THE EFFECTS OF A CAREER-ENDING INJURY
ON AN ELITE ATHLETE’S SELF-CONCEPT
AND PSYCHOLOGICAL DISTRESS

by

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Oct 2007
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I have read the thesis of Lauren Aline Loberg in its final form and have found that (1) its format, citations, and bibliographic style are consistent and acceptable; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the supervisory committee and is ready for submission to The Graduate School.

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ABSTRACT

Limited research has examined career-ending injuries. A majority of the research have focused on either dealing with injury or the multiple causes of career termination an athlete experiences. This study was concerned with how the transition resulting from a career-ending injury impacts an athlete’s level of psychological distress and his or her self-concept. More specifically, athletes experience stages of recovery that include (a) the onset of injury, (b) the day a medical professional tells them the injury is career ending, and (c) the 9 to 15 months postinjury. Quantitative measures were administered and analyzed.

The results indicated healthy athletes and previously injured athletes have comparable self-concept scores 9 to 15 months postinjury. Thus, it appears that the onset of an injury reduced the injured athlete’s self-concept and raised levels of psychological distress for a short period of time. However, within 9 to 15 months, athletes returned to a preinjury state with regard to their total self-concept and level of psychological distress.

As a result, this research agrees that an injury can be emotionally and cognitively demanding. When an athlete is confronted with a career-ending injury, his or her level of psychological distress will increase, and there will be a decrease in his or her self-concept. Yet, these reactions will subside after 9 to 15 months.
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CHAPTER 1

INTRODUCTION

One third of an athlete’s existence is occupied with his or her sports career, thus impacting many aspects of an athlete’s growth and advancement (Stambulova, 1994). The career of an athlete can be regarded as “a condensed model” or “miniature course” of one’s lifetime (Stambulova, 2000). When an athlete is adjusting to the consequences of injury, there is a change in his or her self-concept, emotions, lifestyle, physical behavior, and relationships with family and friends (Rose & Jevne, 1993). Some studies have shown that an athlete’s self-perception may also be influenced by personal and situational responses (Brewer, 2001; McDonald & Hardy, 1990). “The instant an athlete is injured, much of what he or she has worked for is taken away. This has a devastating impact, because, for athletes, physical condition and athletic ability are the major components of self-worth” (Faris, 1985, p. 545). Only after an athlete reclaims his or her emotional control is there an ability to acknowledge the limiting capacity and severity of the injury (McDonald & Hardy). Hence, when a sports career is terminated due to injury, this could constitute a shift in one’s self-concept and level of psychological distress.

Previous research has indicated between 14% and 32% of athletes retire because of a career-ending injury (Allison & Meyer, 1988; Mihovilovic, 1968;
Werthner & Orlick, 1986). A career-ending injury is a distinctive form of involuntary exit from an athletic career. Stambulova (1994) identified seven foreseeable transitional phases within a sports career that are connected with defined difficulties. These phases include the (a) beginning of sports specialization, (b) transition to special intensive training in the chosen sport, (c) transition from mass popular sports to high-achievement sports, (d) transition from junior sports to adult sports, (e) transition from amateur sports to professional sports, (f) transition from the culmination to the end of the sport career, and (g) ending of the sport career (Stambulova). Therefore, the termination process for career-ending injured athletes may develop into a longer period because of the initial hopes of returning to sport. A specific exit time can become difficult to determine, thus potentially affecting an athlete’s self-concept and the amount of psychological distress he or she may experience.

The potential uncertainty created by medical professionals, resulting from a serious injury, can produce psychological distress and an extended rehabilitation period. When an athlete is first injured, it may not be clear that his or her athletic career will be terminated. As a result, this period of adjustment, between getting injured and determining that the injury is career ending, entails a number of potential responses that may be taken by an athlete (Henschen & Shelley, 1999). After a period of rehabilitation, the medical staff is then able to make a more informed evaluation of the injury. After an injury occurs, there are more negative emotional responses compared with positive responses. As a result, symptoms such
as depression, fear, tension, anxiety, panic, and anger can manifest (Leddy, Lambert, & Ogles, 1994; Smith, Scott, & Wiese, 1990). The more severe the injury, the more evident these mood disturbances will be (McDonald & Hardy, 1990; Quackenbush & Crossman, 1992). Over time, these negative emotional responses will decrease and positive responses will increase (McDonald & Hardy; Quackenbush & Crossman). Therefore, it remains important to acknowledge the various stages an individual experiencing a career-ending injury will incur because the way he or she appraises the situation may be affected by the stage he or she is in. The integrated model introduced by Wiese-Bjornstal, Smith, Shaffer, and Morrey (1998) provided a framework for this study as to why surveys were asked at three stages: (a) the onset of injury, (b) the day a medical professional told an athlete the injury was career ending, and (c) the 9 to 15 months postinjury. Thus, an athlete’s cognitive appraisals over these three stages would be expected to impact self-concept and emotions after an injury.

High levels of surprise and consequentiality due to a career-ending injury create a flashbulb memory (Brown & Kulik, 1977). As a result, the recall of a career-ending injury will maintain a “live” quality that is similar to a preserved photo (Brown & Kulik). As a result, the flashbulb memories may ameliorate retrospective recall of a career-ending injury.

An athlete’s identity is closely tied to his or her sport. Although athletes appear physically independent, they often continue to be psychologically dependent upon others for their comfort (Lerch, 1984). For example, intercollegiate athletes
have many day-to-day decisions made for them. These decisions may include (a) what to wear, (b) when to eat, (c) what types of food to eat, and (d) where to live. As a result, the transition after a career-ending injury and dealing with their new independence illustrates the difficulty athletes may be feeling (Lerch). This termination of a career is viewed as an opportunity lost by an athlete, thus affecting an athlete’s positive self-concept. This is why a long-term approach is needed for managing the needs of all athletes, especially those with career-ending injuries (Blinde & Stratta, 1992; Drawer & Fuller, 2002; Lerch; Stambulova, 1994). An athletic career can be long, but athletes typically receive support only in the preparatory and competition phases while ignoring the termination and retirement phases.

**Significance of the Study**

Few sport psychology consultants develop an ongoing or long-term relationship with an athlete that includes enough contact to discuss the issues of career termination and one’s life situation after sport competition is completed (Taylor & Ogilvie, 2001). Typically, the intermittent contact with an athlete focuses on a specific aspect of performance or crisis intervention (Taylor & Ogilvie).

Due to the complexity of identifying participants and analyzing retrospective data, few studies have focused on this form of involuntary transition from sport. This topic is underresearched partly due to these technical issues. Therefore, it is important to research career-ending injuries initially using the broad concepts of
self-concept and psychological distress. As the information is gathered, researchers will have the ability to contribute towards the development of more detailed and focused questions.

Statement of the Problem

There is limited research examining career-ending injuries. A majority of the research have focused on either dealing with injury or the multiple causes of career termination an athlete experiences. The research has produced theoretical models presented by Wiese-Bjornstal et al. (1998) and Taylor and Ogilvie (2001). The current study was concerned with how the transition out of sport resulting from a career-ending injury impacts an athlete’s self-concept and psychological distress. More specifically, as an athlete experiences the stages of recovery including the onset of injury, the day a medical professional determined the injury was career ending, and 9 to 15 months postinjury, how has an athlete’s self-concept and psychological state changed?

Research Questions

The research questions guiding this study were designed to determine how transition out of sport, caused by a career-ending injury, affects an athlete’s psychological distress and self-concept over the three stages of recovery described in the introduction. Therefore, the study asked the following questions:

1. Does an athlete’s psychological state change as he or she progresses through the stages of recovery following a career-ending injury?
a. As an athlete’s knowledge about the severity of his or her injury changes over different stages of recovery, is there a difference in his or her psychological distress?

b. Is there a difference in the global severity index of the Symptom Checklist-90-Revised (SCL-90-R) following a career-ending injury depending on an athlete’s potential for a professional career in his or her sport?

c. Following an injury, career termination, and current status, are there differences in selected subscales and supplementary scales of the SCL-90-R?

d. Do injured athletes have a different global severity index than healthy, competitive athletes?

2. What effect does transitioning out of sport due to a career-ending injury have on an athlete’s self-concept?

a. As an athlete’s knowledge about the severity of his or her injury changes over different stages of recovery, is there a difference in his or her total self-concept?

b. Is there a difference in an athlete’s total self-concept following a career-ending injury depending on an athlete’s potential for a professional career in his or her sport?

c. Following an injury, career termination, and current status, are there differences in selected subscales and supplementary
scales of the Tennessee Self-Concept Scale: Second Edition (TSCS: 2)?

d. Do injured athletes have a different total self-concept than healthy, competitive athletes?

3. Is there a relationship between the SCL-90-R global severity index and an athlete’s total self-concept in all three stages of recovery: (a) onset of injury, (b) day a medical professional tells an athlete the injury is career ending, and (c) 9 to 15 months postinjury?

**Hypotheses**

The following hypotheses were tested in this study:

1. A career-ending injury will increase an athlete’s level of psychological distress.

a. An injury will increase the global severity index of a healthy, competitive athlete compared with his or her level of psychological distress prior to injury.

b. The discovery that an injury is career ending will decrease an athlete’s global severity index relative to an athlete’s level of psychological distress at the onset of injury.

c. After 9 to 15 months following the day of injury, there will be an increase in an athlete’s global severity index relative to the level of psychological distress while injured.
d. There will be an increase in an athlete's global severity index following a career-ending injury when there is potential for a professional career in his or her sport compared with his or her level of psychological distress prior to injury compared with an athlete with no potential for a professional career.

e. There will be an inverse relationship between an athlete's change in level of anxiety, perception of bodily dysfunction, and feeling of inadequacy to an athlete's change in total self-concept from the onset of injury 9 to 15 months postinjury.

2. A career-ending injury will reduce an athlete's self-concept compared with his or her self-concept as a healthy, competitive athlete.

a. An injury will reduce the total self-concept of a healthy, competitive athlete compared with his or her total self-concept prior to injury.

b. The discovery that an injury is career ending will reduce an athlete’s total self-concept relative to an athlete’s total self-concept at the onset of injury.

c. After 9 to 15 months following the day of injury, an athlete’s total self-concept will increase relative to the total self-concept while injured.
d. There will be a greater decrease in an athlete’s total self-concept following a career-ending injury when there is a potential for a professional career in his or her sport compared with an athlete without a potential for a professional career.

e. Based on the literature review, a low identity score will have the strongest relationship with a decrease in the total self-concept.

3. There will be an inverse relationship between an athlete’s total self-concept after a career-ending injury and an athlete’s level of psychological distress.

**Delimitations**

The following delimitations applied to this study:

1. The participants were National Collegiate Athletic Association (NCAA) Division I athletes.

2. The participants ranged in age from 18 to 24 years.

3. The participants answered the surveys 9 to 15 months postinjury.

4. The participants voluntarily agreed to take part in the study, indicating interest and possible bias toward their answers.
Limitations

The following limitations may have affected the outcome of this study:

1. The number of participants was small due to the low return rate (36.6%) of mailed surveys.

2. Reviewing career-ending injuries from a retrospective perspective may have influenced an athlete's responses, although the meaningfulness of the injury to an athlete may produce a flashbulb memory.

3. Results obtained from this study can only be generalizable to NCAA Division I athletes who have experienced career-ending injuries in the last 9 to 15 months.

Assumptions

The following assumptions were recognized in this study:

1. The athletes in the study responded honestly and to the best of their ability.

2. The athletes in the study understood and followed directions accurately in completing the assessment tools.

3. The study was scored and interpreted without bias.

4. The athletes' career-ending injuries were processed cognitively as a flashbulb memory.
Definitions of Terms

The following terms were defined for this study:

*Athletic identity* refers to the amount a person identifies with an athlete role (Brewer, Van Raalte, & Linder, 1993).

*Career-ending injury* refers to the inability to complete one’s athletic career as expected due to an acute injury (Heil, 1993).

*Elite athlete* refers to a NCAA Division I athlete.

*Flashbulb memories* refer to the memories of situations in which an individual initially learns of a surprising and consequential event (Brown & Kulik, 1977).

*Healthy, competitive athlete* refers to an athlete currently competing, practicing, or both in his or her sport and is not a red-shirt athlete.

*Injury* refers to a physical impairment for an athlete that restricts active participation in sport (Ford & Gordon, 1999).

*Psychological distress* refers to a characteristic profile based on symptom dimensions that contribute to an individual’s level of suffering (Derogatis, 1994).

*Self-concept* refers to an individual’s perceptions of himself or herself. These perceptions are developed through interpretations and experiences of one’s environment (Shavelson, Hubner, & Stanton, 1976).

*Total self-concept* refers to an individual’s overall self-concept and associated intensity of self-esteem (Fitts & Warren, 1996).
“A transition [emphasis added] can be said to occur if an event or nonevent results in a change in assumptions about oneself and the world and thus requires a corresponding change in one’s behavior and relationships” (Schlossberg, 1981, p. 5).
CHAPTER 2

REVIEW OF LITERATURE

The literature on career-ending injuries of athletes is incomplete. For example, when an athlete leaves sport suddenly, what characteristics contribute to whether the individual grows or deteriorates? These characteristics may include (a) injury, (b) an informal career termination, (c) timing of the event, and (d) loss of a professional career. This idiosyncratic experience can be difficult to research. An analysis of the literature on career transition, career-ending injuries, injury models, self-concept, and flashbulb memories provides the necessary background for the present research design.

Career Transition

Initially, researchers have focused on retirement as a single event. Retirement has since evolved, providing the concept that termination is a transitional process (Wylleman, Alfermann, & Lavallee, 2004). An athlete’s career termination has the potential of being a traumatic experience. However, researchers have been unable to make any conclusive recommendations (Taylor & Ogilvie, 2001).

All athletes’ careers must come to an end at some point; however, they will not handle this in an identical manner. The reaction to career termination is related
to an athlete’s involvement and timing of retirement (Crook & Robertson, 1991). Responses to retirement often create a feeling of loss and an adjustment period (Crook & Robertson; Kerr & Dacyshyn, 2000).

Injury is one of four reasons for unanticipated career transitions (Blinde & Stratta, 1992; Lavallee, 2000; Taylor & Ogilvie, 2001). The other three causes of career transition are (a) age, (b) deselection, and (c) free choice. Empirical studies have demonstrated that separation from a sport due to injury is difficult (Lavallee). This trying situation is because individuals rarely plan for this circumstance. Ogilvie and Taylor (1993) suggested that the complex performances of athletes can be diminished because of the smallest reduction in physical activity. Hence, impairment or injury presents the possibility of combining the most suffering or sorrow with athletic career transition.

Multiple situations determine the type of transition one is experiencing. Transitions are viewed as either positive or negative; yet, either way they will alter one’s life and the need to cope (Schlossberg, 1989a, 1989b). The Human Transition Model created by Schlossberg provides a model to evaluate and rationalize athletic response to career-ending injuries.

Any transition in one’s life presents significant change to the individual. Transition may change the role of the individual, change the relationships one has, change the routines one has, or change the assumptions about oneself or the world (Schlossberg, 1989a, 1989b). These four changes contribute to the determination of the magnitude of the transition. However, a transition for one person may appear
to be a major trauma, whereas it could be a minor problem for another. The basis for a transition often lies within a “contradiction” or “inner conflict” between what the individual is and what the individual should be or desire to be (Stambulova, 2000). Schlossberg (1981) defined transition as an occurrence creating the outcome of change in individuals’ beliefs about the world or themselves, which produces adjustment to one’s relationships and behaviors. Therefore, the reactions can create opportunity or risks for one’s psychological stability.

The term transition has also been used by sport psychologists as “a difficult situation,” “a critical life event,” “a stressful situation,” or “a crisis” (Stambulova, 2000). Hence, multiple sport career studies have viewed transitions as a form of crisis related to Schlossberg’s (1989a, 1989b) Human Transition Model (Baillie, 1993; Pearson & Petitpas, 1990; Stambulova, 2000; Wylleman et al., 2004).

Schlossberg (1989a, 1989b) introduced three categories of transitions: (a) anticipated transitions, (b) nonevent transitions, and (c) unanticipated transitions (Schlossberg, 2004). An anticipated transition occurs when a major life event takes place, and it is usually expected as part of one’s life. Therefore, the anticipation provides the individual with a long time to think about it. A nonevent transition transpires when the predicted event fails to occur (Schlossberg, 2004). Last, the unanticipated event is when an event, often disruptive, occurs unexpectedly. An example of this situation is a career-ending injury. Whether the transition is anticipated, unanticipated, or a nonevent, the situation can challenge the individual emotionally and then force that individual to use various coping skills.
Life introduces continual change and transition. These transitions may develop new behaviors, networks, or self-perceptions (Schlossberg, 1981). People vary in their ability to adjust to change. For example, one athlete may cultivate new interests, whereas another athlete may become completely inactive. Multiple variables contribute to the reaction to a transition.

Three main components help illustrate the complexity of transition. First, a transition may change the individual’s relationships, routines, roles, and assumptions (Schlossberg, 2004). For example, this is true with the altering of an athlete’s life with a career-ending injury. An athlete’s role disappears, daily training routines are adjusted, relationships with teammates and coaches change, and beliefs about oneself change. The larger these changes are, the bigger the possible impact and the extended amount of time it may take to incorporate the transition and move forward (Schlossberg). The second component explains that any transition process takes time and that the individual’s response to the transition changes. How long does this process take? Three months? Six months? One year? For some people, the progression transpires quickly and easily, but for others it could take years (Schlossberg). Initially, an athlete may be consumed by the new role of the injured and retired athlete. Over this unknown period, an athlete may sway back and forth between the two roles. The last component is the “4 S System” for coping. Schlossberg’s “4 S system” identified (a) situation, (b) self, (c) supports, and (d) strategies introducing the prospective deficits or resources included in the experience of each transition (Schlossberg). The person’s situation
at the time of transition such as any other life events can impact the transition. Self refers to the individual’s inner strength influencing his or her coping ability. The support available can be viewed as critical to an individual’s sense of well-being. Last, Schlossberg emphasized that there is no “magic coping strategy.” As a result, the positive or negative influence from each of the 4 S categories can affect the transition.

A career-ending injury can be viewed by an athlete as a transition. This occurrence represents a surprise event that would change one’s social networks as well as the growth or deterioration of an athlete’s self-concept and psychological distress. The adaptation to transition may depend on the assumptions about self and the environment before and after the transition. Whether the adaptation is positive or negative, there will always be some degree of stress involved (Schlossberg, 1981).

This type of injury is viewed as an external source because the change is forced upon the individual. Hence, an issue may develop of perceived control over one’s life (Schlossberg, 1981). The timing of an injury never occurs during an opportune time. Schlossberg related the timing of transition to age relevancy and how people view their lives with regard to a timetable. Yet, an athletic life span is often unpredictable. As mentioned previously, a career-ending injury can be sudden. A career-ending injury will create distress, a lack of feeling, and concern when the transition is difficult to accept (Schlossberg). When the injury occurs, it can be viewed as either permanent or uncertain, depending on the diagnosis from
the doctor. Prior to diagnosing a career-ending injury, there is often a waiting period for healing to occur. This lack of knowledge can become stressful and unsettling for an athlete.

A transition develops into a crisis when an athlete may not be able to cope effectively with the situation placed in front of him or her, which transfers the focus to the inner conflict (Stambulova, 2000). Stambulova defined a crisis as “a turning (or transitional) point in the development of a system (an individual or a society, for example); it is connected to difficulty or even danger; and it influences the existence of the system” (p. 586). The types of inner conflicts causing situational-related crises were identified by Stambulova as follows: “«I must, but I cannot» (between demands and abilities); «I want to, but I cannot» (between desires and abilities); «I must, but I do not want to» (between demands and desires); and «I must, but I cannot, and I do not want to» (between demands, on the one hand, and abilities and desires, on the other hand).” This crisis allows an athlete to better understand the link between events and athletic career stages as well as to develop connections between the past, present, and future and the connection between life outside sports and one’s athletic career (Stambulova). Various types of inner conflict were identified with situation-related crises using 552 student athletes (Stambulova). These classifications included (a) crisis of interactions (or relationships), (b) crisis of change, (c) crisis of break, (d) crisis of loss, (e) crisis of search, (f) crisis of failure, (g) crisis of victory, (h) crisis of glory, (i) crisis of deautomatization of motor acts, (j) crisis of changing sport techniques, (k) crisis of
illness or injury or overtraining, (i) crisis of directed weight loss, (m) crisis of destructive influence of a strong psychological barrier, and (n) crisis of moral values. In these crisis situations, there is a decrease in one’s self-esteem and recurrent emotional discomfort (Stambulova). During these times of situation-related transitions, an athlete typically becomes more receptive to failures and mistakes, creating an increase in the number of psychological barriers or symptoms he or she may experience.

Blinde and Stratta (1992) researched the unanticipated and involuntary exit of athletes using a qualitative format. However, the sample was selected from an athletic department that suddenly canceled two sport programs and other athletes who were cut from an athletic team. Athletes with career-ending injuries were not included in this study because of the identification of having an even more unique exit situation. The athletes were interviewed 4 months and 9 months after the termination decision was made. The transition process was portrayed as disruptive and traumatic (Blinde & Stratta). Blinde and Stratta compared the responses with Kübler-Ross’ (1969) stages of loss as a framework because the majority of responses paralleled the experience to death and dying. The initial stage of shock and denial was the shortest stage compared with the other stages. Anger developed from the feeling of betrayal towards the person responsible for the termination of his or her career. Yet, this anger evolved into a frustration with the sport system itself (Blinde & Stratta). The stage of bargaining included an athlete’s attempt to challenge or reverse the decisions made about termination. However, the response
to this effort was often a feeling of hopelessness. Along with the realization that
his or her sport experience was terminated was a feeling of depression, the most
extended stage. A number of areas of an athlete’s life were affected due to his or
her career termination such as social, physical, academic, and psychological
domains. One individual commented:

I think it’s definitely not easy for anyone. I mean, your sport is
going to end at some point. When you end your collegiate career as
a senior, you’re expecting it . . . But this . . . It’s definitely harder
because you are not expecting it. I mean it’s so hard to describe, but
it’s nothing you ever really consider. It’s definitely like someone has
just died. (Blinde & Stratta, p. 16)

The last stage of acceptance may not necessarily involve happiness with the
transition, but there is a certain amount of acknowledgement, acceptance, or both.

Specific features create a challenging experience for each athlete when
living through transition. As mentioned previously, the suddenness of a termination
decision is difficult, whereas other athletes have a feeling of incomplete business
(Blinde & Stratta, 1992). Another issue communicated by the athletes was the
feeling of loss. This finding was related to the extreme amount of time in each
athlete’s life devoted to athletics. Last, the difficult adjustments were attached to
surrounding support systems and the general belief system of an athlete and his or
her sense of control (Blinde & Stratta). The potential impact and adjustments
related to career termination suggest the necessity for further research considering
involuntary transitions from sport.
Career-Ending Injury

The diversity in one’s response to transition may be related to the way an athlete’s transition occurs. An involuntary departure from sport includes (a) an athlete being cut from a team, (b) the sport program being terminated, or (c) an athlete suffering from a career-ending injury (Blinde & Stratta, 1992). As surgical techniques have expanded and improved, the definition of career-ending injury has been altered (Lerch, 1984).

Previous research indicated that between 14% and 32% of athletes retire because of a career-ending injury (Allison & Meyer, 1988; Mihovilovic, 1968; Werthner & Orlick, 1986). Adjusting to life after sport may be accentuated by the same characteristics that go with sport. The level of apparent control over the choice to retire is closely related to an athlete’s adjustment to retirement (Fortunato & Marchant, 1999). A career-ending injury occurs with little warning, often resulting in a loss of identity, self-esteem, status, and self-concept (Fortunato & Marchant). This occurrence may also introduce a perceived lack of control associated with depression and anxiety (Fortunato & Marchant).

Research presented by Kleiber and Brock (1992) represented one of the only studies to focus on the relationship between career-ending injuries and life satisfaction. The data for this study were drawn from 425 athletes surveyed previously. Of the 425 athletes, the study analyzed the 54 who had career-ending injuries. The results suggested that lower measures of life satisfaction and self-esteem conveyed 5 to 10 years later were related to the effects of experiencing a
Although an athlete appears physically independent, he or she often continues to be psychologically dependent upon others for his or her comfort (Lerch, 1984). For example, intercollegiate athletes have many day-to-day decisions made for them. These decisions may include (a) what to wear, (b) when to eat, (c) what types of food to eat, and (d) where to live. As a result, the transition after a career-ending injury and dealing with his or her new independence will illustrate the difficulty an athlete may be feeling (Lerch). This termination of a career may be viewed as an opportunity lost by an athlete, thus affecting an athlete’s positive self-concept. This is why a long-term approach is needed for managing the needs of all athletes, especially those with career-ending injuries (Blinde & Stratta, 1992; Drawer & Fuller, 2002; Lerch).

The type of career-ending injury will display a significant differentiation between an athlete’s opinions about the influence his or her injury had compared with other reasons for retirement (Drawer & Fuller, 2002). In the Drawer and Fuller (2002) study, athletes who had experienced career-ending injuries agreed that the injury limited the duration of their playing career and led to further medical problems.

Injury

When a person participates in sports, injury is intrinsically a risk. Injury is an everyday part of active exercise at every level. Therefore, a physical impairment may be viewed by an athlete as an inconvenience preventing him or
her from active involvement (Ford, Eklund, & Gordon, 2000; Ford & Gordon, 1999; Heil, 1993). Whether the injury is permanent or temporary, it can be behaviorally, emotionally, and cognitively demanding (Brewer, 2001; Ford & Gordon; Weinberg & Gould, 2003; Wiese-Bjornstal et al., 1998). Therefore, the occurrence of an injury can imperil one's belief system, self-concept, values, commitments, emotional stability, and ability to function socially, occupationally, or both (Ford & Gordon).

**Cognitive Appraisal**

Cognitive appraisal is introduced as an evaluative “process of categorizing an encounter and its various facets with respect to its significance for well-being” (Lazarus & Folkman, 1984, p. 31). It is important to place emphasis on cognitive appraisal when discussing injuries because of the significance cognitive appraisal may have on the psychological response of an athlete (Brewer, 1994; Evans & Hardy, 1999; San Jose, 2003). Cognitive appraisal is central to the process in which a distinct situation such as injury is assessed as stressful (Evans & Hardy). The dealings with personal factors and situational factors such as injury-related characteristics or the social and physical environments influence the cognitive appraisal (Brewer). This type of appraisal aids in identifying the degree of stress, emotional response, or both (Brewer).

The cognitive process assists an athlete in understanding and explaining the event such as suffering an injury, eliminating doubts, and placing oneself in a social context (San Jose, 2003). Coping skills and strategies fluctuate with the
circumstances within the environment and each individual’s personality (Evans & Hardy, 1999). In an injury context, the value and concentration placed on the stress response will specify the significance of the ongoing relationship between the individual and the environment (Evans & Hardy).

The stress response may also distinguish what is important during a specific situation. The emotions provide insight into the individual’s attitude about “self” and the “world” (Evans & Hardy, 1999). The individual’s reaction exposes how he or she views a situation related to his or her own well-being. For example, when a sport injury occurs, the cognitive appraisal will uncover the emotions and behaviors related to the injury. Therefore, researching these responses contributes to the understanding of the potential shift from one’s goal-directed actions of being an athlete after experiencing an injury (Evans & Hardy).

The cognitive response to injury considers four main features, including (a) attributions for injury, (b) self-perceptions following injury, (c) coping strategies, and (d) perceived benefits of injury (Brewer, 2001). The attributions for injury are generally difficult because of the inability to foresee the occurrence of an injury; this may cause a traumatic experience for an athlete due to the inability to prepare for the onset of injury. An athlete’s cognitive appraisal preceding the injury frequently depends on both an athlete’s situational and personal factors (Brewer; McDonald & Hardy, 1990). “The instant an athlete is injured, much of what he/she has worked for is taken away. This has a devastating impact, because, for athletes, physical condition and athletic ability are the major components of
self-worth” (Faris, 1985, p. 545). Only after an athlete reclaims his or her emotional control is there an ability to acknowledge the limiting capacity and severity of the injury (McDonald & Hardy). A perception of benefits of injury could also be a reaction that is influenced by the success of another rehabilitation experience or whether he or she has been affected by a previous injury (Brewer; McDonald & Hardy). However, dealing with physical and psychological suffering from an injury will initiate some type of coping strategy (Brewer).

**Coping Strategies**

Lazarus and Folkman (1984) defined coping as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Various coping strategies are utilized after an injury occurs such as acknowledging the injury and then concentrating on becoming healthy and thinking in a constructive, optimistic manner (Brewer, 2001). When an athlete is adjusting to the consequences of injury, there is a change in his or her self-concept, emotions, lifestyle, achievements, finances, physical behavior, and relationships with family and friends (Ford & Gordon, 1999; Rose & Jevne, 1993). Depending upon the mind-set of the individual and his or her behavior, these strategies can be perceived as either positive or negative. For example, athletes interviewed about their response to injury and the role social support played in their ability to cope with athletic-injury-related stress (Ford & Gordon) resulted in one athlete commenting:
I’ve definitely lost a sparkle [since the injury]. . . . I’m normally the kind [of person] who’s telling jokes to everyone, . . . and now I just have no motivation to do that. I would say my sense of pride, because I’m not playing, is a bit down at the moment. (p. 249)

When encountering a significant change in one’s health condition, individuals are more likely to rely on others and anticipate help they would like to receive (Udry, Gould, Bridges, & Tuffey, 1997). It is important during a sport injury to seek out and use all of the social resources surrounding a person (Brewer, 2001; Ford & Gordon, 1999). An athlete identified the support he or she received by remarking:

I felt like the injury should have affected my relationship with my friends. . . . I felt like I have been a complete grouch and they must hate me, but they have all been wonderful and I think it has actually brought a few of my friends and I closer together. (Ford & Gordon, 1999, p. 250)

The following eight types of social support were identified by Brewer: (a) listening support, (b) expressive support, (c) emotional trials, (d) appreciation of the undertaking, (e) task challenge, (f) certainty confirmation, (g) personal assistance, and (h) material assistance.

The social factors surrounding an athlete contribute to the psychological response to the situation. The distinct characteristics of the activity and an athlete’s connection with peers, family, coach, and group will differ between team and individual sports (San Jose, 2003). In an individual sport, an athlete seems to place more emphasis on his or her dependence on the coach’s instruction versus an atmosphere of team support (San Jose).
An athlete may also maintain the ability to recognize the positive benefits of injury. There is often a feeling of threat or loss; however, there may be a feeling of benefit (Brewer, 2001). Personal development during recovery from an injury may allow an athlete to develop other interests outside of athletics or provide additional time to reflect on life. An injury may also be viewed as a test of character or the chance for sport performance enhancement. The downtime during rehabilitation may be perceived as an opportunity to increase inner motivation and use the lessons taught physically (Brewer). Recognition of these benefits is more common with minor injuries than with an injury of greater severity (Brewer). An injury as finite as a career-ending injury could eliminate the motivation that would complement the drive towards returning to one’s sport.

Psychological Models

Over the years, researchers have studied both stage models and cognitive appraisal models with respect to the psychological aspects of injury. These conceptual models provide supportive information to understand the psychological response to sport injury (Brewer, 1994; Wiese-Bjornstal et al., 1998).

The stage model was initially modified from research on the psychological reaction to terminal illness and other sources discussing grief and loss (Astle, 1986; Brewer, 2001; Kübler-Ross, 1969). Utilizing a stage model, injury stimulates the stages of grief introduced by Kübler-Ross. Kübler-Ross discussed various reactions to loss in her five-stage model, including (a) denial and isolation, (b) anger, (c) bargaining, (d) depression, and (e) acceptance. These reactions to
loss tend to be viewed as a consequence regardless of the type of loss encountered (Astle). However, some researchers have not completely supported the grief model because of the oversimplification of the progression with respect to injury (Brewer, 1994; Evans & Hardy, 1995; Rose & Jevne, 1993). Some overlapping concepts in the review of literature, presented by Evans and Hardy (1999), included (a) concern, (b) obsession and probing, (c) fury and remorse, (d) emotions of loss of self and loss of identity, and (e) justifying defenses.

Rose and Jevne (1993) interviewed seven athletes who had experienced injuries ranging from 3 months to 15 years ago. The results presented a "risks model." This model was broken down into five phases, including (a) thinking in the preinjury context, (b) getting injured, (c) acknowledging the injury, (d) dealing with the impact, and (e) achieving a physical and psychosocial outcome (Rose & Jevne). Acknowledging the injury was differentiated along a range from acceptance to denial. One athlete commented, "I realized finally, formally, that I had a chronic problem that wasn't going to go away, and I think then I became depressed a bit" (Rose & Jevne, p. 320). The following phase, dealing with the impact, was when the athletes modified or familiarized themselves with the cognitive, behavioral, emotional, and physical consequences related with their injuries. At this point, the individuals also contended with self-concept changes and lack of motivation related to rehabilitation. Finally, each athlete either ignored or acted upon the lessons from being injured. These results provided more details related to dealing with injury, thus supporting the idea that stage models may present too
broad of a view for the injury process (Rose & Jevne).

Lately, more researchers have begun to set aside the grief models and explain the demonstrative reaction to sports injury by using cognitive appraisal-based models (Brewer, 1994; Evans & Hardy, 1999; Rose & Jevne, 1993). This switch of focus to the cognitive appraisal models draws attention to the broad number of psychological reactions to injury (Evans & Hardy). The cognitive appraisal models are interconnected with the conceptual skeleton from other stress and coping theories (Brewer, 2001). Some authors such as Wiese-Björnstal et al. (1998) believe the insufficiency with the grief model was that the grief model was based on individuals dealing with death, a population dissimilar to athletes. Therefore, the grief model accentuates the inability to explain the character differences within an athlete’s reaction to injury (Evans & Hardy).

The more recent view of psychology of injury is more flexible than the five stages of Kübler-Ross (1969; Weinberg & Gould, 2003) or the cognitive appraisal model. In 1994, Brewer reviewed the research supporting both stage and cognitive appraisal models. Stage models related to the psychological reactions to athletic injury are based on the grief model (Brewer; Evans & Hardy, 1999). This process indicates that an individual’s reactions evolve over time by means of stages. A cognitive appraisal model describes the person’s different reaction to a situation and the evaluation of each situation separately (Brewer; Evans & Hardy; Lazarus & Folkman, 1984). Lazarus and Folkman provided an example, stating:

The extent to which the physical [emphasis added] vulnerability depends on the importance of the commitments that the physical
disabilities threaten, ... psychological vulnerability is determined not just by a deficit in resources but by the relationship between the individual's pattern of commitments and his or her resources for warding off threats to those commitments [emphasis added]. (p. 51)

This situation could easily be an example of a career-ending injury. After reviewing both stage-based and process-based models, Brewer determined that cognitive appraisal models were best for comprehending the sport injury process. However, Evans and Hardy suggested that the grief stages be considered in combination with the cognitive appraisal model when looking at the psychology of injury. Wiese-Bjornstal et al. (1998) introduced the integrated model using both the stage model and cognitive appraisal model with respect to injury.

The integrated model presents a thorough way of studying injury by its inclusive and cyclic nature. The integrated model illustrates how the psychological outcomes of sport injury are related to the complete injury experience (Wiese-Bjornstal et al., 1998). The core of the integrated model represents the cognitions that sequentially influence the emotional and behavioral response to injury (Wiese-Bjornstal et al.). The integrated model of response to sport injury addresses both preinjury and postinjury responses. The preinjury contributors include an athlete's personality, history of stressors, coping resources, and interventions. The postinjury section of the model focuses on the response to sport injury and the rehabilitation process. This section of the model is divided into three parameters: (a) cognitive appraisal, (b) behavioral response, and (c) emotional response. The personal and situational factors are reconciled by one's cognitive appraisal (Brewer, 2001). The integrated model suggests that cognitions (i.e., self-esteem,
self-worth, self-confidence, and self-efficacy) influence the emotional and behavioral responses to injury (Wiese-Bjornstal et al.). Therefore, each of these parameters influences the physical and psychosocial recovery responses. These emotional reactions have more variety and are less sequential than stated in the stage models (Brewer). Despite the need to further investigate the response to injury, the integrated model by Wiese-Bjornstal et al. is the most well-developed process up to this point (Brewer; Mainwaring, 1999).

**Psychological and Behavioral Responses**

Several studies have found that the initial reaction to injury is frustration, depression, or both (Brewer, 2001; Brewer et al., 1993; Mainwaring, 1999; Smith et al., 1993). Brewer et al. completed four studies to determine whether the disturbance of a pursuit of self-defining activities is related to a depressed mood. All four of the studies’ results suggested an athletic role was associated with the depressive reaction to an applicable negative life occurrence (Brewer et al.).

Mainwaring (1999) presented a longitudinal, qualitative study with 10 injured athletes, ranging in age from 20 to 29 years old. The psychological response to sport injury was deciphered as a process beginning with the onset of injury and continued during rehabilitation. Three domains of experience were identified related to the psychological response to sport injury. These domains included (a) physical, (b) psychological, and (c) social. The initial setup of this process was reflected by an individual’s physical trauma, which initiated an internal response. Each athlete’s internal response made an attempt to restore order
or attain equilibrium in his or her life. The physical domain was the primary classification with two themes: (a) the sport injury experience and (b) the treatment and rehabilitation. The psychological domain initiated a cognitive and affective response to injury. All of the injured athletes expressed the experience as being disruptive in their lives. The negative emotional responses consisted of (a) anger; (b) anxiety; (c) need for control; (d) depression in association with a perceived sense of reduced athletic ability, muscle atrophy, and social support; (e) sense of loss; (f) disappointment; (g) fear; (h) frustration; (i) sense of reduced pride and self-esteem; and (j) shock (Mainwaring). The social domain emphasized the connection between an athlete’s social lives and his or her sport and how the injury affected his or her community. Mainwaring suggested that all domains of an individual’s life need to be focused on during rehabilitation of severe injuries rather than focusing only on physical recovery. Therefore, this research will further the focus on psychological responses of athletes with career-ending injuries.

Brewer (2001) believed that the behavioral responses of an injured athlete have generated the most research. These reactions are related to personal, situational, emotional, and cognitive behaviors (Brewer). For example, one response is the attitude towards sport-injury rehabilitation. This type of reaction is affected by clinic-based activities, the modification made to physical activity, the physical therapy exercise performed at home, and the possibility of taking medication for one’s injury (Brewer). A person’s conduct is typically influenced by internal and external personal factors. Some examples of this consider one’s health,
pain tolerance, an inner-driving force, task involvement, and the inner toughness of the mind (Brewer). Another behavior may address the coping strategies discussed previously.

An athlete’s personal factors may include age, athletic identity, investment in playing professional sports, level of involvement in the sport, and one’s competitive trait anxiety (Brewer, 2001). The negative association with situational factors of emotional distress include (a) impairment of sport performance, (b) level of sport participation, (c) medical prognosis, (d) recovery progress, (e) surrounding social support for rehabilitation, and (f) social support satisfaction of the injured party (Brewer). Therefore, the psychology of injury incorporates a huge variety of factors with both positive and negative correlations with regard to an athlete’s reaction. This research study investigated these issues when the rehabilitation of the injury did not lead to a return to athletic activity and how this created different or varied behavioral responses.

Athletic Identity

An athletic identity of an individual is based on the amount a person identifies with an athlete role (Brewer et al., 1993). An individual who places a great amount of value on athletic achievement may associate his or her self-esteem and motivational level to his or her participation and outcomes (Brewer et al.). As a result, the reaction to an injury is interpreted by his or her athletic identity (Brewer et al.; Pearson & Petitpas, 1990).
**Self-Concept**

Self-concept is one of the most significant constructs in the social sciences. Self-concept refers to an individual’s perceptions of himself or herself. These perceptions are developed through interpretations and experiences of one’s environment (Shavelson et al., 1976). Self-concept is often viewed as either a multidimensional, hierarchical oriented construct or domain specificity (Chanal, Marsh, Sarrazin, & Bois, 2005; Marsh & Shavelson, 1985).

In 1991, Lirgg completed a meta-analysis scrutinizing gender differences in self-confidence in physical activity related to previous claims. The definition of self-confidence was described as the awareness of one’s own abilities and commonly cited as a “mediating construct in achievement strivings and as a psychological factor affecting athletic performance” (Lirgg, p. 294). Hence, these perceptions are one portion that may impact an athlete’s total self-concept. The claims in the study stated that males would have greater confidence than females in tasks that were male oriented and in competitive situations. The research questions asked: (a) Do males generally display more confidence than females? (b) If so, how large is the difference? (c) Do tasks that have a male orientation contribute to larger confidence differences? and (d) Does performing in a competitive situation negatively affect female self-confidence? (Lirgg). Criteria for the meta-analysis stated that the studies had to be published after 1977, the participants had to include both males and females, a prior measurement of confidence had to occur prior to any manipulation occurring, and the statistics had to include the ability to
calculate effect size (Lirgg). Thirty-five studies with a total of 46 effect sizes were included in the meta-analysis. The results indicated that a difference in self-confidence does appear between males and females, favoring the males. However, competition does not play a role in these differences (Lirgg). This suggested that male athletes have a higher self-concept than females. In 2003, Todd and Kent discovered a similar result, suggesting that male’s perceived athletic competence was more important than female’s perceived athletic competence.

Two studies used the Tennessee Self-Concept Scale (TSCS) to measure the self-concept of athletes versus nonathletes. The first study (Schumaker, Small, & Wood, 1986) examined self-concepts and grade point averages between nonathletes and athletes. The total self-concept scores (342.8 and 321.3) were significantly higher for the athletes than the nonathletes, respectively. There were also significant differences between the athletes and nonathletes with respect to the physical self, moral-ethical self, personal self, identity, and behavior subscales (Schumaker et al.). Another study utilized the TSCS to determine if self-perceptions varied between bodybuilders and the general population (Finkenberg & Teper, 1991). The results indicated that the bodybuilders had significantly higher scores than the general population.

Pargman and Lunt (1989) used the TSCS to determine the relationship between the severity of injury in freshmen collegiate varsity football athletes and self-concept. As it has been shown that athletes begin with a higher self-concept, this can be affected by an injury (Pargman & Lunt). Results demonstrated a
significant negative correlation between severity of injury and self-concept (Pargman & Lunt). Therefore, an injury as severe as career ending could have a strong relationship with a negative self-concept.

**Retrospective Accuracy**

Retrospective questions often increase recall errors that lead to under- and overreporting. The consequence of human memory on the answers to survey questions has been the apprehension of this survey methodology for years (Ayhan & Isiksal, 2004). Locating individuals immediately after a career-ending injury can become difficult and time-consuming. As a result, the data were collected by asking the athletes to reflect on specific circumstances. The accuracy of the responses were assumed to be due to flashbulb memories.

**Flashbulb Memory Hypothesis**

A flashbulb memory was first introduced in 1977 by Brown and Kulik. In order to create this type of flashbulb memory, two factors are necessary: (a) a high level of surprise and (b) consequentiality (Brown & Kulik). This type of memory will primarily have a “live” quality that is virtually perceptual. Brown and Kulik described the flashbulb memory as having the characteristics of a photograph that arbitrarily preserves the setting in which one was found when the flashbulb was fired. Conclusions made from flashbulb literature indicate that the information from these events is extraordinarily preserved at long retention levels, even 1 year or longer after the occurrence of the event (Christianson, 1992). However, the
flashbulb memory is still far from complete.

Brown and Kulik (1977) observed 10 types of unexpected or novel events, 9 historical (e.g., the assassination of John F. Kennedy) and 1 personal (e.g., unexpected shock). Each of the 40 participants answered a questionnaire. The first question asked: “Do you recall the circumstances in which you first heard that? . . .” If the individual answered yes, he or she was then asked to write a free recall about his or her circumstances (Brown & Kulik). The answers provided were divided into “canonical” groupings. Some differences were identified between the content of the historical events and the personal events, thus creating small changes in the categories. The seven categories included (a) “place,” where one learned of the event; (b) “ongoing event” that was interrupted; (c) “informant” that provided the news; (d) “affect in others” upon listening to the news; (e) “own affect”; (f) immediate “aftermath” for the individual on hearing the news; and (g) personal shock (Brown & Kulik). The personal event has some differences in the categories because of the differences in the uniqueness of the experience.

Flashbulb memories are considered a category of autobiographical memories. However, flashbulb memories differ because they are related with many event-specific, sensory-perceptual details, causing the recall to appear more vivid than other memories (Conway, 1995). Individuals may retain the original event and details such as the place where he or she was, time when he or she learned about the event, constant activity, informer, personal reactions, others’ reactions, and aftermath (Brown & Kulik, 1977; Curci, 2005; Larsen, 1992; Winningham,
Winningham et al. (2000) examined the consistency of reports documented between the initial occurrence and a time delay following an occurrence. This research considered the announcement of the O. J. Simpson acquittal (Winningham et al.). It seems that reasonably long delays between the event and preliminary documentation have created greater consistency in reports (Winningham et al.).

Self-Report

When researching injury, it is often difficult to access athletes both retrospectively and prospectively. One study compared data collected prospectively and retrospectively related to injured gymnasts. The evidence suggests that assessing a minor injury retrospectively may have less recall accuracy (Kolt & Kirkby, 1999). However, none of the data differed when focusing on injury types and anatomical locations.

Summary

A career-ending injury occurs without notice and has the ability to affect an athlete’s perceptions of himself or herself. Termination of a career is viewed as an opportunity lost by an athlete, thus affecting an athlete’s positive self-concept. Self-concept refers to an individual’s perceptions of himself or herself. These perceptions are developed through interpretations and experiences of one’s environment (Shavelson et al., 1976). The potential effects on the self-concept and level of psychological distress are why a long-term approach is needed for
managing the needs of athletes with career-ending injuries (Blinde & Stratta, 1992; Drawer & Fuller, 2002; Lerch, 1984).

Unfortunately, the difficulty in researching this involuntary event has created a minimal amount of research. Therefore, it is important to review the literature and models from injury and career transitions. The complexity of the integrated model by Wiese-Bjornstal et al. (1998) and the human transition model by Schlossberg (1981) interwoven together may possibly create an image of what an athlete’s response to a career-ending injury could be.
CHAPTER 3

METHODS

This chapter describes the methodology used regarding this study. First, selection of the participants is presented. Second, instruments utilized to assess the dependent variables are discussed. Last, the procedures and data analysis of the data are outlined.

Participants

Detection of a purposeful, homogeneous sample was collected. The sample tested consisted of voluntary NCAA Division I athletes from various programs throughout the nation. Both males and females were tested, ranging from 18 to 24 years of age.

A power analysis revealed a sample size of 26. Therefore, with a 5% to 10% attrition rate, an attempt was made to locate 29 athletes for this study, enabling statistical judgments that were accurate and reliable. Sixty athletes were sought: (a) 30 athletes for the reference group and (b) 30 athletes for the injured group. The injured group was selected on the basis that the athletes were told by a medical professional that they were unable to return to sport due to an injury. This injury occurred 9 to 15 months prior to the date the assessments were filled out. The reference group consisted of healthy, competitive athletes who were matched
by sport with the injured group.

**Instruments**

Instruments were selected to measure an athlete’s self-concept and his or her psychological distress. Data were gathered by having the athletes complete the (a) Demographic Questionnaire, (b) TSCS: 2, and (c) SCL-90-R.

**Demographic Questionnaire**

All participants completed a Demographic Questionnaire in order to establish relevant personal information (see Appendix A). Two slightly different questionnaires were prepared for the injured group and the reference group. The Demographic Questionnaire was designed to collect descriptive data from the athletes. This information included items such as gender, university, age, and age at injury. The Demographic Questionnaire also included a few questions to verify whether anything other than the injury changed the results of the data such as any other significant events that occurred in the last year of an athlete’s life or whether an athlete believed he or she had the opportunity to perform at a professional level within his or her sport.

**Tennessee Self-Concept Scale: Second Edition**

Self-concept is the guiding energy behind all behavior and occupies a view of self-worth or personal importance put upon the self by the individual (Wylie, 1974). The purpose of the TSCS: 2 (Fitts & Warren, 1996) is to assess a multidimensional sketch of an individual’s self-concept. Fitts (1972) believed that
self-concept is a valid predictor of many aspects of behavior.

The Adult Form of the TSCS: 2 has 82 self-descriptive items and uses a 6-point Likert-type scale. This form is appropriate for ages 13 and older. Each question permits the individual to describe his or her own self-picture with the following responses: always false, mostly false, partly false, partly true, mostly true, and always true. The form can be completed by groups or individuals with an approximate third-grade (or higher) reading level. Completion of the TSCS: 2 is estimated to take 10 to 20 minutes.

The TSCS: 2 is comprised of four validity scores, two summary scores, six self-concept scores, and three supplementary scores. The validity scores intend to recognize guarded, defensive, socially desirable, and other uncommon response patterns. If any inconsistencies are identified, it is important to visually inspect responses for patterns. These four scores consist of (a) inconsistent responding, (b) self-criticism, (c) faking good, and (d) response distribution. These four scores are calculated separately from each other. Inconsistent responding suggests whether the responses have any unusually wide inconsistencies with similar content. For example, a pair of items (“I look fine just the way I am” and “I am an attractive person”) when answered differently may be a result of careless responding. The inconsistent responding score was developed by recognizing nine pairs of items with relatively high correlations. Scores ($\geq 70T$) indicate caution is necessary when interpreting an individual’s profile. The self-criticism score consists of mildly derogatory statements (e.g., “I get angry sometimes”). This score determines if the
individual may be defensive with answers or is attempting to provide “pleasing” answers. A low self-criticism score indicates the need for further questioning of the individual, and a high self-criticism score ($\geq 707$) suggests the individual may dwell on personal faults. Faking good helps determine if the individual may provide a falsely positive self-concept to present a favorable impression. These items include ideas such as “I have a healthy body.” Response distribution elucidates certainty about the way an individual sees himself or herself. This score is evaluated by counting the number of extreme responses. Detecting unusually high or low validity scores will let the researcher know that he or she must visually inspect the item response further to identify noncompliant or atypical patterns. The reasons for atypical validity scores may be investigated using clinical histories or interviews. Atypical validity scores may suggest an extraordinary orientation to the content or test-taking circumstance. As a result, if atypical validity scores are identified, individual items are further investigated to determine the relative strengths or vulnerabilities of the participant.

The summary scores are total self-concept and conflict. The total self-concept score is the single most important score on the TSCS: 2 (Fitts & Warren, 1996). This score indicates the individual’s global self-concept and level of self-esteem. Individuals with high total self-concept scores ($\geq 607$) may perceive themselves positively. This high sense of value and self-confidence is drawn upon when his or her self-image is threatened or injured. Very high total self-concept scores ($\geq 707$) are often related to serious psychological disturbance or distress.
This score could be a reaction or sense of failure. Lower total self-concept scores ($\leq 40T$) mean the individual is doubtful of his or her self-worth, causing self-descriptions to be tentative and conservative. However, very low total self-concept scores ($\leq 30T$) typically reflect long-term personal difficulties. Conflict contrasts the degree to which an individual sets apart his or her self-concept by affirming with positive items such as “who I am” or negating with negative items such as “who I am not.” Typically, adults provide an equal amount of focus to both sides. A conflict score above average or high ($\geq 60T$) suggests either a balanced self-view or the presence or emergence of a conflict. Very high conflict scores ($\geq 70T$) are related to a high level of ambivalence or conflict. If a good number of TSCS: 2 scores are below $40T$ and the conflict score is higher than $65T$, there is evidence that the individual is suffering from low self-acceptance and self-esteem. Low conflict scores ($\leq 40T$) suggest that the individual concentrates more on who he or she is not than who he or she is. A low conflict score ($\leq 30T$) means a defensive or disagreeable attitude exists.

The self-concept subscales include (a) physical self-concept, (b) moral self-concept, (c) personal self-concept, (d) family self-concept, (e) social self-concept, and (f) academic/work self-concept. The physical self-concept score portrays the participant’s viewpoint of his or her state of health, body, physical appearance, sexuality, and skills. This evaluation is important because his or her physical appearance is closely linked with the individual’s global self-esteem across his or her lifetime. This item may say “I like the way I look” or “I have lots of aches or
pains.” Items from the moral self-concept subscale state, “I think I do the right
thing most of the time” and “I shouldn’t tell so many lies.” These answers depict
the self from a moral-ethical point of view, thus examining the moral worth of a
person, satisfaction with one’s religion or lack of it, and feelings of being a
“good” or “bad” person. The personal self-concept score reveals the individual’s
sense of personal worth, self-evaluation of his or her personality apart from the
body or his or her relationship with others, and his or her feelings of adequacy as
a person. This scale uses items such as “I’m happy with who I am” or “I’m not
important at all.” The score may indicate an individual’s overall personality
integration. Items in the family self-concept subscale include “My family will
always help me” or “My family doesn’t trust me.” This score reveals one’s
feelings of adequacy, value, and worth as a family member, thus displaying the
individual’s opinion of self related to his or her immediate circle of connections.
The social self-concept subscale is similar to the family self-concept subscale; that
is, it measures how the self is identified as related to others. This self-concept
recognizes in a broader way the individual’s sense of worth and adequacy in social
relations with other people. These items state “I get along well with other people”
or “I find it hard to talk with people I don’t know.” These social self-concept
scores have a tendency to be related to the physical self-concept scores. Last, the
academic/work self-concept score measures the individual’s perception of himself
or herself in work or school settings and how he or she is viewed in those settings.
The questions from this subscale include “Other people think I am smart” or “I
don’t know how to work well.” This score is the most strongly related to actual academic performance of all TSCS: 2 scores.

The supplementary scores incorporate identity, satisfaction, and behavior. These scores are collections of entries from each self-concept subscale and are arranged as one of three primary messages: (a) “This is who I am, this is how I identify myself” (identity); (b) “this is how satisfied I am with myself” (satisfaction); and (c) “this is what I do, this is how I behave” (behavior). These scales are assumed to signify an internal frame of reference within which the individual expresses himself or herself. Items such as “I am a cheerful person” or “I am a bad person” contribute to the identity score. The satisfaction score results from items such as “I look fine just the way I am” or “I should love my family more.” In general, this provides the level of self-acceptance for the individual. Last, the behavior score is an expression of how the individual perceives the way he or she functions such as “I take good care of my body” or “I fight with my family.”

The TSCS: 2 also identifies 13 items as critical items. Each item provides critical values of particular responses. If the responses appear to be in the critical range, these critical responses may recognize an unusual amount of distress or uncommon circumstances that may be particularly significant in an individual’s existing situation (Fitts & Warren, 1996). As a result, the clinician should inquire further into the individual’s responses.
Scoring. Fifteen raw scores are calculated by hand and include (a) four validity scores (inconsistent responding, self-criticism, faking good, and response distribution); (b) two summary scores (total self-concept and conflict); (c) six self-concept scores (physical self-concept, moral self-concept, personal self-concept, family self-concept, social self-concept, and academic/work self-concept); and (d) three supplementary scores (identity, satisfaction, and behavior). Hand scoring takes approximately 10 minutes using the Auto Score™ form. Initially, the validity of the individual’s responses is identified. Once the raw scores are calculated, they are plotted on the profile sheet, providing a $T$ score with each raw score. The $T$ score is based on the 1988 edition items, scoring, rules, and norms. These norms, however, are not based on an athletic population. Plotting the $T$ scores supplies the researcher with a visual examination of each scale, potential scale clusters, or both. The TSCS: 2 profile scores for the majority are likely to fall between 40 and 60 (one standard deviation above and below the mean). This general evaluation of the profile pattern allows the researcher to identify a positive, average, or negative self-concept. Last, an interpretation is made for each specific scale and critical items, which identifies specific areas of difficulty for each individual.

Psychometric properties. Over a span of 30 years, the TSCS has been identified as a reliable and valid measure of self-concept. The TSCS: 2, Adult Form and Child Form, were restandardized on a nationwide sample of 3,000 participants ranging from 7 to 90 years of age. The Adult Form was standardized with 1,944 participants ranging from 13 to 90 years of age. The test was shortened
from the 1988 version; however, the median correlation of scale scores between
the two tests is .94 (Fitts & Warren, 1996).

In 1965, Fitts discussed the characteristics of the original TSCS normative
sample and the comparative effects of moderator variables (i.e., sex, age, ethnic
background, intelligence, and education). Fitts concluded, based on several
independent data collections, that the effect of these variables was small (i.e.,
correlations of .20 or less) and, hence, accounted for little variance within the
scores. This was retested in 1988 and for the TSCS: 2, which resulted in the same
collection.

The original findings in 1965 by Fitts determined inconsequential sex
differences. When observing sex, the effect size for the Adult Form is .14. As a
result, separate norms are unnecessary when using the TSCS: 2. However,
Sharpley and Hattie (1983) reexamined for cultural and sex differences within the
TSCS. One hundred one men and 101 women from Australia completed the
questionnaire. The results suggested that the norms provided were unlikely to give
stability across cultures. The results also determined that there were significant
differences between females and males.

Male scores were higher on personal self, psychosis, personality
integration, self-criticism, neurosis, defensive positive, and true/false
ratio, and lower on conflict scores. Females were higher on
personality disorder, row variability, moral/ethical self, and social
self. (Sharpley & Hattie, p. 720)

When observing age, the TSCS: 2 scores for self-concept increased. For the Adult
Form, it has been determined that answers provided change when an individual
turns 18 years of age compared with younger age groups. The average effect size between adult and adolescent groups is small to medium (.28 deviation units), which supports the idea that separate norms should continue to be used with the TSCS: 2. Comparing ethnic groups with the full standardization sample created a small effect size. The results determined that there were no significant differences (Fitts & Warren, 1996). The TSCS: 2 testing of participants was based on the education level of the head of household. The scores compared the head of household having fewer than 12 years of education, high school graduates with no college education, noncollege graduates with some college education, and college graduates. The scores showed no residual differences of practical significance. The TSCS: 2 standardization groups observed the socioeconomic status established by the occupation of the head of household. Results indicated there was no clear evidence of age-by-occupation interaction. The representation of geographic regions was explored, resulting in little difference in the answers from various U.S. geographic regions.

Internal consistency and test-retest reliability are identified for the TSCS: 2. Internal consistency estimates for the TSCS: 2 Adult Form ranged from .73 to .95 with a median of .80, using Cronbach's alpha. Test-retest reliability scores were assessed by investigating 135 high school students. The participants took the Adult Form with 1 to 2 weeks test-retest period. These test-retest results provided a range from .47 (inconsistent responding) to .82 (total self-concept) with a median of .76. Average test-retest differences provided a range from -.14 for the social
self-concept to +.20 for the conflict (median +.00 for the satisfaction). These changes are mostly small; thus, practical significance is minimal. The standard error of measurement was derived from the test-retest reliabilities with a range from 4.1 to 7.2 T-score points and with a median of 5.1 T-score points.

Several studies in various counseling, clinical, educational, and medical settings have provided verification for validity of the TSCS: 2. Two lines of research examined content validity. After the items of the TSCS were developed in 1965, seven clinical psychologists were selected to classify the items. In 1975, Levin, Karnie, and Frankel developed a mapping sentence characterizing the structure of the TSCS items as “the extent to which the respondent’s conception of the internal modality (identity, self-satisfaction, behavior) of his [or her] self with regard to the self as a (physical, moral/ethical, personal, family, social) referent is high to low” (Fitts & Warren, 1996, p. 62). The results verified that a sufficient fit could be attained for a two-dimensional solution with internal and external dimensions.

Construct validity was confirmed by using factor analytic studies to verify the multiple dimensions of the self-concept scale. Concurrent validity was tested by correlating the questionnaire with measurements having similar constructs. Correlations were reported with the Minnesota Multiphasic Personality Inventory, Edwards Personal Preference Schedule, Self-Description Questionnaire III, Piers-Harris Children’s Self-Concept Scale, and a variety of other personality measures. All correlations were significant in the predicted direction (Fitts & Warren, 1996).
In 1979, Van Tuinen and Ramanaiah presented a multitrait-multimethod study demonstrating convergent and divergent data for validity of the total self-concept score as a measure of global self-esteem. Three separate constructs were measured: (a) global self-esteem, (b) need for order, and (c) social self-esteem. Two hundred four undergraduate psychology students were given the measures. The results provided strong criterion-related validity evidence that the total score is a measure of global self-esteem, which is separate from social self-esteem.

Research and personality theory suggest that groups that differ in certain psychological dimensions would also differ in self-concept. One comparison included 363 psychiatric patients and 626 nonpatients. These groups differed substantially except for self-criticism and response distribution. Another study that compared 75 functioning individuals and 626 nonpatients displayed a difference for every score in a direction opposite to that of the patient group.

Symptom Checklist-90-Revised

The SCL-90-R (Derogatis, 1994) is a questionnaire designed to measure the current psychological symptom status. The SCL-90-R has been used as both a screening device and an outcome measure across an extensive span of research and clinical contexts. A prototype of this test, the SCL-90, was introduced in 1973. However, the SCL-90 was an expansion of the Hopkins Symptom Checklist adding 45 items to 5 primary symptom dimensions defined by Derogatis, Lipman, Covi, and Rickels (1971, 1972). The SCL-90-R replaced 2 items and modified 7 items while demonstrating validity and sensitivity of the instrument.
The Adult Form of the SCL-90-R contains 90 items and uses a 5-point Likert-type scale. This form is appropriate to reflect the psychological symptom status of medical patients, psychiatric patients, nonpatients, and adolescent nonpatients. The Adult Form can be completed in 12 to 15 minutes. Participants are asked to indicate how much the problem has distressed or bothered them during the past 7 days, including today. The responses include *not at all, a little bit, moderately, quite a bit,* and *extremely* (Derogatis, 1994). This form can be completed by an individual with approximately a sixth-grade reading level or higher.

The SCL-90-R is comprised of nine primary symptom dimensions and three global indices. The primary symptom dimensions include (a) somatization, (b) obsessive-compulsive, (c) interpersonal sensitivity, (d) depression, (e) anxiety, (f) hostility, (g) phobic anxiety, (h) paranoid ideation, and (i) psychoticism. The somatization dimension suggests distress appearing from perceptions of bodily dysfunction. Sample symptoms include soreness of a person’s muscles and feeling weak in parts of his or her body (Derogatis, 1994). The obsessive-compulsive dimension involves symptoms that are identified with the standard clinical syndrome of obsessive-compulsiveness. This measure concentrates on actions, impulses, and thoughts that are experienced as irresistible and are of an unwanted nature. Sample symptoms include feeling blocked in getting things done and being unable to make difficult decisions. The interpersonal sensitivity dimension directs the focus toward feelings of inadequacy and inferiority, especially compared with
others. Sample symptoms include feeling others do not understand or are unsympathetic and feeling self-conscious with others. The depression dimension indicates a representative range of the manifestations of clinical depression. Sample symptoms include feeling low in energy or slowed down and feeling lonely. The anxiety dimension provides general signs of anxiety. Sample symptoms include feeling fearful and feeling tense or keyed up. The hostility dimension reflects feelings, actions, or thoughts that are qualities of the negative affect state of anger. Sample symptoms include feeling easily annoyed or irritated and getting into frequent arguments. The phobic anxiety dimension is a continuing fear response that is disproportionate and illogical to a specific person, object, place, or situation leading to avoidance or escape of a behavior. Sample symptoms include feeling afraid in open spaces or on the streets and having to avoid certain things, places, or activities because they are frightening. The paranoid ideation dimension characterizes paranoid behavior fundamentally as a disordered way of thinking. Sample symptoms include feeling others are to blame for most of one’s troubles and feeling that one is watched or talked about by others. The psychoticism dimension signifies the construct as a continuous dimension of human experience. This construct includes the first-rank symptoms of schizophrenia and items indicative of an isolated, withdrawn, and schizoid lifestyle. Sample symptoms include hearing voices that others do not hear and feeling lonely even when one is with people.
The three global indices of distress include the (a) global severity index, (b) positive symptom distress index, and (c) positive symptom total. The function of these measures is to convey the individual’s psychological distress with one score. The global severity index score is the best single indicator of psychological distress by combining information from the symptoms reported with the intensity of identifiable distress. The positive symptom distress index is a measure used to determine the symptom intensity, and the positive symptom total reflects the number of symptoms endorsed by the respondent.

Last, seven additional items are not considered under any of the primary symptom dimensions. These items load on a number of the dimensions but are not univocal to any of them. These items are included because they possess clinical significance, even though they violate one of the statistical criteria for inclusion in the test. The seven items contribute to the overall global scores.

Scoring. Raw scores were calculated by hand using the answer keys and a worksheet. These included the nine symptom dimensions, three global indices, and seven additional items. Following the calculation of raw scores, a conversion to the proper area $T$ score was completed in order to compare an individual’s performance or status from one domain to the next such as comparing relative levels of anxiety and depression. The appropriate gender-specific profile was used to plot the data in order to interpret the three levels. The SCL-90-R is intended to interpret on three distinct levels of information: (a) discrete symptom level, (b) dimensional level, and (c) global level. This general evaluation of the profile
pattern allows the researcher to identify a positive, average, or negative level for each dimension. Last, each case was defined by:

\[ \text{Positive } D_x = T_{\text{global severity index}} = T_{63} \text{ or } T_{\text{2DIM}} = T_{63}. \]

However, this caseness rule has not been fully explored for generalizability.

**Psychometric properties.** Four major normative cohorts are included in the SCL-90-R: (a) adult (Norm A) psychiatric outpatients, (b) adult (Norm B) nonpatients, (c) adult (Norm C) psychiatric inpatients, and (d) adolescent (Norm E) nonpatients. For the current research, the results were limited to Norm B. Norm B is made up of approximately 1,000 individuals. Unfortunately, the descriptive demographics were not as complete for this group.

Recognized reliability estimates for the SCL-90-R include (a) internal consistency and (b) test-retest. Internal consistency coefficients were formed from two sources using the Kuder-Richardson Formula 20. The first study, using “symptomatic volunteers,” ranged from .77 (psychoticism) to .90 (depression), and the second study, using “psychiatric outpatients,” ranged from .79 (paranoid ideation) to .90 (depression; Derogatis, 1994). Test-retest reliability scores were assessed measuring untreated psychological symptoms. The first study used “psychiatric outpatients” over a 10-week time period and ranged from .68 (somatization) to .83 (paranoid ideation). The second study used “heterogeneous psychiatric outpatients” over 1 week and ranged from .78 (hostility) to .90 (phobic anxiety). These correlations are appropriate levels for measures of symptom
Several studies in various settings have provided verification for validity of the SCL-90-R. Research examined the internal structure with a matrix that examined the dimensional structure of the SCL-90-R. This confirmed that the empirical analysis matched the theoretical structure. Factorial variance data have been reported for all nine dimensions across the parameter of gender. The results revealed high levels of agreement ranging from .60 to .85, except for paranoid ideation (.51; Derogatis, 1994). Convergent-discriminant validity was established by correlating the questionnaire with independent measures of similar or dissimilar constructs. Correlations were reported with the Minnesota Multiphasic Personality Inventory and the Crown-Crisp Experimental Index. All correlations were significant in the predicted direction (Derogatis). Concurrent validity has been established by simultaneously administering analogous instruments with the SCL-90-R. Correlations are reported with the Center for Epidemiologic Studies Depression Scale, Hamilton Rating Scale for Depression, Social Adjustment Scale—Self-Report, Raskin Depression Screen, General Health Questionnaire, Present State Examination, Beck Depression Inventory, and Asberg Rating Scale. All correlations were significant in the predicted direction (Derogatis).

**Procedures**

Athletic training rooms from NCAA Division I colleges were contacted requesting male and female volunteers to participate in a study on the effects of career-ending injuries on an athlete’s self-concept and psychological distress. The
volunteers were between the ages of 18 and 24 years. The injured group was identified by athletic trainers at each university. Initially, the injured group was asked to complete the package of information. When completed results were received, a healthy, competitive athlete was contacted from the same sport as the injured athlete.

The athletes were contacted by their trainer or the researcher through e-mail or mail. The documentation explained how the test should be conducted. A short introduction to the study and instructions to the TSCS: 2 and SCL-90-R were provided (see Appendix B). At this point, the athletes were allowed to contact the researcher regarding questions or concerns related to the testing procedure.

Each injured participant received an envelope with the following items enclosed: (a) informed consent (see Appendix C), (b) Request Results form (see Appendix D), (c) Demographic Questionnaire (see Appendix A), (d) a time line (see Appendix E), (e) three TSCS: 2 with three sets of instructions (see Appendix F), (f) three SCL-90-R with three sets of instructions, and (g) a stamped and addressed manila envelope. Participants were asked to sign an informed consent and to complete the Demographic Questionnaire, TSCS: 2, and SCL-90-R. The reference group was directed to complete the TSCS: 2 and SCL-90-R only once. The injured group was asked to complete the TSCS: 2 and SCL-90-R on 3 consecutive days. This enabled the athlete to think of his or her situation at the time of injury, the day an athlete was told that he or she would not be able to return to sport, and 9 to 15 months from the date of injury. The order in which an
athlete was asked to think of his or her situation varied among the three time frames.

Conclusions drawn from flashbulb memory literature indicated that information from these events is extraordinarily preserved at long retention levels, even 1 year or longer after the occurrence of the event (Christianson, 1992). The participants completed the forms on their own and returned them in an addressed stamped envelope provided. The forms took approximately 30 to 45 minutes to fill out each day.

The first mailing was sent out once a list of potential contacts was received from an athletic training room. A second reminder was sent out after a 2-week period, with a follow-up phone call after another week.

After all participants returned the multiple forms, the data were statistically analyzed. Initially, each questionnaire was hand scored. The scores were then interpreted to determine whether any of the information was incomplete and needed to be excluded from the data analysis. This occurred when there were more than 18 items omitted from the SCL-90-R or more than 8 items omitted from the TSCS: 2. All items on each of the scales were completed for each athlete. The conflict scores from the TSCS: 2 were assessed for each of the three questionnaires to look at within-subject variability enabling a determination of the precision of the measurement. Following this analysis, data cleaning was performed prior to running statistical analysis.
Data Analysis

This investigation was an exploratory study in self-concept, psychological distress, and career-ending injuries. Data obtained from participants were hand scored and then entered into the Statistical Package for Social Sciences Graduate Version 15.0 for Windows. The Statistical Package for Social Sciences calculated the statistics, measuring the data from two groups: (a) injured group and (b) reference group. The three periods of injury included (a) the day of injury, (b) the day it was determined that the injury was career ending, and (c) the current status. Descriptive statistics showing the means, standard deviations, variances, and frequencies between the two groups were examined looking at the demographic results.

The following statistical calculations were used: (a) a one-way analysis of variance (ANOVA) with repeated measures with Fisher’s least significant differences, (b) a one-way ANOVA, and (c) correlations. A one-way ANOVA with repeated measures was performed to evaluate if there were differences between an athlete’s knowledge about the severity of his or her injury over different stages related to his or her total self-concept using the TSCS: 2 and psychological distress using the SCL-90-R. When differences were determined, Fisher’s least significant differences was utilized to determine where the differences occurred. A one-way ANOVA with repeated measures was also performed to assess changes in the subscales and supplementary scales of the TSCS: 2 and SCL-90-R over the three periods of injury. Fisher’s least significant differences was used to determine
where the differences occurred. This test was also performed to determine an athlete’s total self-concept if an athlete had potential for a professional career in his or her sport. A one-way ANOVA was completed to evaluate if any difference in the total self-concept existed between a healthy, competitive athlete and an injured athlete. Last, correlations were performed to review the relationship between the SCL-90-R global severity index and an athlete’s total self-concept in all three stages.
CHAPTER 4
RESULTS AND DISCUSSION

This study was concerned with the amount of psychological distress that occurs after a career-ending injury and an athlete’s self-concept. Thus, this chapter presents and discusses the results obtained from the analyses. A discussion of these results in view of the hypotheses and the literature as well as the possible explanations for further analyses performed are provided.

Analysis

Requests were sent to approximately 2,200 individuals with a physical therapy or athletic training background. These individuals worked with numerous athletic teams at each university. These contacts were located across the nation and were involved with 324 Division I universities. Ninety-one individuals were never contacted due to incorrect e-mail information. Forty-seven contacts responded that they no longer worked directly with athletes. Eighteen contacts forwarded the information to the appropriate contact. Only 1 school replied that they were not interested in participating. All of the military academies were eliminated since active duty personnel cannot participate in research studies. Three schools requested further Institutional Review Boards from that institution and thus were eliminated due to time limitations. One hundred twenty-two contacts responded that
they had no athletes with career-ending injuries in the last 9 to 15 months. There were 31 potential participants who had experienced a career-ending injury and received the information. A response rate of 36.6% was reached with 11 injured participants returning the research packets completed ($n = 11$). Each injured athlete was matched with a healthy, competitive athlete in the same sport. Twenty-one healthy, competitive athletes were contacted. A response rate of 66.6% was achieved with 14 athletes. One healthy, competitive athlete was eliminated from the research due to incomplete data ($n = 13$).

The analysis began by viewing the descriptive statistics. The complete sample consisted of 24 participants, approximately half of whom were women ($n = 11$) and the remainder were men ($n = 13$). Approximately 83% of the participants were White, and the remaining participants were distributed across Blacks (8.7%), Hispanics (4.3%), and others (4.3%). The athletes were from nine NCAA Division I schools and eight sports (i.e., baseball, soccer, gymnastics, football, volleyball, track and field, and basketball). Injuries requiring career termination were comprised of shoulder, knee, disease, multiple surgeries, and multiple concussions. Table 1 displays descriptive statistics for the individual’s age at the start of his or her career, currently, and at career termination. No participants were eliminated due to data-cleaning issues. In addition, validity scores did not require the elimination of any participants because of the results. However, one individual’s responses were two to three standard deviations from the norm on multiple scales in both the TSCS: 2 and the SCL-90-R. As a result, the individual
Table 1

*Descriptive Statistics of Ages*

<table>
<thead>
<tr>
<th></th>
<th>Current age</th>
<th>Age when athletic career started</th>
<th>Age at career termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>24</td>
<td>24</td>
<td>11</td>
</tr>
<tr>
<td>Mean</td>
<td>21.1</td>
<td>9.6</td>
<td>20.6</td>
</tr>
<tr>
<td>Median</td>
<td>22.0</td>
<td>8.5</td>
<td>21.0</td>
</tr>
<tr>
<td>Mode</td>
<td>22.0</td>
<td>14.0</td>
<td>20.0&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>1.8</td>
<td>4.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Variance</td>
<td>3.1</td>
<td>22.9</td>
<td>2.1</td>
</tr>
<tr>
<td>Minimum</td>
<td>18.0</td>
<td>3.0</td>
<td>18.0</td>
</tr>
<tr>
<td>Maximum</td>
<td>24.0</td>
<td>19.0</td>
<td>23.0</td>
</tr>
</tbody>
</table>

<sup>a</sup>Multiple modes exist. The smallest value is shown.

was provided with information necessary to contact a professional to discuss further any psychological/emotional issues with which he or she may have been dealing.

Results

All statistical assumptions were tested prior to analysis. When the assumption for Mauchly’s Test of Sphericity was not met, the more conservative measure of Huynh-Feldt was used to determine significance. When either Mauchly’s Test of Sphericity or Huynh-Feldt was statistically significant, follow-up tests were conducted to evaluate pairwise differences. Pairwise comparisons were
calculated using Fisher’s least significant differences.

Research Question 1

The initial step in the analysis was to determine if an athlete’s psychological state changed as he or she progressed through the stages of recovery following a career-ending injury. At the onset of injury, the level of psychological stress increased compared with the scores from healthy, competitive athletes. When the athlete was told by a medical professional that the injury was career ending, the level of psychological stress remained high. However, 9 to 15 months postinjury, the psychological levels reduced to the same level as that of the healthy, competitive athlete. The data were analyzed by dividing Research Question 1 into four subparts.

Research Question 1a. The first analysis determined the difference in an athlete’s psychological distress related to his or her knowledge about the severity of his or her injury over three stages. The three stages included (a) the day the injury occurred, (b) the day a medical doctor stated that the injury was career ending, and (c) the current state of the individual 9 to 15 months postinjury. This analysis was accomplished with a one-way repeated measure ANOVA with a Fisher’s least significant differences post hoc test. The dependent variable was an athlete’s global severity index between injury, career-ending injury, and current status. The mean values for the global severity index $T$ score across the three stages of recovery are reported in Table 2. The mean differences were statistically higher between the onset of injury and 9 to 15 months postinjury and career
Table 2

*Mean Values of the Global Severity Index T Score Across Three Stages of Recovery*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global severity index: injured</td>
<td>65.5</td>
<td>10.7</td>
<td>11</td>
</tr>
<tr>
<td>Global severity index: career ending</td>
<td>67.0</td>
<td>13.5</td>
<td>11</td>
</tr>
<tr>
<td>Global severity index: 9 to 15</td>
<td>58.0</td>
<td>9.8</td>
<td>11</td>
</tr>
</tbody>
</table>

termination and 9 to 15 months postinjury. Little difference was seen between the means of when the athletes were injured and when they determined the injury was career ending. The ANOVA was significant, $F(2,20) = 7.37, p = .004$.

Follow-up tests were conducted to evaluate pairwise differences. Pairwise comparisons were made using Fisher's least significant differences. Significant differences occurred between injury and current status ($p = .017$) and between career-ending injury and current status ($p = .018$). No statistical difference was found in an athlete's global severity index between an athlete's onset of injury and the time he or she discovered the injury was career ending.

**Research Question 1b.** The second analysis determined whether an athlete's global severity index following a career-ending injury was dependent upon an athlete's potential for a professional career in his or her sport. The one-way ANOVA with repeated measures was not statistically significant, $F(2,18) = .169, p = 0.846$, suggesting when athletes experience career-ending injuries the amount of psychological distress athletes experience is not dependent upon whether they
believed a professional career was part of their future.

**Research Question 1c.** The third analysis focused on the subscales and global indices of the SCL-90-R, indicating whether there were differences between each of the three stages of recovery. This analysis was accomplished with one-way repeated measures ANOVA with Fisher’s least significant differences with the factor being the three stages of recovery and the dependent variable being each of the subscales and global indices for the SCL-90-R. Table 3 displays data for the means, standard deviations, $F$ scores, $p$ values, and partial eta squared values.

Each of the subscales and supplementary scales was statistically significant, except for the somatization subscale. These results suggest that somatization was not strongly affected by experiencing a career-ending injury. Follow-up pairwise comparisons were calculated for the subscales and supplementary scales that were statistically significant. It should be noted that there was little change in means between the onset of injury and the time when a medical professional determined the injury was career ending; therefore, the significant trend was due to changes with these two stages of recovery and 9 to 15 months postinjury. The obsessive-compulsive scale was statistically significant across all three stages of recovery. The positive symptom total was only statistically significant between determining the injury was career ending and 9 to 15 months postinjury. These results imply that the athletes’ number of symptoms regardless of distress is only affected when the medical professional tells them the injury is career ending.
Table 3

Differences Between Subscales and Global Indices of the Symptom Checklist-90-Revised Across Three Stages of Recovery

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Injury</th>
<th>Career termination</th>
<th>9 to 15 months postinjury</th>
<th>F</th>
<th>p value</th>
<th>Partial eta²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatization⁸</td>
<td>56.5 ± 9.1</td>
<td>56.5 ± 11.8</td>
<td>54.0 ± 9.2</td>
<td>.716</td>
<td>.471</td>
<td>.067</td>
</tr>
<tr>
<td>Obsessive-compulsive⁸</td>
<td>60.9 ± 10.0</td>
<td>64.4 ± 12.9</td>
<td>53.9 ± 12.9</td>
<td>12.901</td>
<td>.001</td>
<td>.563</td>
</tr>
<tr>
<td>Interpersonal sensitivity⁸</td>
<td>67.1 ± 11.2</td>
<td>66.0 ± 10.9</td>
<td>58.6 ± 10.8</td>
<td>5.255</td>
<td>.026</td>
<td>.344</td>
</tr>
<tr>
<td>Depression⁸</td>
<td>66.8 ± 10.9</td>
<td>69.0 ± 12.5</td>
<td>59.4 ± 9.9</td>
<td>6.038</td>
<td>.011</td>
<td>.376</td>
</tr>
<tr>
<td>Anxiety</td>
<td>60.1 ± 11.5</td>
<td>60.5 ± 13.3</td>
<td>50.8 ± 9.1</td>
<td>5.731</td>
<td>.011</td>
<td>.364</td>
</tr>
<tr>
<td>Hostility⁸</td>
<td>60.6 ± 12.8</td>
<td>61.8 ± 12.6</td>
<td>51.8 ± 9.9</td>
<td>7.060</td>
<td>.010</td>
<td>.414</td>
</tr>
<tr>
<td>Global indices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive symptom distress index⁸</td>
<td>62.4 ± 9.5</td>
<td>63.7 ± 10.3</td>
<td>56.0 ± 7.4</td>
<td>5.962</td>
<td>.016</td>
<td>.373</td>
</tr>
<tr>
<td>Positive symptom total⁸</td>
<td>61.5 ± 9.4</td>
<td>63.5 ± 11.2</td>
<td>57.2 ± 9.1</td>
<td>4.261</td>
<td>.040</td>
<td>.299</td>
</tr>
</tbody>
</table>

⁸Did not meet Mauchly's Test of Sphericity; thus, the more conservative measure, Huynh-Feldt, was used.
Research Question 1d. The fourth analysis indicated whether injured athletes have a different global severity index than healthy, competitive athletes. This analysis was accomplished with a one-way ANOVA. No statistical difference was found, $F(1,22) = .067, p = .798$, between healthy, competitive athletes and injured athletes 9 to 15 months postinjury, insinuating that athletes with career-ending injuries may have the same level of psychological distress as healthy, competitive athletes 9 to 15 months postinjury.

Research Question 2

The second step in the analysis was to determine whether an athlete’s self-concept changed when transitioning out of sport due to an injury. Research Question 2 stated: What effect does transitioning out of sport due to an injury have on an athlete’s self-concept? This inquiry was divided into four subparts.

Research Question 2a. The first analysis examined the stability of an athlete’s self-concept across three injury stages. These stages included (a) the day the injury occurred, (b) the day a medical doctor stated that the injury was career ending, and (c) the current state of the individual 9 to 15 months postinjury. This analysis was accomplished with a one-way repeated measure ANOVA with Fisher’s least significant differences post hoc test. The dependent variable was the total self-concept score. The mean values for the total self-concept $T$ score across the three stages of recovery are reported in Table 4. Therefore, the total self-concept mean at injury and career termination was close in score. However, the total self-concept increased 9 to 15 months postinjury related to the mean for both
Table 4

Mean Values of the Total Self-Concept T Score Across Three Stages of Recovery

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total self-concept: injured</td>
<td>44.8</td>
<td>10.8</td>
<td>11</td>
</tr>
<tr>
<td>Total self-concept: career ending</td>
<td>45.4</td>
<td>12.9</td>
<td>11</td>
</tr>
<tr>
<td>Total self-concept: now</td>
<td>54.5</td>
<td>8.6</td>
<td>11</td>
</tr>
</tbody>
</table>

the time of injury and career termination. The ANOVA was significant, $F(2,20) = 4.78, p = .02$. The time factor accounted for 51% of the variance. Follow-up tests were conducted to evaluate pairwise differences. Pairwise comparisons were made using Fisher’s least significant differences. Significant differences occurred between the onset of injury and 9 to 15 months postinjury ($p = .012$) and between career-ending injury and 9 to 15 months postinjury ($p = .035$). No statistical difference was found in an athlete’s total self-concept between an athlete’s onset of injury and the point at which he or she discovered that the injury was career ending.

Research Question 2b. The second analysis determined whether an athlete’s total self-concept when a medical professional determined the injury was career ending was dependent upon an athlete’s potential for a professional career in his or her sport. Approximately 54% of the athletes believed that there was potential for a professional career in his or her sport. The one-way ANOVA with repeated measures was not statistically significant, $F(2,18) = .196, p = 0.823$, suggesting
when athletes experience career-ending injuries their total self-concept is not dependent upon whether they believed a professional career was part of their future.

**Research Question 2c.** The third analysis focused on the subscales and supplementary scales of the TSCS: 2, inquiring whether there were differences between each of the three stages of time. This analysis was accomplished with one-way repeated measures ANOVA with Fisher’s least significant differences with the time factor being the three stages of recovery and the dependent variable being each of the subscales and supplementary scales. Table 5 displays the means, standard deviations, $F$ score, $p$ value, and partial eta squared. Each of the subscales and supplementary scales was statistically significant, except for the family, social, and academic subscales. These results suggest that family, social, and academic self-concept were not strongly affected by experiencing a career-ending injury.

Follow-up pairwise comparisons were calculated for the subscales and supplementary scales that were statistically significant. Significant changes appeared between the onset of injury and 9 to 15 months postinjury and determining the injury was career ending and 9 to 15 months postinjury. It should be noted that there was little change in means between the onset of injury and the time when a medical professional determined the injury was career ending; therefore, the significant trend was due to changes with the two stages of recovery and 9 to 15 months postinjury. However, the satisfaction scale indicated a
<table>
<thead>
<tr>
<th>Subscales</th>
<th>Injury</th>
<th>Career termination</th>
<th>9 to 15 months postinjury</th>
<th>F</th>
<th>p value</th>
<th>Partial eta²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical</strong></td>
<td>45.3 ± 8.7</td>
<td>44.8 ± 13.4</td>
<td>52.6 ± 7.2</td>
<td>4.060</td>
<td>.033</td>
<td>.289</td>
</tr>
<tr>
<td><strong>Moral</strong></td>
<td>48.5 ± 8.5</td>
<td>46.0 ± 8.9</td>
<td>54.1 ± 7.9</td>
<td>6.046</td>
<td>.009</td>
<td>.377</td>
</tr>
<tr>
<td><strong>Personal</strong></td>
<td>42.7 ± 10.5</td>
<td>44.6 ± 12.1</td>
<td>55.5 ± 11.8</td>
<td>5.070</td>
<td>.017</td>
<td>.336</td>
</tr>
<tr>
<td><strong>Family</strong></td>
<td>50.8 ± 8.5</td>
<td>52.6 ± 9.2</td>
<td>57.0 ± 7.7</td>
<td>3.122</td>
<td>.066</td>
<td>.238</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>41.0 ± 12.3</td>
<td>42.2 ± 16.8</td>
<td>51.5 ± 13.1</td>
<td>3.324</td>
<td>.057</td>
<td>.250</td>
</tr>
<tr>
<td><strong>Academic</strong></td>
<td>46.8 ± 11.5</td>
<td>47.5 ± 11.2</td>
<td>51.5 ± 9.8</td>
<td>3.129</td>
<td>.066</td>
<td>.238</td>
</tr>
<tr>
<td><strong>Supplementary scales</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Identity</strong></td>
<td>43.9 ± 9.2</td>
<td>44.0 ± 10.4</td>
<td>53.6 ± 10.2</td>
<td>4.899</td>
<td>.019</td>
<td>.329</td>
</tr>
<tr>
<td><strong>Satisfaction</strong></td>
<td>45.0 ± 9.3</td>
<td>46.0 ± 13.0</td>
<td>54.3 ± 7.8</td>
<td>3.525</td>
<td>.049</td>
<td>.261</td>
</tr>
<tr>
<td><strong>Behavior</strong></td>
<td>45.1 ± 11.1</td>
<td>45.8 ± 12.0</td>
<td>55.3 ± 9.8</td>
<td>3.765</td>
<td>.041</td>
<td>.273</td>
</tr>
</tbody>
</table>
statistically significant difference between the onset of injury and 9 to 15 months postinjury.

**Research Question 2d.** The fourth analysis indicated whether injured athletes have a different total self-concept than healthy, competitive athletes. This analysis was accomplished with a one-way ANOVA. No statistical difference, \( F(1,22) = .121, p = .731 \), was found between healthy, competitive athletes and injured athletes 9 to 15 months postinjury, suggesting athletes with career-ending injuries may have the same total self-concept of healthy, competitive athletes 9 to 15 months postinjury.

**Research Question 3**

The last step in the analysis was to determine if there was a relationship between the SCL-90-R global severity index and an athlete’s total self-concept at each of the three stages. Correlation coefficients were computed between global severity index and total self-concept at each of the three stages. Each of the three stages of recovery had a strong negative correlation between the two measures. The correlation between the global severity index and total self-concept at the onset of injury was significant, \( r(9) = -.713, p < .01 \). The day the medical professional determined the injury was career ending, the correlation between the global severity index and total self-concept was significant, \( r(9) = -.669, p < .05 \). The correlation between the global severity index and total self-concept was also significant, \( r(22) = -.681, p < .01 \), 9 to 15 months postinjury. These results indicated that at each stage of recovery the more psychological distress an athlete
Discussion

The purpose of this exploratory study was to investigate the effects on one’s psychological distress and self-concept of transitioning out of sport as a result of a career-ending injury. The following research questions discuss the applicability of the results and explanations related to each of the hypotheses.

Research Question 1

Hypothesis 1 stated that a career-ending injury would increase an athlete’s level of psychological distress. Hypotheses 1a, 1b, and 1c connected to the original hypotheses were only partially supported. The ANOVAs revealed that there were significant differences between the time the injury occurred and 9 to 15 months postinjury as well as the period when the medical doctor indicated the injury was career ending and 9 to 15 months postinjury. These results are important because they support the literature that indicates an injury, either temporary or permanent, will be emotionally and cognitively demanding (Brewer, 2001; Ford & Gordon, 1999; Pargman & Lunt, 1989; Weinberg & Gould, 2003; Wiese-Bjornstal et al., 1998). The ANOVA that was not statistically significant was the time between injury and determining the injury was career ending, which may be due to the small sample size. However, there are a number of possible reasons for this result. Depending on the time frame between an athlete’s injury and the point he or she was told that the injury was career ending, an athlete may not differentiate between
the two occurrences. Some of the athletes may have known immediately that their injuries were career ending. Hence, the athletes may have begun to move through the stages of recovery earlier than others. Some of the athletes could have also reacted by having less distress or more distress when the injury was determined to be career ending; however, the means would be similar to those reported. Another reason for this result could be because the sample is made up of college students. Many athletes who attend college are achievement oriented, providing them with other options after athletics; this may not be the case with a noncollege sample.

Hypothesis 1a, based on the literature, suggested that healthy, competitive athletes had a lower level of psychological distress than injured athletes. The results did not support the literature (Finkenberg & Teper, 1991; Schumaker et al., 1986). The data indicated that 9 to 15 months after an injury an athlete’s level of psychological distress had returned to the same level demonstrated prior to injury. This conclusion is based on the assumption that healthy, competitive athletes are a representative sample of the level of psychological distress athletes had prior to injury.

Hypothesis 1b suggested that there would be an increase in the global severity index of the SCL-90-R following a career-ending injury when there was a potential for a professional career in his or her sport. No statistically significant differences were found ($p = 0.823$). Kleiber and Brock (1992) indicated that athletes who had been devoted to playing professionally and experienced career-ending injuries showed lower life satisfaction and self-esteem 5 to 10 years
postinjury. However, the small sample size may have affected these results with 4 males and 2 females who had anticipated a professional career in their future. In addition, there are fewer professional sports opportunities for females than males, which may also have affected the results. Therefore, it would be important to continue further research distinguishing between males and females and their anticipated opportunities for a professional career.

Research Question lc asked if there were differences between the subscales and global indices of the SCL-90-R at each of the three stages. Hypothesis lc suggested that an inverse relationship would exist between an athlete’s level of anxiety, perception of bodily dysfunction, and feeling of inadequacy with an athlete’s total self-concept. The athletes’ somatization subscale was the only subscale that was not strongly affected by experiencing a career-ending injury. Somatization reflects concern from perceptions of bodily dysfunction. Because a healthy, competitive athlete could be dealing with similar issues due to training, this may be the reason there is no difference across the three stages of recovery.

Further analyses were calculated to distinguish differences among the three stages. Each dimension was subtracted between career-ending injury and the remaining injury stages in order to determine the differences. The differences were then correlated with the differences in the total self-concept to distinguish which subscales represented the strongest relationship. A multiple regression analysis was conducted to evaluate how well the subscales of the SCL-90-R predicted the global severity index between career termination and 9 to 15 months postinjury. In Table
Differences Between Current Status and Career Termination With Subscales and Global Indices of the Symptom Checklist-90-Revised

Table 6

Differences Between Current Status and Career Termination With Subscales and Global Indices of the Symptom Checklist-90-Revised

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Zero order</th>
<th>Standardized coefficients beta</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatization</td>
<td>.382</td>
<td>.269</td>
<td>.048</td>
</tr>
<tr>
<td>Obsessive-compulsive</td>
<td>.784</td>
<td>.049</td>
<td>.624</td>
</tr>
<tr>
<td>Interpersonal sensitivity</td>
<td>.789</td>
<td>.389</td>
<td>.204</td>
</tr>
<tr>
<td>Depression</td>
<td>.969</td>
<td>1.187</td>
<td>.019</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.616</td>
<td>.317</td>
<td>.183</td>
</tr>
<tr>
<td>Hostility</td>
<td>.779</td>
<td>.257</td>
<td>.030</td>
</tr>
<tr>
<td>( R^2 = .990 )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global indices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive symptom total</td>
<td>.867</td>
<td>.268</td>
<td>.077</td>
</tr>
<tr>
<td>Positive symptom distress index</td>
<td>.962</td>
<td>.746</td>
<td>.000</td>
</tr>
<tr>
<td>( R^2 = .950 )</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6, the zero order, standardized coefficients beta, and significance are presented to determine the impact each subscale had on the global severity index. However, the depression subscale standardized coefficient beta is three times greater than the other subscales, indicating that depression is the most important predictor in determining an athlete’s level of psychological distress. These results would support the research by Blinde and Stratta (1992), which indicated that depression was the most prolonged stage when experiencing an unanticipated and involuntary exit from college athletics. The feeling of depression was related to athletes identifying this time period as unproductive (Blind & Stratta).
Table 7 presents differences between the injury stage and career-ending injury stage. These results determine significant correlations between total self-concept and interpersonal-sensitivity and the positive symptom dimension index. Table 8 introduces correlations ranging from \(-.543, p < .05\), and \(-.840, p < .01\).

A multiple regression analysis was conducted to evaluate how well the subscales of the SCL-90-R predicted the total self-concept between career termination and 9 to 15 months postinjury. Table 9 introduces items that distinguish the largest impact on the total self-concept. The subscales of interpersonal sensitivity, anxiety, and depression from the SCL-90-R are key predictors of one's total self-concept.

Research Question 2

The second step of the analysis supported the hypothesis, suggesting that a career-ending injury will reduce an athlete's self-concept. Hypotheses 2a, 2c, and 2d partially supported the original hypotheses. The ANOVA revealed significant differences in the total self-concept between the time the injury occurred and 9 to 15 months postinjury and between the period when the medical doctor indicated the injury was career ending and 9 to 15 months postinjury. These results are important because they support the literature that indicates an injury, either temporary or permanent, is damaging both emotionally and cognitively (Brewer, 2001; Ford & Gordon, 1999; Pargman & Lunt, 1989; Weinberg & Gould, 2003; Wiese-Bjornstal et al., 1998). The expectation that there would be further issues both emotionally and cognitively when the individual was told that the injury was
Table 7

*Correlation is significant at the 0.05 level (1-tailed). **Correlation is significant at the 0.01 level (1-tailed).

Note. $N = 11$. 

<table>
<thead>
<tr>
<th></th>
<th>TOT</th>
<th>SOM</th>
<th>OC</th>
<th>IS</th>
<th>DEP</th>
<th>ANX</th>
<th>HOS</th>
<th>PSDI</th>
<th>PST</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOT</td>
<td>Pearson</td>
<td>.164</td>
<td>.140</td>
<td>-.650*</td>
<td>-.431</td>
<td>-.281</td>
<td>-.383</td>
<td>-.812**</td>
<td>-.083</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.315</td>
<td>.341</td>
<td>.015</td>
<td>.093</td>
<td>.201</td>
<td>.122</td>
<td>.001</td>
<td>.404</td>
</tr>
<tr>
<td>SOM</td>
<td>Pearson</td>
<td>.674*</td>
<td>-.426</td>
<td>.358</td>
<td>.463</td>
<td>-.184</td>
<td>.138</td>
<td>.625*</td>
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<td>Sig. (1-tailed)</td>
<td>.011</td>
<td>.096</td>
<td>.140</td>
<td>.076</td>
<td>.294</td>
<td>.343</td>
<td>.020</td>
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<tr>
<td>OC</td>
<td>Pearson</td>
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<td>.093</td>
<td>.216</td>
<td>.443</td>
<td>.228</td>
<td>.085</td>
<td>.623*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
<td>.393</td>
<td>.261</td>
<td>.086</td>
<td>.250</td>
<td>.402</td>
<td>.020</td>
<td></td>
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<tr>
<td>IS</td>
<td>Pearson</td>
<td></td>
<td></td>
<td>.141</td>
<td>.125</td>
<td>.668*</td>
<td>.555*</td>
<td>.052</td>
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<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
<td></td>
<td>.393</td>
<td>.357</td>
<td>.012</td>
<td>.038</td>
<td>.439</td>
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<tr>
<td>DEP</td>
<td>Pearson</td>
<td></td>
<td></td>
<td></td>
<td>.374</td>
<td>-.382</td>
<td>.662*</td>
<td>.473</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
<td></td>
<td></td>
<td>.340</td>
<td>.123</td>
<td>.012</td>
<td>.071</td>
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<tr>
<td>ANX</td>
<td>Pearson</td>
<td></td>
<td></td>
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<td></td>
<td>-.063</td>
<td>.145</td>
<td>.727**</td>
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<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.427</td>
<td>.335</td>
<td>.006</td>
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<tr>
<td>HOS</td>
<td>Pearson</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.246</td>
<td>-.064</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.233</td>
<td>.426</td>
<td></td>
</tr>
<tr>
<td>PSDI</td>
<td>Pearson</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td>.107</td>
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<tr>
<td></td>
<td>Sig. (1-tailed)</td>
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<td>.377</td>
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<td>PST</td>
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<td></td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Table 8

*Pearson Correlations of Symptom Checklist-90-Revised Dimensions Between Career-Ending and 9 to 15 Months Postinjury*

<table>
<thead>
<tr>
<th>Dim</th>
<th>Total</th>
<th>Symptom</th>
<th>OC</th>
<th>IS</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Hostility</th>
<th>PSDI</th>
<th>PST</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOT</td>
<td>Pearson</td>
<td>-.019</td>
<td>-.322</td>
<td>-.580*</td>
<td>-.617*</td>
<td>-.339</td>
<td>-.733**</td>
<td>-.840**</td>
<td>-.543*</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
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*Correlation is significant at the 0.05 level (1-tailed). **Correlation is significant at the 0.01 level (1-tailed).

Note. N = 11.
Table 9

*Differences Between 9 to 15 Months Postinjury and Career Termination With Subscales and Global Indices of the Symptom Checklist-90-Revised to the Total Self-Concept*

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<td>Obsessive-compulsive</td>
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<td>.300</td>
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<td>Interpersonal sensitivity</td>
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<td>-1.638</td>
<td>.268</td>
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<td>1.386</td>
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<tr>
<td>Anxiety</td>
<td>-.339</td>
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<tr>
<td>Hostility</td>
<td>-.733</td>
<td>-.461</td>
<td>.298</td>
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</table>

$R^2 = .751$

**Global indices**

| Positive symptom total | -.543 | .350 | .633 |
| Positive symptom distress index | -.840 | -1.144 | .021 |
| Global severity index | -.629 | .027 | .975 |

$R^2 = .755$

career ending was not supported. This finding may be due to the small sample size; however, there are a number of possible reasons for this result.

Depending on the time that elapsed between an athlete’s injury and the point he or she was told that the injury was career ending, an athlete may not have been able to differentiate between the two events. Data were not collected on this time period. In some cases, an athlete probably knew the injury was career ending at the time of injury or the injury may have occurred in his or her last year of
eligibility. The psychological reaction to an injury by an athlete is a function of how it is appraised (Brewer, 2001; Evans & Hardy, 1999; Gayman & Crossman, 2003). Gayman and Crossman divided an athlete’s season into four subcategories: (a) preseason, (b) mid-season, (c) end-season, and (d) postseason. Therefore, the timing in the season (Gayman & Crossman) and the transitional phase in which the sport crises occurred (Stambulova, 1994) could strongly impact an athlete’s reaction to a career-ending injury.

Another reason for this result could be because the sample is made up of college students. Although his or her athletic career may have ended, another option may exist while attending college/university, which may not be the case for a noncollege sample.

Hypothesis 2b suggested that there would be a decrease in an athlete’s total self-concept following a career-ending injury when there was potential for a professional career in his or her sport. Although approximately half of the individuals believed there was potential for a professional career, no statistical difference in total self-concept was determined \((p = 0.823)\). Kleiber and Brock (1992) found that athletes who had been devoted to playing professionally and experienced career-ending injuries showed lower life satisfaction and self-esteem 5 to 10 years postinjury. The small sample size may have affected these results. Both males \((n = 4)\) and females \((n = 2)\) who had the chance for a professional career were included in the analysis. However, there are fewer professional sports opportunities for females than males, which may have affected the attitudes with
respect to a professional career and may also have affected the results.

Research Question 2c determined differences between the subscales and supplementary scales of the TSCS: 2 at each of the three stages. The hypothesis suggested, based on the literature review, that a low identity score would have the strongest relationship with a decrease in total self-concept. Identity had a strong relationship, but it was not the strongest predictor. The athletes' family, social, and academic subscales were not statistically different across the three stages of recovery. This finding may be due to the fact that the athletes' family, social, and academic self-concepts did not change because of injury; that is, these support systems remained consistent through this event (Brewer, 2001; Rose & Jevne, 1993; San Jose, 2003). The one exception was the social subscale, which changed a full standard deviation on the $T$ score. However, the social subscale scores were the most variable.

Further analyses were calculated to distinguish differences among the three stages. Each dimension was subtracted between the scores from career-ending injury and injury stages in order to determine the differences. The differences were then correlated with the differences in the total self-concept in order to distinguish which subscales represented the strongest relationship. Table 10 presents correlations ranging from .866 to .977 at the $p$ level of .01. Table 11 introduces differences between the career-ending injury stage and 9 to 15 months postinjury. These results determined significant correlations among all subscales and supplementary scales ranging from .770 to .978 at the $p$ level of .01.
Table 10

*Pearson Correlations of Tennessee Self-Concept Scale: Second Edition Subscales and Supplementary Scales Between Career-Ending and Injured Stages*

<table>
<thead>
<tr>
<th></th>
<th>PHY</th>
<th>MOR</th>
<th>PER</th>
<th>FAM</th>
<th>SOC</th>
<th>ACA</th>
<th>IDN</th>
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*Correlation is significant at the 0.05 level (1-tailed). **Correlation is significant at the 0.01 level (1-tailed).

Note. N = 11.
### Table 11
Pearson Correlations of Tennessee Self-Concept Scale: Second Edition Subscales and Supplementary Scales Between Career-Ending and 9 to 15 Months Postinjury

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<td>.000</td>
<td>.000</td>
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<tr>
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</table>

*Correlation is significant at the 0.05 level (1-tailed). **Correlation is significant at the 0.01 level (1-tailed).

Note. $N = 11.$
The consistently high correlations across all scales suggest that each subscale may impact the total self-concept. A multiple regression analysis was conducted to evaluate how well the subscales of the TSCS: 2 predicted the total self-concept between career termination and 9 to 15 months postinjury. Table 12 presents the zero order, standardized coefficient beta, and significance to each subscale. All of the subscales were similar with regard to predicting the athletes’ total self-concept; the exception was the moral subscale. The moral subscale may not affect the total self-concept because one’s morals and values could remain the

<table>
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<th>Subscales</th>
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<th>Sig.</th>
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<tr>
<td><strong>R² = .998</strong></td>
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</table>

Supplementary scores

| Identity           | .770       | .225                           | .002  |
| Satisfaction       | .973       | .372                           | .020  |
| Behavior           | .970       | .471                           | .006  |
| **R² = .992**      |            |                                |       |
same whether or not an athlete is injured. When using supplementary scores, behavior was the strongest predictor for total self-concept and identity was the lowest predictor. These results did not support previous literature that suggested that identity would be the highest predictor because injury is a threat to an athlete’s identity (Brewer et al., 1993; Pearson & Petitpas, 1990). The behavior supplementary scale measures an athlete’s perception of his or her own behavior or the way he or she functions (Fitts & Warren, 1996). The way the individual views his or her athletic identity is based on the amount a person identifies with an athlete’s role, which could explain how the two definitions (athletic identity and behavior) are related (Brewer et al.). However, it is important to remember that judgments about the relative importance of supplementary scales are difficult because they are correlated.

Hypothesis 2d (Research Question 2) was based on the literature suggesting that healthy, competitive athletes had a higher total self-concept than injured athletes (Finkenberg & Teper, 1991; Schumaker et al., 1986). The results did not support the literature, which is likely due to the small number of participants. However, it is important to consider other significant life events occurring during the 9 to 15 months postinjury. The Demographic Questionnaire asked whether there had been any positive or negative significant life events in the last year. Of the 13 healthy athletes, 6 indicated that there had been a significant life event, and 10 of the injured athletes indicated other significant life events. A one-sample, chi-square test was conducted to assess whether injured or healthy athletes had more or
less positive or negative significant life events. The results of the test were significant, $\chi^2 (1, N = 24) = 5.371, p = .020$. The number of healthy athletes who experienced other significant life events was different from injured athletes with other significant life events. As a result, it is important to evaluate the outcomes with caution because other significant life events may affect the data and the degree to which the injury impacted the individual’s self-concept and level of psychological distress. As a result, time passing would not be a sufficient explanation for one’s total self-concept to improve after a career-ending injury.

Research Question 3

Hypothesis 3 stated that there would be an inverse relationship between an athlete’s total self-concept after a career-ending injury and an athlete’s level of psychological distress. This hypothesis was supported at each of the three stages by presenting a strong negative correlation between an athlete’s total self-concept and global severity index. This hypothesis was also supported by results from Fortunato and Marchant (1999) that a career-ending injury may result in loss of identity, self-esteem, status, self-concept, and a perceived lack of control related to depression and anxiety. Therefore, it was concluded that as an athlete’s psychological distress following a career-ending injury begins to decrease, his or her self-concept will improve (see the Figure).
Global severity index and total self-concept across three stages of recovery.
CHAPTER 5

SUMMARY, FINDINGS, CONCLUSIONS, AND
RECOMMENDATIONS FOR
FUTURE RESEARCH

This study was designed to examine the effect that a career transition due to a career-ending injury would have on an athlete’s psychological distress and self-concept. The knowledge that is gained from this study will help coaches, athletes, doctors, athletic trainers, and families realize the complexity involved in dealing with a career-ending injury. The following sections are (a) a summary of the study, (b) findings derived from the data analyses, (c) conclusions of the study, and (d) recommendations for future research in the area.

Summary

The purpose of this study was to determine how transition out of sport caused by a career-ending injury affects one’s psychological distress and self-concept. The complete sample consisted of 24 participants, including 11 injured and 13 healthy competitive athletes. The participants had all competed at the NCAA Division I level. The participants completed the (a) Demographic Questionnaire, (b) TSCS: 2, and (c) SCL-90-R. The measures were compared across three stages of recovery: (a) the onset of injury, (b) when a medical
professional determined that the injury was career ending, and (c) 9 to 15 months postinjury.

Descriptive statistics showing the means, standard deviations, variances, and frequencies for each of the two groups were examined looking at the demographic results. A one-way ANOVA with repeated measures was performed to evaluate if there were differences between an athlete’s knowledge about the severity of his or her injury over three stages of recovery related to his or her total self-concept using the TSCS: 2 and psychological distress using the SCL-90-R. A one-way ANOVA with repeated measures was also performed to assess changes in the subscales and supplementary scales of the TSCS: 2 and the SCL-90-R over the three periods of recovery. This study also investigated whether the potential for a professional career moderated the relationship between psychological distress, self-concept, or both across the three stages of recovery. When differences were identified, Fisher’s least significant differences was utilized to determine where the differences occurred. A one-way ANOVA was completed to evaluate if any difference in the total self-concept existed between a healthy, competitive athlete and an injured athlete. Last, correlations were performed to review the relationship between the SCL-90-R global severity index and an athlete’s total self-concept at all three stages of recovery.

Findings

The results from this study add to the minimal amount of research on athletes who have experienced career-ending injuries. The data supported the
following findings:

1. The one-way ANOVA with repeated measures with Fisher’s least significant differences indicated that the differences in an athlete’s total self-concept at each of the three stages were statistically significant, $F(2,20) = 4.78, p = .02$. Significant differences occurred between time of injury and current status ($p = .012$) and between career-ending injury and current status ($p = .035$). There was no statistical difference in an athlete’s total self-concept between an athlete’s onset of injury and the point at which he or she discovered that the injury was career ending.

2. The one-way ANOVA with repeated measures indicated an athlete’s total self-concept following a career-ending injury was not moderated by an athlete’s potential for a professional career in his or her sport, $F(2,18) = .196, p = 0.823$.

3. The one-way ANOVA with repeated measures revealed there was no statistical difference, $F(1,22) = .121, p = .731$, between the healthy, competitive athletes and the injured athletes 9 to 15 months postinjury related to their total self-concept.

4. The one-way ANOVA with repeated measures with Fisher’s least significant differences indicated that the differences in an athlete’s global severity index at each of the three stages were statistically significant, $F(2,20) = 7.37, p = .004$. The significant differences
occurred between injury onset and current status \((p = .017)\) and between career-ending injury and current status \((p = .018)\). There was no statistical difference in an athlete's global severity index between an athlete's onset of injury and the time he or she discovered that the injury was career ending.

5. The one-way ANOVA with repeated measures indicated an athlete's global severity index following a career-ending injury was not moderated by an athlete's potential for a professional career in his or her sport, \(F(2,18) = .169, p = 0.846\).

6. The one-way ANOVA with repeated measures revealed there was no statistical difference, \(F(1,22) = .067, p = .798\), between healthy, competitive athletes and injured athletes 9 to 15 months postinjury related to their global severity index.

7. A regression analysis for the psychological distress subscales indicated that the change in the global severity index was due to changes in somatization, depression, and hostility and in the global indices of positive symptom total and positive symptom distress index.

8. A regression analysis for the self-concept subscales indicated that the change in total self-concept was due to changes in physical, personal, family, and academic and in the supplementary scores identity, satisfaction, and behavior.
9. The change in an athlete's psychological distress following a career-ending injury was inversely related to change in his or her total self-concept.

10. A regression analysis indicated that although all of the SCL-90-R subscales contributed to a change in total self-concept, some were statistically significant. When using the global indices, the positive symptom distress index was by far the most important predictor of changes in total self-concept.

Conclusions

Because of the small sample size and retrospective recall methodology used, it is important to view these results with caution. However, career-ending injuries are emotional and consequential and thus may be less susceptible to bias due to a flashbulb memory. The results of this study indicated that healthy athletes and previously injured athletes have comparable total self-concept scores now. Thus, it appears that the onset of an injury reduced the injured athlete's total self-concept and raised levels of psychological distress for a short period of time. However, within 9 to 15 months, athletes returned to a preinjury state with regard to their total self-concept and level of psychological distress.

The correlations between the subscales and supplementary scales of the TSCS: 2 are all remarkably similar and fairly strong. The one exception may be the identity supplementary scale, which was notable because it did not entirely support the previous research literature. The strongest predictor of the SCL-90-R
was the depression scale, which was three times as important as any other subscale in predicting changes from career termination to 9 to 15 months postinjury. Whether the athletes believed a professional career was part of their future did not impact their reactions to career-ending injuries. Finally, psychological distress and self-concept seem to be related to each other. During recovery from the news that the injury was career terminating, psychological distress began to diminish. These changes correlated ($R^2 = .75$) with positive changes in total self-concept. The most important factors seemed to be interpersonal sensitivity, anxiety, and depression.

As a result, this research agrees that an injury can be emotionally and cognitively demanding. When an athlete is confronted with an injury that is career ending, his or her level of psychological distress will increase and his or her level of self-concept will decrease. Yet, these reactions will subside after 9 to 15 months.

**Recommendations for Future Research**

The results of this exploratory study provided preliminary data to add to the literature on career-ending injuries. However, a larger sample size, which would increase power, is necessary to draw any substantial conclusions. To complement this study, it may be useful to examine an athlete’s levels of psychological distress and total self-concept prior to any injury occurring. An athlete’s coping strategies may indicate why some athletes have the ability to cope whereas others have a difficult time. Furthermore, examining the length of time between the onset of injury and the point at which the injury was determined to be career ending could
distinguish further if any differences exist. An athlete should also be asked when he or she first suspected the injury was career ending. Future research should ask each athlete more specifically about his or her significant life events that occurred since the time of injury; this would allow the researcher to differentiate between positive effects, negative effects, or both that may impact the results. In addition, using a qualitative or mixed-method approach would enhance the amount of information the researcher could draw from an athlete’s personal experience with a career-ending injury. For example, the researcher might want to ask an athlete to explain how he or she identified his or her stages of recovery or the various levels of cognitive appraisals an athlete experienced after a career-ending injury. The researcher may also want to ask about the overall experience of an injury and how that injury impacted the athlete.
APPENDIX A

DEMOGRAPHIC QUESTIONNAIRES
Demographic Questionnaire for Injured Group

Date: __________________________________________

Sport: __________________________________________

Gender: __________________________________________

Current university: __________________________________________

Current age: __________________________________________

Age when athletic career started: __________________________

Age at career termination: __________________________

Type of injury: __________________________________________

Have there been any significant life events between rehabilitation and 1 year from your injury (both positive/negative experiences)?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Have you discussed your career-ending injury with a “counselor?” If yes, what type of “counselor?”

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Please circle:

At what point in your anticipated athletic career did you learn that your injury was completed?

1. Too early in career
2. Early in career
3. On time
4. Late in career
5. Too late in career
Rate your athletic identity NOW (I still feel like an athlete):
1. Not at all
2. A little
3. Somewhat
4. A lot
5. Very much

Rate the satisfaction you have with your life NOW:
1. Not at all
2. A little
3. Somewhat
4. A lot
5. Very much

When you selected your university, was sport the primary reason?
1. Unimportant
2. Slightly important
3. Important
4. Very important
5. Extremely important

Do you believe that you had the potential for a professional career in your sport?
1. Yes
2. No
Demographic Questionnaire for Reference Group

Date: ____________________________

Sport: ____________________________

Gender: ____________________________

Current university: ____________________________

Current age: ____________________________

Age when athletic career started: ____________________________

Have there been any significant life events over the last year (both positive/negative experiences)?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Have you discussed your career-ending injury with a “counselor?” If yes, what type of “counselor?”

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Please circle:

Rate your athletic identity NOW (I still feel like an athlete):

1. Not at all

2. A little

3. Somewhat

4. A lot

5. Very much
Rate the satisfaction you have with your life NOW:
   1. Not at all
   2. A little
   3. Somewhat
   4. A lot
   5. Very much

When you selected your university, was sport the primary reason?
   1. Unimportant
   2. Slightly important
   3. Important
   4. Very important
   5. Extremely important

Do you believe that you had the potential for a professional career in your sport?
   1. Yes
   2. No
May 15, 2006

Dear Sir/Madam:

I am a master’s student at the University of Utah studying the psychosocial aspects of sport. I am conducting research for my thesis, “The Effects of a Career-Ending Injury on an Elite Athlete’s Self-Concept and Psychological Distress.” I was wondering if you would be willing to help me identify athletes within your program who have had career-ending injuries.

The population that I'm seeking consists of voluntary NCAA Division I athletes from various programs around the nation. Both males and females will be tested, ranging in ages from 18 to 26. The reference group will consist of healthy, competitive athletes who will be matched by school and sport to the injured group. The injured group will be selected on the basis that an athlete was told by a medical professional that he or she was unable to return to sport due to an injury. This injury will have occurred 9 to 15 months from the date of injury.

An athlete’s participation in this research is voluntary. Please understand that use of these data will be limited to this research, as authorized by the University of Utah, although results may ultimately be presented in formats other than the thesis such as journal articles or conference presentations. You also have the right to express concerns to me at the number below or to my advisor, Dr. Keith Henschen, at the University of Utah (khensche@hsc.utah.edu).

I would greatly appreciate your help in this research. Please contact me if you are willing to help. Thank you for your support.

Sincerely,

Lauren Loberg
University of Utah Master’s Student
Psychosocial Aspects of Sport
(435)901-0071; laloberg@comcast.net
Informed Consent for Injured Group

University of Utah, Exercise and Sport Science
Informed Consent Statement

Background

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you volunteer to take part in this study.

The purpose of this study is to determine the impact of a career-ending injury on an athlete’s self-concept and psychological distress. The study will be limited to NCAA Division I athletes between the ages of 18 and 26. One third of an athlete’s existence is occupied with his or her sports career, thus impacting many aspects of an athlete’s growth and advancement (Stambulova, 1994). Hence, when a sports career is terminated instantly due to injury, this constitutes a shift in one’s self-concept. When an athlete is first injured, it may not be clear that one’s athletic career will be terminated. After a period of rehabilitation, the medical staff is then able to make a more informed evaluation of the injury.

There is limited research examining career-ending injuries. A majority of the research have either focused on injury or career transition. Creating a better understanding of career-ending injuries may provide athletes, coaches, sport psychologists, and researchers a better framework to develop support systems for athletes affected by this experience.

Study Procedure/Intervention/Methods

With this letter, you should be receiving an envelope with the following items: (a) Request Results form, (b) Demographic Questionnaire, (c) TSCS: 2 with three sets of instructions, (d) SCL-90-R with three sets of instructions, and (e) a stamped and addressed manila envelope. You must be between the ages of 18 and 26 years of age. You will be asked to complete the questionnaires on three different days. It will take you approximately 45 minutes on the 1st day to complete this study. The following 2 days will take approximately 30 minutes each. As part of the 1st day, you will be asked to complete a short Demographic Questionnaire and answer some questions about your experience. Please view the time line provided and the attached directions prior to completing the TSCS: 2 and the SCL-90-R each day. This will enable you to think of your situation at the time of injury, the day you were told that you would not be able to return to sport, and approximately 1 year from the date of your injury. You will complete the forms on your own and return
them in the stamped and addressed envelope provided.

Risks

The risks of this study are minimal. You may feel upset thinking about or talking about personal information related to your career-ending injury. These risks are similar to those you experience when discussing personal information with others. If you feel upset from this experience, you may tell the researcher, and she will tell you about resources available to help.

Benefits

There is no direct benefit to you for your participation. However, we hope that the information we get from this study may help develop a greater understanding of the effects of a career-ending injury in the future. You may receive the results from the study by filling out the Request Results form, if so desired.

Alternative Procedures/Intervention/Methods

There will be no alternative procedures for this study. You may choose not to participate in this study.

Confidentiality

Your data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents. These incidents include, but may not be limited to, incidents of abuse and suicide risk. All other information will be kept confidential by Lauren Aline Loberg. Data and records will be stored in a locked filing cabinet or in a password-protected computer located in the researcher’s work space. Only the researcher and members of her study team will have access to this information. No reference will be made in oral or written reports that could link participants to the study. Data in published reports will appear as group means and will not refer to individual data.

Person to Contact

If you have questions or need more information about this study, you may contact the researcher, Lauren Loberg. Messages may be left at the following phone number or e-mail address at any time: (435)901-0071 or (435)940-1485; aloberg@comcast.net
Institutional Review Board

If you have questions regarding your rights as a research participant, or if problems arise that you do not feel you can discuss with the investigator, please contact the Institutional Review Board Office at (801)581-3655.

Voluntary Participation

It is up to you to decide whether or not to take part in this study. If you decide to take part, you will be asked to sign this consent form. You are still free to withdraw, without giving reason, at any time. Withdrawal will not affect your relationship with the investigator or staff.

Costs and Compensation for Participants

There are no costs to the subject. There will be no compensation for participating in this study.

Consent

By signing this consent form, I confirm I have read and understand the information presented in it. I have had the opportunity to ask questions. I understand my participation is voluntary, and I am free to withdraw at any time without giving a reason and without cost. I understand that I will be given a signed copy of this consent form. I voluntarily agree to take part in this study.

_________________________
Printed Name of Participant

_________________________                  _____________
Signature of Participant                     Date

_________________________
Printed Name of Researcher or Staff

_________________________                  _____________
Signature of Researcher or Staff               Date
Informed Consent for Reference Group

University of Utah, Exercise and Sport Science
Informed Consent Statement

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Risks

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Confidentiality

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Printed Name of Participant

________________________________________

Signature of Participant Date

________________________________________

Printed Name of Researcher or Staff

________________________________________

Signature of Researcher or Staff Date
APPENDIX D

FORM TO REQUEST RESULTS
Request Results

I, ____________________, would like to receive a copy of the results to this research study, “The Effects of a Career-Ending Injury on an Elite Athlete’s Self-Concept and Psychological Distress.” You may mail the information to:

Name: __________________________________________

Address: __________________________________________

City, state, zip code: __________________________________________

Thank you
Collecting Data from Athletes

<table>
<thead>
<tr>
<th>Injured Group</th>
<th>Reference Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAY 1</strong></td>
<td></td>
</tr>
<tr>
<td>Sign Consent Form &amp; Contact Information</td>
<td>Answer questionnaires in the present</td>
</tr>
<tr>
<td>Demographic Questionnaire</td>
<td>TSCS:2</td>
</tr>
<tr>
<td></td>
<td>SCL-90-R</td>
</tr>
<tr>
<td><strong>DAY 2</strong></td>
<td></td>
</tr>
<tr>
<td>Answer questionnaires reflecting to the day of injury</td>
<td></td>
</tr>
<tr>
<td>TSCS:2</td>
<td>SCL-90-R</td>
</tr>
<tr>
<td><strong>DAY 3</strong></td>
<td></td>
</tr>
<tr>
<td>Answer questionnaires reflecting to the day a medical professional said that you would no longer be able to return to sport due to injury</td>
<td></td>
</tr>
<tr>
<td>TSCS:2</td>
<td>SCL-90-R</td>
</tr>
</tbody>
</table>
Day 1

Please think about the sport in which you have contributed a majority of your time. Let some of the encounters and events you have had in your sport come to mind. Focus on what participating in your sport has meant to you. Now, I want you to think of how you feel currently. What are your emotions? Allow yourself to experience the feelings that you have.

Now, complete the questionnaires on the desk in front of you. Fill out the questionnaire.

Day 2

Please think about the sport in which you have contributed a majority of your time. Let some of the encounters and events you have had in your sport come to mind. Focus on what participating in your sport has meant to you. Now, I want you to reflect back to the day of your injury. Think of how you felt during this time period. What were your emotions? Allow yourself to experience the feelings that you had from this time period of your life.

Now, complete the questionnaires on the desk in front of you. Fill out the questionnaire as you felt the day of your injury.

Day 3

Please think about the sport in which you have contributed a majority of your time. Let some of the encounters and events you have had in your sport come to mind. Focus on what participating in your sport has meant to you. Now, I want
you to reflect back to the day the medical professionals told you that you would no longer be able to return to your sport. Think of how you felt during this time period. What were your emotions? Allow yourself to experience the feelings that you had from this time period of your life.

Now, complete the questionnaires on the desk in front of you. Fill out the questionnaire as you think you felt the day you were told by a medical professional that you would be unable to return to sport.
REFERENCES


