychological models to sport injury. These models include the grief stage model, the cognitive appraisal model, and the transtheoretical model. While the theories will be presented individually, there are overlapping characteristics and it is possible to apply more than one model to sport injury at a time.

      Grief stage model. Historically, research has not provided a lot of evidence for the application of the stage model of grief to the athletic injury recovery process. Kübler-Ross (1969) proposed a five-stage grief model, including: denial and isolation of diagnosis or prognosis, anger, bargaining and possible postponing of acceptance, bereavement process, and acceptance. Evans and Hardy (1995) stated that their main criticism about using the grief stage model approach to sport injury is the assumption that the stages are linear. In contrast, the grief process is dynamic, thus conceptualizing it as if it were stepwise restricts the practical application of this model. According to Van Der Poel and Nel, 2011, Kübler-Ross's intention was not for the stages to be sequential. Evans and Hardy (1995) provided a quote from Kübler-Ross that indicated the grief stages are meant to serve as guidelines for understanding the different phases of the grieving process and are not to be viewed as a stepwise progression for every individual.

      Van Der Poel and Nel (2011) explored the Kübler-Ross model as it applies to athletic injury through a qualitative study. They interviewed 21 athletes about their injury process based on cognitive, emotional, and behavioral responses to different phases of injury. The phases were as follows: injury, treatment decision-making and planning, early rehabilitation, late rehabilitation, and return-to-competition. The results indicated that all five stages of grief were present for the injured athletes throughout the recovery process. Overall, 90.5% of athletes felt isolated, 85.7% expressed acceptance, 81% experienced

denial, 66.7% reported depression, 33.3% reported anger, and 4.8% engaged in bargaining. More importantly, the early and late rehabilitation stages emerged as the most difficult time for injured athletes as evidenced by the presence of greater isolation during these phases. Based on these results, the components of the five-stage grief model by Kübler-Ross appear to apply to sports injury. The results were congruent with the point made by Hardy and Evans (1995) that the stages were not meant to be stepwise as the stages overlapped during injury recovery. In fact, each phase of the injury process evidenced one or more stages of grief. Moreover, the overlapping of grief stages exemplifies the complicated nature of the grief and injury processes.

The limitations of this study include a small sample size, retrospective interview, and an age range that was quite large (12 to 35). However, this study highlighted that further exploration into how the components of grief present in injured athletes may be useful as psychological difficulty increased for athletes during rehabilitation. The clinical implications of these results may include preventative measures of difficulty in the latter stages of recovery, as well as effective timing of interventions.

Cognitive appraisal model. As described by Brewer (2007), "cognitive appraisal models are a group of related conceptual frameworks that borrow heavily from stress and coping theory and ascribe a central role to cognition in determining psychological reactions to sport injury" (p. 406). Though there are a number of examples, one well-developed model is an integrated model proposed by Wiese-Bjornstal, Smith, Shaffer, and Morrey (1998) that conceptualizes preinjury factors and postinjury response variables as stemming from personal and situational factors that interact to impact recovery outcome. Postinjury personal factors are determined by preinjury personality and the

28

athlete's history of stressors, while postinjury situational factors are impacted by preinjury coping resources and interventions. Subsequently, both postinjury personal and situational factors contribute to the athlete's response to injury by informing the cognitive appraisal process (i.e., goal adjustment, rate of perceived recovery, self-perception, sense of loss or relief, cognitive coping, and belief and attributions). Finally, within this model, recovery outcome is affected by the athlete's cognitive appraisal, emotional response, and behavioral response.

The relationship between cognitive appraisal, mood disturbance, and coping strategies was examined by Albinson and Petrie (2003) through a study of 84 collegiate football players. Cognitive appraisals were examined as a possible predictive factor. Additionally, they sought to explore the relationship between preinjury factors and postinjury cognitive appraisals and mood disturbance. Their results indicated that negative cognitive appraisals were related to mood disturbance, greater stress, and coping difficulties during early rehabilitation. Negative cognitive appraisals predicted greater mood disturbance one month from initial injury. Also, early primary and secondary appraisals predicted whether the athlete would later engage in active behavioral coping or active cognitive coping. Heightened stress and coping issues early in recovery predicted less active cognitive coping and more active behavioral coping later in injury recovery. As with the grieving model, understanding the effect cognitive appraisals may have on recovery is important in order to determining timely and effective interventions.

Transtheoretical model. The Transtheoretical Model is a way of viewing intentional behavior change across five stages: precontemplation (arousal of concern), contemplation (risk/reward analysis), preparation (commitment and planning), action

(shift toward new behavior through plan implementation), and maintenance (integration of new behavior as habitual) (DiClemente, 2005). The importance of each stage is expressed by DiClemente (2005): "unless each of these tasks is done well enough to support the action and ultimately the maintenance of change, the behavior change process will fail" (p. 6). As with the stage model of grief, the stages of the Transtheoretical Model are fluid rather than strictly sequential. Viewing the process of change as dynamic rather than linear has emerged as an important aspect to understand the change process.

The Transtheoretical Model was first applied to the sports world in order to determine adult and adolescent readiness for surgery following a tear of the anterior cruciate ligament (Udry, Shelbourne, & Gray, 2003). Expanding on this idea, Clement (2008) conducted a study applying the Transtheoretical Model to injured college athletes in order to determine their readiness for rehabilitation. Researchers examined the stages of change, processes of change, decisional balance, and rehabilitation beliefs and adherence. The results indicated that athletes further along in their stages of change reported more pros than cons to engaging in rehabilitation and used more behavioral processes of change than cognitive-based strategies. However, rehabilitation compliance and adherence did not appear to be related to the athlete's stages of change.

Although the Clement (2008) research supports the presence of the stages of change during the rehabilitation process of injured athletes, the application of the Transtheoretical Model to rehabilitation is limited based on this study. Future research will need to revisit the relationship between the stages of change and rehabilitation adherence and compliance. If a significant relationship is determined, it will inform the decision about when to intervene with an athlete to increase adherence and compliance.

Additionally, the stages of change may serve as a predictor for length of recovery. At this time, the utility of the Transtheoretical Model in sport injury rehabilitation is limited.

Emotional response to injury. Injuries disrupt the daily life of athletes by limiting or eliminating their participation in sport. This change in involvement alters their connection to the team and adds the demand of planning rehabilitation around their already busy schedules. These changes, not to mention the pain of discomfort from the injury, can lead to psychological distress for injured athletes. Taylor, Stone, Mullin, Ellenbecker, and Walgenbach (2003) define psychological distress in sport injury as "a negative reaction to an injury that impairs the athlete's functioning" (p. 46). While a certain level of emotional turmoil is expected following injury, sometimes the emotional response becomes maladaptive for the injured athlete and can impede recovery and day-to-day functioning.

Wiese-Bjornstal, et al. (1998) highlighted the role of psychological flexibility in the process of injury recovery by addressing the temporal flow of injury in sports. The temporal flow is dynamic and overlapping, including the athlete's reaction (reflexive and immediate), response (evaluative and dynamic), adjustment (reconciliation and coping), and return to play (readiness and confidence). Each aspect of the temporal flow is impacted by psychological factors like mood state, type of injury, and coping resources.

Mood state. Quinn and Fallon (1999) provided evidence of the dynamic process of mood states. They followed 136 injured elite athletes from injury onset through full recovery. The recovery was divided into four phases (initial, 1/3 of recovery time, 2/3 of recovery time, and full recovery) that were calculated based on a medical assessment of predicted recovery time with adjustments made for athletes who experienced longer than

expected recovery time. For each phase the athletes filled out a revised form of the

Profile of Mood States (POMS) to measure tension, depression, fatigue, vigor, confusion,

and anger.

Based on the POMS, negative mood states were highest in phase 1 and lowest in

phase 4. Conversely, positive mood (vigor) was lowest in phase 1 and highest in phase 4.

However, the relationship was not linear. For the most part, the greatest decrease of

negative mood and increase of positive mood occurred between phase 1 and phase 2.

Interestingly, tension, depression, confusion, and vigor increased from phase 3 to phase

4. An increase of tension and vigor with full recovery and anticipation of returning to

play appears understandable, but an increase in confusion and depression are unexpected.

Perhaps there is anxiety for athletes who are returning to sport based on fear of re-injury

that causes confusion and depression about returning to sport. Also, it could be that the

athlete is unsure if he/she wants to return to play. Wiese-Bjornstal and Shaffer (1999)

caution against assuming all athletes want to return to play as some athletes may use

injury as a way to stop playing without being viewed as a quitter. Additionally, positive

emotions were included in this study – which future research should examine to provide

more information about mood state changes throughout the recovery process.

Type of injury. Emotional response to sport injury may also vary based on the

type of injury. For example, Hutchison, et al. (2009) compared athletes with

musculoskeletal injuries to athletes who suffered a concussion. Their results indicate that

athletes who experienced a musculoskeletal injury evidenced an increase in anger while

those who incurred a concussion displayed a decrease in vigor and a significant elevation

of fatigue. Although both types of injuries elicited an emotional response, gaining a

further understanding of the different types of responses based on the type of injury may be used to better inform intervention and rehabilitation strategies.

Coping. As previously stated, athletes face many life stressors, including injury, that often result in emotional distress that has to be managed with coping skills. Coping skills are actions people take to deal with life difficulties and include behaviors, cognitions, and perceptions (Pearlin & Schooler, 1978). Effective coping skills are of such interest to the sport community that a unique inventory was created specifically for the athlete population. As reported by Smith, et al. (1995), the Athletic Coping Skills Inventory (ACSI) is a 42-item questionnaire developed in the mid-1980s that was subsequently refined to 28 items by Smith, et al. (1995). These items were separated into seven scales: coping with adversity, peaking under pressure, goal setting/preparation, concentration, freedom from worry, confidence, and coach-ability. Based on this study the ACSI appears to have utility in the athlete population; however, it has not been used to explore the relationship between coping skills and sport injury recovery time.

Social support. Although social support is not a well defined construct in the literature, Veiel and Baumann identified it as one of the most important variables in mental health and Thoits stated that it is one of the most frequently researched psychosocial variables (as cited in Rees & Hardy, 2000). Fernandes, et al. (2014) conducted an overview of research on sport injury recovery and social support. Based on their review, there is not a consensus on the definition of social support. Additionally, there are two manners in which researchers conceptualize how social support aids in the recovery process. First, some researchers explain the impact of social support as a buffer to psychological distress. With the presence of social support the athlete can reappraise

the injury as less threatening and his/her distress decreases which enhances effective coping. The second manner in which social support is viewed to impact injury recovery is through a direct impact on the athlete's psychological response. Without consensus on the definition and conceptualization, the ability to generalize research findings is limited.

In an attempt to create a more uniform understanding of social support, Rees and Hardy (2000) conducted a qualitative study with 10 internationally competing athletes, five females and five males. They ranged in age from 18 to 27 and the sports included rugby, tennis, sprinting, field hockey, gymnastics, badminton, netball, basketball, and judo. Individual interviews were conducted with each athlete that included the same six questions about help they receive in order to deal with various challenges (e.g., pressure of high level sport, relationships, practical matters, injury and rehabilitation). Using grounded theory for data analysis, four dimensions of social support were revealed: emotional (being able to turn to others and feel cared for), esteem (expression of belief that an individual can cope with adversity), informational (provide guidance in problem-solving), and tangible (given necessary resources to cope with the stressful event). Of importance to the current study is the social support received during the injury process. The results indicate that help with injuries required the following social support: emotional support to take their minds off of the injury, get sympathy from peers, and know people care and are concerned; esteem support for directive encouragement, reassurance, and knowing others believe in them; and tangible support to help with appointments, finances, injury treatment, planned rehabilitation, and help with tasks that build confidence.

Although the four dimensions of social support are not used in the current study, Rees and Hardy (2000) provide supporting evidence that athletes receive specific social support based on their needs which includes injury and rehabilitation. This research highlights the complexity of social support as a construct and the limitations of the literature overall due to inconsistencies in the definition of social support. Finally, their results cast light on the multidimensional nature of social support that suggests operationalizing it as a single construct is not accurate. That is not to say that the existing literature is not useful, but caution should be used when generalizing the findings and comparing results across studies.

Using a social support questionnaire with a 5-point Likert scale, Clement and Shannon (2011) examined the satisfaction of social support in injured college athletes. Results indicated that athletic trainers were the most available form of social support, provided the most social support, and contributed the most satisfying social support to injured athletes. Clement and Shannon (2011) reasoned that the isolation that an injured athlete may experience and the hands-on work athletic trainers perform during recovery likely contribute to these results as the athletic trainer is a source of social interaction. Interestingly, athletic trainer's listening support and the coach's tangible support were negatively correlated with the year the athlete was in school. Further, injured athletes who were more experienced and nonstarters who were injured tended to experience less support overall (Corbillon, Crossman, & Jamieson, 2008). This highlights the importance of considering the types and timing of support based on how long the athlete has been in the program and, possibly, their status on the team (starter vs nonstarter). Caution should be used since not all sources of support were included in this study (such as family and

35

friends) which limits the applicability of the findings and the knowledge about all available support.

Yang, et al. (2010) looked at social support patterns before and after injury in college athletes that included athletic trainers, physicians, coaches, family, and friends. Participants consisted of 256 collegiate athletes from 13 different sports. Data was collected over an 8-month period and 92 athletes suffered injuries (57 male and 35 female). The researchers used the modified 6-item Social Support Questionnaire (SSQ6) that measures availability and satisfaction of support using a 6-point Likert scale. Not surprisingly, family and friends were the most relied on sources of social support before injury for both male and female athletes. However, three months postinjury, all athletes reported relying more on coaches, athletic trainers, and physicians for support and were more satisfied with this support. Athletes were also satisfied with support from their friends. Male athletes relied more on athletic trainers for support postinjury and were more satisfied with support from athletic trainers and physicians, but experienced a decrease in satisfaction with family support. Female athletes also relied more on athletic trainers for social support and were more satisfied with this support postinjury; however, they had higher satisfaction with friends, coaches, and physicians for postinjury social support than male athletes. This study emphasized the importance of social support to include family and friends and to measure support pre- and postinjury.

In order to address stress and perceived social support during the injury process, Malinauskas (2010) conducted a study with 123 college athletes (69 male and 54 female) ages 18 to 25 years. There were 69 athletes with minor injuries (no sport participation for less than one week) and 54 athletes with severe injuries (no sport participation for more

36

than 21 days). The sports represented included basketball, football, track, Eastern martial arts, volleyball, and gymnastics. The athletes filled out the Multidimensional Scale of Perceived Social Support (MSPSS), Perceived Stress Scale-10 (PSS-10), and Satisfaction with Life Scale (SWLS). The MSPSS is a 12-item questionnaire that measures family support, friend support, and significant other support using a 7-point Likert scale. The PSS is a 10-item self-report inventory that uses a 4-point Likert scale designed to measure how much one finds life to be unpredictable, uncontrollable, and overloading. The SWLS is a five-item global life satisfaction questionnaire that uses a 7-point Likert scale.

The researcher found that athletes with a major injury reported more diminished life satisfaction when greater perceived stress was experienced than those with minor injuries (Malinauskas, 2010). Additionally, athletes with major injuries and high perceived stress were shown to have a greater impact on their life satisfaction when social support was present than those with minor injuries. The researchers highlight social support in the injury process and encourage consideration of the severity of injury. These results are correlation in nature and should not be interpreted as causation.

Overall, there appears to be a consensus in the literature that social support of some kind is beneficial to the injury recovery process. In their overview of the literature, Fernandes, et al. (2014) point out that athletes do not always seek out the social support they need due to gender, quality of relationships, psychological problems, and stigmatizing behavior like using performance enhancing drugs. Further complicating the matter is the individual nature of social support. Based on the athlete's preference and his/her stage of recovery, athletes are not always satisfied with the social support they

receive. Therefore, it is essential that rehabilitation providers assess the athlete's needs throughout recovery to ensure s/he has access to appropriate social support resources.

Concussion

While much of the research around injury and sports has been conducted with musculoskeletal injuries, in recent years concussions have emerged as a cause for concern in the athletic community. Postconcussion Syndrome (PCS) has brought to light the complexity of injury recovery and mood states as PCS symptoms are prevalent in the general population in individuals without a history of concussions. To better understand PCS symptoms, postconcussion-like symptoms were examined by Edmed and Sullivan (2012) in a non-clinical sample using a postconcussion symptom inventory. The results indicated that 72.9% of symptom variance could be explained by depression, anxiety, and stress. Further, stress was the strongest predictor of postconcussion-like symptoms, whereas depression was the second best predictor. It is important to note that the manner in which stress was measured in this study may better reflect psychological distress and worry. Nevertheless, both psychological distress and stress are important to consider in injury recovery. Additionally, the evidence provided by these results indicate that the application of the stress-injury model in concussion management is likely appropriate. A more specific measurement of stress should be used in the future.

Further highlighting concussion as a different type of injury than musculoskeletal injuries, Kontos, et al. (2013) examined the coping resources of high school and college athletes. They divided participants into three groups (healthy, musculoskeletal injury, concussion) and compared the coping resources used by each group. The coping measure that was used included 14 subscales of coping measured over 28 items that were rated on

a 4-point Likert scale (1 - I haven't been doing this at all; 4 - I have been doing this a lot).

Types of coping that were identified were approach, avoidant, and social. No significant

differences in coping were found between the musculoskeletal group and the healthy

group. The concussion group had significantly less coping, less instrumental support, and

less acceptance than the healthy group and significantly less coping, lower scores of self

distraction, and less positive reframing than the musculoskeletal group. Finally, the

concussion group had significantly less denial, substance abuse, behavioral

disengagement, venting, planning, humor, religion, and self-blame than the healthy and

musculoskeletal group. Although the concussion group reported less overall coping

responses, some of the coping responses that were reported were maladaptive. These

results suggest that athletes who suffer concussions engage in different coping responses

than healthy athletes and athletes who suffer musculoskeletal injuries. There is no

indication that coping strategies of one group are better than another; rather, concussion

management may require different coping skills than musculoskeletal injury. Further

investigation into similarities and differences of coping styles for musculoskeletal and

concussion injuries will add important information about type and timing of interventions

for both groups.

Self-Compassion

Self-compassion is a relatively new concept in the Western world, but it has a

long standing history in the Buddhist tradition. Self-compassion cannot be defined

without considering the definition of compassion (Neff, 2003a). Compassion has six

components that are attributed to oneself and others: care for well-being, sensitivity to

distress, capacity for sympathy, capacity for tolerating emotions and distress, empathy,

and nonjudgment (Gilbert & Tirch, 2010). Therefore, self-compassion involves a nonjudgmental approach to one's suffering and understanding one's pain without denying it (Neff, 2003b). While it is easy to assume that such an accepting and nonjudgmental stance will lead to complacency, this approach results in motivation to "alleviate one's suffering and to heal oneself with kindness" (Neff, 2003b, p. 87). Self-compassion is a way to view one's experience that results in decisions to treat oneself in a kind manner.

Neff (2003b) breaks self-compassion into three components: self-kindness, common humanity, and mindfulness. These components are distinct entities as well as interacting variables that enhance one another. Self-kindness involves being kind and understanding to oneself while refraining from judgment and self-criticism. Common humanity is the ability to view oneself in the context of the larger human experience without feeling isolated. Mindfulness is the ability to hold "one's painful thoughts and feelings in balanced awareness rather than over-identifying with them" (p. 89). In essence, self-compassion entails treating oneself with acceptance and kindness, viewing oneself as a part of a larger human experience, and refraining from self-criticism.

Self-compassion and self-esteem.   An important distinction to make is between self-compassion and self-esteem. Neff (2011) defines self esteem as, "an evaluation of your worthiness as individuals, a judgment that we are good, valuable people" (p. 1). According to Neff (2003a), the most important difference between these two concepts is that self-esteem requires self-evaluation, while self-compassion removes the evaluative standard and focuses more on acceptance and kindness toward oneself. Removing the aspect of evaluation allows individuals to relate to others, rather than viewing themselves in opposition to one another and making comparisons. Further, self-esteem requires

praise from others and is only impactful if the praise matches how the individual sees himself/herself. As Neff (2003a) states that unrealistic praise is, "a primary reason why it is so difficult to raise others' self-esteem, especially through unrealistic praise - people don't buy it" (p. 92). On the other hand, self-compassion allows for acknowledgment of inadequacies. Permitting individuals to understand and recognize inadequacies does not harm them; rather it is a validation of their lived experience.

Self-esteem and self-compassion have been found to have a moderate correlation, which is likely due to the fact that both involve positive emotion toward oneself (Neff, 2003b; Neff, 2003a). Even with this correlation, the distinction between self-compassion and self-esteem is evident. For instance, Leary, et al. (2007) found that participants high in self-compassion and low in self-esteem exhibited low negative affect. The different associations that self-compassion and self-esteem have with negative affect support the notion that they are separate constructs. Additionally, Neff, et al. (2007) found that self-compassion serves as a predictor and buffer for anxiety while self-esteem does not. One explanation for this difference is that self-compassion has more positive effects because it applies even when self-esteem falls short (Neff, et al., 2007). Understanding the similarities and differences between self-compassion and self-esteem is important in exploring and determining how each construct may impact an individual as well as how each one interacts with other variables.

Self-compassion, anxiety, and depression. Self-compassion has been examined in relation to depression and anxiety. Several studies have found that depressive symptoms in college students can be predicted by levels of self-compassion (Raes, 2010; Raes, 2011; Terry, Leary, & Mehta, 2012). Self-compassion may also serve as a buffer to

depression and anxiety (Raes, 2010). In a two part study by Johnson and O'Brien (2013), participants higher in self-compassion had lower levels of depressive symptoms. Subsequently, when a self-compassion intervention was implemented, depressive symptoms significantly decreased compared to an expressive writing intervention and a control group (Johnson & O'Brien 2013). Moreover, when clinically depressed patients were compared to subjects who have never been clinically depressed, the clinically depressed patients had significantly lower self-compassion (Krieger, et al., 2013). Finally, in a chronic pain population, self-compassion was found to be negatively correlated to depression and anxiety (Costa & Pinto-Gouveia, 2013). The literature appears to support that people who are higher in self-compassion experience lower levels of depressive symptoms.

Hall, Row, Wuensch, & Godley (2013) conducted a study that examined the physical and psychological well-being of college students in relation to self-compassion. The Self-Compassion Scale (Neff, 2003a) was used to examine the three components of self-compassion across six subscales: self-judgment versus self-kindness, isolation versus common humanity, and over-identification versus mindfulness. A physical symptoms inventory, stress scale, and depression inventory were also administered. The components of self-compassion were found to be predictors and correlates of different variables. Self-judgment versus self-kindness served as a predictor for physical well-being. One reason given for this was that someone who utilized more self-judgment may not put forth as much effort to take care of his/her body. All three composite scores correlated significantly to depressive symptoms, but only self-judgment versus self-kindness and isolation versus common humanity predicted depressive symptoms. Overall, the outcome

42

suggested a relationship between physical well-being, depressive symptoms, and the components of self-compassion.

Another study conducted by Van Dam, et al. (2011) compared self-compassion and mindfulness as predictors for anxiety, depression, worry, and quality of life in an international sample of individuals seeking help for anxious distress. Participants ranged in age from 18 to 73 years. The findings support self-compassion as a significant predictor of depression and anxiety symptoms beyond the predictive ability of mindfulness. Also, self-compassion was found to better predict rumination, negative affect, and worry. Understanding self-compassion as a predictive factor for emotional distress broadens the possible usefulness of self-compassion interventions with those who are experiencing emotional upset.

Self-compassion and stress. As previously discussed, stress can negatively impact daily life. Knowing what variables impact levels of stress is important in stress management and maintaining psychological well-being. In the literature, self-compassion has been shown to correlate negatively with stress (Birnie, et al., 2010). Stress can come from many sources, particularly negative life events which can range from one particularly traumatic event to the hassles of daily life.

Leary, et al. (2007) conducted five studies to examine how the level of self-compassion in college students impacted how they manage daily hassles. In response to negative life events, those with higher self-compassion engaged in less catastrophizing and were able to normalize their experience rather than feel they were the only person dealing with negative events. Self-compassion was shown to buffer against the impact of negative life events. Additionally, those with higher levels of self-compassion were more

43

likely to react similarly to positive and neutral feedback. Participants who were low in self-compassion were more likely to attribute positive feedback to themselves and less likely to attribute neutral feedback to themselves. Participants higher in self-compassion rated themselves more positively and perceived themselves in a more accurate light. Finally, when self-compassion was induced in participants, they had a better ability to identify as a person who makes mistakes without feeling negatively about this fact; rather they accepted it as part of the human experience. These studies are important in understanding self-compassion and the wide array of implications it has for psychological well-being and self-perception. Self-compassion serves as a predictor of and buffer between stress and stress response, which may be beneficial to the athlete population.

Self-compassion and cognition. Little research has been conducted on self-compassion and cognitions, but a few studies are available. Neff (2011) reported that people with high self-compassion were less fixed and rigid in their opinions. Likewise, Martin, et al. (2011) found that adults who exhibited cognitive flexibility were more likely to report higher levels of self-compassion. Additionally, Neff, et al. (2007) found that college students were less likely to suppress their thoughts if they were high in self-compassion. Thus, individuals high in self-compassion do not tend to engage in avoidance when faced with tough cognitions as those who are lower in self-compassion. Finally, Zhou, et al. (2013) conducted a study with 418 college students in China to examine negative cognitive style, self-compassion, and a subtype of depression called hopelessness depression. They found that self-compassion was significantly and negatively correlated to negative cognitive style when students were faced with negative life events.

The literature seems to support a relationship between cognitive flexibility and the use of positive cognitive styles when dealing with life events. The correlation between self-compassion, cognitive flexibility, and cognitive style provides evidence for future research in this area as cognitive flexibility is important in psychological well-being. The relationship between cognition and self-compassion offers another avenue through which self-compassion may be clinically valuable to the athlete population.

Current Study

The current study is a pilot study that examines the level of self-compassion in injured athletes. This is the first study of what is necessary to understand the role of self-compassion in the injured athlete population. Self-compassion has been found to assist in dealing with life stress, cognitive flexibility, and emotional well-being. These variables are also pre-injury factors that can affect post-injury recovery. Determining the level of self-compassion in injured athletes will inform the usefulness of self-compassion interventions during the injury process. In addition, perceived social support has been found to be related to an athlete's overall well-being and can buffer the impact of negative life stressors. Since stressors can increase susceptibility to injury and prolong injury recovery, a higher level of perceived social support in injured athletes is ideal. Therefore, establishing the level of self-compassion and perceived social support, as well as exploring a possible relationship between self-compassion and perceived social support in injured athletes, one may be able to positively impact the injury process. For example, one may be able to decrease injury frequency, decrease the length of recovery time, and lessen the amount of pre-injury risk factors and post-injury barriers. Based on

the impact self-compassion and social support have on psychological distress, stress, and coping, the two hypotheses of the current study are as follows:

Hypothesis 1: Injured athletes will have a lower level of self-compassion in comparison to the non-injured athletes.

Hypothesis 2: Among injured athletes there will be a positive relationship between level of self-compassion and perceived social support.

Chapter 3

Methodology

Participants

The participants for this pilot study were undergraduate student-athletes enrolled in a Midwestern university during the spring semester of 2015. There were 45 participants who engaged in the study, 11 injured athletes and 34 non-injured athletes. Upon visual inspection of the data, there were individuals who did not complete a significant portion of the measures. Seven participants provided incomplete data and were removed from the sample. The remaining data set is comprised of 38 individuals, seven injured and 31 non-injured athletes.

The sample is comprised of five injured females, two injured males, 17 non-injured females, and 14 non-injured males who ranged in age from 19 to 22 years. The injured group consisted of three senior, one junior, and three sophomore athletes. The non-injured group consisted of four senior, seven junior, six sophomore, and 13 freshmen athletes. The overall sample consisted of 35% freshman, 24% sophomore, 22% junior, and 19% senior athletes. Note, one participant did not indicate gender or academic year but was still included in the analyses. The sports represented in the overall sample include baseball (2), basketball (11), cross country (5), diving (3), softball (2), soccer (8), swimming (2), tennis (2), track (2), and volleyball (1). From this sample, the injured athletes participated in basketball (2), diving (1), soccer (1), tennis (2), and track (1).

Procedure

After receiving approval from the Institutional Review Board at a Midwestern university and permission from the Athletic Director, a contact in the Athletic Department disseminated an email to all student-athletes. The email was sent two different times during the spring semester. The email oriented the student-athletes to the purpose of the study, asked for their participation, and contained a link to an online survey. The contact information for the researchers was provided, and the participants were encouraged to contact the researchers with any questions or concerns. Participants were provided the option of being entered in a drawing for a chance to win a $25 gift card for their participation. The student-athletes were informed that the survey would take around 10 minutes of their time. If the student-athletes chose to participate, they were instructed to click on the link provided in the email, which took them to the informed consent for this study. After indicating they had completed the consent form and agreed to the terms, the student-athletes anonymously completed and submitted a set of demographic questions, the Self-Compassion Scale, and the Multidimensional Scale of Perceived Social Support.

Measures

The self-compassion scale. The Self-Compassion Scale (SCS) is a 26-item self-report questionnaire (Neff, 2003a) (see Appendix A). Each item is answered on a 5-point Likert scale ranging from almost never (1) to almost always (5). Each item falls into one of six subscales: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. The self-kindness subscale contains items such as, "I try to be loving towards myself when I'm feeling emotional pain." The self-judgment scale

48

contains items such as, "I'm disapproving and judgmental about my own flaws and inadequacies." The common humanity subscale contains items such as, "I try to see my failings as part of the human condition." The isolation subscale contains items such as, "When I fail at something that's important to me, I tend to feel alone in my failure." The mindfulness subscale contains items such as, "When something upsets me I try to keep my emotions in balance." Finally, the over-identification subscale contains items such as, "When I'm feeling down I tend to obsess and fixate on everything that's wrong." In order to determine the overall self-compassion score, all items were added and averaged. The self-kindness, common humanity, and mindfulness subscales were scored normally while the items on the self-judgment, isolation, and over-identification subscales were reverse-scored. Subscale scores were calculated by adding the items of each subscale and computing the mean. Low scores range from 1 to 2.5, moderate scores range from 2.5 to 3.5, and high scores range from 3.5 to 5.

The validity and reliability of the SCS was determined by a series of three studies conducted by Neff (2003b). The SCS exhibited good test-retest reliability of 0.93. The six-factor model was found to have a goodness of fit with a non-normed fit index (NNFI) of 0.92 with a comparative fit index (CFI) of 0.93. The overall self-compassion score was found to have a non-normed fit index of 0.90 and a comparative fit index of (0.92). These outcomes indicate that the overall self-compassion score and the subscale scores accurately measure the intended constructs based on the definition of self-compassion. Moderate correlations were found between self-compassion and different aspects of self-esteem, self-acceptance, self-determination, and basic psychological needs (autonomy, competency, and relatedness). A relationship between narcissism and self-compassion

49

was not found to be significant. These moderate correlations are expected considering the definition of self-compassion and its relation to other psychological variables. However, the moderate correlations also indicate appropriate differentiation between variables, which supports the claim that the SCS measures self-compassion and not self-esteem, self-acceptance, self-determination, or basic psychological needs.

The multidimensional scale of perceived social support. The Multidimensional Scale of Perceived Social Support (MSPSS) is a 12-item self-report measure that was developed to assess an individual's subjective, perceived social support from various sources (Zimet, Dahlem, Zimet, & Farley, 1988) (see Appendix B). Each item is answered on a 7-point Likert scale ranging from 1 (very strongly disagree) to 5 (very strongly agree). Each item falls into one of three factor groups: family, friends, or significant other. The family factor group has four items such as, "My family really tries to help me." The friends factors group has four items such as, "I can count on my friends when things go wrong." The significant other factor group has four items such as, "There is a special person in my life who cares about my feelings." In order to determine an overall perceived support score, all of the responses are added together and divided by 12 (Zimet, et al., 1988). A score that falls between 1 and 2.9 is considered a low support score, 3 to 5 indicates moderate support, and 5.1 to 7 suggests high support. The overall perceived support score can be broken down into each factor group to determine from what group the individual may be receiving the most or least support. The MSPSS does not have established norms; instead, it is typically used to compare perceived social support between groups (Zimet, et al., 1988).

Using the college population, Zimet, Dahlem, Zimet, and Farley (1988) determined that the support from a significant other, friends, and family are three separate factors. The support from a significant other and support from friends were moderately correlated ($r = 0.63$), while family was more independent ($r = 0.24$ for significant other and $r = 0.34$ for friends). Additionally, Zimet, et al. (1988) established the reliability of the factor groups and the overall perceived support score. The internal consistency for the significant other, family, friends, and overall support was good (Cronbach's alpha = 0.91, 0.87, 0.85, and 0.88, respectively). The MSPSS has adequate stability over time with test-retest coefficients of 0.72, 0.85, 0.75, and 0.85, respectively, after two to three months following the initial administration. Finally, social support measured by the MSPSS was found to be negatively correlated with the anxiety and depression subscales of the Hopkins Symptoms Checklist (HSCL) (Zimet, et al., 1988). A significant inverse relationship exists between perceived support from family and symptoms of depression and anxiety ($r = -0.24$, $p < 0.01$), perceived support from friends and depression symptoms ($r = -0.18$, $p < 0.01$), perceived support from a significant other and depression symptoms ($r = -0.13$, $p < 0.05$), and overall perceived support and depression symptoms ($r = -0.25$, $p < 0.01$) (Zimet, et al., 1988). Overall, the MSPSS has been determined to be a reliable and valid measurement of overall perceived social support as well as perceived support from family, friends, and significant others.

Data Analysis

As previously stated, the hypotheses tested by the current study are that injured athletes will have a lower level of self-compassion than non-injured athletes. Also there will be a positive relationship between level of self-compassion and perceived social

support among injured athletes. Based on the hypotheses, the main statistical analyses examine between-group differences.

The data analysis proceeded in two phases comprised of preliminary analyses and main analyses. Preliminary analyses included a thorough, objective analysis of whether or not the data met statistical assumptions for between-group tests, screening the data, looking for outliers, and determining inclusion or exclusion of outliers. Preliminary visual inspection and statistic procedures were conducted to ensure that the four assumptions were met to perform parametric analyses. These assumptions include that the data is interval or ratio, only independent observations were used, there is homogeneity of variance, and the distribution of the data is normal. Following the confirmation of these assumptions, analyses of the hypotheses were conducted.

Statistical assumptions. Before analyzing the data, it was inspected to ensure all four assumptions were met to determine if the data is appropriate for a t-test. The interval data was collected on a Likert scale. The assumption of independent observations was met because no participant completed the survey more than once to the researcher's knowledge. In order to determine normality of the data, a stem and leaf plot, histogram, and q-q plot were used. The Levene statistic was used to ensure homogeneity of variance.

Screening for outliers. An initial analysis of the completed data set (n = 38) was conducted to identify possible outlying data. The standard procedure to determine and remove outliers is the use of visual inspection of a histogram and stem and leaf plot which revealed two outliers. In order to validate that these were true outliers, SCS and MSPSS scores were converted to z-scores. Based on recommendations from Field

(2013), scores are considered outliers and should be removed if they exceed the absolute value of a z-score of 2.58.

Preliminary analysis of SCS and the MSPSS. Before analyzing the SCS and MSPSS data, steps were taken to ensure the sample represented a normal distribution and fell within acceptable ranges for skew, kurtosis, and variance. First, visual inspection of the histogram, stem and leaf plot, as well as a q-q plot was used to determine if the sample represented a normal distribution. Next, the skew and kurtosis were calculated to determine if it fell within the acceptable range. Third, the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted to determine normal distribution of the injured and non-injured samples. Finally, the Levene Statistic was used to determine homogeneity of variance.

Main analyses. In order to determine if there was a significant difference in self-compassion between injured and non-injured athletes an independent t-test was conducted. Due to outliers, two t-tests were conducted with one t-test including the outlying scores and the other excluding the outlying scores. The same procedure was conducted to determine if a difference in perceived social support existed between injured and non-injured athletes. Based on the sample size, it was necessary to conduct additional tests to determine differences between the groups. Due to the small sample size and the large difference between the injured and non-injured groups, nonparametric tests, specifically the Wilcoxon Rank Sum and Mann Whitney U tests, were run. Finally, in order to determine the relationship between the levels of self-compassion and perceived social support of injured athletes a Pearson correlation was calculated.

Additional analyses. In addition to the correlation between the SCS and MSPSS for the injured athlete group, the same correlations were determined for the non-injured athletes and the overall athlete population. These correlations were calculated to explore the possible impact of injury status on the relationship between self-compassion and perceived social support.

Chapter 4

Results

Incomplete Data

Out of all of the items that were administered (1,444), there were nine items that went unanswered. Three were on the social support scale and six were on the self-compassion scale; therefore, .006% of questions were unanswered which is comparable to an expected amount given the number of items (Tabachnick and Fidell, 1998). A linear interpolation procedure was used to replace the missing values in the data set.

Screening for Outliers

The total SCS and MSPSS scores that exceeded the absolute value of 2.58 were identified as outliers. Two SCS scores were removed, leaving the total sample at 36 participants. There were no MSPSS scores removed.

Preliminary Analysis of SCS

Through visual inspection, the histogram and stem and leaf plot appeared to represent a normal distribution. The q-q plot appears to evidence normality. The skew was 0.207 ($z = 0.05$), which is between one standard deviation and two standard deviations below what would be expected, and the kurtosis was -0.610 ($z = -0.79$). The results of this study should be considered in light of the skew but is within the acceptable range, and it was determined that transformation of the data to further fit the normal curve was not necessary. The Kolmogorov-Smirnov and Shapiro-Wilk tests were

conducted to determine normal distribution of injured and non-injured samples. All of the results were not significantly different from a hypothetical normal distribution of the same sample. The Levene Statistic was conducted to determine homogeneity of variance, and it was not significant; therefore, the variance of the data is considered to be uniform.

Preliminary Analysis of MSPSS

Visual inspection of the histogram evidenced a negative skew. The q-q plot looked uniform and stem and leaf plot did not reveal outliers. The skew of -0.681 ($z = -1.73$) is not significantly skewed compared to what would be expected by chance. The kurtosis was -0.439 ($z = -0.57$). The Kolmogorov-Smirnov was not significant, while the Shapiro-Wilk was significant which suggests that the distribution of the data may not be normal. The Levene statistic was conducted to determine homogeneity of variance, and it was not significant; therefore, the variance of the data is uniform.

Main Analyses

In order to determine if the level of self-compassion between injured and non-injured athlete was significant a t-test was conducted and the difference was not significant ($M_{injured}= 3.06$, $M_{noninjured} = 2.95$; t(34) = 0.672, p=0.506, two-tailed). In contrast, an independent t-test was conducted to determine if there was a significant difference in perceived social support between injured and non-injured athletes. Results of the t-test revealed a significant difference in perceived social support between injured and non-injured athletes such that injured athletes reported significantly lower perceived social support (t (36) = -2.029, p = 0.05, two-tailed). With and without outliers, perceived social support is significantly lower for injured athletes.

Due to the small sample size and the significant difference in sample size between the two groups, Wilcoxon Rank Sum and Mann Whitney U tests were run and no significant differences were found between the groups on their level of self-compassion (U=91, W=526, p=0.675, 2-tailed, r = -0.03). When these tests were run to determine differences in perceived social support, a significant difference was found such that injured athletes have lower PSS than non-injured athletes (U = 155, W = 590, p = 0.032, 2-tailed, r = 0.36) (Rosenthal, 1991).

A Pearson correlation was calculated to determine the relationship between the level of self-compassion and perceived social support in injured athletes. The correlation between the SCS and MSPSS scores of injured athletes was not significant (r = 0.402, n = 7, p = 0.372).

Descriptive Statistics

The mean Self-Compassion Scale score for injured athletes (M = 3.07, *SD* = 0.500) fell in the moderate range with 14% in the low range, 57% in the moderate range, and 29% fell in the high self-compassion range. The mean Self-Compassion Scale score for Non-injured athletes non-injured athletes (*M* = 0.503, *SD* = 0.503) also fell in the moderate range with 19% in the low range, 71% in the moderate range, and 10% in the high range.

The mean the Multidimensional Scale of Perceived Social Support for injured athletes (*M* = 4.524, *SD* = 1.06) fell in the moderate range with 71% in the moderate range and 29% in the high range. The mean of the non-injured athletes (*M* = 5.485, *SD* = 1.145) fell in the high perceived social support range with 3% in the low range, 19% in the moderate range, and 77% in the high range.

Additional Analyses

      Two additional correlations were calculated to determine if there was a relationship between self-compassion and perceived social support in non-injured athletes and combined injured and non-injured athlete population. The correlations of the SCS and MSPSS scores are as follows: non-injured athletes was significant ($r = 0.409$, $n = 36$, $p = 0.027$) and combined was significant ($r = 0.331$, $n = 43$, $p = 0.048$).

Chapter 5

Discussion

The aim of this pilot study was to determine how the level of self-compassion in injured student-athletes compared to non-injured student-athletes. Based on the results, the first hypothesis, injured athletes will have a lower level of self-compassion in comparison to the overall athlete population, was not supported. There was not a significant difference between injured and non-injured athletes and their levels of self-compassion. Similarly, the second hypothesis, among injured athletes there will be a positive relationship between level of self-compassion and perceived social support, was not supported as the SCS scores and the MSPSS scores did not evidence a significant relationship.

Although neither hypothesis was supported, additional tests were conducted to determine the relationship between self-compassion and perceived social support in non-injured athletes. A significant relationship was found between the SCS and MSPSS scores for the non-injured athletes and for the combined athlete sample (injured and non-injured athletes). Based on the small sample size of the injured athlete, the significance found in the non-injured and combined groups provide evidence that future research on self-compassion in the sport injury process may be warranted. Finally, consistent with previous research, a significant difference of perceived social support was found between injured and non-injured such that injured athletes perceive that have less social support

than non-injured athletes.

Self-compassion shares elements with self-esteem, but is a distinct variable. The amount of research on self-esteem of athletes is far greater than information available about self-compassion. While it is likely that self-compassion impacts performance on some level, its utility has the potential to span the entire injury process, from buffering the impact of stress to informing response to injury to rehabilitation interventions that may shorten recovery time. For example, Mosewich, Kowalksi, Sabiston, Sedgmwick, and Tracy (2011) conducted a study with teenage female athletes to determine the relationship between self-compassion and a number of other constructs. They found that self-compassion contributed beyond self-esteem for a number of things, most notably lower body shame, lower fear of failure, and lower fear of negative evaluation. Given that individuals who suffer injuries may be confronted with these construct, development of self-compassion prior to injury should have a positive impact on injury recovery.

The results of this study are the first step in examining how the construct of self-compassion may impact injured athletes. Although no significant difference in the levels of self-compassion was found between injured and non-injured athletes, there are no other studies that compare levels of self-compassion of this population. Therefore, this pilot study serves as a foundation for further exploration of self-compassion as a construct that may impact the injury process and the athletic experience.

Additionally, social support is an essential component to an athlete's success within and outside of sport. In fact, Hodes, James, Martin, and Milliner (2015) proposed a systemic structure designed to support athletes solely in their academic careers. In terms of sport, athletes receive support from teammates, coaches, athletic trainers, strength

coaches, and fans. While there are many sources of support for athletes, studies show that perceived social support significantly declines after an athlete suffers an injury (Yang, Peek-Asa, Lowe, Heiden, & Foster, 2010; Yang, et al., 2014). This has the potential to be a barrier to successful rehabilitation as social support has been shown to be an important catalyst to injury recovery (Lu & Hsu, 2013). The results of this pilot study add to the body of evidence that an athlete's perceived social support is impacted when an injury occurs by highlighting the significant difference of perceived social support between injured and non-injured athletes.

Further, the relationship between self-compassion and perceived social support was significant for the non-injured and combined (injured and non-injured) athlete sample. Although this was not the case for injured athletes, the significant correlations that were found in the other groups provide an argument for future research to examine the relationship in the injured athlete population due to the limited samples size of injured athletes in this study. Moreover, assuming that a significant relationship between self-compassion and perceived social support is found in a larger injured athlete sample then targeting the relationship between the two variables in future research will add important data to the sport injury prevention and recovery literature.

Finally, athletes have existing coping strategies that help them get through times of adversity. To better understand what coping skills are employed when setbacks occur, Mosewich, Crocker, and Kowalski conducted a qualitative study with five female athletes who experienced poor performance, performance plateau, and injury as setbacks. These athletes coped with their setbacks by using a positive attitude approach, managing their self-criticism, using social support, and attempting to find balance in their lives. The

authors introduce self-compassion as a possible approach to enhance coping with setbacks, especially finding balance and dealing with self-criticism. Given the negative cognitive appraisals that injured athletes often have to confront, self-compassion may be an effective intervention to manage self-criticism and should be explored in the future.

Clinical Implications

Although the sample size of this pilot study was limited, there are possible clinical implications to consider. First, self-compassion the level of self-compassion in athletes overall seems to be in the moderate range regardless of injury status. Fostering this level of self-compassion is important and may enhance resiliency that can be used to help athletes get through difficult times. In addition, the lack of perceived social support that injured athletes experience compared to non-injured athletes is significant. Increasing social support for injured athletes during their recovery is something that coaches and medical staff should consider to decrease the injured student-athlete's distress. Presuming the injured athlete wants to return to sport, increasing perceived social support may also help the athlete return to preinjury health and return to sport more quickly.

While the athlete's performance in sport is important, his/her ability to be successful outside of sport is equally, if not more, important. Employing successful coping strategies and fostering or building characteristics like self- compassion will be essential to improve the success of athletes while in school and after graduation. Eventually every athlete will retire from sport, whether this is due to injury, choosing to end participation, or a dwindling of opportunity. The ability to secure social support and have a healthy level of self-compassion during a potentially difficult transition will assist the athlete in moving forward in his/her life.

Limitations

Limitations always exist within the research including the current study. First, the sample size of the injured sample is small which limits the potential not only for significant findings but also for generalizing the results to the broader athlete population. Possible reasons the number of respondents was limited include that the dissemination of the survey happened very close to the end of the spring semester (when students were busy preparing for finals) and that the survey was only sent out twice. The study may have been more successful had the survey been sent out more times and if a deadline had been given for completion. Moreover, the disparity between the group sizes likely lowered the statistical power; the injured group consisted of seven participants and the non-injured group was comprised of 29 individuals. Further, even though preliminary analyses were conducted to ensure the four assumptions were met, it is possible that the sample violated the assumption of normality based on the skew that was present.

Additionally, a number of the respondents did not finish the survey which decreased the sample size. The manner in which the survey was constructed allowed for participants to skip questions. Perhaps if each question would have been mandatory to answer, more surveys would have been complete. Although the reason some statements on the SCS were not completed is unknown, some of the statements may have been unfamiliar to the athletes or worded in an odd manner. This may have deterred athletes from completing the entire measure.

Moreover, there has been recent criticism of the SCS, especially in regard to the six-factor structure, as well as its being tested overwhelmingly with college students. Lopez, et al. (2015) conducted a study with adults in a community setting and found that

the SCS six-factor model was undermined and the total score was not reflective of measuring self-compassion. Because this study was conducted with college athletes, it is possible that the athlete identity could create enough separation with the general college population that the SCS does not measure self-compassion accurately.

Finally, self-compassion is a trait variable that should be stable across time and context. Based on the hypothesis of this study, self-compassion was examined as a state variable since the before and after injury was between and not within groups. The impact of the difference between trait and state may have contributed to the findings that the levels of self-compassion between injured and non-injured athletes was not significant. In order to better capture the trait of self-compassion, the approach to this study could have been to determine if there is a relationship between self-compassion and injury recovery time. The results of this question would better inform the role self-compassion has in the injury process.

Future Research

Further research on student-athletes and levels of self-compassion is needed. Addressing the possibility that some of the items on the Self-Compassion Scale may be odd or uncomfortable for the student-athletes to answer could be advantageous. For example, one of the items is, "when I'm feeling down I try to approach my feelings with curiosity and openness." Although this is not particularly odd, it is not a common statement and may be surprising to some college students to be asked to rate it. Looking into this possibility will ensure that the items are understood and that there is consistency in responses. Also, a larger sample size is needed to determine if there is a difference in levels of self-compassion between injured and non-injured athletes. It does not appear

that there is; however, with a small sample size, the ability to generalize the outcome is stunted.

Further exploring the relationship between self-compassion and perceived social support, especially as it relates more specifically to student-athletes, would assist in building understanding of student-athletes' needs. For example, while the MSPSS is a well-known and widely used measure, perhaps using a measure that explores social support from family, friends, significant others, coaches, and athletic trainers would provide information more specific to the collegiate athlete population. Researchers should continue to examine injured athletes and explore the possibility that the type of injury may impact self-compassion and perceived social support. These results will further inform the utility of self-compassion in the injury recovery.

Finally, given the recent research that questions the stability of the six-factor structure of the Self-Compassion Scale, it is imperative that the construct of self-compassion is clarified. The Self-Compassion Scale was constructed using the definition of self-compassion based on the three components presented by Neff (2003b). If the factors underlying self-compassion are not stable then the meaning of the overall self-compassion score cannot be determined. In order for future research to be useful, it is essential that the definition and operationalization of self-compassion is determined to be stable. Subsequently, it is essential to clarify if the Self-Compassion Scale is accurately measuring self-compassion, if there is a better instrument to use, or if one needs to be created.

Pilot Study Experience

Through this study, this researcher was able to gain experience in navigating the research process within the university setting and learn a number of important considerations for conducting future research. Originally this study was intended to be conducted in-person during the fall season and include more than one Division I institution. The schools of interest were contacted toward the end of the summer semester to determine their interest in the study. In hindsight there were a number of problems with the timing of initiating contact with the universities due to obstacles that were not feasible to navigate within the timeline of this study. Additionally, working with statistics in an exploratory capacity for this pilot study was a new experience. Lastly, it is possible that the bias of the researcher unintentionally impacted the hypothesis, the assumptions, and the direction of the study.

A variety of considerations for conducting this study at more than one university surfaced through the research process. First, the best person to contact within the athletic departments varied based on which university was contacted. For example, one university requested that the point of contact be their head athletic trainer while another school forwarded the inquiry on to the Assistant Athletic Director. Once the appropriate contact was made, there were multiple correspondences that took place in order to answer questions and clarify concerns which took a significant amount of time. Second, the credibility of the research within each institution and within the field of psychology, specifically sport psychology, was not established. Perhaps if the research went through a network of sport psychology professionals or if there would have been time in the researcher's schedule to meet with the various university personnel in person, there

would have been more buy-in for the study. It will be important for this researcher to attain more visibility and involvement in order to be considered credible within the field. Finally, the time that was needed in order to set-up the in-person study conflicted with the Institutional Review Board (IRB) deadlines for details to be provided about the study. In the end the time constraints were a significant factor in the direction of this study; however, it might have not taken as long if the universities were contacted earlier resulting in the proper people to contact in each university being determined in a timely fashion and if the credibility of the researcher in the field had been established prior to contacting the universities.

Further, using statistics to explore the general results and dynamics of the outcome was a novel experience. Conducting a study that has literature directly supporting the reason for the research provides the opportunity for comparison of data. A study that is conducted with literature supporting the reasoning in an indirect manner is challenging to find the foundational support and interpret the outcome in a meaningful way, especially when the number of participants is limited. Instead of determining relationships, this study could have been approached as an exploration of self-compassion of injured athletes. Using this language would have created flexibility and maximized the use of statistics in an exploratory fashion rather than being confined to a single question.

Finally, this researcher learned the role of inherent bias that can impact research from the start and limit the utility of the outcome. More specifically, the experience of this researcher as a former Division I athlete who faced a career-ending injury likely colored the approach to the hypothesis. Based on experience and exposure to sport culture, the assumption that self-compassion would be lower in injured athletes is not

67

found in the literature. Although rationalization of this decision was that other factors, like self-esteem, can change after injury, this resulted in treating self-compassion as a state variable instead of as a trait variable. Upon this realization and reflecting on past experiences, this researcher recognized that the hypothesis was directional because of personal opinion and not scientific data. In addition, the desire for another variable to assist with injury recovery resulted in a short-sighted view of self-compassion which actually limited how the data can be applied broadly. The self-reflection about possible biases that may impact the research took place following the completion of my study and did not occur throughout the process. Gaining the knowledge and understanding, as well as the first-hand experience that biases can impact every step of the research process from the research question/hypotheses to research design to methods/procedure to analyses to the discussion. Although this was the most challenging aspect of conducting a pilot study, it was also the most impactful and rewarding.

Appendix A

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				**Almost always**
1	**2**	**3**	**4**	**5**

___ 1. I'm disapproving and judgmental about my own flaws and inadequacies.
___ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.
___ 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through.
___ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.
___ 5. I try to be loving towards myself when I'm feeling emotional pain.
___ 6. When I fail at something important to me I become consumed by feelings of inadequacy.
___ 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.
___ 8. When times are really difficult, I tend to be tough on myself.
___ 9. When something upsets me I try to keep my emotions in balance.
___ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
___ 11. I'm intolerant and impatient towards those aspects of my personality I don't like.
___ 12. When I'm going through a very hard time, I give myself the caring and tenderness I need.
___ 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.
___ 14. When something painful happens I try to take a balanced view of the situation.
___ 15. I try to see my failings as part of the human condition.
___ 16. When I see aspects of myself that I don't like, I get down on myself.
___ 17. When I fail at something important to me I try to keep things in perspective.
___ 18. When I'm really struggling, I tend to feel like other people must be having an easier time of it.
___ 19. I'm kind to myself when I'm experiencing suffering.
___ 20. When something upsets me I get carried away with my feelings.
___ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.
___ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.

___ 24. When something painful happens I tend to blow the incident out of proportion.

___ 25. When I fail at something that's important to me, I tend to feel alone in my failure.

___ 26. I try to be understanding and patient towards those aspects of my personality I don't like.

Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet & Farley, 1988)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you **Very Strongly Disagree**
Circle the "2" if you **Strongly Disagree**
Circle the "3" if you **Mildly Disagree**
Circle the "4" if you are **Neutral**
Circle the "5" if you **Mildly Agree**
Circle the "6" if you **Strongly Agree**
Circle the "7" if you **Very Strongly Agree**

1.	There is a special person who is around when I am in need.	1	2	3	4	5	6	7	SO
2.	There is a special person with whom I can share my joys and sorrows.	1	2	3	4	5	6	7	SO
3.	My family really tries to help me.	1	2	3	4	5	6	7	Fam
4.	I get the emotional help and support I need from my family.	1	2	3	4	5	6	7	Fam
5.	I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7	SO
6.	My friends really try to help me.	1	2	3	4	5	6	7	Fri
7.	I can count on my friends when things go wrong.	1	2	3	4	5	6	7	Fri
8.	I can talk about my problems with my family.	1	2	3	4	5	6	7	Fam
9.	I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7	Fri
10.	There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7	SO
11.	My family is willing to help me make decisions.	1	2	3	4	5	6	7	Fam
12.	I can talk about my problems with my friends.	1	2	3	4	5	6	7	Fri

References

Albinson, C. B. & Petrie, T. A. (2003). Cognitive appraisals, stress, and coping: Preinjury
and postinjury factors influencing psychological adjustment to sport injury.
Journal of Sport Rehabilitation, 12, 306-322.

Andersen, M. B. & Williams, J. M. (1988). A model of stress and athletic injury:
Prediction on prevention. *Journal of Sport and Exercise Psychology, 10*, 294-306.

Arvinen-Barrow, M. & Pack, S. (2013). Social support in sport injury and rehabilitation.
In M. Arvinen-Barrow & N. Walker (Eds.), *The psychology of sport injury and
rehabilitation* (p. 117-131). New York, NY: Routledge.

Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy
in the context of mindfulness-based stress reduction (MBSR). *Stress and Health,
26*, 359-371.

Brewer, B. W. (2007). Psychology of sport injury rehabilitation. In G. Tenenbaum & R.
C. Ecklund (Eds.), *Handbook of Sport Psychology* (3rd ed.). (pp. 404-424).
Hoboken, NJ: John Wiley & Sons, Inc.

Brooks, K. (2012). Collegiate athletic participation, physical limitations, and chronic
disease risk. *Journal of Exercise Physiology Online, 15*(1), 15-25.

Clement, D. (2008). The transtheoretical model: An exploratory look at its applicability
to injury rehabilitation. *Journal of Sport Rehabilitation, 17*, 269-282.

Clement, D. & Shannon, V. R. (2011) Injured athletes' perceptions about social support.

Journal of Sport Rehabilitation, 20, 457-470.

Corbillon, F., Crossman, J., & Jamieson, J. (2008). Injured athlete' perceptions of the

social support provided by their coaches and teammates during rehabilitation.

Journal of Sport Behavior, 31(2), 93-107.

Costa, J. & Pinto-Gouveia, J. (2013). Experiential avoidance and self-compassion in

chronic pain. *Journal of Applied Social Psychology, 43*, 1578-1591.

Devantier, C. (2011). Psychological predictors of injury among professional soccer

players. *Sport Science Review, XX* (5-6), 25-56.

DiClemente, C. C. (2005). Conceptual models and applied research: The ongoing

contribution of the transtheoretical model. *Journal of Addictions Nursing, 16*, 5-

12.

Edmed, S. & Sullivan, K. (2012). Depression, anxiety, and stress as predictors of

postconcussion-like symptoms in a non-clinical sample. *Psychiatry Research*,

200, 41-45.

Evans, L. & Hardy, L (1995). Sport injury and grief response: A review. *Journal of Sport*

and Exercise Psychology, 17, 227-245.

Fernandes, H. M., Reis, V. M., Vilaça-Alves, J., Saavedra, F., Aidar, F. J., & Brustad, R.

(2014). Social support and sport injury recovery: An overview of empirical

findings and practical implications. *Revista de Psicología del Deporte, 23*(2),

445-449.

Field, A. (2013). *Discovering statistics using IBM SPSS Statistics (4th Ed.).* Thousand

Oaks, CA: Sage Publications.

Ford, I. W., Eklund, R. C., & Gordon, S. (2000). An examination of psychosocial

    variables moderating the relationship between life stress and injury time-loss

    among athletes of a high standard. *Journal of Sports Sciences, 18*, 301-312.

Gilbert, P. & Tirch, D. (2010). Emotional memory, mindfulness and compassion. In F.

    Didonna (Ed.)*, Clinical handbook of mindfulness* (pp. 99-110). New York, NY:

    Springer.

Hanson, S. J., McCullagh, P., & Tonymon, P. (1992). The relationship of personality

    characteristics, life stress, and coping resources to athletic injury. *Journal of Sport*

    and Exercise Psychology, 14, 262-272.

Hodes, J. S., James, T., Martin, G., & Milliner, K. (2015). Go for the win: A

    collaborative model for supporting student-athletes. *Learning Assistance Review -*

    (TLAR), 20(1), 47-60.

Howard, C. (2013). *America's Top Colleges.* Retrieved from

    http://www.forbes.com/colleges/wright-state-university-main-campus/

Hu, F. J. H. & Hsu, Y. (2013). Injured athletes' rehabilitation beliefs about subjective

    well-being: The contribution of hope and social support. *Journal of Athletic*

    Training, 48(1), 92-98.

Hutchison, M., Mainwaring, L. M., Comper, P., Richards, D. W., & Bisschop, S. M.

    (2009). Differential emotional responses of varsity athletes to concussion and

    musculoskeletal injuries. *Clinical Journal of Sport Medicine, 19*, 13-19.

Ivarsson, A. & Johnson, U. (2010). Psychological factors as predictors of injuries among

    senior soccer players: A prospective study. *Journal of Sports Science and*

    Medicine, 9, 347-352.

Ivarsson, A., Johnson, U., & Podlog, L. (2013). Psychological predictors of injury occurrence: A prospective investigation of professional Swedish soccer players. *Journal of Sport Rehabilitation, 22*, 19-26.

Jacobsson, J., Timpka, T., Kowalski, J., Nilsson, S., Ekberg, J., Dahlström, Ö., & Renström, P. A. (2013). Injury patterns in Swedish elite athletes: Annual incidence, injury types and risk factors. *British Journal of Sports Medicine, 47*, 941-952.

Johnson, U. & Ivarsson, A. (2011). Psychological predictors of sport injuries among junior soccer players. *Scandanavian Journal of Medicine and Science in Sports, 21*, 129-136.

Johnson, E. A. & O'Brien, K. A. (2013). Self-compassion soothes the savage ego-threat system: Effects on negative affect, shame, rumination, and depressive symptoms. *Journal of Social and Clinical Psychology, 32*(9), 939-963.

Kleinert, J. (2002a). An approach to sport injury trait anxiety: Scale construction and structure analysis. *European Journal of Sport Science, 2*(3), 1-12.

Kleinert, J. (2002b). Causative and protective effects of sport injury trait anxiety on injuries in German university sport. *European Journal of Sport Science, 2*(5), 1-12.

Kobasa, S. C., Maddi, S. R., & Courington, S. (1981). Personality and constitution as mediators in stress-illness relationship. *Journal of Health and Social Behavior, 22*, 368-378.

Kontos, A. P., Elbin, R. J., Appaneal, R. N., Covassin, T., & Collins, M. W. (2013). A comparison of coping responses among high school and college athletes with

concussion, orthopedic injuries, and health controls. *Research in Sports Medicine: An International Journal, 21*(4), 367-379.

Krieger, T., Altenstein, D., Baettig, I., Doerig, N., & Holtforth, M. G. (2013). Self-compassion in depression: Associations with depressive symptoms, rumination, and avoidance in depressed outpatients. *Behavior Therapy, 44*, 501-513.

Larimore, D. & Chitiyo, G. (2007). Non-economical societal impacts of intercollegiate athletics. *Sport Journal, 10*(2), 1-17.

Leary, M. R., Tate, E. B., Adams, C. E., Allen, A. B., & Hancock, J. (2007).. Self-compassion and reactions to unpleasant self-relevant events: The implications of treating oneself kindly. *Journal of Personality and Social Psychology, 92*(5), 887-904.

Lopez, A., Sanderman, R., Smink, A., Zhang, Y., van Sonderen, E., Ranchor, A., & Schroevers, M. J. (2015). A reconsideration of the self-compassion scale's total score: Self-compassion versus self-criticism. *PLoS ONE, 10*(7), 1-12.

Malinauskas, R. (2010). The associations among social support, stress, and life satisfaction as perceived by injured college athletes. *Social Behavior and Personality, 38*(6), 741-752.

Martin, M. M., Staggers, S. M., & Anderson, C. M. (2011). The relationship between cognitive flexibility with dogmatism, intellectual flexibility, preference for consistency, and self-compassion. *Communication Research Reports, 28*(3), 275-280.

Mosewich, A. D., Kowalski, K. C., Sabiston, C. M., Sedgwick, W. A., & Tracym, J. L. (2011). Self-compassion: A potential resource for young women athletes. *Journal of Sport and Exercise Psychology, 33*, 103-123.

National Collegiate Athletic Association. (2015). *Student-athlete participation: NCAA sports sponsorship and participation rates report.* Indianapolis, IN: Irick.

Neff, K. D. (2003a). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223-250.

Neff, K. D. (2003b). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*, 85-101.

Neff, K. D. (2011). Self-compassion, self-esteem, and well-being. *Social and Personality Psychology Compass, 5*(1), 1-12.

Neff, K. D, Kirkpatrick, K. L., & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of Research in Personality, 41*, 139-154.

Pearlin, L. I. & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior, 19*, 2-21.

Perry, J. L. (2015). *Sport psychology: A complete introduction*. London, England: Teach Yourself.

Petrie, T. A., Deiters, J., & Harmison, R. J. (2014). Mental toughness, social support, and athletic identity: Moderators of the life stress-injury relationship in collegiate football players. *Sport, Exercise, and Performance Psychology*, *3*(1), 13-27.

Quinn, A. M. & Fallon, B. J. (1999). The changes in psychological characteristics and reactions of elite athletes from injury onset until full recovery. *Journal of Applied Sport Psychology, 11*, 210-229.

Raes, F. (2010). Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. *Personality and Individual Differences, 48*, 757-761.

Raes, F. (2011). The effect of self-compassion on the development of depression symptoms in a non-clinical sample. *Mindfulness, 2*, 33-36.

Rees, T. & Hardy, L. (2000). An investigation of the social support experiences of high-level sports performers. *The Sport Psychologist, 14*, 327-347.

Rogers, T. J. & Landers, D. M. (2005). Mediating effects of peripheral vision in the life event stress/athletic injury relationship. *Journal of Sport and Exercise Psychology, 27*, 271-288.

Rosenthal, R. (1991). *Meta-analytic procedures for social research.* (2nd Ed.). Newbury Park, CA: Sage.

Sibold, J. & Zizzi, S. (2012). Psychosocial variables and time to injury onset: A hurdle regression analysis model. *Journal of Athletic Training, 47*(5), 537-540.

Steffen, K., Pensgaard, A. M., & Bahr, R. (2009). Self-reported psychological characteristics as risk factors for injuries in female youth football. *Scandinavian Journal of Medicine and Science in Sports, 19*, 442-451.

Surujlal, J., Van Zyl, Y., & Nolan, V. T. (2013). Perceived stress and coping skills of university student-athletes and the relationship with life satisfaction. *African Journal for Physical, Health Education, Recreation and Dance, 19*(4:2) 1047-1059.

Tabachnick, B. G. & Fidell, L. S. (2012). *Using multivariate statistics* (6th ed.). Boston: Pearson.

Taylor, J., Stone, K. R., Mullin, M. J., Ellenbecker, T., & Walgenbach, A. (2003). *Comprehensive sports injury management: From examination of injury to return to sport* (2nd ed.). Austin, TX: Pro Ed, Inc.

Terry, M. L., Leary, M. R., & Mehta, S. (2012). Self-compassion as a buffer against homesickness, depression, and dissatisfaction in the transition to college. *Self and Identity*, 1-13.

Udry, E., Shelbourne, K. D., & Gray, T. (2003). Psychological readiness for anterior cruciate ligament surgery: Describing and comparing the adolescent and adult experiences. *Journal of Athletic Training, 38*(2), 167-171.

Van Dam, N. T., Sheppard, S. C., Forsyth, J. P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptoms severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders, 25*, 123-130.

Van Der Poel, J. & Nel, P. (2011). Relevance of the Kübler-Ross model to the post-injury responses of competitive athletes. *South African Journal for Research in Sport, Physical Education and Recreation, 33*(1), 151-163.

Wadey, R., Evans, L., Hanton, S., & Neil, R. (2012). An examination of hardiness throughout the sport injury process. *British Journal of Health Psychology, 17*, 103-128.

Wiese-Bjornstal, D. M. (2010). Psychology and socioculture affect injury risk, response, and recovery in high-intensity athletes: A consensus statement. *Scandanavian Journal of Medicine and Science in Sports, 20*(2), 103-111.

Wiese-Bjornstal, D. M. & Shaffer, S. M. (1999). Psychosocial dimensions of sport injury. In R. Ray & D. M. Wiese-Bjornstal (Eds.), *Counseling in Sports Medicine* (pp. 23-40). Champaign, IL: Human Kinetics.

Wiese-Bjornstal, D. M., Smith, A. M., Shaffer, S. M., & Morrey, M. A. (1998). An integrated model of response to sport injury: Psychological and sociological dynamics. *Journal of Applied Sport Psychology, 10*(1), 46-69.

Yang, J., Peek-Asa, C., Lowe, J. B., Heiden, E., & Foster, D. T. (2010). Social support patterns of collegiate athletes before and after injury. *Journal of Athletic Training, 45*(4), 372-379.

Yang, J., Schaefer, J. T., Zhang, N., Covassin, T., Ding, K., & Heiden, E. (2014). Social support from the athletic trainer and symptoms of depression and anxiety at return to play. *Journal of Athletic Training, 49*(6), 773-779.

Zhou, L., Chen, J., Liu, X., Lu, D., & Su, L. (2013). Negative cognitive style as a mediator between self-compassion and hopelessness depression. *Social Behavior and Personality, 41*(9), 1511-1518.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*(1), 30-41.