AN ABSTRACT OF THE THESIS OF

Kirstie A. Schwartze for the Master of Science in Physical Education presented on May 27, 1997.

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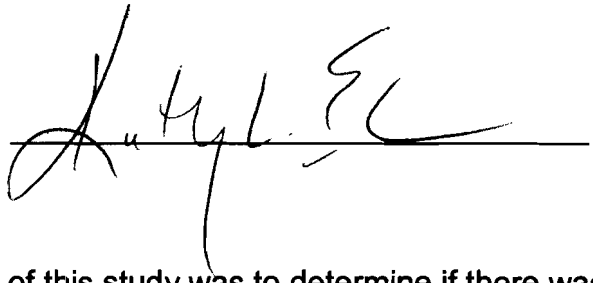
Abstract approved: 

The purpose of this study was to determine if there was a relationship among learned effectiveness scores, injury rate, and fatigue. A sub-problem of this study was to examine if there were differences between and among gender, track and field event types, and scholarship category on learned effectiveness scores. The participants of this study were male and female outdoor track and field athletes at Emporia State University (N=50). During the 1997 MIAA outdoor track and field season, the participants were asked to complete an eight week heart rate log and to answer a Motivational Effectiveness Scale (MES). Data were analyzed through the use of a Pearson Product correlation coefficient, chi square, and an one-way analysis of variance (ANOVA). All data were analyzed at the $p < .05$ level of significance. The correlation coefficient indicated no significant relationship between learned effectiveness scores and injury rate ($r = .18$) and fatigue and injury rate ($r = .18$). The correlation coefficient indicated a relationship between learned effectiveness scores and fatigue ($r = -.35$, $p =$

.035). An one-way ANOVA indicated no significant difference between learned effectiveness scores and gender, F (1,48) = 2.1396, p =.15); event type, F (2, 47) = 1.01, p =.37; and scholarship category, F (1,48) = 1.74, p =.17.

The Relationship Among Learned Effectiveness, Overuse Symptoms, and Fatigue

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A Thesis

Presented to

the Division of Health,

Physical Education, and Recreation

EMPORIA STATE UNIVERSITY

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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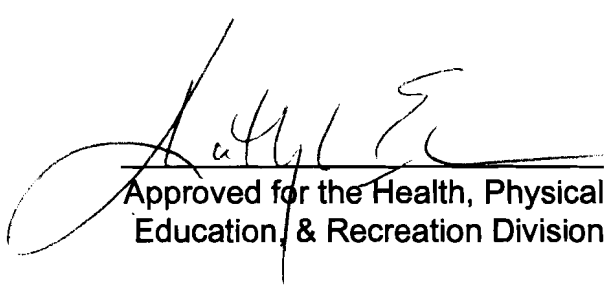
by

Kirstie A. Schwartze

May 27, 1997



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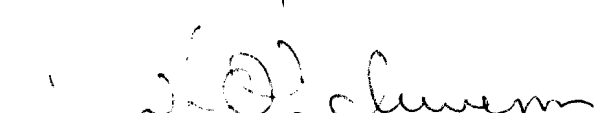

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CHAPTER I

INTRODUCTION

The primary focus of sport psychology is to identify principles and develop techniques which coaches and athletes can use to enhance performance. These types of psychological principles and techniques include methods to help the athlete manage stress, set accomplishable goals, and improve attention and concentration. In addition, sport psychology has incorporated the principles and techniques of human motivation into the sport environment. These principles and techniques are used to increase visualization skills and improve self-affirmation and self-concept.

An understanding of human motivation is critical to the success of an athlete. Athletic achievement and success require more than just physical ability. Athletes must be motivated to make a commitment to the effort and practice needed to be successful in sport. An athlete must have the desire and drive to develop the skills necessary to compete effectively, as well as learn from the success and failure of competition.

Motivation is defined as the direction and intensity of an athlete's effort (Weinberg & Gould, 1995). Direction refers to the methods a person uses to seek out, attract, or approach certain situations. For example, a person may be motivated to try out for a team, join a fitness club, or go to a summer instructional camp. Intensity of effort is described as the amount of time and effort a person puts into the activity. Examples of intensity may include a person attending an

aerobic class, but not working in the target heart rate zone or a basketball player wanting to make a game winning free throw, but as a result of becoming overly motivated, misses the shot (Weinberg & Gould, 1995). Motivation in sport can influence an athlete's reaction to many situations. Through this influence, athletes can learn to overcome obstacles in order to heighten performance. The athlete can also have negative responses to motivational influence which could increase his/her chances for failure.

High levels of motivation can lead to excessive pressure to perform. Pressure can be heightened by the coach, parents, peers, or the athlete. Increases in pressure, whether external or internal, can lead to decreases in performance. With these declines in performances, the athlete may feel like s/he is not competing hard enough. As a result, an athlete may begin to train and practice over extended periods of time to help overcome the decrease in performance. This overtraining leads to improper cycles of rest and recovery; time which can cause an athlete to become fatigued. Improper rest and recovery time can also increase the chance of injury for the athlete.

Limited research has been conducted on the relationship between motivation and injury in sport. Anderson and Williams (1993) suggested the personality characteristics of low motivation, high motivation, coherence, or competitive anxiety traits can place an individual in injury situations. However, there has been little research on the relationship between motivation and athletic injury. It is this relationship that was the focus of this study.

Statement of the Problem

Research has been conducted for the purpose of studying motivation and the effects it has on sport performance and competition. Few, if any studies have examined the relationship between motivation and sport injuries. Since few studies have been conducted on the topic of motivation and sports injury, a possible link between the level of motivation of an athlete and the rate of injuries might be beneficial in early identification of future injuries.

Purpose

The purpose of this study was to determine if there is a relationship among learned effectiveness motivation, injury rate, and fatigue. A sub-problem of this study was to examine if there were any differences between and among gender, track and field event type, and scholarship category on learned effectiveness motivation scores.

Hypotheses

1. There is no relationship among learned effectiveness scores, injury rate, and fatigue.
2. There is no difference between male and female track and field athletes on learned effectiveness scores.
3. There is no difference among sprinters, distance runners, and field athletes on learned effectiveness scores.
4. There is no difference between scholarship and non-scholarship track and field athletes on learned effectiveness scores.

Statement of Significance

There has been much research linking motivational principles and sport performance (Atkinson, 1979; Orlick, 1990; Roberts, 1992). These studies have focused on characteristics of internal and external motivation, task or ego involvement of athletes, and achievement and attribution characteristics of athletes. The results of these studies indicated the type and level of motivation an athlete may have will influence the athlete's performance in sport.

Current research is significant because the level and type of motivation of an athlete can be related to the rate or type of injury an athlete may experience. By determining if the motivational level of an athlete is related to overuse injuries, trainers, coaches, and athletes may be able to identify particular signs and symptoms which predispose athletes to injury.

An athlete's knowledge of the type of motivational behavior s/he possesses could have a direct relationship to the training habits and values the athlete may possess. A person with high learned effectiveness motivation may be able to recognize early symptoms of injury and be more likely to get the injuries treated. On the other hand, a person with low learned effectiveness motivation may choose to ignore symptoms of injury and allow these injuries to progress into more severe and chronic overuse injuries.

Definitions

The following terms are defined as used in this study:

1) Distance Runners - Individuals who compete in running events that are 800 meters and longer.
2) Extrinsic Motivation - "A wide variety of behaviors where the goals of action extend beyond those inherent in the activity itself" (Fortier, Vallerand, Briere, & Provencher, 1995, pg. 25).
3) Field Athletes - Individuals who participate in events such as discus, hammer throw, javelin, shot-put, pole vault, long jump, triple jump, and high jump.
4) Injury Rate - Complaints of injury or illness given by an athlete at any period of time during the season. All injuries and illnesses are equal in importance.
5) Intrinsic Motivation - "Behavior which is motivated by a person's innate need to feel competent and self-determining in dealing with his or her environment" (Halliwell, 1993, pg. 85).
6) Learned Effectiveness Motivation - "The theory that there is a way to perceive and react to the world of sport that will maximize an athlete's effectiveness in it" (Bunker & Rotella, 1981, pg. 89).
7) Locus of Control - "The theory that behavior is determined by both the structure of a situation and by the beliefs or expectancies brought to the situation by the person" (Phares, 1976, pg. 6).
8) Overuse Syndrome - "Training loads which are too intense and too long for individuals to adapt, resulting in decreases in performance. An abnormal

extension of the training process which builds up to a state of staleness" (Heil, 1993, pg. 59).

9) Sprinters - Individuals who compete in running events which are 800 meters and under.

Review of Literature

In this section a review of literature relevant to learned effectiveness and athletic injury will be presented. Learned effectiveness has its foundations in sport psychology. Specifically, this motivational pattern is a combination of attribution theory, locus of control, and achievement motivation. Each area will be discussed and related to the learned effectiveness motivational pattern.

Learned Effectiveness Motivational Pattern

Learned effectiveness is a motivational pattern athletes use to create a positive attitude in order to help them achieve success (Long, 1994). Learned effectiveness educates athletes to develop reactions and methods to help them maximize the effectiveness of their efforts. Learned effective athletes learn to read their minds and bodies in a way that will help them maximize their performance. The athletes who have developed this pattern have a strong work ethic and set realistic, challenging goals. These characteristics help build self-confidence and determination. External rewards are not the primary motivators for learned effective athletes. Athletes with learned effectiveness use internal (personal) characteristics to help achieve success. These internal characteristics consist of high levels of concentration, dedication, and the

willingness to master a skill in order to be successful (Long, 1994). Learned effective athletes have positive outlooks about performance and competition. They approach a situation with the attitude of "I can do this" instead of "I think I can do this" (Bunker & Rotella, 1981). Positive attitudes and rational choices are characteristic of learned effective athletes. The learned effective athlete has a strong background in discipline, time management, goal setting, and possesses high levels of self-confidence, trust, and internal motivation.

Learned effective athletes believe they will be successful at sometime in the future. These athletes are patient and persistent. They take pride in their achievements and realize the importance in the amount of effort put into a task (Long, 1994). Athletes who are learned effective take control of their lives. They do everything they possibly can to improve their chances for success (Bunker & Rotella, 1981). They use internal motivation to help achieve their goals and perform successfully.

Athletes who are not learned effective depend on the feedback and acceptance of coaches and peers. Low learned effective athletes do not learn from their mistakes, instead they view mistakes and poor performances as failures. These types of athletes have low levels of self-esteem, possess a poor self-image, and have low levels of self-confidence (Long, 1994). Low learned effective athletes take pride in defeating others and are influenced by external rewards associated with sport. Athletes with low levels of learned effectiveness do not take responsibility for their actions. They blame their failures on their

surroundings and others. These types of athletes perceive situations as being influenced by external factors which are viewed as being uncontrollable factors.

The perceptions athletes use to explain success and failure influence how they will approach future situations. There are several factors which influence an individual's learned effectiveness pattern. These factors are attribution theory, locus of control, and achievement motivation.

Attribution Theory

Attribution theory is a central component of learned effectiveness motivation. Attribution theory focuses on the way in which individuals form causal interpretations of their behavior and the behavior of others (Long, 1994; Roberts, 1992). It focuses on the reasons an individual gives to explain his or her successes and failures (Weinberg & Gould, 1995). These reasons for success or failure can be grouped into three categories: stability, causality, and control (Weiner, 1986). Stability refers to the permanence or instability of an individual's reasons. Causality refers to the internal or external source of an individual's reasons. Control refers to whether the individual perceives success or failure as something s/he can or cannot control.

The attributions athletes make are significant because they affect the future successes, failures, and emotional responses of an individual (Weinberg & Gould, 1995). In addition, the reasons an athlete gives for his/her success or failure determines the way s/he approaches the next challenge or task. Long stated people make attributions in order to feel comfortable in their surroundings

and in control of various situations. A key to understanding a person's motivation is to examine the reasons the individual offers for success and failure.

Attribution Theory and Learned Effectiveness Motivation

High learned effective athletes credit responsibility, success, and failure to stable, internal (personal) attributions. Athletes with high learned effectiveness do not blame others for their misfortunes and take responsibility for their mistakes. They have high levels of self-confidence and self-esteem (Long, 1994). Long (1994) stated athletes who attribute their success to ability and effort (internal and stable causes) will increase their self-confidence. In addition, athletes who make internal and stable attributions have higher expectations for future success in sport performances and competitions.

Locus of Control

The second component of learned effectiveness motivation is locus of control. Locus of control is a social theory of learning which explains the extent to which an individual believes s/he is in control of events and the environment around him/her (Long, 1994; Scheer & Ansorge, 1979). Rotter (1966), categorized individuals as either external or internal as related to locus of control. Individuals with an external orientation perceive they have little, if any, control over their environment. As a result, success or failure in sport is viewed as being outside their control or responsibility. Individuals with an internal orientation perceive they have control over their environment. As a result, success and failure in sport is viewed as a direct result of their actions.

Research on external and internal locus of control indicates people who are internally-oriented attempt to control their environment by being active and more direct than externally-oriented individuals (Long, 1994). Some characteristics of internals included achievement, drive, high levels of activity, and independence (Hersch & Scheibe, 1967; Julian & Katz, 1968).

Internally-oriented individuals concentrate more on the task and task difficulty (Duda, Chi, Newton, Walling, & Catley, 1995). They are more likely to experience pleasure from participation, cope well with feedback, and demonstrate self-motivation (Fredrick & Ryan, 1995). Externally-oriented people conform to the influences and expectations of others. Externals also rely on information and feedback from outside sources more than internally motivated people (Long, 1994). Some characteristics of externals include being dependent on social acceptance, as well as basing their self-worth and ability on how well they perform a task. Externally-oriented individuals are also referred to as ego-involved. Ryan (1995) stated ego-involved individuals feel pressure to attain particular outcomes in order to preserve their self-esteem. Ego-involved athletes participate in sport to gain social status and validate their self-esteem. Individuals who are ego-involved compare their own ability to the ability of others. When athletes are in a state of ego-involvement, they use their performance to demonstrate competence in their athletic ability. These individuals feel successful when they outperform others (Duda, et al., 1995; Fredrick & Ryan, 1995).

Both internal and external-oriented groups have been studied in terms of performance. Internals organize cues from their environment and perform tasks more effectively than externals. They concentrate by utilizing internal characteristics such as ability and effort. External individuals perform better with feedback provided by people they trust. They are also more dependent on other people than internals (Long, 1994). Externals do not value mastery of a skill but concentrate on the talent of their opponent.

Phares (1976) studied internal and external locus of control in relation to competition. Phares found externally-oriented individuals contain high levels of anxiety before competition due to the possibility of failure. Internally-oriented individuals have less anxiety because they believe ability and effort will aid in performance. Internally-oriented athletes approach a task with the belief they will do whatever it takes to accomplish that particular task.

Locus of Control and Learned Effectiveness Motivation

High learned effective athletes take pride in mastering a skill. Athletes with low learned effectiveness motivation tend to rely upon the chance aspect of learning (Long, 1994). These individuals hinder their opportunities to improve their self-esteem and confidence.

Internally-oriented athletes perform more successfully than externally-oriented athletes (Duda, et al., 1995, Fredrick & Ryan, 1995, Long,1994). High learned effective athletes direct their attention on accomplishing tasks, attaining goals, and concentrating on the effort needed to achieve the task at hand (Long,

1994). They control these aspects of their environment and believe in their ability to succeed.

Low learned effective or extrinsically motivated athletes base their self-worth on uncontrollable factors such as ability of opponents, officiating or social support. Low learned effective athletes may enter competition with high levels of stress because they rely upon social acceptance. Trying to control elements, which are often uncontrollable, is the main problem of low learned effective athletes.

Achievement Motivation

The final component of learned effectiveness motivation is achievement motivation. Achievement motivation theory focuses on the recognition that success and failure are psychological states which are based on the outcomes an individual is striving to accomplish (Roberts, 1992). Success, failure, and achievement can be interpreted in terms of goals. For example, success to one person may be a failure to another (Roberts). In terms of achievement motivation, athletes who perform well do so because they have the desire or the need to achieve a goal they have set (Long, 1994).

The expectations athletes have about their performance often determine how well they will compete (Long, 1994). For highly motivated athletes, expectations may produce high levels of accomplishment and success. For athletes with low levels of motivation, expectations may increase anxiety, diminish self-confidence and result in a decrease in performance. High

expectations maximize the drive to accomplish a goal; the greater the expectation, the more effort the athlete will put into accomplishing the task or goal at hand. This drive is known as persistence. On the other hand, athletes with low levels of motivation may view expectations and goals as something that will set themselves up for failure.

Learned effective athletes with high expectations will continue to persist at a task even after repeated failure. Expectations of success or failure are reflections of self-concept. High learned effective athletes enhance their self-concept by making expectations which are vital to performance. They expect to perform well. If high learned effective athletes fail, they continue to practice in order to achieve their goals. High learned effective athletes do not give up once they have failed, but learn from their mistakes (Long, 1994).

Achievement Motivation and Learned Effectiveness Motivation

Achievement motivation complements attribution theory and locus of control. People have certain expectations when they enter an achievement situation. They contribute specific explanations for the reasons they succeeded or failed. High learned effective athletes understand a need to achieve and this directs their motivation to perform. The athlete's attributions toward success or failure and locus of control are important factors in the accomplishment of goals.

Overuse Syndrome

Athletes practice and train on a daily basis. When high intensity training workouts occur for a long duration of time, the athlete may experience periods of

decreased performance and feelings of fatigue (Heil, 1993). These feelings of fatigue and decreased performance may be an indication of overuse syndrome. There are two stages in overuse syndrome. The first stage refers to short term overuse or overreaching. The second stage refers to the long-term overuse syndrome.

The athlete in the first stage of overuse may exhibit fatigue, reduction in performance ability, and temporary competitive inability (Heil, 1993; Lehmann, Foster, & Keul, 1993). The recovery phase of overreaching may take anywhere from a few days to a few weeks before the athlete can train again. Most overreaching cases are not a serious problem. Unfortunately, many cases develop into overuse syndrome because the symptoms go undetected or are ignored by the coaches and athletes. Many coaches and athletes increase training workouts in an attempt to overcome the decline in performance and fatigue (Lehmann et al., 1993).

The second stage of overuse syndrome can be characterized by a state of physical and emotional exhaustion and frustration, loss in motivation, reduction in concentration, exhaustive fatigue, muscle soreness and stiffness, and a decline in performance over a sustained period of time (Heil, 1993; Lehmann et al., 1993). Overuse syndrome can also reduce the body's immune system due to the extreme amount of fatigue and exhaustion experienced by the athlete. This reduction in the immune system can result in the athlete becoming susceptible to illness and injury (Heil, 1993). Fatigue of the musculoskeletal

system can lead to overuse injuries such as shin splints, tendonitis, or stress fractures. Research has shown overuse injuries, as a result of overuse, can develop in any age group (Norris, Carroll, & Cochrane, 1992; Nudel, Hassett, Gurian, Diamont, Weinhouse, & Gootman, 1989; Rowland & Walsh, 1985).

As long as athletes continue to be motivated to achieve high performance in established goals, overuse will continue to be a factor in training. The diagnosis of overuse syndrome is difficult to determine. Ultimately, the treatment includes weeks or months of rest in order to recover (Lehmann et al., 1993). Monitoring the athlete's daily training activities and insisting the athlete rest for the proper recovery time are essential factors in the prevention of overuse syndrome and overuse injuries (Heil, 1993).

Motivation and Injury

Little research has been conducted on the psychological characteristics which may predispose athletes to injury. Often research makes generalizations across a number of individuals but does not present information about how to individualize approaches to training and competition.

Many athletes may be predisposed to injury because of stress or past experiences with injuries. Some athletes may be prone to injury because of their motivational and risk-taking tendencies. These tendencies may make an athlete a worthy competitor, but may also make the athlete more vulnerable to injury (Rotella & Heyman, 1993).

Willingness to take risks can be related to external motivation. External motivation is characteristic of the desire to please others or the belief that one's fate is controlled by external factors (Rotella & Heyman, 1993). When an externally-oriented or motivated athlete takes risks, he or she may not be aware of his/her surroundings and an injury may occur.

Many athletes also believe in masking or playing with pain. The athlete believes an injury will keep him or her out of competition or practice for long periods of time. The athlete decides to play with pain (Rotella & Heyman, 1993). In relation to overuse injuries, masking the pain may aggravate an injury. However, the athlete may not seek treatment for fear of losing valuable playing time.

Acting tough is another factor related to injury. Athletes have been taught to give 110%. This extended effort is beneficial for competition and performance, but mental toughness and giving 110% can increase the chances for injury. Athletes learn to endure most types of pain. This mental and physical toughness may make athletes good competitors, but it will not help them if they are hurt. Athletes with this trait will continue to play, and eventually, cause more damage to an injury. This injury results in the athlete possibly never playing up to his/her full potential (Rotella & Heyman, 1993).

Athletes who ignore signs of injury are often externally motivated. They believe they never need to rest, never miss a play, or never allow injury to keep them from competing. Failure to play through the pain is viewed as a sign of

weakness (Rotella & Heyman, 1993). Internally motivated individuals may recognize signs of injury and take care of the injury before it progresses. Educating athletes to recognize signs and symptoms of fatigue and injury can help prevent a career ending injury from happening in the athlete's future.

Summary

There are several approaches to motivation and sport performance. The approach discussed in this chapter is learned effectiveness motivation. This motivational pattern focuses on how an athlete can make the most of his/her athletic endeavors. The three categories of learned effectiveness motivation include attribution theory, locus of control, and achievement motivation. Attribution theory is defined as the reasons athletes provide for their successes or failures. Locus of control is the way in which athletes perceive their environment and control their expectations for success. Achievement motivation examines the need athletes have to be successful.

This chapter also introduced the characteristics involved with overuse injuries. Athletes who increase their training workouts to overcome decreased performances often suffer from this syndrome. They may experience exhaustion, decreases in performance, emotional instability, and fatigue. The recovery phase of overuse syndrome can involve a few weeks to a few months of rest.

Highly motivated athletes posses characteristics of learned effectiveness. They set goals, learn from their mistakes, take responsibility for their failures,

and take pride in their successes. Studies have shown athletes with high levels of motivation possess the attitudes and beliefs that will increase their chances of performing to their potential. Athletes with positive attitudes and beliefs create opportunities for success, overcome obstacles, and disregard limitations to their accomplishments and goals.

CHAPTER II

METHODS

The purpose of this study was to determine if there is a relationship among learned effectiveness motivation, injury rate, and fatigue. A sub-problem of this study was to examine if there were any differences between and among gender, track and field event type, and scholarship category on learned effectiveness scores.

Participants

The participants of this study were male and female track and field athletes. These participants competed in the 1997 outdoor track and field season at Emporia State University (N = 50); a Mid-America Intercollegiate Athletic Association (MIAA) Division II institution. Of the 50 participants, 25 were male and 25 were female. The number of male and female participants in each track and field event type was field events (n = 9 M, 10 F), sprint events (n = 9 M,10 F), and distance events (n = 7 M, 5 F). There were 16 male and 22 female scholarship athletes and 9 male and 5 female non-scholarship athletes.

Procedures

Permission to conduct this study was obtained from the Human Subjects Committee at Emporia State University (see Appendix A). Permission to test the track and field athletes was verbally obtained from the head men's and women's track and field coach at Emporia State University. During the first team meeting prior to the start of the outdoor track and field season, participants were given a

brief overview of the study and asked to sign an informed consent form (see Appendix B). During this meeting, the participants were given a heart rate log to keep track of their bi-weekly heart rates for eight weeks (see Appendix C). The researcher provided a brief explanation and demonstration of how the participants were to take and keep track of their heart rates. The participants were to lie down for 10 minutes. After 10 minutes, they stood up and waited for 12 seconds. They found their pulse (radial or carotid arteries) and took it for 6 seconds. The next step was to continue standing for 90 seconds. After 90 seconds, the participants took their pulses again for 30 seconds. Each number was recorded on the heart rate log. The participants took their heart rates twice a week for eight weeks. At the second team meeting, held during the middle of the outdoor track season, the athletes took the Motivational Effectiveness Scale (MES) (Long, 1994) and filled out a brief biographical questionnaire (see Appendix D & E). All participants were assigned a code number to be used when filling out the MES to insure their responses would be kept confidential.

Injury rates of the participants were recorded for the 1997 outdoor track and field season. The outdoor track and field season ran from the first day of practice through the MIAA Conference Championships for a total length of about 10 weeks. Injury records were recorded by the researcher in the training room (see Appendix F). Injury rate was defined as the complaints of injury or illness given by the athlete at any period of time throughout the season. Injuries and illnesses were recorded in four categories - new, recurring, traumatic, and

overuse. New injuries were defined as injuries or illnesses which have not been treated previously. Recurring injuries were described as injuries which were treated and improved, but were treated at another time during the season. Traumatic injuries occurred spontaneously without known cause. Overuse was defined as injuries which progressively became worse throughout the season. All injuries and illnesses were equal in significance in this study. All recorded injuries were compared to the participants eight week recordings of their heart rates and their learned effectiveness scores.

Instrumentation

The MES was developed by Long (1994) to assess the components of learned effectiveness motivation of college athletes in achievement situations. The purpose of the MES was to examine the athletes' thoughts during performance, evaluate their performance, and examine performance behavior.

The scale was tested on Division I college track and field student-athletes. The scale differentiated between athletes who performed well and athletes who did not perform well based on motivational profiles. The MES is scored by using a Likert-like scale ranging from 1 (strongly agree) to 6 (strongly disagree). The MES consisted of 28 items ranging from scores of 83 (high learned effectiveness) to 168 (low learned effectiveness). Long (1994) asked Division 1 track and field coaches to classify their athletes as having high or low learned effectiveness motivation. From these results, Long (1994) was able to classify

74.0% of the highly learned effective athletes and 63.0% of the athletes' with low learned effectiveness through the use of the MES.

Reliability for the MES was determined by two methods. A test-retest procedure and the Cronbach alpha procedure to measure internal consistency of the MES questions. A Pearson Product correlation was also used to measure reliability of the MES. A correlation coefficient of r = .70 was established as an acceptable measure of instrument stability (Long, 1994). The test-retest reliability reported a r = .78 probability of the measurement abilities of the MES. Cronbach alpha was run to examine the amount of error of measurement within the scale. Alpha coefficient was calculated as r =.93.

The validity of the MES was established through both content validity and construct validity. Content validity was divided into three categories: face, item, and sampling validity. Face validity included agreement by the jury of experts on how accurately the items in the MES measured learned effectiveness. Item validity was self-validated by the researcher since the panel was unable to agree on the categories of the items for the scale. Sampling validity found 72% of the item pools were representative of the learned effectiveness motivational pattern.

Construct validity verified the MES measured learned effectiveness motivation among athletes. Analysis of Variance (ANOVA) was used to compare the means of the high and low learned effective groups. A significant difference was found; the mean scores for the high and low learned effective groups were 56.70 and 72.02 respectively. According to Long (1994), the difference in the

means of the high and low learned effective athletes indicated high learned effective athletes possess strong beliefs and attitudes toward performance and competition.

Statistical Design

Several different statistical methods were used to interpret the data collected in this study. A Pearson Product correlation coefficient was used to determine if there were relationships between learned effectiveness motivation, injury rate, and fatigue. A Chi Square was used to determine if there were relationships between injury rate, gender, track and field event types, and scholarship category. An analysis of variance was used to determine if there were differences on learned effectiveness scores and gender, track and field event type, and scholarship category. Dependent variables included high learned effectiveness scores, injury rate, and fatigue. The independent variables were gender, track and field event types, and scholarship category. All data were analyzed at the $p.<.05$ level of significance.

Summary

The purpose of this study was to determine if there is a relationship among learned effectiveness motivation, injury rate, and fatigue. A sub-problem of this study was to examine if there were any differences between and among gender, track and field event type, and scholarship category on learned effectiveness scores.

The target population included NCAA Division II track and field athletes attending Emporia State University. There were 25 male and 25 female track and field athletes participated in this study. They competed in the 1997 MIAA Outdoor Track and Field Season. Permission to use the Emporia State University track and field athletes was obtained from the head men's and women's track and field coach and the Human Subjects Committee at Emporia State University. Athletes took the MES to assess learned effectiveness motivation. The MES is a questionnaire designed to measure the learned effectiveness motivational pattern of athletes. All data were analyzed at the $p<.05$ level of significance through the use of Pearson Product correlation coefficient, Chi Square, and Analysis of Variance (ANOVA).

CHAPTER III

RESULTS

The purpose of this study was to determine if there is a relationship among learned effectiveness motivation, injury rate, and fatigue. A sub-problem of this study was to examine if there were any differences between gender, track and field event type, and scholarship category on learned effectiveness scores. The participants in this study were the male and female outdoor track and field athletes (N=50) from Emporia State University. The data were analyzed through a Pearson Product correlation coefficient, Chi Square, and analysis of variance (ANOVA). All data were analyzed at the $p < .05$ level of significance. Tables 1 through 5 contain the means and standard deviations for the Motivational Effectiveness Scale (MES) by injury rate, fatigue, gender, track and field event type, and scholarship category for the populations of the study.

Hypothesis 1 stated no relationship existed among learned effectiveness scores, injury rate, and fatigue. The data were analyzed through the use of a Pearson Product correlation coefficient and indicated no relationship existed between learned effectiveness scores and injury rate (r=.18) and fatigue and injury rate (r= .18). The data indicated a relationship did exist between learned effectiveness scores and fatigue (r= -.35, $p < .05$). Table 6 contains the Pearson Product correlation coefficient results for MES scores, injury rate, and fatigue. A relationship was partially supported for fatigue and learned effectiveness scores.

Hypothesis 2 stated no difference existed between male and female track and field athletes and learned effectiveness scores. The data were analyzed

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Hypothesis 2 stated no difference existed between male and female track and field athletes and learned effectiveness scores. The data were analyzed

TABLE 1

Means and standard deviations of injury rate in relation to MES scores

Variable	# of Complaints	Mean	Standard Deviations	Cases
Entire Population		110.88	5.87	50
Injury	.00	112.00	6.48	7
	1.00	111.50	7.02	20
	2.00	108.91	4.28	11
	3.00	111.43	5.71	7
	4.00	111.75	2.63	4
	5.00	105.00	0.00	1

TABLE 2

Mean and standard deviations for fatigue in relation to MES scores

Variable	Heart Rate Total	Mean	Standard Deviation	Cases
Entire Population		111.39	5.69	36
Fatigue	-192.00	119.00	0.00	1
	-170.00	113.00	0.00	1
	-70.00	114.00	0.00	1
	-50.00	114.00	0.00	1
	-34.00	113.00	0.00	1
	-24.00	106.00	0.00	1
	-19.00	111.00	0.00	1
	-6.00	114.00	0.00	1
	-4.00	109.00	0.00	1
	0.00	114.00	0.00	1
	2.00	110.50	2.12	2
	4.00	113.00	11.31	2
	7.00	112.00	0.00	1
	8.00	115.50	9.19	2
	9.00	110.00	0.00	1
	13.00	118.00	0.00	1
	14.00	114.00	0.00	2
	16.00	112.00	0.00	2
	18.00	93.00	0.00	1
	22.00	106.00	0.00	1
	28.00	103.00	0.00	1
	36.00	113.00	1.41	2
	40.00	119.00	0.00	1
	54.00	114.00	0.00	1
	58.00	112.00	1.41	2
	67.00	112.00	0.00	1
	88.00	112.00	0.00	1
	150.00	103.00	0.00	1
	158.00	101.00	0.00	1

TABLE 3

Mean and standard deviations for gender in relation to MES scores

Variable	Value	Mean	Standard Deviation	Cases
Entire Population		110.88	5.87	50
Gender	1.00	112.08	5.11	25
	2.00	109.68	6.41	25

TABLE 4

Mean and standard deviations for Track and field event type in relation to MES scores

Variable	Value	Mean	Standard Deviation	Cases
Entire Population		110.88	5.87	50
Event	1.00	109.63	6.56	19
	2.00	112.32	5.64	19
	3.00	110.59	4.96	12

TABLE 5

Mean and standard deviations for scholarship category in relation to MES scores

Variable	Value	Mean	Standard Deviation	Cases
Entire Population		110.88	5.87	50
Scholarship	1.00	11.84	5.33	25
	2.00	1.9.92	6.32	25

TABLE 6

Pearson Product correlation coefficient for MES scores, injury rate, and fatigue

	MES Scores	Injury Rate	Fatigue
MES Scores	1.00 (50) P =	-.10 (50) P = .50	*-.35 (36) P = .035
Injury Rate	-.10 (50) P = .50	1.00 (50) P =	.18 (36) P = .30
Fatigue	*-.35 (36) P = .035	.18 (36) P = .30	1.00 (36) P =

using one-way ANOVA. The data indicated no significant difference existed between the learned effectiveness scores of male athletes and female athletes, $F(1,48) = 2.24$, $p = .15$. Hypothesis 2 was not rejected for learned effectiveness scores and gender.

Hypothesis 3 stated no difference existed among sprinters, distance runners, and field athletes on learned effectiveness scores. The data were analyzed using one-way ANOVA. The data indicated no significant difference existed between learned effectiveness scores and the track and field event type, $F(2,47) = 1.01$, $p = .37$. Hypothesis 3 was not rejected for learned effectiveness scores and event type.

Hypothesis 4 stated no difference existed between scholarship and non-scholarship track and field athletes on learned effectiveness scores. The data were analyzed using one-way ANOVA. The data indicated no significant relationship existed between learned effectiveness scores and scholarship category, $F(1,48) = 1.74$, $p = .17$). Hypothesis 4 was not rejected for learned effectiveness scores and scholarship category.

The purpose of this study was to determine if there is a relationship among learned effectiveness motivation, injury rate, and fatigue. A sub-problem of this study was to examine if there are any differences between gender, track and field event types, and scholarship category on learned effectiveness scores. Data were analyzed using Pearson Product correlation coefficient and one-way ANOVA. All data were analyzed at the $p < .05$ level of significance. Hypothesis

1 was partially rejected for fatigue and learned effectiveness scores (r = -.35, p <.035). Hypothesis 1 was not rejected for injury rate and learned effectiveness scores (r = .18) or fatigue and injury rate (r = .18). Hypothesis 2 was not rejected for male and female track and field athletes and learned effectiveness scores, $F(1,48)$ = 2.14, p = .15. Hypothesis 3 was not rejected for track and file event type and learned effectiveness scores, $F(2,47)$ = 1.01, p = .37. Hypothesis 4 was not rejected for scholarship category and learned effectiveness scores, $F(1,48)$ = 1.74, p = .17.

CHAPTER IV

DISCUSSION AND FUTURE RECOMMENDATIONS

The purpose of this study was to determine if there is a relationship among learned effectiveness motivation, injury rate, and fatigue. A sub-problem of this study was to examine if there were any differences between gender, track and field event types, and scholarship category on learned effectiveness scores. The participants of this study were the male and female outdoor track and field athletes (N=50) at Emporia State University.

The results of this study indicated a negative relationship between learned effectiveness scores, injury rate, and fatigue. In addition, no differences existed between gender and learned effectiveness, track and field event type and learned effectiveness, and among scholarship category and learned effectiveness. The reasons for these findings could be attributed to the small sample size of only 50 participants, the non-reported cases of injuries, and the characteristics of learned effectiveness motivation.

The results indicated there was no difference between male and female athletes and learned effectiveness scores. These findings were supported by Long's (1994) study. This study indicated no significant differences between male and female track and field athletes and learned effectiveness motivation. Learned effectiveness motivation has characteristics of trust, patience, persistence, learning from mistakes, goal-setting skills, and mastering skills to accomplish set goals (Bunker & Rotella, 1981; Long, 1994). In terms of athletes,

these characteristics are not influenced by the gender of an athlete, but are characteristic of a learned effective athlete.

The results indicated there was no difference between track and field event type and learned effectiveness scores. These findings were supported by Long's (1994) study. Learned effectiveness motivation is a method athletes use to create a positive mental attitude which will help move them toward success (Long). This is a motivational pattern which will help any type of athlete achieve success in his/her sport regardless of whether s/he is a field athlete or a runner.

The results indicated there was no difference between scholarship and non-scholarship athletes and learned effectiveness scores. This finding could be attributed to the small sample size of athletes (N =14) who were not on scholarship. These athletes could be more motivated to train and compete in the hope of being offered a scholarship. Non-scholarship athletes could be competing for intrinsic reasons which would make them more likely to have the qualities of a learned effective athlete.

The results did indicate a significant, negative relationship between fatigue and learned effectiveness scores. Research by Long (1994) indicated the lower the Motivational Effectiveness Scale (MES) scores, the greater the learned effectiveness motivation of an athlete. The higher the MES scores, the less likely an athlete will be to possess the qualities of learned effectiveness motivation. The data indicated the lower the MES scores, the more likely an athlete could experience fatigue. This finding contradicts the research by Long

(1994). Research has indicated the more learned effective an athlete, the more in tune s/he is with his/her body (Bunker & Rotella, 1981; Long, 1994). Learned effective athletes know when their body is becoming fatigued and injured. This type of athlete will get the proper amounts of rest and treatment before they progress to later stages of fatigue and injury (Long, 1994). Data in this study indicated learned effective athletes may experience more fatigue than the athletes who were not learned effective. Research by Weinberg and Gould (1995) and Williams (1993) indicated the motivation of an athlete could increase an athlete's drive to train and compete. The more an athlete trains, the increased chance an athlete might become fatigued (Heil, 1993; Leymann et al., 1993, & Rotella & Heyman, 1993). Learned effective athletes may continue to train in order to increase performance regardless of how their bodies react toward the increased training sessions.

The data also indicated the higher the MES scores, the less fatigue an athlete experienced. Athletes who possessed low levels of learned effectiveness motivation often do not set achievable, realistic goals; do not master skills necessary to help improve performance; and are often motivated by extrinsic factors (Bunker & Rotella, 1981, Long, 1994, & Phares, 1976). These athletes may decrease training periods and give up on competition toward the end of the season. Athletes who do not possess the qualities of learned effectiveness motivation may have experienced lower fatigue levels due to their performances throughout the season.

The researcher speculates the cases of non-reported injuries played a role in determining the injury rates and fatigue levels of the athletes. The researcher speculates approximately 30% of the athletes did not report injuries and participated with these injuries throughout the season. These athletes possessed characteristics of learned effectiveness motivation. They chose to participate with the injury instead of treating the problem. The non-reported injuries may not have progressed to significant injuries, but these injuries may not have improved throughout the season. The speculated 30% of non-reported injury cases could have been a contributing factor to results of injury rate and fatigue levels of the participants in this study.

The researcher speculates the training periods of the athletes contributed to the increase in fatigue levels as well. Many of the participants of this study competed in cross country, indoor track and field, and outdoor track and field. This study was performed at the end of the 1996-1997 school year during the outdoor track and field season. Fatigue levels could be indicative of the prolonged training periods of some of the athletes.

The results of this study suggest there is a relationship between learned effectiveness scores and fatigue. The more athletes possess characteristics of learned effectiveness motivation, the more likely they will experience fatigue caused by training. The less athletes possess the qualities of learned effectiveness motivation, the less chance they will experience fatigue caused by training. The results suggest there is no significant difference between injury

rate, gender, track and field event type, and scholarship category on learned effectiveness motivation scores.

Future Recommendations

Recommendations for future research include:

1. Recording heart rate logs where one person instructs, times, and records athletes heart rates at the same time, twice a week.
2. Recording injury rate in a manner in which categories are developed to record injury rate and the time taken to recover from these injuries.
3. Testing high school, junior colleges, and smaller universities to examine any differences in learned effectiveness motivation between age groups and competitive levels.
4. Testing team sports to examine a difference between team and individual sport athletes on learned effectiveness motivation in team verses individual sports.

REFERENCES

Anderson, M. B., & Williams, J. M. (1993). Psychological risk factors and injury prevention. In Heil, J. (ed.), Psychology of Sport Injuries (pp. 49-57). Champaign, Il: Human Kinetics.

Bunker, L. ,& Rotella, R. (ed.) (1981). Psychological Considerations in Maximizing Sport Performance. Charlottesville, VA: The University of Virginia.

Cailliet, R. (1988). Soft tissue pain and disability (2nd ed.). Philadelphia, PA: F. A. Davis.

Duda, J. L., Chi, L., Newton, M. L., Walling, M. D., & Catley, D. (1995). Task and ego orientation and intrinsic motivation in sport. International Journal of Sport Psychology, 26, 40-63.

Fortier, M. S., Vallerand, R. J., Briere, N. M., & Provencher, P. J. (1995). Competitive and recreational sport structures and gender: a test of their relationship with sport motivation. International Journal of Sport Psychology, 26, 24-39.

Frederick, C. M., & Ryan, R. M. (1995). Self-determination in sport: a review using cognitive evaluation theory. International Journal of Sport Psychology, 26, 5-23.

Halliwell, W. (1980). Intrinsic motivation in sport. In W. F. Straube (ed.) Sport Psychology: An Analysis of Athlete Behavior (pp. 85-90). Ithaca, NY: Mouvement.

Heil, J. (1993). Psychology of sport injury. Champaign, IL: Human Kinetics.

Lehmann, M., Foster, C., & Keul, J. (1993). Overtraining in endurance athletes: a brief review. Official Journal of the American College of Sports Medicine, 854-861.

Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic rewards: a test of the overjusification hypothesis. Journal of Personality and Social Psychology, 28, 129-137.

Long, S. (1994). Development of an Instrument of Perceived Characteristics of the Learned Effectiveness Motivational Pattern. Lawrence, KS: University of Kansas.

Norris, R., Carroll, D., & Cochrane, R. (1992). The effects of physical activity and exercise training on psychological stress and well-being in an adolescent population. Journal of Psychomatic Research, 36, 55-65.

Nudel, D. B., Hassett, I., Gurian, A., Diamant, S., Weinhouse, E., & Gootman, N. (1989). Young long distance runners. Clinical Pediatrics, 28, 500-505.

Orlick, T. (1990). In pursuit of excellence: how to win in sport and life through mental training (2^{nd} ed.). Champaign, IL: Human Kinetics.

Phares, E. J. (1976). Locus of Control in Personality. Morristown, NJ: General Learning Press.

Rejeski, W. J. (1992). Motivation for exercise behavior: a critique of theoretical directions. In Roberts, G. C. (ed.), Motivation in Sport and exercise (pp. 129-157). Champaign, IL: Human Kinetics.

Roberts, G. C. (1992). Motivation in Sport and Exercise. Champaign, IL: Human Kinetics.

Rotter, J. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monograghs: General and Applied, 80, 1-28.

Rowland, T. W., & Walsh, C. A. (1985). Characteristics of child distance runners. The Physician and Sports Medicine, 13, 45-53.

Scheer, J. K., & Ansorge, C. J. (1979). Influence due to expectations of judges: a function of internal-external locus of control. Journal of Sport Psychology, 1, 53-58.

Weinberg, R., & Gould, D. (1995). Foundations of Sport and Exercise Psychology. Champaign, IL; Human Kinetics.

Weiner, B. (1992). Human motivation: Metaphors, Theories, and Research. Newbury Park, CA: Sage.

Williams, J. (ed.) (1993). Applied Sport Psychology: Personal Growth to Peak Performance. 2nd. ed. Mountain View, CA: Mayfield.

Appendix A

Permission to use Human Subjects

Human Subjects Committee - Emporia State University

EMPORIA STATE UNIVERSITY
1200 COMMERCIAL EMPORIA, KANSAS 66801-5087 316/341-5351
FAX 316/341-5909
RESEARCH AND GRANTS CENTER - BOX 4003

February 11, 1997

Kirstie Schwartze
728 Neosho Apt. 2
Emporia, KS 66801

Dear Ms. Schwartze:

The Institutional Review Board for Treatment of Human Subjects has evaluated your application for approval of human subject research entitled, "The Difference Between High and Low Learned Effective Track and Field Athletes on Overtraining Symptoms." The review board approved your application which will allow you to begin your research with subjects as outlined in your application materials.

Best of luck in your proposed research project. If the review board can help you in any other way, don't hesitate to contact us.

Sincerely,

John O. Schwenn, Dean
Graduate Studies and Research

pf

cc: Kathy Ermler

Appendix B

Informed Consent Document

INFORMED CONSENT DOCUMENT

The Department of Health, Physical Education, and Recreation supports the practice of protection for human subjects participating in research and related activities. The following information is provided so that you can decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time, and that if you do withdraw from the study, you will not be subjected to reprimand or any other form of reproach.

This study will identify and examine the motivational levels of college athletes. This study will look at the priority an athlete takes during and following performance and competition. You will be asked to complete a questionaire. You will only complete the questionaire once. Your responses will be anonymous and participation will be confidential. It is estimated that this questionaire will take no more than ten (10) minutes to complete. Although it is not likely, there is a chance that you may feel uncomfortable with some of the questions. Participation will not benefit you directly, but honest answers to the questions will benefit future athletes and effective motivation.

In addition to the motivational questionaire, you will be asked to keep a log of your heart rate. Heart rate will be taken twice a week, in the morining. Participation in this study will benefit future athletes. Honest answers and keeping track of your heart rate log will benefit this research.

"I have read the above statement and have been fully advised of the procedures to be used in this project. I have been given sufficient opportunity to ask questions I had concerning the procedures and possible risks involved. I understand the potential risks involved and I assume them voluntarily. I likewise understand that I can withdraw from the study at any time without being subject to reproach."

_____ _____

Signature of subject agreeing to participate. Date

By signing, the subject certifies that he/she is at least 18 years of age.

Kirstie A. Schwartze
HPER Building
Emporia, KS 66801
(316) 341-5499

Appendix C

Heart Rate Log

HEART RATE LOG

The Best Time to Measure Your Heart Rate Is Before You Get Out Of Bed In The Morning!!!!!

1. Lie down for ten minutes.

2. Stand up, wait exactly 12 seconds, then take your pulse for 6 seconds. (Add a zero for beats/minute).

3. Remain standing for 90 seconds. Take your pulse a second time for 30 seconds. (Multiply by 2 to convert into beats/minute).

4. Take your Heart Rate twice a week (once at the beginning of the week Mon/Tues, and once at the end of the week Thurs/Fri).

5. Compare your readings.

Heart Rate Log

Date	12 Second Heart Rate		30 Second Heart Rate		Comparison		Comments
	M/T	T/F	M/T	T/F	M/T	T/F	
Week 1							
Week 2							
Week 3							
Week 4							
Week 5							
Week 6							
Week 7							
Week8							

Remember this project is beneficial to you because it will give you a guide to becoming physically fatigued. Please record the heart rates honestly. If you are having trouble remembering to take your heart rate in the morning, come into the training room before practice for assistance. Thank you.

Appendix D

Permission to Use Motivational Effectiveness Scale

AIR FORCE ACADEMY ATHLETIC ASSOCIATION
UNITED STATES AIR FORCE ACADEMY COLORADO SPRINGS, CO 80840-5461

November 25, 1996

Ms. Kirstie A. Schwartze
728 Neosho #2
Emporia, KS 66801

Dear Kirstie,

Thanks for returning the agreement license. Scoring the MES is relatively simple. Give a point for every corresponding response, i.e., one point for strongly agree, five points for moderately disagree, etc. Items 6 and 16 are the only items that are reversed scored, i.e., six points for strongly agree, two points for moderately disagree.

Interpreting the results is fairly simple also. **Low scores are good.** In your case, athletes who recover faster have a higher degree of learned effectiveness. If your hypothesis is correct, athletes who recover faster and more completely will have significantly lower scores than athletes who do not respond as effectively

The key is purposive sampling. Take the recommendations of people who really know the athletes. They are the experts! Don't just take athletes for the sake of increasing your sample size. The discriminant analysis in my dissertation revealed that coaches do a great job of selecting highly learned effective athletes but only an adequate job of selecting lowly learned effective athletes. Try to make differences in the population before you test them, not afterwards.

Let me know how I can help throughout the process. Good luck and thanks for selecting the MES as your instrument.

Sincerely,

Stephen Long, Ph.D

Appendix E

Motivational Effectiveness Scale

Competitive Solutions, Inc.
6971 White Buffalo Road, Suite 100
Colorado Springs, CO 80919
719/260-0626

I, the undersigned, agree to not reproduce, translate or adapt the Motivational Effectiveness Scale© in whole or in part, for any purpose whatsoever, by any means, mechanical or electronic, including photocopying, mimeographing, reprinting, scanning, or any form of computer storage or programming. As a condition of your acceptance of these materials, you, the undersigned, agree you will not reproduce or adapt the Motivational Effectiveness Scale© in any manner or license others to do so.

Print Name: Kirstie A. Schwartze

Address: 728 Neosho #2

Emporia, Ks

66801

Home Phone: (316) 343-2165

Work Phone: (316) 341-5499 or 341-5953

Signature: Kirstie A Schwartze

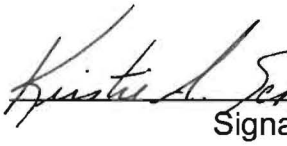
Appendix F

Injury Record

Complaints of Injury

Date	Name	ID #	Type of Injury	Type of Illness	New	Reoccurring	Traumatic	Overuse	Complaint

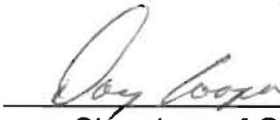
I, Kirstie A. Schwartze, hereby submit this thesis to Emporia State University as partial fulfillment of the requirements for an advanced degree. I agree that the Library of the University may make it available to use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying which involves potential financial gain will be allowed without written permission of the author.



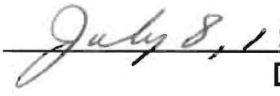
Signature of Author

July 1, 1997
Date

The Relationship Among Learned Effectiveness, Overuse Symptoms, and Fatigue
Title of Thesis



Signature of Graduate Office



Date Received