



Western Michigan University
ScholarWorks at WMU

Dissertations

Graduate College

12-1996

A Study of the Emotional Responses and Coping Strategies of Male and Female Athletes with Moderate and Severe Injuries

Donna S. Eaton
Western Michigan University

Follow this and additional works at: <https://scholarworks.wmich.edu/dissertations>



Part of the Counseling Commons, and the Rehabilitation and Therapy Commons

Recommended Citation

Eaton, Donna S., "A Study of the Emotional Responses and Coping Strategies of Male and Female Athletes with Moderate and Severe Injuries" (1996). *Dissertations*. 1689.

<https://scholarworks.wmich.edu/dissertations/1689>

This Dissertation-Open Access is brought to you for free and open access by the Graduate College at ScholarWorks at WMU. It has been accepted for inclusion in Dissertations by an authorized administrator of ScholarWorks at WMU. For more information, please contact wmu-scholarworks@wmich.edu.



A STUDY OF THE EMOTIONAL RESPONSES
AND COPING STRATEGIES OF MALE AND
FEMALE ATHLETES WITH MODERATE
AND SEVERE INJURIES

by

Donna S. Eaton

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Counselor Education
and Counseling Psychology

Western Michigan University
Kalamazoo, Michigan
December 1996

A STUDY OF THE EMOTIONAL RESPONSES
AND COPING STRATEGIES OF MALE AND
FEMALE ATHLETES WITH MODERATE
AND SEVERE INJURIES

Donna S. Eaton, Ed.D.

Western Michigan University, 1996

Emotional responses and coping strategies of injured athletes was the focus of the study. Several emotions have been identified in injured athletes such as frustration, depression, anger, and shock. Questions remain whether males and females feel similar emotions and engage similar coping strategies and whether severity of injury is a significant factor in responses and coping.

Quantitative data were obtained on emotional responses and coping strategies using the Emotional Response of Athletes in Injury Questionnaire (ERAIQ), the Profile of Mood States (POMS), and the COPE. The study examined whether gender and severity of injury may influence emotional responses and coping strategies of injured athletes, and the relationship between coping strategies and emotional responses. Forty three male and female subjects from nine different sports offered at four midwest intercollegiate institutions were recruited for the study. Subjects were asked to complete all three inventories within two days post-injury, and then at each week until they returned to action.

A one way analysis of variance was used to report differences between gender

and severity of injury. Males reported feeling more shock than females. Gender differences appeared with coping strategies; females have a greater tendency than males to use emotion-focused coping. Individual coping strategies which influenced the difference in coping strategies between genders were Positive Reinterpretation, Emotional Social Support, and Religion. Severity of injury was not a significant factor in emotional responses.

A repeated measure analysis of variance was used to examine emotional responses of athletes over time. Anger decreased during the first week while Shock, Depression, and Pain decreased over two weeks. Correlations between coping strategies and emotional responses were calculated using the Pearson r . There were low correlations between coping strategies and five emotions.

Results indicated few differences between male and female emotional responses to injury. Females may be more apt than males to cope with injury with emotion-focused strategies. Results from the study provide evidence that athletes emotional responses over time may fit in to some current grief models. These patterns of emotional responses and defining coping strategies are two areas for future research.

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

UMI Number: 9716002

UMI Microform 9716002
Copyright 1997, by UMI Company. All rights reserved.

**This microform edition is protected against unauthorized
copying under Title 17, United States Code.**

UMI
300 North Zeeb Road
Ann Arbor, MI 48103

Copyright by
Donna S. Eaton
1996

TABLE OF CONTENTS

LIST OF TABLES	v
CHAPTER	
I. THE PROBLEM	1
Introduction	1
Background	2
Statement of the Problem	4
Definitions	7
Scope and Delimitations	9
Outline of the Dissertation	10
Statement of the Hypotheses	11
II. LITERATURE REVIEW	13
Psychology and Sport	13
Psychology and the Injured Athlete	14
Coping Skills and Strategies	18
III. DESIGN AND METHODOLOGY	21
Description	21
Research Design	21
Null Hypotheses	22
Subjects	23

Table of Contents—Continued

CHAPTER

Instrumentation	25
Procedures	28
Data Collection	29
Data Analysis	30
Methodological Assumptions	31
Limitations	31
IV. FINDINGS	33
Emotions of Male and Female Injured Athletes	33
Coping Strategies of Male and Female Injured Athletes	33
The Emotions of Moderately and Severely Injured Athletes	36
The Emotions of Severely Injured Athletes Over Time	36
Correlations Between Coping Strategies and the POMS and ERAIQ .	39
Discussion	44
V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	53
Summary	53
Conclusions	55
Recommendations	58

Table of Contents—Continued

APPENDICES

A. Letter of Explanation and Informed Consent	60
---	----

B. Human Subjects Institutional Review Board Forms	63
--	----

BIBLIOGRAPHY	67
------------------------	----

LIST OF TABLES

1. Emotions of Male and Female Injured Athletes on the POMS: Means	34
2. Emotions of Male and Female Injured Athletes on the ERAIQ: Means	35
3. Coping Strategies of Male and Female Injured Athletes: Means	36
4. Individual Coping Strategies of Male and Female Injured Athletes: Means	37
5. Emotions of Severely Injured Athletes Over Time on the POMS: Repeated Measures Analysis of Variance	38
6. Emotions of Severely Injured Athletes Over Time on the ERAIQ: Repeated Measures Analysis of Variance	40
7. Correlations Between the COPE and the POMS of Severely Injured Athletes at Time 1: Pearson Correlation	41
8. Correlations Between the COPE and the ERAIQ of Severely Injured Athletes at Time 1: Pearson Correlation	41
9. Correlations Between COPE Subscales and POMS Subscales at Time 1: Pearson Correlation	42
10. Correlations Between COPE Subscales and POMS Subscales at Time 2: Pearson Correlation	43
11. Correlations Between COPE Subscales and ERAIQ Subscales at Time 2: Pearson Correlation	43

CHAPTER I

THE PROBLEM

Introduction

Collegiate athletics continue to grow as sport moves towards the 21st century. There are many opportunities for student athletes to participate in a sport while attending college. During the 1992-93 school year, 97,977 women competed in a total of 15 sports and 186,115 men competed in a total of 19 sports in which the National Collegiate Athletic Association (NCAA) sponsors championships (NCAA, 1993).

Science and technology continue to play a role in collegiate competition. Better training strategies and improved equipment are allowing athletes to become stronger, faster, more powerful and more flexible. Information from the field of exercise science is providing athletes and coaches with relevant techniques regarding improving strength training and flexibility programs, and nutrition for athletes. Increases in performances are seen as a result of athletic bodies functioning at a higher level, which allows participants to move faster, hit harder, jump higher, and throw harder and further. Combine these increases in physical capabilities with an ever-increasing desire to win, and injury is often a common result.

The fields of sports medicine and athletic training are directed toward prevention, diagnosis, and rehabilitation of physical injury to athletes. Athletes are

often tested for strength and flexibility before the start of their sport season. Athletes who show deficiencies may be given a special conditioning program to improve in weak areas, thus reducing their risk for injury. Athletes with weak or previously injured joints are often taped or braced to protect the vulnerable area. Once an injury does occur, the important first step towards the athlete's return to action is a proper diagnosis of the injury. Once a diagnosis has been made the appropriate form of rehabilitation can begin. Rehabilitation may include provisions for comfort, maintenance of cardiovascular endurance, refinement of motor skills, and a provision of psychological support (Scott, 1984).

Background

It is recognized that an athlete who is injured may be affected not only physically, but emotionally and behaviorally as well (May & Sieb, 1987; McDonald & Hardy, 1990; Ryde, 1977; Scott, 1984; Weiss & Troxel, 1986). In spite of these findings, the emphasis in rehabilitating an injured athlete is typically on the physical injury itself. When physical injuries occur, athletic trainers utilize a specific protocol which is designed to help the physical recovery of the athlete. The competencies required for athletic trainers are primarily directed towards physical rehabilitation of the injured athlete. The competencies are categorized into six domains: (1) prevention, (2) recognition and evaluation, (3) management/treatment and disposition, (4) rehabilitation, (5) organization and administration, and (6) education and counseling. In each domain there are cognitive, psychomotor, and affective skills that are required

for athletic trainers to be certified. In all, there are 191 competencies listed that have been identified as necessary for an athletic trainer to function properly in his or her role. Of these 191 competencies, six relate to the psychological aspects of injured athletes: (1) athletes may have an emotional and psychological dependence on trainers, (2) trainers should have knowledge of psychological techniques used to control pain, (3) trainers should have an understanding of typical psychological and emotional responses to injury which may affect rehabilitation, (4) trainers should learn common signs of psychological and emotional disorders, (5) trainers should have knowledge of psychological referral services within the community, and (6) trainers should have an understanding of their role and of the function of psychologists and counselors (National Athletic Trainers Association, 1992).

Clearly, if the National Athletic Trainers Association (NATA), the governing body that certifies athletic trainers, recognizes a need for athletic trainers to have knowledge of the psychological and emotional impact of injury, the psychological and emotional factors of athletic injury need to be studied in depth. Despite the fact that there is an apparent need for psychological intervention for injured athletes, there has been little research conducted on the psychological needs of injured athletes. Athletic trainers, physicians, and others who may come in contact with injured athletes are without empirically based facts that may provide information for more effective treatment of the athletes. Samples (1987) indicated a desire by those professionals who play a role in rehabilitating injured athletes to have a questionnaire to use with their

patients and a description of typical emotional responses athletes may have when injured.

Statement of the Problem

At the base of the problem is the necessity for understanding the typical emotional responses and psychological needs that occur in injured athletes from the time of injury, throughout their rehabilitation, to their return to action. The types of emotional reactions athletes have to injury, the coping strategies athletes use, and the resulting behavior of the athlete need to be understood before rehabilitation intervention can occur.

A few studies have attempted to examine the emotional reactions of athletes when they incur an injury (Gordon, Milios, & Grove, 1991; Lynch, 1988; McDonald & Hardy, 1990; Nideffer, 1983; Pearson & Jones, 1992; Samples, 1987; Smith, Stuart, Wiese-Bjornstal, Milliner, O'Fallon, & Crowson, 1993; Weiss & Troxel, 1986). Many of these studies report previous lack of significant research in this area.

In Smith et al. (1993), a comparison was made between preinjury and postinjury mood state and self-esteem. This was the first study that recorded data on preinjury mood states. This allowed the researchers to eliminate the possibility of pre-injury factors which may have influenced the athlete's emotions after injury. The results of this study indicated a postinjury increase in depression and anger, and a decrease in vigor.

Another study found that grief was a common reaction to injury in athletes, and that athletes moved through stages of denial, anger, bargaining, and depression before acceptance of the injury and psychological recovery (Gordon, Milios, & Grove, 1991). May and Sieb (1987) reported that increased depression, restlessness, tenseness, anger, and poor concentration occurred in athletes who had been injured. Other research has shown similar emotional responses along with frustration, boredom, and hostility (Pearson & Jones, 1992).

Although similarities exist in current research in the area, much more needs to be done. There are large discrepancies in methodology, sample sizes, and the theoretical framework of what an emotional response to injury model might look like. Some researchers have used surveys to question sports medicine personnel on the types of emotional responses to injury they see in their athletes (Brewer et al., 1991; Gordon et al., 1991). Ivela and Orlick (1991) surveyed 39 athletes retrospectively regarding their emotional responses to injury and psychological factors which played a role in the physical healing process. McDonald and Hardy (1990) studied only five severely injured subjects, administering the Profile of Mood States twice weekly. Pearson and Jones (1992) compared mood states of 61 injured athletes with noninjured athletes using both quantitative and qualitative research.

Many researchers believe that athletes go through a grief process similar to the Kubler-Ross model of terminally ill patients (cited in Smith, et al. 1993; Gordon et al. 1986; Lynch, 1988; Pedersen, 1986). However, other researchers disagree, believing athletes go through stages of psychological reactions other than the typical

grief model when faced with injury. Smith, Scott, and Wiese (1990) found indications that athletes may respond differently to injury, not going through Kubler-Ross' five stages of grieving. Yukelson (1986) reported that depression, anger, and tension reactions occurred together to differing degrees during rehabilitation. The discrepancies between grief models appears to be a problem because not enough studies have been done with athletes to generalize current health models to the athletic population. While there has been some consensus on the emotions an athlete experiences as a result of injury, there are still questions to be answered regarding the pattern of emotions athletes may go through from injury through rehabilitation and return to action. Further research is needed to verify the presence of grieving stages and to help identify and establish "sequential and recurring" stages of emotional responses to injury. Recognition of these stages is required to lead researchers to appropriate interventions for athletes during rehabilitation.

There are diverse motivations for any athlete participating in an intercollegiate sport that contribute to a varied list of the causes of different emotions in response to injury, as well as the coping skills of an individual athlete. In general, athletes tend to be highly motivated to compete successfully and injury only stands in the way. This often results in denial of the injury. Athletes need to learn to control their emotions during competition as fear, anxiety, and anger may be detrimental to their goal of winning. This same ability to control emotional responses often hinders the rehabilitation of injured athletes as they continue to repress the feelings they have

relating to injury. Athletes also have a tendency to resist disclosure because of a need to uphold their image, both self and public.

Are there typical patterns of emotional responses that athletes experience during injury rehabilitation? Do all athletes experience the same emotions when they are injured? Do athletes with different coping strategies show dissimilar emotional responses to injury? These issues should be investigated to provide avenues for rehabilitating athletes as “whole” persons and not just their body part that incurred the injury. In spite of the fact that only 6 of the 191 competencies for athletic trainers relate to the psychological aspects of injured athletes, the field of sports medicine is primed for more knowledge in this area. Eldridge (1983) suggests that since athletes have individual needs, values, and social pressures which influence their sport participation, rehabilitation of physical injury needs to include a more “holistic perspective.” This would consider not only the physical damage to the athlete, but also the cognitive, affective, and social consequences.

Definitions

For purposes of identifying subjects for this study, a student-athlete is defined as:

A student whose enrollment was solicited by a member of the athletics staff or other representative of athletics interests with a view toward the student's ultimate participation in the intercollegiate athletics program. Any other student becomes a student-athlete only when the student reports for an intercollegiate squad that is under the jurisdiction of the athletics department (NCAA Manual, 1993-94, pp. 63-64).

Athletes who participated in this study were from the sports of basketball, soccer, tennis, hockey, gymnastics, volleyball, softball, baseball, or track and field.

An injured athlete is defined by the NCAA Injury Surveillance System (ISS) as a member of an NCAA intercollegiate athletic team who becomes injured either in practice or competition, who requires medical attention by a team athletic trainer or physician, and who is restricted from participation for more than one day (NCAA News, 1993).

Injured athletes who are out of action between 2 and 7 days will be described as moderately injured athletes. Injured athletes who miss more than 7 days of participation will be described as severely injured athletes.

Athletes who are injured and return to action within 2 days will not be included in the study. This short a time period will most likely not result in significant emotional responses. Athletes who incur injuries that keep them out of action more than 3 weeks will not be included in the study. There are relatively few injuries of this type during any 12 to 16 month period; this would restrict the number of subjects.

Emotional responses that may be significant to injured athletes have been identified as: frustration, confusion, depression, tension, boredom, helplessness, anger, shock, and fear.

Coping strategies are defined as techniques, thoughts, and behaviors that allow an injured athlete to deal with his or her injury that will enable physical rehabilitation to occur in an optimal manner. Two types of coping are Problem-Focused Coping and Emotion-Focused Coping. Problem-Focused Coping involves using problem-solving

techniques to modify the source of the stress. Emotion-Focused Coping involves working towards reducing or managing the emotional response that occurs due to the stressor (Carver, Scheier, & Weintraub, 1989).

Scope and Delimitations

Subjects who participate in this study were male and female intercollegiate athletes at NCAA member institutions in Michigan. These athletes were drawn from the following sports: soccer, volleyball, cross country, basketball, swimming, baseball, softball, or track and field. Football players were not included in this study to help maintain a gender balance among subjects.

Athletes who incur a minor injury that results in their return to action within one day were not considered for the study. It is believed that athletes who have minor injuries do not experience the same type or severity of emotional responses as more severely injured athletes and thus would not provide pertinent information. At the other end of the spectrum, athletes who incur severe, disabling injuries were not included in the study. This study was conducted for a 16 month period; the possibility of obtaining sufficient subjects in the disabling injury category during this time period was poor. Also, it was likely that athletes who incur a severe or disabling injury would not return to action during the time of the study.

Athletes who incurred an injury and were expected to be out of action for at least 2 days were accepted for this study. Information regarding emotional responses to injury and coping strategies of all subjects was gathered.

Predisposition for emotional responses or coping strategies will not be considered in this study. Although it may be assumed that individual athletes have different personality characteristics that would lead to different degrees of emotional responses, these will not be measured in this study. It may also be assumed that athletes possess diverse coping strategies before they are injured. Preinjury coping strategies will not be measured.

The information gained from this study may be generalized only to male and female intercollegiate athletes who incur an injury that prevents their participation in practice or games for at least 2 days and who expect to return to action within 4 weeks.

Outline of the Dissertation

Chapter II will contain a review of the literature in the area of the psychology of the injured athlete. Included in this section will be background material that will provide a historical base of the association of psychology with the area of athletic training as it pertains to injured athletes. This is a relatively new field of study, with limited research having been conducted prior to the 1980s. The literature will be divided among early research, which focused on the personality of athletes and the predictability of injury, and more current research, which addresses the psychological needs of athletes after they are injured.

Chapter III will present methodology, including a description of the research project, the research design, and the null hypotheses. Subjects will be characterized

by gender and severity of injury. Instrumentation will be presented, along with the procedures of the project. An overview of data collection and data analysis will conclude this chapter.

Chapter IV will present the findings from this research, including sections on discussion, interpretation, and a summary which will tie the research together.

Chapter V will present conclusions regarding the data gathered from the research. Finally, recommendations for future research and the application of this body of research to the area of rehabilitation of injured athletes will be offered.

Statement of the Hypotheses

Males and females often approach sport and competition with a desire to fulfill one or more needs. Their needs may be to improve the physical condition of their bodies; develop friendships on teams; receive accolades from coaches, teammates, and fans; achieve goals and feel successful; and even learn how to deal with failure. Whatever the reason(s), it is assumed that when an athlete is unable to participate due to injury there is a sense of loss. The response to injury felt by athletes is individual and occurs regardless of gender. This study will examine the emotional responses and coping strategies of male and female athletes. It is the belief of the researcher that males and females will respond in similar ways.

When athletes are injured they may feel anger, sadness, guilt, depression, or other emotions. The occurrence of these emotions may be influenced by the severity of the injury and the length of time the athletes expect to be out of action. The

researcher believes there are common patterns which these emotions follow in athletes with moderate and severe injuries.

It is also expected that athletes possess a variety of coping strategies that may be influential in helping the athletes manage the negative emotions they may feel during injury. The study will investigate the coping strategies of injured athletes in an attempt to identify abilities that may be useful in helping athletes deal with emotions felt while they are out of action.

CHAPTER II

LITERATURE REVIEW

Psychology and Sport

The literature on current concepts in rehabilitating injured athletes provides a great deal of information regarding the care and treatment of injuries, the provision of comfort, the restoration of strength and endurance, and the refinement of motor skills. There are several different modalities and pieces of equipment that are available to the athletic trainer to aid in healing the physical injury. However, the psychological needs of the injured athlete have not been discussed although they are acknowledged as being an important factor in rehabilitation (Scott, 1984).

The connection between psychology and sport has been a relatively new phenomenon, with the majority of sport psychology research and theory being developed starting in the mid-1960s. The connection between the two fields was initiated by the motivation of members of the athletic population to better understand how the mind of the athlete is integrated with the physical performance of the athlete. Considering this fact, it does not seem unusual that scientists in the field of sport would not have contemplated the possibility of an athlete experiencing a psychological impact to a physical injury. The focus of injury rehabilitation was solely physical with little or no acknowledgment of psychological trauma. It was not until the 1980s that

researchers began examining the connection between psychological variables and injury in sport. Weiss and Troxel (1986) discussed the role of psychology in injury management and defined injury as a stressor, with further discussion of how athletes interpret that stress. They acknowledged the little attention previously given to the psychology of the injured athlete and how the lack of empirical data made it difficult to aid in the rehabilitative process from a psychological point of view. Athletic trainers and sports medicine personnel realized from experience that an athlete could benefit from psychological healing in their attempt to return to their sport. But they had questions due to the wide variance in how athletes responded to and coped with injury. Again, the lack of research that could explain the factors that influence how athletes respond to injury and how to intervene with these athletes prevented these professionals from finding the answer to their questions (Samples, 1987).

Psychology and the Injured Athlete

Much of the early research on the psychological aspects of athletic injury focused on the prediction of injury occurrence (Gordon, Milios, & Grove, 1991). Scientists were interested in determining a connection between personality type and risk of injury. The personality characteristics of the athlete and his or her perceived stressors were hypothesized to play a role in the incidence of athletic injury. Life events, cognitive appraisals, and attentional aspects were thought to relate to the risk of injury. Level of stress was associated with a lack of good coping skills. Athletes with good coping skills were less apt to become injured than athletes with poor coping

skills (Andersen & Williams, 1988). A study of the relationship between stress and injury in football players showed that life stress seemed to be an important variable in the occurrence of injury (Hanson, McCullagh, & Tonymon, 1992). Their results also demonstrated a protective effect from injury in those athletes who had good coping skills. Negative life stress and social support interactions were found to relate to severity of injury in terms of time missed from action (Petrie, 1993a). These findings support the concept that athletes who have higher life stress, weak social support, and poor coping skills have a greater risk of incurring an injury that will keep them out of action for a longer period of time. This has implications for the types of emotional reactions athletes have when they are injured and the type of intervention that may be helpful in their rehabilitation.

When an athlete becomes injured and cannot participate in practice or competition, the injury and resulting removal from normal sport activities may be perceived as a stressful event by that athlete. How the athlete reacts to the stress of the injury is important for their well being as an athlete and as a person. When injured, an athlete typically undergoes a cognitive appraisal of the situation, with a variety of different thoughts. Concern about what other players and coaches may be thinking and what will happen to the team while they are absent are common apprehensions that athletes feel when they become injured (Eldridge, 1983; Ermler & Thomas, 1990; Weiss & Troxel, 1986). Athletes may also worry over the length of time they will be out of action and how much pain they will feel.

Cognitions often result in emotional responses. Weiss and Troxel (1986) defined emotional response using the symptoms resulting from physiological arousal (increase in heart rate, blood pressure, and respiration). The emotional responses which occur can be a result of the cognitive appraisal or the physiological arousal. Common emotions to injury are anxiety, anger, frustration, depression, disgust, and panic (Lynch, 1988).

Grief is another emotional response that is reported to occur in some athletes when they become injured. Wehlage (1980) reported that the second most common emotional response for athletes after becoming injured is grief, described as a process of the athlete trying to resolve the emotion of loss. The importance of the loss may be different for each individual. It is usually associated with the meaning the individual holds about competing. For example, male athletes on scholarship at a nationally prominent institution looking for a professional career after college may sense a loss of potential financial success. Athletes who have no aspirations or opportunities to continue their athletic career after college would not feel the loss in this way.

Research has supported a pattern of grief as a typical emotional response athletes have when they are injured (Astle, 1986; McDonald & Hardy, 1990; Pedersen, 1986; Samples, 1987). Grief or loss of health or life has been described as a five-stage process (Kubler-Ross, 1969). The first stage is denial. Athletes may deny the pain and try to keep playing. Once out of action they may deny the seriousness of the injury and believe they will be back to action the next day. The second stage is anger, in

which athletes may begin to understand they will be out of action for an extended time, and may realize what they have lost and what they will be missing by not being able to compete. The third stage is the bargaining stage. Athletes will try to make deals with their athletic trainers, coaches, or a higher power to let them return to competition even if they are not ready. The fourth stage is depression. At this time athletes realize there are no deals to be made, no miracles that will restore their injury quickly, and that life on the team they were previously a part of will go on without them. The final stage is that of acceptance. Athletes are able to come out of their depression and accept the facts of their injury.

Gordon et al. (1991) reported that 77% of therapists interviewed believed that athletes go through psychological reactions similar to Kubler-Ross' stages of grief. However, several arguments have been made against the Kubler-Ross model; other models may more appropriately describe the emotional response pattern of injured athletes. The basis of the debate is the fact that the Kubler-Ross model is based on a loss of health in the general population and not in an athletic population. Although the general guidelines may pertain quite well to individuals with severe or terminal illness, it has been shown that there is a difference between athletes and nonathletes in how they respond to illness and injury (Little, cited in Smith et al. 1990).

Other models have been proposed. Hardy (1992) proposed a three stage model. The first stage is protest, which is similar to Kubler-Ross' first stage in that it includes denial. Additional emotions associated with this stage are shock and anger. Athletes may feel numb, not being able to rationally understand what has happened. When they

do begin to understand, they become angry. The second stage is called hopelessness. During this stage the athletes accept that the injury has occurred and that it will not just go away. Isolation is a common behavior in this stage. The third stage is called reorganization, where the athletes come to terms with the loss and are able to focus their energy on what they need to do to return to action. This model has not been empirically tested.

Brown and Stoudemine (cited in Pedersen, 1986) have also proposed a model that differs from Kubler-Ross. It is a three-phase model which takes the athlete through denial and helplessness (Phase I); intense preoccupation with the injury, anger, or guilt and social isolation (Phase II); and a reorganization of interests and activities (Phase III). Although not empirically tested, the model appears to fit with what athletic trainers are observing with injured athletes (Pedersen, 1986).

There are several similarities with respect to the emotional responses in the above mentioned models. It appears that questions remain regarding the pattern of emotional response or stages that injured athletes experience during their rehabilitation.

Coping Skills and Strategies

Although research in the area of measuring coping skills and their relationship to injury prediction has been conducted, there has been relatively little work done in considering the relationship between coping skills or strategies and injury rehabilitation.

Ievleva and Orlick (1991) suggest factors and techniques to address the psychological needs during rehabilitation. Factors such as attitude, stress and stress management, social support, goal setting, positive self-talk, imagery, and belief in the above mentioned factors were hypothesized to have an effect on the psychological health of injured athletes during rehabilitation.

Ermler and Thomas (1990) have hypothesized that athletes experience a sense of powerlessness, anomie (where social norms have been broken down and can no longer act as a guide for behavior), and isolation. Their intervention strategies for coping with injury encompass strategies which deal with these three areas.

Lynch (1988) has described his work with intervention strategies for injured athletes. His methods of helping athletes deal with injury involve controlling panic associated with injury, cognitive restructuring, visualization and relaxation, and communicating feelings. He believes it is important that athletes regulate their stress, fear, and panic associated with being injured.

Weiss and Troxel (1986) presented a Psychological Skills Training program for injury management that consists of three phases: (1) education, (2) skill development, and (3) practice. The program was thought to provide athletes with a sense of control over their injury and skills with dealing with their injury.

Smith et al. (1990) indicated there had been no previous significant research done in assessment of coping skills of injured athletes. If intervention for the psychological needs of injured athletes is to be developed and used as a part of

rehabilitation, pertinent coping skills and strategies currently used effectively by athletes need to be identified.

Although there has been an increase in the interest regarding the psychological responses of injured athletes, there is still a relatively small pool of research. Gordon, Milios, and Grove (1991) indicated that most of the work in the area of psychology and injury has focused on factors which may influence prediction of injury, such as the types of athletes prone to injury, with little attention having been given to the psychological aspects of injury. Hardy (1992) reviewed the empirical literature on the psychological stress in sport and how those stressors may impact vulnerability to and rehabilitation from injury. This review was limited due to the lack of research on the psychological stress of injury in athletes. Ievleva and Orlick (1991), investigating the psychosocial factors relating to healing in injured athletes, also indicated that most of the previous research has been focused on psychological factors that may predict injury rather than psychological factors which may play a role in injury rehabilitation.

McDonald and Hardy (1990) examined the affective response pattern of severely injured athletes, indicating a need for this type of information due to the lack of empirical evidence to identify the emotional reactions of athletes to injury and how those reactions may influence their rehabilitation. Others also indicate a lack of research in the area of sports injury and how to apply psychological principles to injury rehabilitation (Gould, cited in Pearson & Jones, 1992; Wiese, Weiss & Yukelson, 1991).

CHAPTER III

DESIGN AND METHODOLOGY

Description

The purpose of the research was to describe the relationship between emotional responses and coping strategies of male and female injured athletes. Quantitative data on emotional responses and coping strategies were obtained from the injured athletes using the Emotional Response of Athletes to Injury Questionnaire (ERAIQ), the Profile of Mood States (POMS), and the COPE inventory. Data from the inventories were analyzed and comparisons were made between male and female athletes, moderate and severely injured athletes, and Emotion-Focused and Problem-Focused coping strategies used by the injured athletes in the study. Results from the study may be used to help professionals who treat injured athletes improve the quality of their service due to their increased level of knowledge of the psychological impact of injury and the strategies used by athletes to cope with injury.

Research Design

The study examined the possibility that gender, severity of injury, and coping strategies would have a significant effect on the emotional responses and coping strategies of injured athletes. The independent variables in the study were gender

(males and females), severity of injury (moderate and severe), and coping strategies (Emotion-Focused and Problem-Focused). The dependent variables measured were the emotional responses (measured by the ERAIQ and the POMS) and the coping strategies of injured athletes (Emotion-Focused and Problem-Focused).

Null Hypotheses

Based on the research hypotheses stated in Chapter I, the following null hypotheses were formulated:

1-17. There will be no difference in the male and female initial mean scores on the six POMS and the 11 ERAIQ scales.

18-19. There will be no difference in the male and female severely injured athlete's initial mean scores on Emotion-Focused Coping and Problem-Focused Coping scales of the COPE.

20-37. There will be no difference in the moderately injured and severely injured athlete's initial mean scores on the six POMS and the 11 ERAIQ scales.

38-54. There will be no difference in the mean scores on the POMS and the ERAIQ of severely injured athletes after 2 days, and at the end of the first and second week of inactivity.

55-71. There will be no difference in the mean scores on the POMS and the ERAIQ between Emotion-Focused Coping and Problem-Focused Coping severely injured athletes after 2 days, and at the end of the first week of inactivity.

Subjects

Forty-three total subjects participated in this study; 19 male and 24 female intercollegiate athletes from nine different sports at four Western Michigan NCAA institutions. Although it was difficult to make predictions regarding the numbers of athletes who would incur injuries over a 16 month period, it was assumed that since injury is a common occurrence in athletics, subjects would be available. It was anticipated, based on the injury report of one institution (Hope College, 1993) that 75 to 100 athletes would be available for subjects from the four participating institutions. However, with injury rates varying from year to year and the exclusion of football players from the study, fewer subjects were available for the study.

Athletes were obtained from Division I, Division II, and Division III NCAA institutions in Western Michigan (Western Michigan University, Grand Valley State University, Hope College, and Kalamazoo College). One limitation of previous research in this area has been in sample selection, with subjects having been drawn from a limited number of sports. (McDonald & Hardy, 1990; Weiss & Troxel, 1986). In an attempt to overcome this limitation of previous research, subjects in this study were chosen from the following sports: basketball, hockey, soccer, tennis, volleyball, gymnastics, softball, baseball, and track and field. These sports were chosen to allow for the gathering of information across several sports. The greatest number of subjects came from basketball (46.5%) with the next greatest number coming from soccer (18.6%). The right side of the body was injured in 55.8% of the cases, and 60.5% of

the injuries were the first time the athlete had incurred the specific injury. Almost all (95%) of injured athletes intended to return to their sport with 55.8% expressing fear about returning. Many (83.7%) indicated they anticipated a full recovery once they returned to action. Pressure from coaches, family, friends, teammates, or self to participate in their sport affected 74.4% of the injured athletes. The most significant pressure appeared to come from the athletes themselves, with 41.1% reporting pressure from self as the main source of stress to return to action. All respondents felt they had a strong support system, although 58.1% reported feeling abandoned since their injury. Support from friends, parents, family, and teammates was similar (19.8% to 21.5%), with support from coaches reported by only 15.8% of the respondents. Most athletes (95.3%) described themselves as being highly motivated to exercise and return to action. Athletes reported missing several things when they were unable to participate in normal practice and games. The thrill and challenge of competition and the camaraderie with teammates were reported as the three factors the athletes missed most. Camaraderie with teammates was the most significant loss according to 40.4% of the athletes.

There were several different types of injuries incurred by the athletes in the study. These types were: (a) fractures (14.9%), (b) undiagnosed swelling (2.1%), (c) sprained ligaments (46.8%), (d) torn cartilage (6.4%), and (e) pain (2.1%). Most of the injuries occurred to the ankle (22), accounting for 45.8% of the body parts injured. The knee was the second most prevalent body part reported injured (14.6%).

Gender is another area not often considered in past research. The sports listed above are ones that field teams for both males and females, thus broadening the relevance of the study.

All members of intercollegiate teams in the above mentioned sports were candidates for this study. Selection of the subjects were made on a voluntary basis of those athletes who incurred an injury which kept them out of action for at least 2 days.

Instrumentation

Previous studies examining athlete's emotional reactions to injuries utilized the Emotional Response of Athlete to Injury Questionnaire (ERAIQ) (Smith et al., 1990; Smith, Scott, & Weiss, 1990). The ERAIQ evolved from research (Smith et al., 1993) and uses a five-point Likert scale measurement of 11 specific emotions related to injury: (1) frustration, (2) tension (3) depression, (4) boredom, (5) helplessness, (6) anger, (7) shock, (8) fear, (9) optimism, (10) pain, and (11) relief. The ERAIQ also provides information regarding the place sport plays in the lives of athletes, the type of injury the athletes incurred, and the degree of encouragement and support they feel from others.

The ERAIQ was developed at the Mayo Clinic in Rochester, Minnesota, on the basis of earlier work done by the researchers (Smith et al., 1990). Although information on reliability and validity of the ERAIQ is not available, it appears as though the instrument could be used to appropriately measure emotional responses of

injured athletes. Previous research that has utilized the ERAIQ has often indicated similar emotional responses of athletes from the ERAIQ and the POMS (Smith et al., 1990; Smith, Scott, & Weiss, 1990).

The Profile of Mood States (POMS) is a 65-item inventory which uses a five point Likert scale. It has been a commonly used instrument to measure the emotional state of injured athletes (McDonald & Hardy, 1990; Pearson & Jones, 1992; and Smith et al., 1990). The POMS was used in this study as another measure of the emotional responses of athletes and the changes that occurred during the course of rehabilitation. This instrument measures six mood states: (1) tension, (2) depression, (3) anger, (4) vigor, (5) fatigue, and (6) confusion (Smith et al., 1990). Reliability of the POMS is .84 to .95 using the Kuder-Richardson formula #20. Test-retest correlations are .65 to .74 with a median of .69. This range occurs because the purpose of the inventory is to measure emotional states that vacillate (Buros, 1978). The POMS has high internal validity with a significant amount of repetition in the scales which would make it difficult for a respondent to deny one emotion while acknowledging a similar one (Smith et al., 1990).

A third instrument, the COPE (Carver, Scheier, & Weintraub, 1989) was used to measure the coping strategies of the athletes. The COPE is an instrument that contains 60 items covering 13 conceptually distinct scales: (1) active coping, (2) planning, (3) seeking instrumental social support, (4) restraint coping, (5) suppression of competing activities, (6) seeking emotional social support, (7) positive reinterpretation and growth, (8) religion, (9) acceptance, (10) denial, (11) focus on and

venting of emotions, (12) mental disengagement, and (13) behavioral disengagement. Scales one through five are classified as Problem-Focused Coping and scales 6 through 10 are classified as Emotion-Focused Coping. The inventory is scored on a Likert scale ranging from 1 (I usually don't do this at all) to 4 (I usually do this a lot). The total score can range from 60 to 240. There is a test-retest reliability range of .46 to .86 and an internal consistency coefficient (Cronbach's alpha) with a range of .45 to .92 (Carver, Scheier, & Weintraub, 1989). There is only one scale that has a reliability below .6 (the mental disengagement scale, resulting from it being a multiple-act criterion due to the fact that the tactics used in mental disengagement are more diverse than the tactics that make up the other coping strategies). In research done by the authors (Carver et al., 1989), data showed both convergent and discriminant validity of the COPE. An investigation into the association of personality dimensions and coping strategies indicated active coping, planning coping, denial, and behavioral disengagement were correlated with beneficial personality characteristics. Discriminant validity was suggested by the fact that although correlations between coping strategies and personality characteristics were present, they were not very strong, indicating differences in personality characteristics and coping styles. The COPE scales also had weak correlation with the social desirability scale in which positive reinterpretation and growth would likely play a role.

The advantage of these instruments was the short amount of time to complete them. Completion of the initial set of inventories took only 20-25 minutes. This set included the informed consent form, an explanation of the procedures for filling out

the inventory, the three page Form A of the ERAIQ, the POMS and the COPE. The athletes were usually able to reply in 15 to 20 minutes to subsequent inventories (Form B of the ERAIQ, the POMS, and the COPE). Form A of the ERAIQ was used for initial intake only. Form B of the ERAIQ is a one page, shortened version of Form A and was used for all subsequent weekly testing.

Procedures

Head athletic trainers at Hope College, Kalamazoo College, Grand Valley State University, and Western Michigan University were contacted by phone by the researcher to determine initial levels of interest in participating in the study. Each trainer gave verbal acceptance pending a formal written explanation of the research project. Upon receiving a written explanation of the research project and verification of approval from the Human Subjects Review Board at Western Michigan University, trainers at all four institutions agreed to participate in the study. Several copies of the inventories were then made available to the athletic training staff at each institution which agreed to take part in the study. The researcher met with the head athletic trainer to explain the procedure for administering the inventories. The trainers were informed that the purpose of the study was to gain information on emotional responses and coping strategies of athletes when they were injured. Details regarding the specific hypotheses of the researcher were not revealed to the trainers to reduce the risk of bias.

Regular procedures for athletic trainers include diagnosis and documentation of each injury that is reported. Athletes from basketball, hockey, soccer, tennis, volleyball, gymnastics, softball, baseball, and track and field who incurred an injury that would most likely keep them out of action for more than one day were asked by the athletic trainer to participate in a research project to help trainers understand the psychological impact of injury. Within 48 hours of the initial injury the injured athletes who agreed to take part in the study received from the athletic trainer a letter of explanation and an informed consent form (Appendix A) in a packet which included the inventories. After completion of the inventories, the athletes sealed them in the envelope to ensure confidentiality and returned the envelope to a collection box in the training room. The athletes were instructed to keep their copy of the informed consent form and an appointment card which indicated the day and date for filling out their next set of inventories. The inventories were administered to the athletes in the training room to help assure their prompt completion. The athletes completed a new set of the inventories weekly until they returned to action. The weekly ERAIQ was modified to include only the measurement of emotional responses (Form B). Male and female athletes injured athletes were given the ERAIQ, the POMS and the COPE.

Data Collection

The inventories were collected periodically from each site by the researcher who checked with the head athletic trainer on the progress of distributing the inventories. Upon collection of the inventories they were coded by the researcher and

kept in a locked filing cabinet. The coding indicated gender (0 = male, 1 = female) and weeks out of action (0 = less than one week, 1 = more than 1 week and less than 2 weeks, 2 = more than 2 weeks and less than 3 weeks, 3 = more than 3 weeks and less than 4 weeks). The athletes recorded the last four digits of their social security number to code the inventories. This procedure was necessary to ensure matching inventories and provide confidentiality. Data were collected starting in January of 1995 and continued through April of 1996.

Data Analysis

Data from the POMS and ERAIQ inventories were compared using a one-way analysis of variance (ANOVA) to report differences between gender and severity of injury. The level of significance was set at .05.

A repeated measure design was used on the athletes with severe injuries. The purpose of the design was to examine the emotional responses of athletes during the first 2 weeks they were unable to participate in their sport. The lack of sufficient number of subjects out of action for more than 2 weeks prohibited a longer analysis. For both ERAIQ and POMS, a repeated measures analysis of variance using mean scores of severely injured athletes was used to examine differences over a 2 week period using two measurements. Measures were taken on each athlete within 2 days of their injury, and after one week of inactivity.

Correlations between Problem-Focused Coping scores and Emotion-Focused Coping and the POMS and ERAIQ scores for two time periods were calculated.

Scores for Problem-Focused Coping were calculated by summing scales 1 through 5 of the COPE and scores for Emotion-Focused Coping were calculated by summing scales 6 through 10 of the COPE. Correlations between each of the 10 sub-scales on the COPE and the POMS and ERAIQ scores were also calculated. Reliability coefficients on the POMS and the COPE were calculated using Cronbach's alpha. Reliability on the ERAIQ was not calculated due to the single choice answers for each scale.

Methodological Assumptions

It was assumed that the athletic trainers would properly identify the athletes by sport and by injury and provide them with the POMS, ERAIQ, and COPE inventories within 48 hours post-injury. It was also assumed that the athletic trainers would be responsible for administering the inventories to the injured athletes. It was assumed that the athletes would complete the inventory at the time they were received and that the inventories would be repeated each week until the athletes returned to action.

It was further assumed that athletic trainers would not show any bias towards athletes that may have influenced the way the athlete completed the inventories.

Limitations

Motivation and cooperation of the injured athletes was a variable that may have influenced the number of subjects and the accuracy of the test results. Athletes

may have been suspicious of the research and therefore would not have answered the questions truthfully. They may not have attended rehabilitation on the day they were scheduled to complete the inventories or may have left the training room without completing the inventories.

Results of this study may not be generalizable to the athletic population, but only to injured athletes. It also cannot be assumed that athletes who do not participate in an intercollegiate sport in an NCAA institution will react in the same way as the athletes in this study.

CHAPTER IV

FINDINGS

Emotions of Male and Female Injured Athletes

Results of the one way analysis of variance (ANOVA) on six scales of the Profile of Mood States (POMS) indicate no significant difference between male and female injured athletes. Only one scale (Depression) was even close to being significant ($p = .137$)(see Table 1). Reliability coefficients on the POMS were very good on the anger scale ($r = .9336$), the depression scale ($r = .9309$), and the tension scale ($r = .9022$). Reliability on vigor and fatigue was good ($r = .8864$ and $.8791$) and acceptable on the confusion scale ($r = .7844$).

A one-way ANOVA on the 11 ERAIQ scales indicate no significant difference between male and female injured athletes on 10 of the 11 scales of the ERAIQ. On one variable (Shock) there was a statistically significant difference ($p = .04$) with males expressing more shock than females (see Table 2). Only one of the first 17 null hypotheses was rejected.

Coping Strategies of Male and Female Injured Athletes

Results of the initial mean scores of male and female injured athletes on the COPE using a one-way ANOVA indicated a statistically significant difference between

gender when examining the Emotion-Focused Coping strategies. Results indicated that females have a greater tendency to use Emotion-Focused Coping than males ($p = .000$) (see Table 3).

Table 1
Emotions of Male and Female Injured Athletes on the POMS:
Means

POMS scales		Males n = 18	Females n = 25	Difference
Anger	Mean	18.167	14.600	3.567
	Standard Deviation	12.225	9.717	---
Confusion	Mean	11.667	10.640	1.027
	Standard Deviation	5.331	5.438	---
Depression	Mean	23.722	17.800	5.922
	Standard Deviation	14.199	11.361	---
Fatigue	Mean	9.278	10.600	1.322
	Standard Deviation	6.229	6.325	---
Tension	Mean	15.778	13.360	.299
	Standard Deviation	7.009	7.308	---
Vigor	Mean	12.778	14.056	.624
	Standard Deviation	6.122	6.746	---

$p < .05$

Table 2
Emotions of Male and Female Injured Athletes on the ERAIQ:
Means

ERAIQ scales		Males n = 18	Females n = 25	Difference
Angry	Mean	3.889	4.120	.231
	Standard Deviation	1.183	.881	---
Bored	Mean	2.722	2.800	.078
	Standard Deviation	1.227	1.080	---
Depressed	Mean	3.167	3.240	.073
	Standard Deviation	1.425	1.393	---
Frightened	Mean	2.056	2.480	.424
	Standard Deviation	1.259	1.046	---
Helpless	Mean	3.444	3.280	.164
	Standard Deviation	1.199	1.275	---
Frustrated	Mean	4.278	4.480	.202
	Standard Deviation	.958	.714	---
In pain	Mean	3.333	3.800	.467
	Standard Deviation	.970	1.041	---
Relieved	Mean	1.278	1.360	.082
	Standard Deviation	.669	.638	---
Shocked	Mean	2.833	2.080	.753*
	Standard Deviation	1.200	1.115	---
Tense	Mean	2.444	2.640	.196
	Standard Deviation	1.294	.952	---
Optimistic	Mean	2.722	3.080	.358
	Standard Deviation	1.179	1.077	---

*p < .05

Table 3
Coping Strategies of Male and Female Injured Athletes:
Means

COPE scales		Males n = 18	Females n = 25	Difference
Emotion-Focused Coping	Mean	46.058	54.869	8.811*
	Standard Deviation	6.684	5.872	---
Problem-Focused Coping	Mean	51.588	53.434	1.846
	Standard Deviation	7.31	7.96	

* $p = .00$

Looking at individual variables, the scales that influenced the difference between male and female scores on the Emotion-Focused Coping results are: (1) Positive Reinterpretation ($p = .003$), (2) Emotional Social Support ($p = .017$), and (3) Religion ($p = .047$)(see Table 4).

The Emotions of Moderately and Severely Injured Athletes

The one-way ANOVA on the POMS and the ERAIQ indicate no significant difference between moderately injured and severely injured athletes at initial intake or at the end of the first and second week of inactivity.

The Emotions of Severely Injured Athletes Over Time

Results from examining mean scores of severely injured athletes over time on

Table 4
Individual Coping Strategies of Male and Female Injured Athletes:
Means

COPE scales		Males n = 18	Females n = 25	Difference
Positive reinterpretation	Mean	10.29	13.52	3.23*
	Standard Deviation	2.31	1.95	---
Emotional social support	Mean	9.05	11.65	2.60*
	Standard Deviation	2.53	2.91	---
Religion	Mean	9.00	11.95	2.95*
	Standard Deviation	2.95	3.19	---

* $p < .05$

the POMS using a repeated measures ANOVA indicate a change in one variable (Anger) ($p = .0059$) with the subjects reporting a decrease in anger during the first week of inactivity. There was a significant difference in mean scores from Time One to Time Two ($p = .024$) and Time One to Time Three ($p = .001$) but no significant difference in Time Two to Time Three ($p = .286$)(see Table 5).

Results from examining mean scores over time on the ERAIQ using a repeated measures ANOVA indicate a significant decrease in the variables of Shock ($p = .0138$), Pain ($p = .0015$), and Depression ($p = .0098$) and a significant increase over time in Optimism ($p = .016$). For Shock there was a significant difference in mean scores from Time One to Time Three ($p = .0051$) and Time Two to Time Three

($p = .0297$) but no significant difference between Time One and Time Two ($p = .4486$). For Pain the results were similar.

Table 5

Emotions of Severely Injured Athletes Over Time on the POMS:
Repeated Measures Analysis of Variance

POMS scales	Time 1 <u>M</u>	Time 2 <u>M</u>	Time 3 <u>M</u>	F Statistic	Level of Significance (p value)
Anger (time effect)	17.46	13.38	11.53	6.42	.0059*
Time 1 vs 2				2.409	.024*
Time 1 vs 3				3.501	.001*
Time 2 vs 3				1.091	.286
Confusion (time effect)	12.46	11.84	11.53	.48	.6273
Depression (time effect)	24.53	21.38	21.23	.30	.2912
Fatigue (time effect)	11.23	12.30	11.90	.21	.8140
Tension (time effect)	16.76	15.07	13.84	2.15	.1385
Vigor (time effect)	12.61	13.00	13.90	.05	.8229

* $p < .05$

There was a significant decrease in Pain from Time One to Time Three ($p = .0004$) and Time Two to Time Three ($p = .0362$) but no significant difference from Time One to Time Two ($p = .064$). Depression also decreased during the first week of inactivity. There was a significant change from Time One to Time Two ($p = .05$) and from Time One to Time Three ($p = .0028$) but no significant change from Time Two

to Time Three ($p = .2122$). For Optimism there was a significant increase in mean scores from Time One to Time Three ($p = .0044$) but no significant difference from Time One to Time Two ($p = .1665$) or from Time Two to Time Three ($p = .0997$) (see Table 6).

Correlations Between Coping Strategies and the POMS and ERAIQ

Correlations were computed using the Pearson r . Results from the initial inventory indicate a negative correlation of $-.428$ between athletes who used Emotion-Focused Coping and the Anger variable on the POMS (see Table 7). There was a positive correlation of $.434$ between athletes who used Problem-Focused Coping and the Pain variable on the ERAIQ (see Table 8). Results of one subscale on the COPE and two scales of the POMS at initial intake indicate a low negative correlation between Positive Reinterpretation with Anger ($-.404$) and Depression ($-.325$) (see Table 9). At Time Two there was a low negative correlation between Acceptance with Anger ($-.5629$) and Depression ($-.5186$) (see Table 10). Results of two subscales on the COPE and three scales on the ERAIQ at Time Two indicate a low negative correlation between Positive Reinterpretation and Shock ($-.4472$) and between Acceptance on the COPE and Shock ($-.4510$), Angry ($-.4818$) and Helplessness ($-.4283$) on the ERAIQ (see Table 11). Responses from the second week of inactivity indicated no statistically significant correlations between coping strategies and emotional responses on the POMS or the ERAIQ.

Table 6

Emotions of Severely Injured Athletes Over Time on the ERAIQ:
Repeated Measures Analysis of Variance

ERAIQ scales	Time 1 <u>M</u>	Time 2 <u>M</u>	Time 3 <u>M</u>	F Statistic	Level of Significance (<u>p</u> value)
Shock (time effect)	2.84	2.61	1.92	5.14	.0138*
Time 1 vs 2				-.7703	.4486
Time 1 vs 3				-3.081	.0051*
Time 2 vs 3				-2.310	.0297*
Optimism (time effect)	2.46	2.84	3.30	4.94	.0160*
Time 1 vs 2				1.426	.1665
Time 1 vs 3				3.139	.0044*
Time 2 vs 3				1.712	.0997
In pain (time effect)	4.00	3.46	2.84	8.67	.0015*
Time 1 vs 2				-1.941	.0640
Time 1 vs 3				-4.160	.0004*
Time 2 vs 3				-2.218	.0362*
Depression (time effect)	4.15	3.53	3.15	5.65	.0098*
Time 1 vs 2				-2.050	.0514
Time 1 vs 3				-3.331	.0028*
Time 2 vs 3				-1.281	.2122
Angry (time effect)	.76	.53	.46	2.00	.1573
Bored (time effect)	2.92	3.23	3.15	.41	.6658
Frightened (time effect)	2.61	1.92	2.23	2.42	.1107
Helpless (time effect)	3.69	3.38	3.23	1.24	.3073
Frustrated (time effect)	4.53	4.38	4.53	.65	.5317
Relieved (time effect)	1.38	1.15	1.15	1.14	.3375
Tense (time effect)	2.92	2.92	2.84	.02	.9766

* $p < .05$

Table 7

Correlations Between the COPE and the POMS of Severely Injured Athletes at Time 1: Pearson Correlation

POMS scales	COPE Scales	
	Problem Focused	Emotion Focused
Anger	.184	-.428*
Confusion	.048	-.254
Depression	.161	-.336
Fatigue	.183	-.178
Tense	.181	-.292
Vigor	-.133	.098

* $p < .05$

Table 8

Correlations Between the COPE and the ERAIQ of Severely Injured Athletes at Time 1: Pearson Correlation

ERAIQ scales	COPE Scales	
	Problem Focused	Emotion Focused
Angry	.305	-.054
Bored	.324	.302
Depressed	.047	-.141
Frightened	.220	-.014
Helplessness	-.130	.024

Table 8—Continued

POMS Scales	COPE Scales	
	Problem Focused	Emotion Focused
Frustrated	.293	.212
In pain	.434*	.286
Relieved	-.161	.003
Shocked	.330	-.061
Tense	.149	-.162
Optimistic	.043	.202

* $p < .05$

Table 9

Correlations Between COPE Subscales and POMS Subscales
at Time 1: Pearson Correlation

POMS Scales	COPE Scales	
	Positive Reintrepetation	
Depression	-.3250*	
Anger	-.4041*	

* $p < .05$

Table 10
Correlations Between COPE Subscales and POMS Subscales
at Time 2: Pearson Correlation

POMS Scales	COPE Scales Acceptance
Depression	-.5629*
Anger	-.5186*

* $p < .05$

Table 11
Correlations Between COPE Subscales and ERAIQ Subscales
at Time 2: Pearson Correlation

ERAIQ Scales	COPE Scales Positive Reinterpretation Acceptance	
Shock	-.4472*	-.4510*
Angry	-.2981	-.4818*
Helplessness	.0318	-.4283*

* $p < .05$

Discussion

In considering gender differences and severity of injury, results of this study indicate that shock is the only variable exhibiting a statistically significant difference between genders in emotional response to injury in sport. Males in the study may have felt a greater degree of shock than females in response to injury. Severity of injury did not appear to be significant in initial emotional responses on either the POMS or the ERAIQ. These two inventories have been used together in recent research to help explain more fully the emotional responses which occur when athletes are injured (Smith et al., 1990; Smith, Scott, O'Fallon, & Young, 1990; Smith, Scott, & Weiss, 1990; Smith, Stuart, Wiese-Bjornstal, Milliner, O'Fallon, & Crowson, 1993).

Lack of statistically significant gender differences in how males and females respond emotionally to injury support previous research (Dishman, 1985; Hardy & Riehl, 1988; Smith, Scott, O'Fallon, & Young, 1990; Smith, Stuart, Wiese-Bjornstal, Milliner, O'Fallon, & Crowson, 1993). Most research used only males as subjects or did not examine differences in gender. Shock was the one variable that did show a possible gender difference, with males indicating a greater degree of shock than females. Shock and denial are described as a sense of being lost, stunned, and immobilized (Pedersen, 1986). It is thought that perhaps males have a greater feeling of indestructibility than females, therefore causing an extreme feeling of disbelief and shock when they in fact do become injured. They may also be unable to rationally conceptualize their injury, believing they will return to practice the next day.

Possible gender differences were present when considering the coping strategies of athletes when they become injured. Females indicated more of a tendency than males to respond with Emotion-Focused Coping. Emotion-Focused copers center on trying to manage responses to stress (in this case injury) rather than denying it exists. There may be a relationship between the results that indicate females use Emotion-Focused Coping with the results that indicate females did not express the same degree of shock as males. Females may have a greater degree of acceptance of injury which allows them to focus on dealing with the emotional results of the injury rather than denying the injury. Emotion-Focused Coping is important in dealing successfully with the emotional responses which occur due to injury.

Three specific coping strategies influenced the Emotion-Focused Coping scores. Positive reinterpretation is directly related to focusing on the emotions experienced as a result of injury rather than the injury itself. This could have a very positive effect on the ability to decrease anger, depression, and tension, and other emotions which often accompany injury. The second strategy related to Emotion-Focused Coping is Emotional Social Support. This generally means receiving moral support and sympathy for the injury. Social support can provide a positive benefit throughout the entire rehabilitation process. It is theorized that the more significant social support an injured athlete receives the less negative effect they have from their emotional responses to injury (Hardy & Crace, 1993). Ievleva and Orlick (1991) also report that those with a high degree of social support experience less emotional distress when faced with a stressor and cope more effectively. The intensity and consistency of

support and the source of where the support comes from are two critical variables in emotional social support. Several people may be important to the athlete (trainers, coaches, teammates, friends, and family) to provide support during rehabilitation. The amount of support required from these people will vary depending on the meaning of the significance the athletes places on them and the type of support given by those closest to the athlete. Wiese and Weiss (1987) indicate that social support can help the injured athlete remain positive and that support from other previously injured athletes can be particularly effective in helping the athlete cope with injury. Social support has also been related to adherence with rehabilitation, therefore increasing the chance the athlete will participate in the most effective physical rehabilitation possible (Duda, 1989).

Support given by others may not always be positive. Coaches and teammates may place pressure on the athlete to return before they are fully rehabilitated, with results being negative. This may in fact increase the stress of the injury resulting in an increase in emotional response. This type of reaction from significant others can be quite detrimental in the rehabilitation of the athlete.

The third coping variable that influenced the Emotion-Focused Coping scores was religion. Females appear to have a greater tendency than males to turn to religion and rely on faith to see them through the injury. Turning to religion often means looking to a higher power for strength. Ermler and Thomas (1990) report athletes may feel a sense of powerlessness during the second stage of grieving in response to injury due to their inability to heal themselves and having to rely on trainers and doctors.

Wehlage (1980) also reports hopelessness as a second stage of grieving which occurs once the athlete realizes the injury cannot be reversed. This sense of powerlessness can impact the emotional responses of athletes. Faith in one's God to be supportive and carry the athlete through the time of injury can be an important factor in combating the negative effects of powerlessness.

Results of the comparisons of moderately and severely injured athletes at the initial time of injury indicated no significant differences in emotional responses of initial mean scores on the POMS or the ERAIQ. This does not correspond with previous research that indicates severely injured athletes will have a greater degree of negative emotional responses than moderately injured athletes (Badenhorst, 1990; Gordon et al., 1991; McDonald & Hardy, 1990; Smith, Scott, O'Fallon, & Young, 1990). Others argue that severity of injury is too simple a concept to fully explain significant emotional responses to injury. The coping skills of the athlete (in particular, social support) and the way the athlete perceives the injury also need to be factored in with severity of injury when considering how athletes respond when injured (Ben-Sira, 1983; Pedersen, 1986). Perhaps this may help to explain the lack of difference in emotional responses between moderately injured athletes and severely injured athlete in the present study.

Some of the most interesting results of the study occurred in the measure of the emotional responses of severely injured athletes over time. Anger, depression, anxiety, and tension are common emotions athletes feel as a result of injury (Lynch, 1988; Smith et al., 1990). Results from the POMS indicated a decrease in Anger

during the first week of inactivity. This decrease in Anger did not continue from the second to the third measurement. Results are similar to analysis of anger over time by McDonald and Hardy (1990). It is likely that the athletes were progressing satisfactorily in their rehabilitation and expected to return to action before too long. All of the athletes were expecting to return to action within 3 weeks of their initial injury. These results correspond partially to other studies that have indicated a significant improvement during the first 2 weeks of injury and subsequent follow up tests until return to action occurred (Smith et al., 1990).

Results from the emotions scales on the ERAIQ indicate a significant time effect on 4 of the 11 variables (Shock, In Pain, Depression, and Optimism). With Shock, it appears that athletes may need up to a week to no longer deny the presence of the injury and to accept the reality of being injured. Once this occurs the athlete may begin to cope with the other emotions that may occur due to the injury. Pain, swelling, and inflammation are often present as a result of physical damage to the body that occurs in injury. Swelling and inflammation are usually the cause of pain. With severe injuries, it often takes more than one week for the swelling and inflammation of an injury to subside as a result of treatment, with a subsequent reduction in pain occurring at the same time.

Depression also took at least a week to begin to subside. While there was no significant decrease from the first measurement (within 2 days post-injury to 7 days post-injury), the most significant decrease occurred over a 2 week time period. As athletes accept the reality of their injury and begin to work towards rehabilitation, with

accompanying decrease in pain and increase in hope to return to action, depression may subside. This coincides with the results of the emotion of Optimism over a 2 week time period. As the experience of Shock, Anger, Pain, and Depression in response to injury decrease the athlete may become more optimistic for a return to action to their sport.

Correlations between coping strategies and emotional responses of severely injured athletes were weak. This does not compare favorably with previous research that has indicated the positive relationship between coping skills and reduction in emotional responses to injury. A possible explanation for this phenomena is the weak reliability of the COPE correlations in this study. There were acceptable reliability coefficients on fewer than half of the subscales using internal reliability tests (Positive Reinterpretation: $r = .7816$, Emotional Social Support: $r = .7780$, Instrumental Social Support: $r = .7189$, Religion: $r = .8129$, and Acceptance: $r = .7382$). Results of the study using the COPE as a measurement of coping strategies and skills may be questioned due to the weak reliability. Research in examining coping resources of injured athletes is scarce, with no widely accepted tool to measure coping skills and strategies of the athletic population who must deal with injury.

There was a low negative correlation ($-.428$) between Emotion-Focused Coping and Anger on the POMS at Time One. This would indicate that the injured athletes who use Emotion-Focused Coping strategies reported feeling less angry than those who used Problem-Focused Coping. There were no significant correlations reported from Time Two. There was a low positive correlation ($.434$) between Problem-

Focused Coping and Pain on the ERAIQ at Time One. Problem-Focused copers center their attention on taking action to change the stress. Their focus on setting goals and imagery would likely result in the need to be particularly cognitive of their pain and its source for progress during rehabilitation. The lack of significant correlation during the second time period is perhaps indicative of the decrease in degree of the emotions felt by the injured athletes.

There were low correlations between two of the sub-scales on the COPE and the POMS. At initial intake, the Positive Reinterpretation scale had a low negative correlation with Anger (-.404) and Depression (-.325) indicating the possibility of a minor relationship between the use of positive reinterpretation and the reduction of anger and depression. At Time Two the sub-scale of Acceptance had a low negative correlation with Anger (-.5629) and Depression (-.5186) indicating a possible relationship between a continued reduction in anger and depression and the injured athlete's acceptance of the reality of their injury and subsequent adjustment of thoughts towards continued successful rehabilitation and return to action in their sport. There were also low correlations between two of the subscales on the COPE and the ERAIQ. At Time Two the scores on the Positive Reinterpretation scale had a low negative correlation with Shock (-.4472) indicating a slight relationship between athletes focusing on their emotional response to injury and decreases in their sense of disbelief that the injury occurred. Also at Time Two there was a low negative correlation between the Acceptance scale on the COPE and Helplessness (-.4283), Shock (-.4510) and Anger (-.4818) indicating a slight relationship between athletes

accepting their injury and realizing they have some control over when they return to action as a result of working on rehabilitation and a reduction in anger and helplessness.

Results of emotional responses seem to follow the grief model proposed by Hardy (1992). Athletes are said to first experience a stage of protest which is characterized by shock, denial, and anger. These are all emotions which decrease over a 2-week time period in the present study. Coping strategies appear to help athletes move through the first stage of protest, through the second stage of helplessness, and into the third stage of reorganization. Athletes are able to accept their injury, the loss they perceive due to the injury, and restructure their lives to most effectively aid in rehabilitating their injury and returning to action in their sport.

Both Emotion-Focused Coping and Problem-Focused Coping may aid the athlete through the grieving process in different ways. Emotion-Focused Coping may allow the athlete to move more quickly through stage one as they are able to focus on what they are feeling and cope with those feelings, rather than denying their emotions. Since results indicate that females may be more apt than males to use Emotion-Focused Coping, females may move through stage one more quickly than males. Problem-Focused Coping centers on taking action to change the source of the stress (injury). Goal setting, mental imagery, relaxation, positive self talk, and social support for instrumental reasons (seeking advice or assistance) all give athletes a sense of control over their injury and rehabilitation. This sense of control may help athletes move through the second stage of hopelessness and lay the groundwork for

restructuring their lives (Stage Three) (Hardy, 1992; Wiese, Weiss, & Yukelson, 1991).

It should be noted that the large standard deviations which occurred in many of the results of the study may be indicative of the wide variation of emotional responses athletes feel when they are injured. It is precisely these variations which make it difficult to theorize on results of research on emotional responses of injured athletes.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

There is little doubt that sport will continue to be a part of many student's lives while they are in college. It also appears likely that science will persist in making an impact on sport in the development of the human body and the human mind. Sports medicine professionals have persevered through the years in providing optimal techniques and equipment for physical rehabilitation in response to the athlete and coach exhorting the trainers and physicians to get the athlete back on the playing field as soon as possible. In the relatively young field of sport psychology, it is now becoming apparent that the athlete may benefit from psychological rehabilitation from injury. Common emotions present in response to injury such as depression, anger, shock, frustration, anxiety, tension, and helplessness have been identified, although questions still exist regarding the degree of emotional responses that occur when athletes are injured and cannot participate in their sport. There are several grief models which attempt to explain patterns of emotions that athletes feel when they are injured. There is still little consensus on which model appropriately describes the series of emotions the injured athlete experiences and when in the rehabilitation process certain emotions are likely to occur. Coping skills certainly play a role in the athlete's

emotional response when injured. In the modest research examining coping skills in injured athletes, there have been two main findings: (1) injured athletes tend to have poorer coping skills than non-injured athletes, and (2) social support plays a critical role in emotional responses of athletes when they are injured.

The purpose of this study was to investigate the influence of gender, severity of injury, and coping strategies on the emotional responses of injured athletes. Forty-three subjects from nine different sports at four NCAA institutions in Western Michigan were recruited. Athletes who were injured and could not participate in practice or competition for at least 2 days were asked to be subjects. The Emotional Responses of Athletes to Injury questionnaire and the Profile of Mood States inventory were used to assess emotional responses to injury. The COPE was used to identify coping strategies. Athletes who agreed to take part were given all three inventories to complete and instructed to fill out a new set of inventories each week until they returned to action. The inventories were collected by the researcher each week during a 16 month period. Data were analyzed using a one-way analysis of variance and the Pearson product moment correlation coefficient.

There were several assumptions made for the research. Identification of injured athletes needed to be made accurately by the athletic training staff who then needed to ask the athlete if they would participate in the study. The athletes needed to complete the inventories each week until they returned to action in their sport. Results of the study may be limited due to the motivation, cooperation, and accuracy of the

athletes completing the inventories. Care must also be taken in generalizing results for athletes other than injured intercollegiate athletes.

Overall, results indicate there is little difference in how males and females respond emotionally to injury. However, possibilities for gender differences occurred when considering the coping strategies injured athletes use when they are unable to participate. Females may have a greater tendency than males to use Emotion-Focused Coping in dealing with injury. There was also little difference in emotional responses of athletes out of action less than 1 week (moderately injured) or more than one week (severely injured). The most significant findings from the study occurred when examining the emotions of severely injured athletes over a 2 week period. Reports of Anger decreased during the first week, with Shock, Depression, and Pain responses declining over a 2 week period. The athletes reported an increase in Optimism over a 2 week period. Results from examining the relationship between emotional responses and coping strategies of severely injured athletes within 2 days of being injured indicated a low negative correlation between Emotion-Focused copers and Anger and a low positive correlation between Problem-Focused copers and Pain. There were no significant correlations between emotional responses and coping strategies at the end of the first week of inactivity.

Conclusions

Results of examining gender differences of initial mean scores of emotional responses to injury reported on both the POMS and ERAIQ appear to indicate males

and females may respond with similar emotional reactions when injured. This supports previous research which has also failed to find significant differences in how males and females respond emotionally when injured. It may then be assumed that when an athlete is injured, their emotional responses occur as a result of several possible variables other than gender.

When examining gender differences in coping strategies of severely injured athletes, indications are that females may have a greater tendency than males to use Emotion-Focused Coping strategies in response to injury. Females may be more apt than males to feel their injury and rehabilitation is a stressful experience that must be endured and focus on managing their emotions by positively reinterpreting their perception of the meaning of the injury, seeking moral support and sympathy from significant others, and relying on religious support and faith.

In previous research significant differences in emotional responses due to severity of injury have been indicated. The present study did not replicate these findings in that results demonstrated no statistically significant differences between moderately injured and severely injured athletes in initial mean scores on either the POMS or the ERAIQ. It is believed that this may be due to two factors: (1) the severely injured athletes in the study returned to action in their sport within 4 weeks of incurring their injury, which may be earlier than in other studies; and (2) the small number of subjects in the severe category (13). Perhaps the length of time out of action was not long enough for there to be a significant difference in emotional

responses between moderately and severely injured athletes. The small number of subjects also makes it more difficult to accept the results of the study as being valid.

Models and theories have been developed to help define patterns of emotional responses athletes exhibit when they are injured. Results of the study indicated a difference in mean scores of the variable of Angry on the POMS and the variables of Shock, Pain, Depression, and Optimism on the ERAIQ for severely injured athletes over a 2 week period of injury. Conclusions from the present study indicate similar patterns of emotional responses of the severely injured athletes that fit with previously presented grief models. Athletes may be expected to become less shocked, angry, and depressed about being injured as they begin to cope with the injury. Pain usually decreases as an injury heals. With the decrease in negative emotions, the athlete may feel increased optimism for returning to action in their sport.

The correlations between the mean scores on the POMS and the ERAIQ with Emotion-Focused and Problem-Focused Coping strategies within 2 days of injury and at the end of the first week of activity are weak. It appears there is little significant relationship between the emotions athletes feel when they are injured and the coping strategies they use when injured. Emotion-Focused copers may have a slight advantage over Problem-Focused copers in decreasing angry feelings when they are first injured. Problem-Focused copers may have a slight advantage over Emotion-Focused copers in decreasing their perception of pain when they are first injured. It appears that once there is a decrease in severity of emotional response from injury, there is no significant advantage of either Emotion-Focused Coping or Problem-Focused Coping

in affecting emotional responses. Use of results from the coping strategies of injured athletes may be limited due to the lack of strong reliability scores on the COPE.

Recommendations

While there have been some statistically significant findings in the present study, caution should be taken when generalizing the results. The small number of subjects overall and the small number of severely injured athletes need to be taken into consideration when making references to the injured athletic population. Future research would benefit from having a large pool of subjects, from many different sports and both genders to continue to provide information to the young, growing field of the psychology of the injured athlete. A strong recommendation needs to be made for the development of an instrument that will reliably measure coping skills and strategies athletes use when they are injured. If injured athletes do indeed have weaker coping skills than noninjured athletes, then several questions need to be answered. What coping skills, however weak they may be, do injured athletes possess? How can coping skills and strategies of injured athletes be improved? Will improving coping skills and strategies of injured athletes result in more effective rehabilitation of the physical injury? Are injured athletes who possess effective coping skills and strategies less apt to have significant negative emotional responses to injury? Which is a more effective coping strategy for injured athletes, Emotion-Focused Coping or Problem-Focused Coping?

Future research should investigate which variables, other than gender, influence how an athlete responds when they are injured. If severity of injury is indeed a factor, how severe does an injury have to be before there is a significant increase in the degree of negative emotional response?

Implications for interventions for injured athletes should focus on providing the athlete with techniques to reduce the effects of the injury as a stressor and how to react positively to emotional responses. Interventions should only be performed by trained counselors or sports psychologists, or athletic trainers who have the appropriate training. Pre-injury screening of all athletes by a sport psychologist or counselor in conjunction with the athletic trainer may provide a mental health professional with information on strategies athletes may use if they become injured. This screening could be a part of preseason physicals or integrated in to the preseason testing of athletes performed by the athletic trainer. Focus needs to be on strengthening coping strategies already intact or developing coping strategies in athletes with poor coping. Techniques such as relaxation, imagery, thought restructuring, and building social support should be available to injured athletes early on in their rehabilitation. The types of emotional responses athletes may have when injured are being fairly well documented in the literature. Now that it is more apparent what athletes may be feeling when they are injured, it is important to examine further how athletes cope with the emotions they feel and how psychology may play a significant role in the rehabilitation of athletes and their ultimate goal of returning to action on the fields and courts.

Appendix A
Letter of Explanation and
Informed Consent

January 10, 1995

TO THE INJURED ATHLETE:

As an athlete who has incurred a second or third degree injury you are being asked to participate in a study that is investigating emotional responses of athletes to injury and coping strategies of those athletes. Although you have acquired a physical injury there may also be an emotional or psychological response to your physical injury. The information received from your responses will provide data on what athletes go through when they are injured. It is believed by some individuals that rehabilitation of injured athletes should be holistic in nature, not just treating the physical aspect of injury. Before it can be determined what type of needs the athlete has to be rehabilitated in this way it is important to learn what it is that an injured athlete experiences emotionally and psychologically after becoming injured.

The athletic trainer who will be treating you will be giving you a packet which contains three inventories. It will only take you a short time to complete them. You will need to complete them before you leave the training room and turn them in to the collection box. Please be as honest as possible to provide the most accurate information. Your responses will be held in strictest confidence. You will be asked to complete these inventories each week until you return to action. Each inventory will be coded and collected in a sealed envelope without the appearance of your name. The coding is done to match your responses on your weekly inventories and will not be used to identify you. The only person who will read the inventories is the researcher. After the data from the inventories have been entered into a computer file the documents will be stored in a locked file. At no time will anyone other than the researcher have access to these inventories. This includes your coach, other athletes, college administrators, or psychologists.

Because this study is to measure emotional responses and coping strategies and not meant to be an intervention in any way, you will not receive any type of specialized treatment at this time. However for individuals who react in a severe manner to the responses on the inventories referrals to appropriate psychological and counseling services may be made if the athlete desires.

Thank you for your participation in this study. I look forward to receiving your data. If you have any concerns at any time during your rehabilitation please contact Donna Eaton at (616) 395-7693.

Sincerely yours,

Donna Eaton, L.P.C
Assistant Professor of Physical Education
Hope College

I, _____, give my consent to provide information regarding how I feel and how I cope with my injury. I understand that the inventories being used will provide data that will be collected and coded which will result in the data being confidential.

I understand that the trainers, coaches, administrators, or other students will not have access to this information.

Further, I understand that the data which I provide will be used in a report of injured athletes.

Name _____

Date _____

Appendix B
Human Subjects Institutional
Review Board Forms



WESTERN MICHIGAN UNIVERSITY

Date: January 4, 1995

To: Donna Eaton

From: Richard Wright, Interim Chair

Re: HSIRB Project Number 94-12-08

Richard A. Wright

This letter will serve as confirmation that your research project entitled "A study of the emotional responses and coping strategies of male and female athletes with second and third degree injuries" has been approved under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

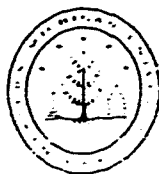
Please note that you must seek specific approval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date. In addition if there are any unanticipated adverse or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: Jan 4, 1996

xc: Geisler, CECF

Human Subjects Institutional Review Board



Kalamazoo Michigan 49008-3896

WESTERN MICHIGAN UNIVERSITY

Date: 12 November 1996

To: John Geisler, Donna Eaton

From: Richard Wright, Chair

Re: HSIRB Project Number 94-12-08

This letter will serve as confirmation that the changes to your research project "A Study of the Emotional Responses and Coping Strategies of Male and Female Athletes with Moderate and Severe Injuries" requested in your memo dated 7 November 1996 have been approved by the Human Subjects Institutional Review Board.

The conditions and the duration of this approval are specified in the Policies of Western Michigan University.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 23 December 1995

xc: Donna Eaton

RECEIVED

66

HUMAN SUBJECTS APPROVAL REVIEW FORM
for Students

DEC 20 1995

H.S.I.R.B.

Western Michigan University's policy states that "the IRB's review of research on a continuing basis will be conducted at appropriate intervals but not less than once per year" In compliance with that policy, the HSIRB requests the following

STUDENT INVESTIGATOR Donna Eaton

DEPARTMENT CECP FACULTY ADVISOR John Geisler

DATE December 1, 1995 PROJECT NUMBER 94-12-08

DATE OF LAST APPROVAL January 4, 1995

PROJECT TITLE "A study of the emotional responses and coping strategies of male and female athletes with second and third degree injuries"

- 1 The research, as approved by the HSIRB, is completed yes X no
If no, continue with 2-4
- 2 I am still the Student Investigator X yes no
If no, details are required on an attached sheet
- 3 Is the approved protocol still accurate and being followed with respect to
 - a Procedures X yes no If no, give details
 - b Subjects X yes no If no, give details
 - c Design X yes no If no, give details
 - d Data collection X yes no If no, give details
- 4 Please attach any new instrumentation

Donna Eaton
(Signature of Student Investigator)

[Signature]
(Signature of Faculty Advisor)

Richard C. Wright
(Signature of HSIRB Chair)

If this form is not returned within 30 days, the research will be coded as completed by changing the end day you initially submitted to the HSIRB

12/94

BIBLIOGRAPHY

- Andersen, M. B. (1988). A model of stress and athletic injury: Prediction and prevention. Journal of Sport and Exercise Psychology, 10, 294-306.
- Astle S. J. (1986). The experience of loss in athletes. Journal of Sports Medicine, 26, 279-284.
- Badenhorst, J. C. C. (1990). Psychotherapeutic approach to the management of the severely injured patient. Psychotherapy Psychosomatic, 53, 153-160.
- Ben-Sira, Z. (1983). Loss, stress and readjustment: the structure of coping with bereavement and disability. Social Science and Medicine, 17(21), 1619-1632.
- Bergandi, T. A. (1985). Psychological variables relating to the incidence of athletic injury: A review of the literature. International Journal of Sport Psychology, 16, 141-149.
- Blackwell, B., & McCullagh, P. (1990, Spring). The relationship of athletic injury to life stress, competitive anxiety, and coping resources. Athletic Training, 25(1), 23-27.
- Brewer, B. W., VanRaalte, J. L., & Linder, D. E. (1991). Role of the sport psychologist in treating injured athletes: A survey of sports medicine providers. Journal of Applied Sport Psychology, 3, 183-190.
- Buros, O. K., (1978). Mental Measurements Yearbook. 8th Edition, 1, 651-653.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing Coping Strategies: A theoretically based approach. Journal of Personality and Social Psychology, 56(2), 267-283.
- Coddington, R. D., & Troxell, J. R. (1980). The effect of emotional factors on football injury rates: A pilot study. Journal of Human Stress, 6, 3-5.
- Crossman, J. (1985). Psychosocial factors and athletic injury. Journal of Sports Medicine Physical Fitness, 25, 151-154.

- Danish, S. J. (1986). Psychological aspects in the care and treatment of athletic injuries. In Vinger, P. F. & Hoerner, E. F. (Eds), Sports injuries: The unthwarted epidemic (pp. 345-353). Littleton, MA: PSG.
- Davis, J. O. (1991). Sports injuries and stress management: An opportunity for research. The Sport Psychologist, 5, 175-182.
- Deutsch R. E. (1985). The psychological implications of sports-related injuries. International Journal of Sports Psychology, 16, 232-237.
- Dishman, R. K. (1985, January). Medical psychology in exercise and sport. Medical Clinics of North America, 69(1), 123-143.
- Duda, J. L., Smart, A. E., & Tappe, M. K. (1989). Predictors of adherence in the rehabilitation of athletic injuries: An application of personal investment theory. Journal of Sport & Exercise Psychology, 11, 367-381.
- Dulberg, H.N. (1988, September). Injury: How athletes deal with hurt. Sport Care & Fitness, 53.
- Dunn, R. (1983). Psychological factors in sports medicine. Athletic Training, 18(1), 34-35.
- Eldridge, W. D. (1983). The importance of psychotherapy for athletic related orthopedic injuries among adults. International Journal of Sport Psychology, 14, 203-211.
- Ermler, K. L. & Thomas C. E., (1990). Interventions for the alienating effect of injury. Athletic Training, (25) 3, 269-271.
- Faris, G. J. (1985). Psychologic aspects of athletic rehabilitation. Clinics in Sports Medicine, 4, 545-551.
- Feltz, D. L. (1984). The psychology of sports injuries. In Vinger, P. E., & Hoerner, E. F., (Eds), Sports injuries: The unthwarted epidemic (2nd ed.) (pp.336-344). Boston: John Wright, PSG.
- Gordon, S. (1986, March). Sport psychology and the injured athlete: A cognitive-behavioral approach to injury response and injury rehabilitation. Science Periodical on Research and Technology in Sport. Ottawa: Coaching Association of Canada.

- Gordon, S., Milios, D., & Grove, J. R. (1991, June). Psychological aspects of the recovery process from sport injury: The perspective of sport physiotherapists. The Australian Journal of Science and Medicine in Sport, 23(2), 53-60.
- Gregory, B. & Van Valkenburgh, J. (1991). Psychology of the injured athlete. Journal of Post Anesthesia Nursing, 6(2), 108-110.
- Hanson, S. J., McCullagh, P., & Tonymon, P. (1992). The relationship of personality characteristics, life stress, and coping resources to athletic injury. Journal of Sport & Exercise Psychology, 14, 262-272.
- Hardy, C.J. & Crace, R.K. (1990). Dealing with injury. Sport Psychology Training Bulletin, 1(6), 108-110.
- Hardy, C. J., Richman, J. M., & Rosenfeld, L. B. (1991). The role of social support in the life stress/injury relationship. The Sport Psychologist, 5, 128-139.
- Hardy, L. (1992). Psychological stress, performance, and injury in sport. British Medical Bulletin, 48(2), 615-629.
- Hope College. (1993-94). Sports medicine injury and treatment summary. Holland, MI:
- Ievleva, L., & Orlick, T. (1991). Mental links to enhanced healing: An exploratory study. The Sport Psychologist, 5, 25-40.
- Kerr, G. & Fowler, B. (1988, September). The relationship between psychological factors and sports injuries. Sports Medicine, 6(3), 127-134.
- Kerr, G. & Minden, H. (1988). Psychological factors related to the occurrence of athletic injuries. Journal of Sport and Exercise Psychology, 10, 167-173.
- Kubler-Ross, E. (1969). On Death and Dying. MacMillan: London.
- Kuland, D. N. (1988). The Injured Athlete (2nd edition), J. B. Lippincott.
- LaMott, E. E., Petlichkoff, L. M., VanWassenhove, J., Stein, K., Wade, G., & Lewis, K. (1989). Psychological rehabilitation of the injured athlete: An educational approach to injury. Paper presented at the annual meeting of the Association for the Advancement of Applied Sport Psychology, Seattle.

- Leddy, M.H., Lambert, M.J., & Ogles, B.M. (1994, December). Psychological consequences of athletic injury among high-level competitors. Research Quarterly for Exercise and Sport, 65(4), 347-354.
- LeUnes, A., Hayward, S., & Daiss, S. (1988). Annotated bibliography on the Profile of Mood States in sports, 1975-1988. Journal of Sport Behavior, 11, 13-239.
- Lynch, G. P. (1988). Athletic injuries and the practicing sport psychologist: Practical guidelines for assisting athletes. The Sport Psychologist, 2, 161-167.
- Lysens, R., Vanden Auweele, Y., & Ostyn, M. (1986). The relationship between psychosocial factors and sports injuries. Journal of Sports Medicine and Physical Fitness, 26, 77-84.
- Mainwaring, L. M. & Galway, R. H. (1989). Psychological factors of athletic-injury rehabilitation. Proceedings of the 7th World Congress in Sport Psychology. (pp. 169-170). Singapore Sports Council.
- Massimo, J. (1985, April). Psychological recovery from injury. International Gymnast, 58, 42-43.
- May, J. R., & Sieb, G. E. (1987). Athletic injuries: Psychosocial factors in the onset, sequelae, rehabilitation, and prevention. In May, J. R. & Asken, M. J. (Eds.), Sport psychology: The psychological health of the athlete (pp. 157-185). New York: PMA.
- May, J. R., Veach, T. L., Reed, M. W., & Griffey, M. S. (1985). A psychological study of health, injury, and performance in athletes on the U. W. alpine ski team. The Physician and Sportsmedicine, 13, 111-115.
- McDonald, S. A., & Hardy, C. J. (1990). Affective response patterns of the injured athlete: An exploratory analysis. The Sport Psychologist, 4, 261-274.
- McNair, D. M., Lorr, N., & Droppleman, L. F. (1981). Manual for the Profile of Mood States. San Diego: Education and Industrial Testing Service.
- Milios, C. D. (1989). Psychological response to and rehabilitation from sport injury. Unpublished Honours Thesis, The University of Western Australia, Perth.
- National Athletic Trainers' Association. (1992). Competencies in athletic training. NCAA Manual. (1993-94). Bollig, L. E. (Ed).
- NCAA Injury Surveillance System. (1993). Kansas.

- Nideffer, R. M. (1989). Psychological aspects of sports injuries: Issues in prevention and treatment, International Journal of Sport Psychology, 20, 241-255.
- Nideffer, R. M. (1983, April). The injured athlete: Psychological factors in treatment. Orthopedic Clinics of North America, 14(2), 373-385.
- Pargman, D. (1993). Psychological Bases of Sport Injuries. Morgantown, WV: Fitness Information Technology, Inc.
- Parham, W. D. (1993, July). The intercollegiate athlete: A 1990's profile. The Counseling Psychologist, 21(3), 411-429.
- Pearson, L., & Jones, G. (1992, October). Emotional effects of sports injuries: Implications for physiotherapists. Physiotherapy, 78(10), 762-770.
- Pedersen, P. (1986). The grief response and injury: A special challenge for athletes and athletic trainers. Athletic Training, 21, 312-314.
- Petrie, T. A. (1993a). Coping skills, competitive trait anxiety, and playing status: Moderating effects on the life stress-injury relationship. Journal of Sport and Exercise Psychology, 15, 261-274.
- Petrie, T. A. (1993b). The moderating effects of social support and playing status on the life stress-injury relationship. Journal of Applied Sport Psychology, 5, 1-16.
- Rohe, D. E. (1988). Psychological aspects of rehabilitation. In DeLisa, J. A. (Ed.), Rehabilitation Medicine: Principles and Practice. (pp. 66-82) Philadelphia: Lippincott.
- Rosenfeld, L. B., Richman, J. M., & Hardy, C.J. (1989). Examining social support networks among athletes: Description and relationship to stress. The Sport Psychologist, 3, 23-33.
- Rotella, R. J., & Heyman, S. R. (1993). Stress, Injury, and the Psychological Rehabilitation of Athletes. In Williams, J. M. (Ed.) Applied Sport Psychology: Personal Growth to Peak Performance. (pp. 338-355). Mountain View, California: Mayfield Publishing Company.
- Rotella, R. J. (1985). The psychological care of the injured athlete. In Bunder, L. K. Rotella, R. J. & Reilly, A. S. (Eds.) Sport Psychology: Psychological Considerations in Maximising Sport Performance. (pp. 273-287). Movement: New York.

- Ryde, D. (1977). The role of the physician in sports injury prevention: Some psychological factors in sports injuries. Journal of Sports Medicine and Physical Fitness, 17, 187-194.
- Samples, P. (1987, October). Mind over muscle: Returning the injured athlete to play. The Physician and Sportsmedicine, 15(10), 172-180.
- Sanderson, F. H. (1981). Psychological aspects of rehabilitation. Physiotherapy in Sport, 4(3), 2, 4.
- Schomer, H. H. (1983). Psychological adjustment to injury and acute trauma. Physiotherapy, 39, 1891-94.
- Scott, S. G. (1984). Current concepts in the rehabilitation of the injured athlete. Mayo Clinic Proceedings, 59, 83-90.
- Smith, A. M., Scott, S. G., O'Fallon, W. M., & Young, M. L. (1990). Emotional responses of athletes to injury. Mayo Clinic Proceedings, 65, 38-50.
- Smith, A. M., Scott, S. G., & Wiese, D. M. (1990). The psychological effects of sports injuries and coping. Sports Medicine, 9(6), 352-369.
- Smith, A. M., Stuart, M. J., Wiese-Bjornstal, D. M., Milliner, E. K., O'Fallon, W. M., Crowson, C. S. (1993, October). Competitive athletes: Preinjury and postinjury mood state and self-esteem. Mayo Clinic Proceedings, 68, 939-947.
- Smith, R., & Smoll, F. (1988, October). Psychosocial factors in athletic injuries. Paper presented at the meeting of the Association for the Advancement of Applied Sport Psychology, Nashua, NH.
- Smith, R. E., Smoll, F. L., & Ptacek, J. T. (1990). Conjunctive moderator variables in vulnerability and resiliency research: Life stress, social support and coping skills, and adolescent sport injuries. Journal of Personality and Social Psychology, 58(2), 360-370.
- Smith, R. E., Smoll, F. L., & Schutz, R. (1988). The Athletic Coping Skills Inventory. Psychometric properties, correlates and confirmatory factor analysis. Unpublished manuscript, University of Washington.
- Tunick, R., Etzel, E., & Leard, J. (1991). Counseling injured and disabled student-athletes: A guide for understanding and intervention. In Etzel, E., Ferrante, A. P., & Pinkney J. (Eds.), Counseling college student-athletes: Issues and interventions. Morgantown, WV: Fitness Information Technology, Inc.

- Wehlage, D. F. (1980, Fall). Managing the emotional reaction to loss in athletics. Athletic Training, 15(3), 144-146.
- Weiss, M. R., & Troxel, R. K. (1986, Summer). Psychology of the injured athlete. Athletic Training, 154, 104-109.
- Wiese, D. M. & Weiss, M. R. (1987). Psychological rehabilitation and physical injury: Implications for the sportsmedicine team. The Sport Psychologist, 1, 318-330.
- Wiese, D. M., Weiss, M. R., & Yukelson, D. P. (1991). Sport psychology in the training room: A survey of athletic trainers. The Sport Psychologist, 5, 15-24.
- Wiese-Bjornstal, D.M. & Smith, A.M. (1993). counseling athletes who are injured. In D. Pargman (Ed), Psychological Bases of Sport Injuries (147-182), Morgantown, VA: Fitness Information Technology.
- Williams, J. M., & Roepke, N. (1993). Psychology of injury and injury rehabilitation. In Singer, R. N., Murphey, M., & Tennant, L. K. (Eds.), Handbook on research in sport psychology. New York: MacMillan.
- Wohlgemuth, E., & Betz, N. E. (1991). Gender as a moderator of the relationship of stress and social support to physical health in college students. Journal of Counseling Psychology, 38, 367-374.
- Yaffe, M. (1983). Sports injuries: Psychological aspects. British Journal of Hospital Medicine, 29, 224-230.
- Yukelson, D. (1986). Psychology of sport and the injured athlete. In D.B. Bernhart (Ed.), Clinics in physical therapy (pp. 175-195). New York: Churchill Livingstone.