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PERCEPTIONS OF COACHING BEHAVIORS AND SELECTED VARIABLES ON INJURY OCCURRENCE IN FEMALE HIGH SCHOOL SOCCER PLAYERS

By

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ABSTRACT

PERCEPTIONS OF COACHING BEHAVIORS AND SELECTED VARIABLES ON INJURY OCCURRENCE IN FEMALE HIGH SCHOOL SOCCER PLAYERS

By

Anthony Kontos

This study was conducted to enhance the knowledge of factors related to athletic injury by examining coaching behaviors, life-stress, competitive anxiety, skill level, physical condition, physical characteristics and previous injuries, as they relate to injury occurrence among 120 female high school soccer players. All variables were examined using quantitative written methods. Results indicated that there was a negative relationship between Reward behaviors and injury number and severity. A positive relationship was reported between injury number and: (a) life-stress, (b) athletes' skill, (c) previous injuries, (d) physical condition, and (e) playing time. A positive relationship was also found between injury severity and: (a) life-stress, (b) athletes' skill, (c) experience, (d) previous injuries and (e) physical condition. Instruction behaviors were negatively correlated with injury severity. Overall, previous injuries, Reward and life-stress were most predictive of injury number, while physical condition and Reward were most predictive of injury severity.

Dedication

To my mother and father for all of their love and support.

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The will to do, the soul to dare.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

Introduction

Injuries are an inevitable occurrence in athletics. They result in such immediate consequences as time away from practice and competition, high levels of stress, and low self-esteem for the injured athlete. All of these and many other factors can, in turn, have a detrimental effect on an athlete's performance, as well as his/her well being. Because there are few, if any, benefits in being injured in athletics, avoiding injuries is a high priority for athletes and their parents, coaches, trainers, physicians, and sport psychologists. It is, therefore, important that the factors affecting, preceding or increasing the likelihood of injury be brought to light.

Traditionally, the factors affecting injury occurrence were studied from a physiological (e.g., fitness levels, strength, maturation.) or structural (e.g., equipment, environment, rules, etc.) perspective. Not until recently, were injuries viewed from a more comprehensive perspective that included other factors as well. With this more complete approach to understanding injury, several important psychosocial variables contributing to injury among athletes were uncovered. Such factors as competitive anxiety (Blackwell & McCullagh, 1990), life-stress events (Bramwell, Masuda, Wagner & Holmes, 1975), personality (Taimela et al., 1990), and self-concept (Young & Cohen, 1981) were all found to be related to the incidence of injury. These findings have helped increase the body of knowledge pertaining to factors correlated with injury. Despite this progress in knowledge, a great deal remains to be learned. The

importance of this statement is enhanced by the constantly increasing injury rates in athletics (Bergandi, 1985; Yaffe, 1983).

In soccer, with its continually increasing number of participants, injuries have become a major area of concern. This increased participation has resulted in a number of improvements aimed at preventing possible injuries. Among them are improvements in equipment (e.g., protective shin guards); rules changes (e.g., the required use of shin guards during competition); improvements in training (e.g., the discontinued use of many contraindicated activities); and environmental adjustments (e.g., requiring portable goals to be anchored). All of these measures have, no doubt, had a positive impact in reducing the incidence of injuries in soccer. Most of these changes, however, have been physiological or structural in nature. Unfortunately, other factors, including the growing number of participants and limited knowledge and training of many new coaches, have probably detracted from the gains made by the physiological and structural improvements in soccer. It is for this reason, that researchers must look toward additional ways to reduce the frequency and severity of injuries in soccer and other sports.

One area of influence that has been suggested by several researchers, to play a role in the overall picture of athletic injury occurrence is the quality of coaching leadership (cited in, Nideffer, 1989; Taerk, 1977). Despite these suggestions, this area of influence has been overlooked in research. The contention put forth by Nideffer (1989) and Taerk (1977), is that coaches, at any level of athletics, have a responsibility to provide quality leadership and

guidance, and exhibit and encourage appropriate safe behaviors in their athletes. The manner in which a coach accomplishes this may have a direct impact on the well-being and safety of his/her athletes. This is particularly true in the case of younger athletes. At youth levels and in high school, athletes are extremely impressionable and rely heavily on their coaches for modeling and guidance in proper techniques and behaviors. These athletes will often engage in whatever behavior their coaches ask for or they think the coaches want, without consciously questioning the appropriateness or risks involved in the tasks. These and other reasons, warrant the need for greater emphasis to be placed on the quality of coaching leadership as it relates to injury.

Fortunately, in the past decade, there has been an increased emphasis placed on improving the quality of coaching. As mentioned earlier, training techniques, such as stretching and various other exercises, have been vastly improved to reduce injury potential. In addition, coaches are increasingly being educated in these and other topics, including the knowledge and application of injury prevention techniques, safe organization of practice, and effective coaching style/psychology usage.

One approach to create an effective coaching style is based on the work of Smith, Smoll and their associates (Smith, Smoll & Curtis, 1978; Smith, Smoll & Hunt, 1977). This approach has focused on, and was primarily developed for, coaching behavior assessment in a youth sports setting. It is referred to as the mediational model of leadership in sports (see Figure 1). It utilizes the Coaching Behavior Assessment System (CBAS) to measure coaching behaviors.

This tool (in its original form) is an observational instrument that enables extensively trained observers to record and code coaching behaviors. It divides these behaviors into two broad classes, reactive and spontaneous. Reactive behaviors are further divided into coaches' responses to (a) desirable performance, (b) mistakes, and (c) misbehaviors. Spontaneous behaviors are either (a) game related or (b) game irrelevant. There are 12 distinct observable behaviors classified by the CBAS (see Table 1). The CBAS has also been found to be a reliable and valid measurement of coaching behaviors and has effectively distinguished between positive and negative coaches (Chaumeton & Duda, 1988; Wandzilak, Ansorge & Potter, 1988).

Despite the general success of the research using the CBAS, it has been confined to examining only a few of the many possible effects of coaching behaviors. Most of the previously conducted research based on the mediational model of coaching leadership, has focused on the relationship between coaching behaviors and player attitudes (e.g., Smith et al., 1978) or the relationship between coaching behaviors and self-esteem (e.g., Smith & Smoll, 1990). No studies have focused on the possible relationship between coaching behaviors and the occurrence and severity of injuries.

In addition, most of the research has ignored how athletes perceive their coaches' behaviors. The athletes' perception of coaching behaviors may be more important than observed behaviors in their relationship to or influence on injuries in sport.

When studying injuries in sport, it is important to understand that one factor alone may not cause or prevent an injury (see Andersen & Williams, 1988 for an example of a comprehensive

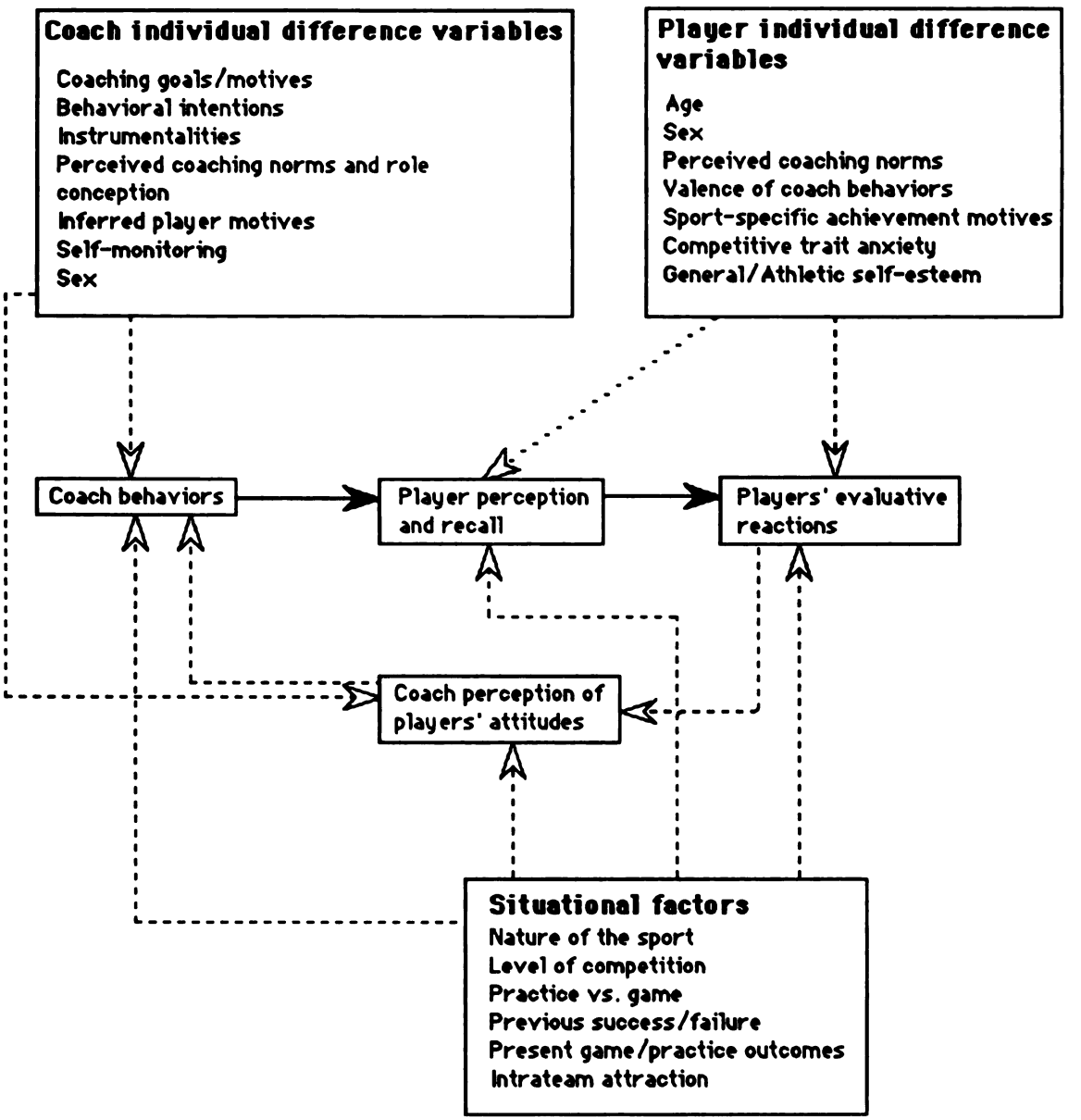

Figure 1. The mediational model of leadership.

From "Leadership behaviors in sport: A theoretical model and research paradigm" by F. Smoll and R. Smith, 1989, Journal of Applied Social Psychology, 19 (18), 1522-1551. Used by permission.

Table 1

Response Categories of the Coaching Behavior Assessment System.

Class I: Reactive Behaviors	
Responses to Desirable Performance	
Reinforcement	A positive, rewarding reaction, verbal or nonverbal, to a good play or good effort
Nonreinforcement	Failure to respond to good performance
Responses to Mistakes	
Mistake-contingent encouragement	Encouragement given to a player following a mistake
Mistake-contingent technical instruction	Instructing or demonstrating to a player following a mistake
Punishment	A negative reaction, verbal or nonverbal, following a mistake
Punitive technical instruction	Technical instruction given in a punitive or hostile manner following a mistake
Ignoring mistakes	Failure to respond to a player mistake
Response to Misbehavior	
Keeping control	Reactions intended to restore or maintain order among team members
Class II: Spontaneous Behaviors	
Game-Related	
General technical	Spontaneous instruction in the techniques and strategies of the sport (not following a mistake)
General encouragement	Spontaneous encouragement that does not follow a mistake
Organization	Administrative behavior that sets the stage for play by assigning duties, responsibilities, positions, etc.
Game-Irrelevant	
General communication	Interactions with players unrelated to the game

From " A system for the behavioral assessment of athletic coaches" by R. Smith, F. Smoll and E. Hunt (1977), The Research Quarterly, 48, 401-407. Used by permission.

injury model). Just as Smoll and Smith's (1989) model indicates that many factors affect leadership behaviors, so too are there a multitude of intertwined factors affecting injury. Specifically, it is a combination of many different factors, which vary with the situation, type of sport, and personality of the athlete, that may increase or decrease the likelihood of an injury occurring. Nideffer (1989) has suggested that demographic variables (e.g., age, gender of the athlete), experience in the sport, level of competition, type of sport (e.g., contact or individual), social supports (i.e., perceived coaching style), presence of life stressors, and type of injury all need to be studied in relation to the occurrence and severity of injury. Similarly, Taerk (1977) has postulated that future research should include these variables as well. By examining several of these and other variables, this study will be better able to paint a complete picture of the multiple factors affecting the incidence and severity of injury.

One factor affecting injury, that has received a great deal of support in the research literature, has been the effect of life-stress events. In the literature, a life-stress event has generally been referred to as any personal, academic, athletic, or other event that brings with it some amount of stress to affect an individual. These events can be perceived as either positive (e.g., new job or captain of the team) or negative (e.g., death or lower team status). This area of study has shown some promising results. These events, whether perceived as positive or negative, may increase the likelihood of injury for athletes (Coddington & Troxell, 1980). Many studies have reported consistent and reliable findings indicating that the number of life-stress events is positively correlated with injury occurrence in

athletics (Coddington & Troxell, 1980; Passer & Seese, 1983). This has been found to be particularly true in the case of contact sports such as football. This fact, together with the contact nature of the sport, combine to make soccer a promising setting to further assess the relationship between life-stress events and injury occurrence, especially as it relates to coaching behaviors.

Another possible predictive variable, when studying the occurrence and severity of injury, is competitive trait anxiety. Much of the research conducted on the relationship between injury and competitive trait anxiety has used general measures of anxiety (Kerr & Minden, 1988; Lysens, Auweele & Ostyn, 1986). It is not surprising that these studies have found no evidence for a relationship between these variables. When sport specific measures have been used, however, results have differed markedly. For example, sport specific competitive trait anxiety has been shown to be associated with greater severity of injuries (Blackwell & McCullagh, 1990; Passer & Seese, 1983). Therefore, it is reasonable to suggest that when studying athletes, a sport-specific assessment instrument should be used.

Some additional variables that may be of importance in studying the occurrence and severity of injury, are height, weight and in the case of female athletes, age of menstruation, which serve to assess somewhat, the physical characteristics of the athletes. Also, perceived skill level and their coaches' ratings of their skill may be related to the occurrence and severity of injury. Athletes who inaccurately perceive that they have high skill may take more risks and may be more prone to injury. Also, athletes rated high in skill by

their coaches may be more apt to take risks and be more aggressive when playing and thus, incur more injuries. Finally, the previous injury history of athletes should also be assessed, since many injuries are often a result of pre-existing physical conditions (Lohnes, Garret & Monto, 1994).

Statement of the Problem

The quality of coaching, as portrayed through either negative or positive behaviors, may play a significant role in the occurrence and severity of injury. Because an injury is a multifaceted event, several variables need to be assessed. Soccer, with its booming popularity, inherent contact nature and legions of new and untrained coaches, provides an excellent arena for examining factors that may be associated with the incidence and severity of injury. Therefore, the determination of the relationship between coaching behaviors and the incidence and severity of injury in female high school soccer players was proposed. In order to provide for a more complete view of injury, the effects of several other variables (life-stress, competitive trait anxiety, skill level, experience, playing time, physical characteristics, physical condition and previous injuries) were also examined.

Purpose of the Study

The present study was designed to enhance the understanding of factors related to the occurrence and severity of athletic injury in female high school soccer players by examining the coaching behaviors of their coaches. In addition, this study also planned to shed light on the influence of other factors that may have an effect on the incidence and severity of injury.

Hypotheses

This study tested the following hypotheses in female high school soccer players:

1. There is a negative relationship between number and severity of soccer injuries and perceived positive coaching as defined by athlete reported frequency of Reward, Encouragement After Mistake, Instruction After Mistake, Instruction, and Encouragement.

2. There is a positive relationship between number and value of life-stress events and the number and severity of soccer injuries.

3. There is a positive relationship between sport competitive trait anxiety and the number and severity of soccer injuries.

4. There is a positive relationship between prior soccer playing experience and the subsequent number and severity of soccer injuries.

5. There is a negative relationship between inflated player perceptions of soccer skill and number and severity of soccer injuries.

6. There is a positive relationship between coaches' ratings of their soccer players' skill and the number and severity of injuries.

The following exploratory questions were also investigated in this population:

1. What variable(s) best discriminates among soccer injury rates?

2. What variable(s) best discriminates among soccer injury severity?

Operational Definitions

For this study, the following definitions were used:

1. Competitive Trait Anxiety- A somewhat permanent personality trait that is determined by a participant's score on the Sport Competitive Anxiety Test (SCAT) (Martens, 1977).

2. Injury- Any physical damage or wound to the body or any specific region of the body incurred by an athlete that is reported to and recorded by the coach or athletic trainer.

3. Life-Stress Event- Any positive or negative occurrence (athletic, family, social, etc.) that is thought to have an effect on a participant as measured by a modified version of the Athletic Life Experiences Scale (ALES) (as adapted by Passer & Seese, 1983).

4. Negative Coaching Behaviors- Refers to the following coaching behaviors (a) Non Reward, (b) Punishment, (c) Punishment and Instruction, and (d) Ignoring Mistakes as measured by the written version of the CBAS (Smith et al., 1978).

5. Positive Coaching Behaviors- Refers to the following coaching behaviors (a) Reward, (b) Instruction After Mistake, (c) Instruction, (d) Encouragement and, (e) Encouragement After Mistake as measured by the written version of the CBAS (Smith et al., 1978).

Limitations

This study was limited by the following uncontrolled factors:

1. Only injuries that were reported by athletes and recorded by their coaches or athletic trainers were included in this study. This may have had the effect of lowering the total number of injuries among athletes. It also may have resulted in the misclassification of those injuries resulting from chronic or nagging problems that had

gone unreported. Pre-existing injuries were reported on the Previous Injury History form (see Appendix A) that all athletes completed prior to the collection of data.

2. This study did not measure or determine the physical growth and development status of the athletes. Because this is a factor that could contribute to or decrease the likelihood of injury, it deserves further mention. There is a possibility that those younger, less physically mature athletes, may be at a greater risk of injury than those older more mature athletes. This was somewhat addressed in the general information section of the Soccer Specific Self-report Inventory (SSSI) (see Appendix B), which asked athletes to report their age, age of menstruation, height, and weight. Unfortunately, these factors alone are not indicative of maturity or development. They did, however, offer at least some insight into the athletes' physical characteristics.

3. Another limitation of this study was in administering pre- and posttest measures of variables. The pretest might have influenced responses on the posttest.

4. The sampling method was not controlled by perfect random sampling.

Assumptions

The following assumptions were made for this study:

1. The written version of the CBAS, ALES, and SCAT are all valid and reliable instruments for female high school soccer players.

2. It was assumed that all participants responded in an honest manner.

3. With regard to collection of injury data, it was assumed that all coaches recorded all injuries in the manner specified by this researcher (see Method section).

4. It was assumed that all athletes reported all injuries to the coaches.

Delimitations

The scope of this study was delimited by the following factors:

1. The participants were female high school varsity soccer players from the Southeast Michigan.

2. There were eight coaches and teams included in the study.

3. Injury reporting was limited to one soccer season.

4. Depending on their playoff success, some teams had longer seasons (and injury reporting time periods- up to one week longer) than others.

CHAPTER II

Literature Review

This chapter presents an overview of the topics germane to this study. Information on athletic injury is presented first, followed by an examination of the various psychological factors that may be associated with athletic injury. The first of these factors, coaching behaviors, includes a comparison of coaching measurement systems and a review of soccer-specific coaching behavior studies. After this, other factors including life-stress, competitive anxiety, maturity, previous injuries and physical condition are discussed in relation to injury. This chapter concludes with a brief synopsis of youth sport injuries.

Overview of Athletic Injury

Injuries are a common occurrence in everyday life. During a single year in the United States alone, over 70,000,000 injuries that required medical attention were reported (Williams & Roepke, 1993). Most injuries, however, are minor and require little or no care at all. On the other hand, many injuries, that should receive care, are frequently ignored or neglected and never receive the necessary treatment. Thus, a multitude of injuries occur each year that are never accounted for by practitioners or researchers.

Injuries are commonplace in sport. In fact, it has been estimated that between 3 and 5 million injuries per year occur in the United States as a result of participation in sports (Kraus & Conroy, 1984). Many more injuries that occur in sport go unreported as well. Some sports like American football, have been found to have 50 to 70% injury rates (Garrick & Requa, 1978)!

The discouraging factor in all of this, is that while sports equipment, rules and training techniques have and continue to improve, injuries are still on the rise (Tator & Edmunds, 1986; Yaffe, 1983). Several reasons have been suggested that possibly underlie this continual rise in the number of injuries in sports. They include an expanding number of participants, more available leisure time for sport, and greater societal interest in sports in general (Pargman, 1993). These, along with other circumstances, have created an increased interest in the study of athletic injuries.

History of Athletic Injury Research

The growing concern with the high incidence of injury in sports has generated a tremendous amount of scientific inquiry into the study of athletic injury over the past few decades. This is evidenced by the influx of articles published in sport psychology, athletic training, behavioral medicine, sport medicine, and psychology journals, concerning athletic injuries. Early research focused primarily on physiological and environmental factors (Pargman, 1993). Physiological factors encompass such areas as nutrition, effects of overtraining and fatigue. In contrast, environmental factors include, equipment, the type of sport, field conditions, and training techniques. Much of this research has and continues to improve sports and reduce the likelihood of injury. Despite the benefits of this early research, many questions still remained concerning the occurrence and severity of athletic injury. To answer these questions, researchers began studying possible links between psychological factors and athletic injury.

Some of the earlier psychological studies were spurned by those involved in coaching or clinical observations. One such individual, Ogilvie (1966), was among the first to suggest the possibility of a relationship between psychological factors and athletic injury. Many of the initial psychological inquiries into athletic injury paralleled those of sport psychology, in that they primarily used the personality theory constructs that prevailed from 1950 to 1965 (Feltz, 1992). Several of these studies did, however, uncover certain personality variables that were related to athletic injury (Brown, 1976; Conger et al., 1959). Even recently, researchers have found relationships between personality factors and athletic injury (Bergandi, 1985). Many other areas of study like competitive anxiety, locus of control, and self-concept owe their inception to these original personality inquiries. Unfortunately, much of this initial, as well as current research of this type, has been atheoretical and plagued by inconsistencies.

The next logical direction for research to take was to begin examining psychosocial aspects of athletic injury. One of the more prominent studies during the infancy of this area of research was conducted by Bramwellet al. (1975). This study adapted a popular social measurement tool, the Social Readjustment Scale (Holmes & Rahe, 1967), to measure social factors specifically affecting participants in sports. The result was the Social and Athletic Readjustment Rating Scale (SARRS). Using this device, Bramwell et al. demonstrated a positive relationship between scores on the SARRS and injury rate. This study served to form the foundation on which many researchers began to build.

Subsequent studies proceeded to concentrate on other psychosocial factors such as social support systems, conformity, and modeling. These variables continue to be examined today (e.g., Curry, 1993). Despite the success of this area of research, these studies failed to integrate the previously mentioned personality and other related factors into their structure. To expand this narrow view that plagued early research into psychosocial factors and athletic injury, current research has begun to look at athletic injury from a model-based interactionist perspective.

Research Directions and a Model of Athletic Injury

Several researchers (Andersen & Williams, 1988; Bergandi, 1985; Nideffer, 1989; Weiss & Troxel, 1986; Williams & Roepke, 1993) have contended that the current knowledge base of the interactions among the many possible intervening variables affecting all aspects of athletic injury needs to be expanded. With the growing need for more applied and theoretical work in sport psychology, this seems quite logical and certainly more useful (Martens, 1987). For this reason, several very similar interaction-based models of athletic injury have been proposed.

Williams and Andersen (1986; 1988) demonstrated the possibilities of utilizing such an approach. Their model of stress and athletic injury incorporates several factors proposed to be associated with athletic injury. Included in the model are personality factors, stressors, coping resources, situational aspects, and intervention strategies (refer to Figure 2). They suggest that researchers should take into account as many of these factors as possible (within experimental constraints) when examining athletic injury. Among the

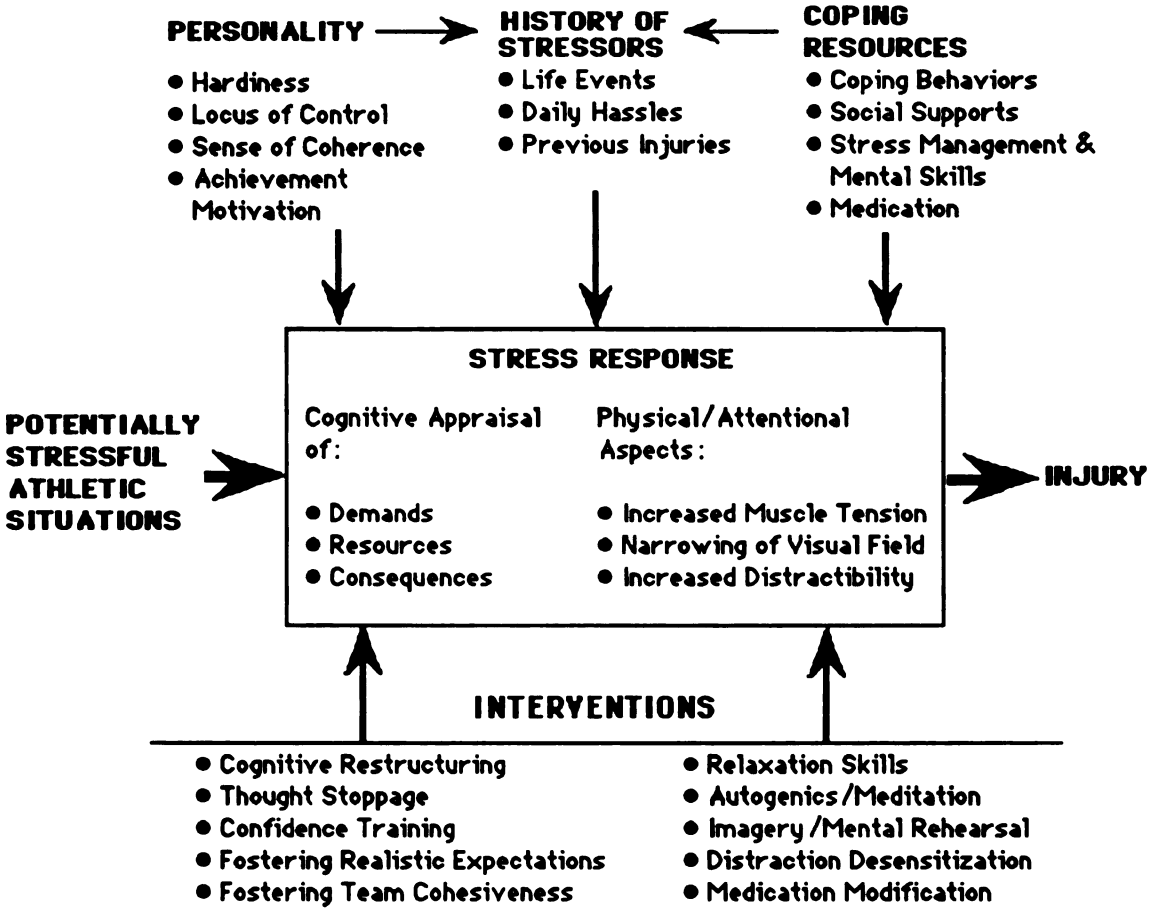

Figure 2. A model of stress and athletic injury.

From "Stress and athletic injury" by M. Andersen and J. Williams, 1988, Journal of Sport and Exercise Psychology, 10(3), 297. Used by permission.

specific factors that Williams and Andersen felt were important were competitive anxiety, life-stress, and social support (i.e., coaching behaviors). Several researchers have successfully supported singular or multiple aspects and factors of this model (Andersen & Williams, 1993). Because their model deals only with psychologically-based factors and interventions, however, physiological factors, ability of athletes, and other factors are not included.

Most models or research suggestions in the psychology of athletic injury tend to have significant overlap in regard to what factors are included in them. In general, most suggestions for research in this area of study resemble those put forth by Andersen and Williams (1988), though some variations do exist. Most variations however, are extensions of this model's premises.

Other researchers have suggested that the study of psychological factors and athletic injury should include other factors as well (e.g., Bergandi, 1985). Specifically, Yaffe (1983) and Bergandi (1985), believe that the study of the complex world of athletic injury should include variables such as type of sport, experience of athletes and coaching techniques. Additionally, Taerk (1977) suggested that in addition to psychological factors, playing time, position, physical condition (including previous injuries), quality of coaching, and age of the athlete, may be associated with athletic injury. These suggestions have been echoed by Nideffer (1989). He added level of competition and type of injury as possible mediating or intervening variables associated with athletic injury.

Psychological Factors Associated with Athletic Injury

As was indicated in the preceding section of this chapter on injury models, many different psychological, physiological and environmental factors may be associated with athletic injury. Within the psychological domain, there exists a further breakdown of variables which may also be associated with athletic injury. Some of these variables and the research pertaining to them are examined next.

Coaching Behaviors/Leadership Styles

At the present time, there exists primarily two different, though related, schools of thought regarding coaching and leadership behaviors or styles in sports. The first of these, which is represented by the mediational model of leadership in sports (refer to Chapter 1, Figure 1), was developed by Smith, Smoll and their associates. This model and research direction of sports leadership has as its base, the Coaching Behavioral Assessment System (CBAS) (refer to Chapter 1, Table 1). The second major approach to leadership behaviors revolves around the work of Chelladurai and his colleagues (e.g., Chelladurai, 1978; Chelladurai & Saleh, 1978). They proposed what is referred to as the multidimensional model of leadership in sports. The Leadership Scale for Sports (LSS) was developed to assess leadership behaviors within the theoretical framework of the multidimensional model of leadership in sports. Research pertaining to these respective models is presented in the following sections.

Much of the research conducted using the CBAS and mediational models of leadership in sports has focused on the relationship between coaching behaviors and player attitudes and

self-esteem. Smith et al. (1978), in their initial study using the CBAS, found that certain behaviors (supportive: positive reinforcement, mistake-contingent encouragement; instructive: general technical instruction and mistake-contingent instruction) were positively correlated to player attitudes toward the coach, sport, and teammates. This study's results were supported somewhat by subsequent research on basketball players and coaches that reported similar findings (Smith, Zane, Smoll & Coppel, 1983). The most obvious difference in the latter study was that positive reinforcement was not very highly correlated with player attitudes.

Research on self-esteem has focused on differences between high and low self-esteem athletes. In doing so, Smith et al. (1978) found that low self-esteem athletes responded more positively to supportive or instructive coaches and more negatively to less supportive and instructive coaches. Impacts on high self-esteem athletes were minimal. More recent studies have affirmed these findings (Smith & Smoll, 1990; Smith et al. 1983).

Smith et al. (1978) have developed written versions of the CBAS for both players and coaches to use in assessing coaching behaviors. These versions of the CBAS enable the assessment of the coach to occur without the previously required direct observation. Thus, athletes, who have intimate contact with their coach, can rate the coach's behaviors, instead of trained observers, who have limited and removed contact with the coach. This is important because athletes have been shown to perceive their coaches' behaviors with a relatively high degree of correlated accuracy (Smith & Smoll, 1991).

For coaches, on the other hand, Smith et al. (1978) found low correlations between coaches' self-reports of behaviors and observed CBAS measures. These findings indicate that coaches, perhaps, do not know how often they engage in specific coaching behaviors.

Some of the research conducted using the multidimensional model of leadership in sports and the LSS has concentrated on the consequences of leadership. Specifically, athlete satisfaction (with leadership) and performance, have been the consequences that have received the most attention in research.

In studying athlete satisfaction, researchers have found certain behaviors by coaches to be correlated with satisfaction of the athletes (Chelladurai, 1978, 1984; Horne & Carron, 1985). Chelladurai's research on university-level, male basketball, track and field, and wrestling athletes, uncovered a curvilinear relationship between the congruence of preferred and perceived behaviors and athlete satisfaction with leadership (1978). In reexamining his 1978 study in light of individual analyses, Chelladurai (1984) again determined that discrepancies between athletes' preferences for coaching behaviors and their actual perceptions of their coaches' behaviors, affected their satisfaction with leadership. In this subsequent study, instruction and positive feedback were the most common leadership behaviors affecting athlete satisfaction. These findings were supported by Horne and Carron in their 1985 study. In addition, they found that social support, along with instruction and positive feedback, were significant predictors of satisfaction with leadership.

In other studies, positive feedback has also been found to be predictive of athlete satisfaction with leadership (Dwyer & Fischer, 1990; Weiss & Friedrichs, 1986). In a somewhat interesting finding, Weiss and Friedrichs (1985), reported a negative relationship between social support and athlete satisfaction with leadership. This was possibly due to the fact that the social support was seen as a demeaning or negative behavior. McMillin's (1990) study revealed that athlete's perceptions of all leadership behaviors were significantly related to satisfaction with leadership.

Another area of research using the LSS involves its relationship to athletes' perceptions of their performance. Horne and Carron (1985) found a positive correlation between positive feedback and perceptions of performance. Serpa, Pataco and Santos (1985) reported that athletes on higher level teams perceived their coach as more autocratic and less positive, rewarding, and supportive. This could mean that the coaches with these qualities led their teams to this higher level of performance or that they tend to alter their behaviors when coaching that level of athlete (Chelladurai, 1993).

Soccer coaches' behaviors. Specific to soccer, research has been conducted concerning youth soccer coaches' style in game versus practice situations (Wandzilak et al., 1988). This study used the Coaching Behavior Assessment Inventory (CBAI) developed by Wandzilak and his colleagues and found that organizational and negative comment occurred significantly more during practice than in games.

Another researcher, Gordon (1986), examined player perceptions of leadership behaviors among Canadian university

soccer players using the LSS. He reported that players on more successful teams perceived more training, social support, and autocratic and positive feedback behaviors in their coaches than those on less successful teams. This lends support to the possibility that win-loss records may have a moderating effect on perception of coaching behaviors.

McMillin (1990), also using the LSS, found that among university-level soccer players, perceptions of positive leadership behaviors (training, instruction, and democratic) were related to satisfaction with leadership. The research to date though, has yet to examine the possible relationship between coaching behaviors and rate and severity of injury among soccer players. Nor has any research been conducted with soccer players using the CBAS to measure coaching behaviors.

Despite the promising findings obtained using the two models and their respective instruments, research has been limited to the aforementioned subject areas. In light of the suggestions in the section on injury models and research directions, it seems surprising that no researcher has made a literary connection nor investigated the possible effects of leadership behaviors on athletic injury. Based on the research in these two areas of study, it seems quite possible that a relationship between coaching or leadership behaviors and athletic injury may exist.

Life-Stress Events and Injury

From its inception, the study of life-stress events has been in close proximity with injury and health-related research. Many researchers in health-related areas have suggested that life-stress

plays a major role in recovery, treatment success and prevention of illness, disease and similar ailments. It has also been suggested that life-stress events are associated with injuries, in particular, athletic injuries.

Research on life-stress (for definition refer to Chapter 1, Operational Definitions section) began in 1967 (Holmes & Rahe) and has resulted in the creation of several different approaches used in its study. These different approaches have, in turn, lead to valid and reliable instruments for measuring stress in life in general, and specifically in sports (e.g., Bramwell, et al., 1975; Coddington & Troxell, 1980; Passer & Seese, 1983; Sarason, Johnson & Siegel, 1978). Recently, revised editions of these original life-stress inventories have been developed and implemented in research in sport. These adaptations include the Athletic Life Experiences Scales (ALES; Passer & Seese, 1983) and the Social and Athletic Readjustment Scale (SARRS; Bramwell et al., 1975).

ALES research. The ALES was adapted from the Life Events Scale (LES) (Sarason et al., 1978) to be used with athletes (Passer & Seese, 1983). This life-stress or life change (note that these terms are used interchangeably) instrument, as it is referred to by its originators, divides life change into positive and negative components. In other words, a person's stress is examined in light of whether it is perceived as positive or negative by that person. For example, a new job might be considered positive to one person, but negative to another.

The initial research assessing life change concentrated on contact sports, more specifically, American football. Passer and Seese

(1983) found that those players who experienced greater negative, but not positive, life changes had a larger time-loss of activity due to injury. It was suggested that this may have been due to the fact that positive life-stress events are not as stressful as negative life-stress events. This only held true for one of the experimental groups, however, suggesting that further research was needed.

More recent research using the ALES has examined the possible relationship between life change and injury among non-contact and sports other than American football. Hardy, Richman and Rosenfeld (1991) in their study of seven different collegiate sports, reported that life-stress and social support were predictive of injury frequency among male athletes. They did not, however, find any significant relationships for female athletes. In an earlier study by Hardy and Riehl (1988), results indicated life-stress as being predictive of injury frequency among non-contact athletes, particularly for female athletes and track and field athletes.

The ALES is considered to be a reliable and valid research instrument (Passer & Seese, 1983). Unfortunately, no researchers to date, have further adapted the instrument for use with any more specific populations within the world of athletics. Most of the studies conducted, have utilized the original ALES without modifications. Because it would be beneficial to accurately evaluate stress among other groups such as female, high school-aged and youth athletes, researchers need to adapt this scale or create entirely new scales for use with specific athletic populations.

SARRS research. The SARRS was developed from the Social Readjustment Rating Scale (Holmes & Rahe, 1967). It incorporates athletic items such as, "problems with coach," with the life-stress questions developed by Holmes and Rahe (1967).

Bramwell et al. (1975) were the first to study life-stress and its possible relation to athletic injury. In their initial inquiry using American football players, they found a large significant positive relationship between overall number of life-stress events and injury risk. They suggested that a possible reason for this was that these life changes may hinder concentration and block previously learned adaptive responses in athletes. This, in effect, served to set the athletes up for injury.

This research was promising, though the researchers prescribed using caution in interpreting the findings. None-the-less, Cryan and Alles (1983) reported similar results in a later study of American football players. In both cases, however, only American football players were studied. It was, therefore, suggested that similar results might not be found among non-contact or other sport participants (Bramwell et al., 1975). Kerr and Minden (1988), in a study of female gymnasts, found a significant positive relationship between life-stress events and injury.

The SARRS has been criticized for not distinguishing between positive and negative life-stress events (Smith, Smoll & Ptacek, 1990). The ALES then, might seem to be a better indicator of life-stress, because it accounts for both positive and negative life-stress as well as total life-stress.

Other research on stress and athletic injury. Using the Life Events Survey for Collegiate Athletes (LESCA), Petrie (1992) found that injured gymnasts reported experiencing more life-stress during the preceding year than uninjured gymnasts did. In this study, life-stress and especially negative life-stress, was also found to be related to athletic injury. Petrie also reported that the LESCA proved to be a more valid measure of life-stress than the SARRS.

Another study, using a similar instrument, the Life Events Scale for Adolescents (LES-A), found significant relationships between individual life-stress events (e.g., parental divorce or death) and athletic injury rates (Coddington & Troxell, 1980). This study, which looked at American football players, was considered by the researchers as merely a pilot study.

Another type of stress closely related to life-stress events is daily hassles. Daily hassles are those microstressor events that occur on a more regular basis that may or may not be associated with some level of stress for the affected individual (Lazarus & Folkman, 1984). These events may also be more likely to be recalled than true life-stress events which may have occurred some time ago and their impact forgotten or diminished.

Competitive Anxiety

Research concerning competitive anxiety in athletics is divided into trait and state anxiety. Trait anxiety is a somewhat permanent personality trait, whereas, state anxiety is dependent upon the situation the athlete is in at that time. For the purposes of this review, only trait anxiety will be examined.

Competitive trait anxiety in athletic research can trace its beginnings to Marten's 1977 work which culminated in the development of the Sport Competitive Anxiety Test (SCAT). This instrument has been implemented successfully time and time again in research. Some researchers, however, suggest that competitive trait anxiety is a multidimensional construct (Smith, Smoll & Schutz, 1990; Weinberg, 1990). Specifically, they believe that competitive trait anxiety should be divided into cognitive and somatic dimensions. Recent studies, despite successfully using the SCAT, have agreed that future research may need to adopt the multidimensional approach to competitive trait anxiety (Petrie, 1993).

Unfortunately, research on competitive trait anxiety and athletic injury has been scarce. Some of the research, though, has met with limited success. The logic in this research is that competitive trait anxiety is correlated with muscle tension and decreased visual perception, thus increasing injury risk. Competitive anxiety has been found to be related to athletic injury, both directly (Blackwell & McCullagh, 1990) and as a moderating variable with stress (Petrie, 1993). The relationship as a moderator variable (Petrie, 1993) has been the strongest evidence to date, linking competitive trait anxiety and athletic injury. Despite these results, inconsistent findings have pervaded the literature in this area, leaving the issue in doubt (Kerr & Minden, 1988). Overall, it can be concluded that more research needs to be done on competitive anxiety's relationship to athletic injury.

Physical Characteristics

It is important to examine athlete's characteristics when studying athletic injury. Characteristics such as age, weight, and height may offer a good description of the population and insight into injury trends (e.g., older athletes are injured more). They also may assist researchers in determining what may have influenced injury trends or findings (e.g., only taller athletes had severe injuries).

Many researchers have examined athletic injury in light of certain physical characteristics. Schmidt-Olsen, Jorgensen, Kaalund and Sorensen (1991), in trying to explain why younger athletes had fewer injuries than older athletes, suggested that perhaps the better flexibility and less weight and generated speed during collisions of younger players, might be a contributing factor. In describing similar differences found between adult and adolescent soccer players, Nilsson and Roaas (1978) also suggested that adolescents have higher elasticity in their skeletal system and slower running speeds in collisions. It is, therefore, of value to assess physical characteristics via variables such as age, age at menarche (for females), weight and height.

Previous Injuries/Physical Condition

Despite the obvious link between an athlete's injury history and his/her subsequent injuries, many researchers do not take this variable into account. As mentioned earlier, some of the models and theories that attempt to explain the diverse world of athletic injury include previous injuries in some form or another (e.g., Taerk, 1977). Obtaining information on this variable does pose some problems

though, if self-report data is used. Athletes may not remember all of their injuries and may report honest, yet inaccurate data.

Another variable that is important to assess in relation to athletic injury is the physical condition of the athletes being studied (Taerk, 1977). After all, if an athlete is in poor physical shape, the risk of injury for him/her might be higher than for those athletes in good shape. Lohnes et al. (1994) discussed the importance of physical condition among soccer players and how this knowledge is important in understanding injury. From this generalization, it is logical to postulate that, by understanding an athlete's previous injuries and physical condition, researchers might be able to better understand the underlying factors involved in each individual's injury. Some researchers have begun to examine these factors more closely (e.g., Brynhildsen, Ekstrand, Jeppsson & Tropp, 1990; Kibler, 1993), but only in purely physiological studies of athletic injuries. Incorporating these factors into psychological injury studies has not caught on yet.

Youth Sports Injury Overview

Youth athletes have often been overlooked with regard to their responses to and effect of participation in sports. This population has been reported to experience many psychosocial effects of and precursors to athletic injury. Among those reported have been vomiting before competition, mental breakdowns, competitive stress, low self-esteem, and clinical depression (Feltz, 1984). Clearly, youth athletes are not immune to the effects of athletics nor are they devoid of the psychosocial factors that may contribute to injury.

Despite the amount of research done on the various psychosocial factors that affect injury occurrence, relatively few studies have emphasized these factors as they relate to youth athletes (e.g., Kozar & Lord, 1988; Smith et al., 1990). Even so, there have been a handful of research studies conducted in this important, though still infantile, area that merits review. When reviewing this literature, though, several important quandaries need to be examined.

When applying theories and models or devising studies for use with youth athletes, many considerations must be taken into account. Too often, researchers have attempted to merely adapt adult-based contextual findings and models directly to children and adolescents without any empirical or theoretical basis. The recent emphasis on studying the differences between adult and youth sport participants, however, has resulted in a greater population specificity in research constructs (Smith & Smoll, 1991).

At the beginning of this chapter, several statistics were presented regarding injuries in general and specifically in sports. Further dissection of this information uncovers that 20 to 30 million children participate in both interscholastic and nonscholastic organized sports (Martens, 1986). With this high number of participants, the understanding of youth sport injuries becomes very important. Most of the studies on the psychology of youth sport injuries have concentrated on the factors that precede athletic injury.

Smith and Smoll (1991) utilized the youth specific Adolescent Perceived Events Scale (APES) (Compas, Davis, Forsythe & Wagner, 1987) in their assessment of the effects of life events on youth sport

injuries. For this study, the researchers also looked at possible moderator variables that might influence the effect of life events on injury rates. They found that youth athletes low in both social support and coping skills experienced more life-stress events and subsequent injuries. None of the variables alone yielded significant results.

Scanlan and Passer (1978) studied the levels of stress of youth soccer players and found that high competitive anxiety, low self-esteem, and low performance expectations were related to high levels of stress. In addition, Simon and Martens (1979) have found significantly high anxiety levels among youth athletes in several different sports. As discussed previously, anxiety and stress have been correlated with muscle tension and decreased visual skills, which may result in an increased injury rate. Based on this information, these researchers have put forth the notion that youth athletes who experience stress or competitive anxiety are at greater risk for possible injury in sports (Feltz, 1984). Unfortunately, little research has been carried out to support or refute this concept, which has left the question open to further debate.

Summary

The factors previously referred to, represent respectively, an area of research that has been overlooked (coaching behaviors) and one that has met with moderate success (life-stress events) in the study of athletic injury. In addition to these factors, several others (i.e., competitive trait anxiety, maturity and physical conditioning) which have met with mixed empirical success, are also important in the study of athletic injury.

CHAPTER III

Method

Participants

120 female high school varsity soccer players from eight different teams served as participants. Injury data were collected from 92 of the athletes. For various reasons (e.g., dropping out, not wanting to report injury data), injury data were not available from 28 of the 120 participants. Data were also gathered from the athletes' respective coaches (N = 8), all of whom were male. Coaches ranged in age from 30 to 50 years (M = 44.38, SD = 6.32) and had coached organized soccer for an average of 6.75 years (SD = 2.12) . The Athletes ranged in age from 14 to 18 years and had a mean age of 15.94 years (SD = 1.16). Further descriptions of the sample population are presented in Table 2. The athletes were primarily

Table 2

Mean characteristics of participants

Participant Characersitics	M	SD	Range	n
Age (years)	15.94	1.16	14-18	120
Age at Menarche (years)	12.38	1.13	9-16	119
Height (m)	1.62	0.07	1.45-1.80	120
Weight (kg)	56.87	7.38	39.0-77.18	117
Experience (years)	6.21	3.00	0-10	120

Caucasian. Their voluntary participation was requested by the investigator prior to the commencement of the season. Written parental consent was obtained in order for athletes to participate in this study (see Appendix C). In addition, athletes were informed that their responses would be confidential to the experimenter and in no way affect their status on their respective teams. Further, all coaches and applicable school administrators gave their consent prior to the commencement of the study (see Appendix D).

The sample for this study was selected from various high schools from the Metropolitan Detroit area. The selection of the eight teams and coaches included in this study was based on their availability and willingness to participate.

Predictor Variables

For this study, the predictor variables were the athletes' perceptions of the nine selected coaching behaviors from the written version of the CBAS. In addition, other predictor variables included (a) physical characteristics (age, age of menarche, height and, weight); (b) life-stress events; (c) skill level (rated by athletes and coaches; (d) perceived physical condition; (e) playing experience; (f) playing time; (g) previous injuries; and (h) sport competitive anxiety.

Written Version of the CBAS

All athletes rated their respective coaches, using a modified written version of the CBAS as adapted (1978) by Smith and Smoll from their original (1977) observational instrument. Coaches also rated themselves using this scale. This modified version contained nine of the original 12 items from the CBAS and soccer specific examples for each item (where applicable). These ratings were used

to assess the coaching behaviors of each of the coaches. This instrument was chosen because of its past successful use in assessing coaching behaviors (Feltz, Chase, Hodge, Simensky, Shi & Lee, 1994) (see Appendix E).

Other Predictor Variables.

These variables were measured using written instruments specific to each variable. To measure physical characteristics, athletes completed a Soccer Specific Self-report Inventory (SSSI) (see Appendix B) concerning age, age at menstruation, height, and weight. This instrument also included information about perceived physical condition, playing experience, perceived skill level, and position played (see Appendix B). A modified version of the perceived skill level section of the SSSI was also completed for each athlete by her respective coach (see Appendix F). This was done to allow for a more objective measure of the athletes' skill levels and to allow this researcher to compare differences between the two perceptions. At the conclusion of the season, each coach also estimated each athlete's playing time during matches for the entire season. Coaches also provided the total number of hours of match and practice participation for each of their teams.

Athletes also completed a modified version of the ALES (as modified by Passer and Seese, 1983) to measure their athletic and life-stress event histories during the past year. The ALES was modified from the original Life Experiences Survey (LES) developed by Sarason et al. (1978). These modifications were based on those made to the Social Readjustment Rating Scale (SRRS) by Bramwell et al. (1975) in creating the sport specific Social Athletic Readjustment

Rating Scale (SARRS). The modifications made by Passer and Seese (1983) allowed the ALES to measure life-stress events among male collegiate athletes. For the purposes of this study, the ALES was further modified to make it applicable for use with female high school athletes (see Appendix G). The ALES was chosen over the SARRS because of its ability to allow participants to assign either a positive or negative value to the various life-stress events.

This modified version of the ALES consisted of 51 questions in three sections covering general, sports specific, and high school specific life-stress events. It was scored on a 7-point scale ranging from extremely negative (-3) to extremely positive (+3). Summing the scores of those events designated as positive provided a positive change score. A negative change score was calculated by summing the scores of all events perceived as negative. A total change score was obtained by adding the negative and positive change scores. An absolute score was also obtained by summing the absolute values of both negative and positive change scores.

To assess sport competitive anxiety, participants completed Marten's (1977) SCAT. The SCAT consists of 15 items covering various physiological and psychosocial responses to sport competition. Ten items were scored on a 3-point check list scale (1= hardly ever, 2= sometimes, and 3= often). The remaining five items were not scored (see Appendix H).

One additional variable that was examined was the previous injury history of the athletes. This information was obtained through the use of an injury history form covering previous injury sites, types and severities (see Appendix A).

Outcome Variables

This study used the number and severity (based on days away from practices and matches) of injuries, that occurred during an eight week season, as outcome variables. Sites and types of injuries were also used to describe the various injuries. In order for injury data to be collected, a standard injury form for recording each injury was developed by the investigator in coordination with several athletic trainers. This form was completed by the coach or athetic trainer of each team, for each injury that occured. These forms were contained within an injury notebook that was given to each coach to use for two week intervals for the entire season (see Appendix I).

One situation that arises when studying injury occurrence pertains to the appropriate way in which to define and measure or quantify the actual injury data. In previous research (e.g., Blackwell & McCullagh, 1990), the National Athletic Injury Reporting System (NAIRS) was often used to define and measure injuries. Unfortunately, this classification scale has not been sensitive enough to define or rate the more common and realistic injuries that typically occur in sports . In addition, the NAIRS defines a minor injury as having to result in at least seven days away from a sport for the injured athlete. For the high school soccer season, this time equates to approximately 1/8 of the entire season! For this reason, this type of definition and classification is not appropriate for use with high school athletes.

Studies specific to soccer injury, have used various definitions of injuries. Three of these have been utilized in research a great deal more than the others. The first of these, constitutes any reported

injury as an injury whether it is a minor abrasion or fracture (e.g., Ekstrand, Roos & Tropp, 1990; Nilsson & Roaas, 1978). This definition fails to take into account the varying severity of an injury. On the other end of the spectrum are the injury definitions that require an injury to result in a minimum of at least 1 to 7 days away from practice and matches for the injured athlete (e.g., Brynhildsen et al., 1990; Yde & Nielsen, 1990). This definition rules out many "real" injuries, but does account for injury severity. A combination of these two definitions has also been used. This combined definition accepts all reported injuries, but classifies them as minor, moderate or severe (e.g., Ekstrand & Gilquist, 1983).

In order to establish a definition and measurement specifications for injuries, several athletic trainers and coaches were also consulted for their input. The consensus was that any injury that was actually reported to the coach (who in high school, generally attend to injuries before the trainers) should be considered an injury. Coaches and trainers also suggested that any injury reported to the athletic trainer, but not the coach, should also be considered an injury. This definition also accounted for those injuries reported to the athletic trainer, but not the coach. Coaches and trainers were instructed that only injuries that forced an athlete to withdraw or be withdrawn (by a coach or trainer) from a practice or match was to be recorded as an injury. Some minor injuries (e.g., minor contusions) were injuries by definition, but were accounted for because the types and sites of injuries were recorded. In addition, the injury report forms tabulated the total severity for each injury. Using this information, injuries were categorized as minor (0 days away from

practices or matches), moderate (1-3 days), moderately severe (4-7 days), or severe (8+ days).

Procedure

Protection of Confidentiality

Prior to any collection of data, approval was obtained from the Michigan State University Committee for Research Involving Human Subjects (see Appendix J). In order to analyze the effects of all of the moderating variables in this study, it was necessary to individualize the data. For this reason, anonymity was not possible; however, confidentiality of all participants was maintained. To accomplish this, each athlete received a code that was used when the investigator analyzed and recorded all data. This code consisted of the following ordered items (a) a number from one to eight representing the team/coach, (b) the last three numbers of the social security number of the athlete (or three random numbers if the social security number was unavailable), and (c) the numbers in the athlete's day of birth. The actual data collected by the coaches was recorded by athlete name and was then transferred to code upon its receipt by the investigator. All instruments completed by the athletes had only the code on them.

Participant Data

Prior to the start of the season, but after the selection of the team, each school and coach selected in the sample was contacted by phone regarding their participation in this study. Additional follow-up calls, meetings, and correspondence were also used as needed. The investigator met individually with each coach to discuss the collection of data and nuances of participating in this study. After

this occurred, parental consent forms were distributed by the investigator to players on each team. General information about the study and participant confidentiality was also given to the athletes at this time. Consent forms were collected by the investigator and coaches before the first official day of the season.

Prior to the first official day of the season, all athletes and coaches completed the instruments used in this study (i.e., ALES, CBAS, previous injury history form, SCAT and SSSI). These instruments were administered separately to each team by the investigator and/or an assistant (recruited from the graduate Physical Education and Exercise Science program at Michigan State University). This was done just prior to a preseason practice and lasted for approximately 30 minutes. Each team was reminded that the information being collected was to be included in a study of soccer players being conducted for a master's thesis at Michigan State University. At this time, the coach of the team was asked to leave the room. Next, as the investigator or assistant distributed the instruments, athletes were reminded to be as honest as possible when completing the forms and that the responses were confidential and would not be made available to anyone (e.g., coach) other than the investigator. All athletes were asked to write their participant code at the top of the first page of the instrument packet.

The athletes were then instructed to place their responses in an envelope at the front of the room when they were finished. The investigator or assistant also indicated that (s)he would remain at the front of the room throughout the duration of the packet completion

process to answer any questions that the athletes might have. The athletes were then instructed to begin completing the forms.

After all athletes had finished the forms, the coach was given the perceived skill rating forms to be completed for each athlete and a coaches' version of the written CBAS form. The coach was reminded that, for the skill rating forms, he should be sure to rate each player in relation to the other players on the team. The investigator or assistant then requested that the coach place all forms in an envelope at the front of the room when finished. When the coach had completed the forms, he was thanked for participating in this part of the study. The coach was also reminded that the investigator or assistant would be collecting the injury logs and giving the coach a new one every 2 weeks. The investigator or assistant also informed the coach that a session would be conducted to gather the post season data from the players and coach.

This was the last contact with the athletes until the season had concluded. At that time, all athletes again completed the CBAS and ALES to assess changes that may have occurred during the course of the season.

Throughout the season, the investigator contacted the coaches every 2 weeks to collect and redistribute injury logs. At the conclusion of the season, the coaches also completed a playing time estimate for each athlete.

After all data had been collected, a letter was mailed to all coaches thanking them for their participation. In addition, the experimenter offered a copy of the abstract to all participants and their families who were interested in obtaining one. Finally, each

letter contained an open invitation to a debriefing/study description session that is to be conducted in the Detroit area sometime after the study is completed.

Injury Data Collection

As mentioned before, in order to obtain the actual injury data for the athletes, coaches or athletic trainers from each school were utilized. Prior to the start of the season, coaches and athletic trainers (where applicable) from each school were contacted individually and given an overview of the study. This overview included the definitions and injury recording instructions previously referred to. At this time, they were also given examples of injuries to record data from. The investigator lead them through this process until all of the coach and trainer's questions were answered and they felt comfortable with the injury recording processs. It was stressed that they were to record all reported injuries in the appropriate manner in the injury log.

Data Analysis

Data for this investigation was analyzed via the Statistical Packages for the Social Sciences (SPSS). Descriptive statistics were used to describe the sample. Individual *t*-tests were used to compare means of certain variables. Pearson Product-moment correlations were used to test the hypotheses. Multiple regression analyses (simultaneous method) were used to explore the questions regarding the prediction of injury rates and injury severity.

CHAPTER IV

Results and Discussion

Introduction

This chapter begins with a descriptive overview of the injury data. Following this initial overview, the various analyses of the data are presented in two different categories. These categories are coaching behavior and other variable results. At the beginning of these sections, hypotheses are presented in the order that they appeared in Chapter I and are then examined in relation to the results. This chapter ends with a discussion of the results in light of research, models, and trends. It is important to note that the *n* varied throughout the analyses due to missing data on different aspects of the study. Because of this, the various *n*'s are indicated within the text, where appropriate. Also, an alpha level of .05 was used for all statistical tests of significance.

Injury Data

Descriptive Data

Overall, 104 injuries were reported that involved 57 athletes. The injury rate for this study was 15.9 injuries per 1000 hours of participation; whereas, the injury frequency was 113 injuries per 100 athletes. 6,532 total hours of participation were recorded in this study. Matches comprised 2,484 of these hours while practices accounted for 4,048. Among injured athletes, the mean number of injuries was 1.82 (*SD* = 0.73, *n* = 57). Of these, 27 athletes had just one injury, 15 had two injuries, 13 had three injuries and only two had four injuries. The injuries were also grouped as occurring in one of two environments, matches or practices. Seventy percent of the

injuries occurred during matches, while only 30% of the injuries occurred during practice.

Additionally, all injuries were grouped according to their site, type and severity, to provide a better overall picture of the athletes' injuries in this study. These data are examined in the following sections.

Injury Sites

The injury sites for the 104 reported injuries, and their respective percent values are presented in Figure 3. As indicated in

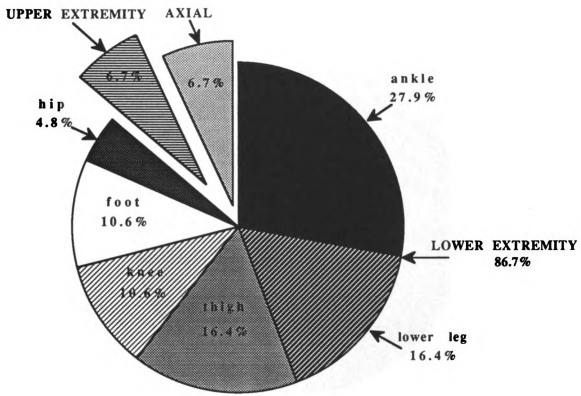

Figure 3. Percent values for injury sites (n = 104).

this figure, the majority of the injuries occurred to the lower extremity (86.7%). Overall, the ankle (27.9%), lower leg (16.4%) and

thigh (16.4%) were the most frequently injured areas. These findings are representative of the sites where most action occurs in soccer.

Very few injuries occurred to the upper extremity (6.6%) and axial (5.7%) regions. This is representative of the lack of use of these areas of the body in soccer.

Injury Types

Injuries were also categorized according to the type of injury. These data are also presented in pie-chart form in Figure 4. As Figure 4 indicates, the majority of the injuries were contusions

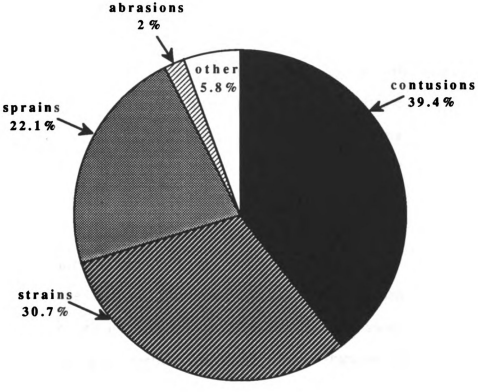

Figure 4. Percent values for injury types (n = 104).

(39.4%), strains (30.7%) and sprains (22.1%). The remaining types of injuries only constituted 7.8% of the total injuries. If the injury type

was not included in one of the existing categories, it was placed in the category labeled "other" (5.8%). This category included fractures, dislocations and concussions. Overall, the types of injuries reported were typical of soccer and relatively common athletic injuries.

Injury Severity

The severity of all injuries resulted in a total of 226 days away from practice and competition. This averages out to 2.46 days lost per athlete (n = 92) during the season or 3.96 days lost per injured athlete (n = 57). The average injury severity for injuries in this study was 2.17 days (n = 104). The most severe injury reported in this study resulted in 20 days away from practice and competition for that athlete.

Injury severity was also collapsed into minor, moderate, moderately severe and severe groupings. As is indicated in Figure 5, the majority of injuries in this study were minor in nature. Several injuries (14%), though, were reported as moderately severe or severe. There were, however, no season-ending injuries reported.

Previous Injury History Data

Each athlete retrospectively reported their injury history at the beginning of the season. Previous injuries were defined as either serious (i.e., requiring surgery or significant time away from sports) or chronic (e.g., consistently sprained ankle) injuries that the athletes have had in the last five years. These data were obtained to determine if there might have been a correlation between the number of previous injuries and the subsequent injuries that athletes incurred during the season.

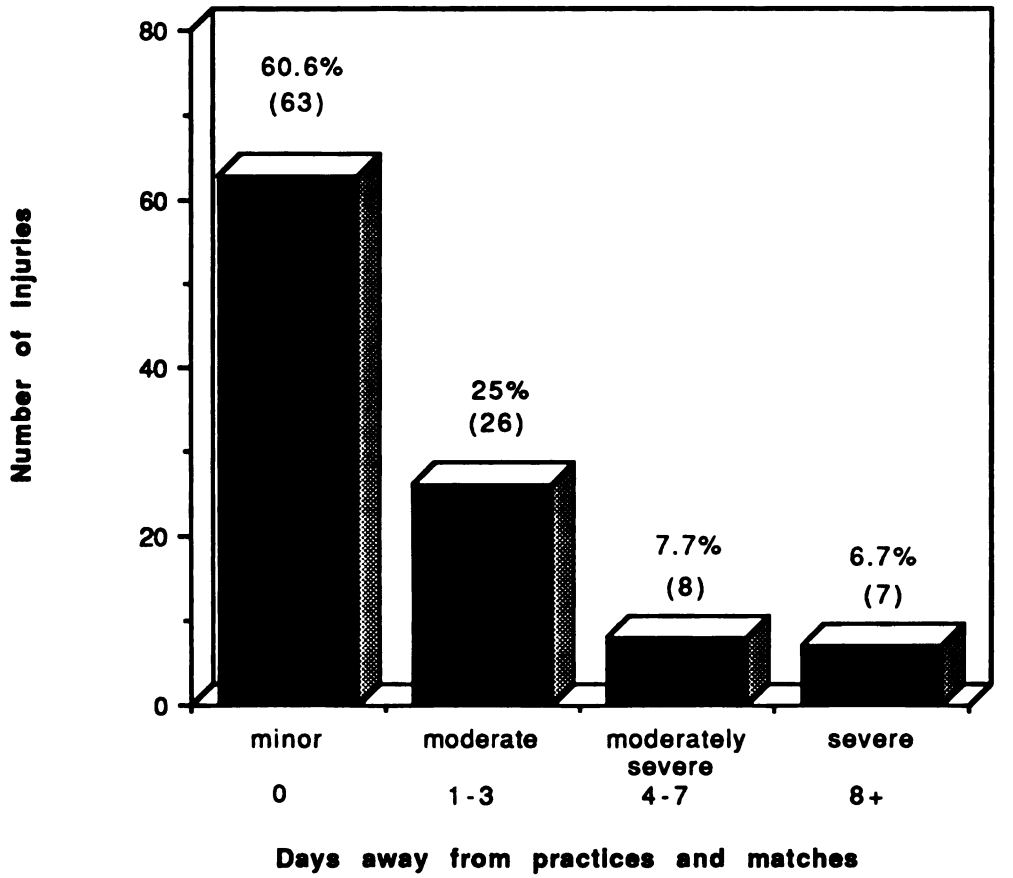

Figure 5. Injury severity by number of injuries.

Pearson Product-moment correlations were used to examine this possible relationship. The results indicated that previous injuries were positively correlated (r = .30) with injury number. Thus, athletes who reported having a greater number of previous injuries had more injuries than those who reported having fewer previous injuries. In addition, previous injuries were positively correlated (r = .29) with injury severity. Therefore, athletes who reported having a greater number of previous injuries had more severe injuries than those who reported having fewer previous injuries.

Coaching Behavior Data

Descriptive Data

Athletes completed both pre- and postseason written CBAS forms. Individual means were calculated for each written CBAS item for both pre- and postseason data. The means are presented in Figure 6. These means have been divided into positive and negative

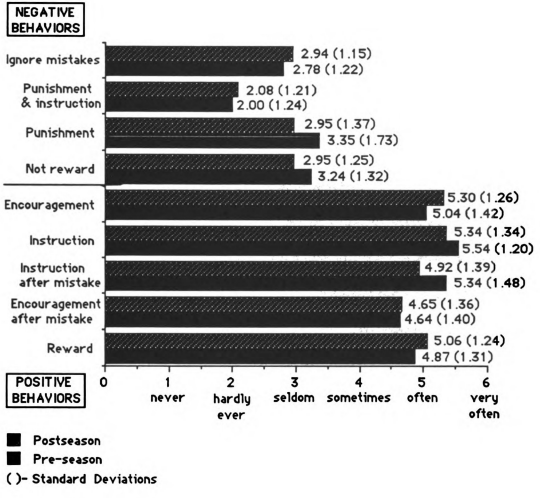

Figure 6. Mean coaching behavior perceptions of athletes for pre- (n = 120) and postseason (n = 102).

coaching behaviors. Generally, coaches were rated relatively high in positive behaviors and relatively low in negative behaviors. Overall, this sample of coaches was perceived by athletes as very positive in nature.

All of the pre-season behavior ratings were positively correlated with the postseason ratings. In other words, athletes' perceptions of coaching behaviors did not change much over the course of the season. There were, however, differences in pre- and postseason perceptions on several of the coaching behaviors. For the following t-tests, n=102. The athletes' pre-season perceptions of Instruction After Mistake (M = 5.34, SD = 1.48) were higher, $t(101)$ = 3.14, p = .002, than their postseason perceptions (M = 4.92, SD =1.38). Coaches were therefore, perceived by athletes as using more Instruction After Mistake behaviors at the beginning of the season than toward the end. This finding could indicate that coaches engaged in instructional behaviors more in the early season than in the late season or that they used the same amount, but the athletes' perceptions changed from the beginning of the season to the end of the season.

In further support of this, perceived pre-season Instruction behaviors (M = 5.54, SD = 1.20) were also higher, $t(101)$ = 1.98, p = .050, than postseason Instruction behaviors (M = 5.34, SD = 1.34). In addition, perceived pre-season Punishment behaviors (M = 3.35, SD = 1.73) were higher, $t(100)$= 2.26, p = .026, than postseason Punishment behaviors (M = 2.95, SD = 1.37). This suggests that punishing behaviors were more prevalent in the early season than in the late season.

Comparisons of Ratings of Coaching Behaviors

In order to compare the perceptions of coaching behaviors, between athletes and their respective coaches, correlations were performed on pre-season perceived behaviors between the two groups. The results of these correlations are presented in Table 3. Despite the fact that all correlations were positive, only 6 of the 9 items were significantly correlated with each other. Additionally, only 1 of these five items (Punishment) had a relatively high correlation (r = .45).

In further comparing the athletes' coaching behavior perceptions with the coaches' own behavior perceptions, several other findings arose. These findings, in the form of means for each coaching behavior item, are depicted in Table 4. Coaches rated themselves in a more positive manner than athletes did, though this difference was not significant. Specifically, athletes rated coaches lower in Reward, Encouragement After Mistake, Instruction After Mistake, Instruction, and Encouragement; and higher in No Reward, Punishment, Punishment and Instruction, and Ignore Mistakes; than coaches rated themselves. Generally, coaches perceived themselves more positively than their athletes did.

Coaching Behaviors and Injury

The first hypothesis stated that there is a negative relationship between number and severity of injuries and perceived positive coaching as defined by athlete reported frequency of Reward, Encouragement After Mistake, Instruction After Mistake, Instruction

Table 3

Correlations Between Coaches' and Athletes' Perceptions of Coaching Behaviors (N = 92)

	Positive Behaviors	
1.	Reward	.24*
2.	Encouragement After Mistake	.27*
3.	Instruction After Mistake	.27*
4.	Instruction	.27*
5.	Encouragement	.05
	Negative Behaviors	
1.	No Reward	.16
2.	Punishment	.45*
3.	Punishment and Instruction	.27*
4.	Ignore Mistakes	.17

*$p < .05$

Table 4

Mean Coaching Behavior Perceptions for Athletes and Coaches

	Coaches			Athletes		
Positive Coaching Behaviors	M	SD	n	M	SD	n
Reward	5.70	0.97	120	4.87	1.31	120
Encouragement After Mistake	5.10	1.10	120	4.64	1.40	120
Instruction After Mistake	5.46	1.15	120	5.34	1.48	120
Instruction	5.84	1.02	120	5.54	1.20	120
Encouragement	5.28	1.04	120	5.04	1.42	120
Negative Coaching Behaviors						
No Reward	2.50	0.87	120	3.24	1.32	120
Punishment	2.68	1.30	120	3.35	1.73	120
Punishment and Instruction	1.62	0.69	120	2.00	1.24	120
Ignore Mistakes	2.79	1.21	120	2.78	1.22	120

and Encouragement. An examination of the number of injuries is presented first followed by the severity of injury.

To examine this hypothesis, Pearson Product-moment correlations between the positive coaching items and the number of injuries were conducted. The results of these correlations are displayed in Table 5. The variables tested uncovered one significant

Table 5

Correlations Between Positive Coaching Behaviors Perceived by Athletes and the Number and Severity of Injuries (N = 92)

Positive Coaching Behaviors	Number of Injuries	Severity of Injuries
Reward	-.27*	-.19*
Encouragement After Mistake	.06	.08
Instruction After Mistake	-.14	-.06
Instruction	-.03	-.25*
Encouragement	-.12	-.15

*$p < .05$

relationship between a positive coaching behavior and the number of injuries. The factor that was correlated with the number of injuries was Reward ($r = -.27$). This correlation was negative, suggesting that a higher perception of Reward behaviors was related to a lower number of injuries. Overall, only one of the positive factors (Reward) was correlated negatively with the number of injuries, lending only minimal support to Hypothesis 1.

The negative items from the CBAS were also analyzed. The results are presented in Table 6. These analyses revealed no significant correlations between athlete-perceived pre-season negative coaching behaviors and the number of injuries. All of these correlations were positive, however, indicating that these negative behaviors may be slightly related to a higher number of injuries.

Table 6

Correlations Between Negative Coaching Behaviors Perceived by Athletes and the Number and Severity of Injuries (N = 92)

Negative Coaching Behaviors	Number of Injuries	Severity of Injuries
No Reward	.11	.01
Punishment	.03	-.12
Punishment and Instruction	.12	-.05
Ignore Mistakes	.11	.17

In further analyzing this hypothesis, correlations between positive coaching behavior and severity of injury were used. The results of these correlations are detailed in Table 5.

Pearson Product-moment correlations between the severity of injuries and the individual positive coaching behaviors were calculated. Results indicated that among injured athletes, two perceived positive coaching behaviors were negatively correlated with injury severity. Both Reward (r= -.19) and Instruction (r= -.25) were correlated with the severity of injury. In addition, though not significant, Encouragement (r = -.15) was also negatively correlated

with injury severity. Overall, these findings lend partial support to the hypothesis that the severity of injuries and positive coaching behaviors are negatively correlated.

In addition to examining the perceived positive coaching behaviors, negative coaching behavior items were also investigated. Again, using Pearson Product-moment correlations, the negative coaching behaviors were tested in relation to severity of injury. These data are presented in Table 6.

Results of these correlations were not significant, but indicated that Punishment was slightly negatively related (r = -.12) with severity of injury. This may suggest that athletes who perceived their coaches as using more punishing behaviors had less severe injuries than those perceiving coaches as using fewer punishing behaviors. A positive, though again not significant, correlation (r = .17) between Ignore Mistakes and severity of injury was also found. This finding suggests that athletes who perceived their coaches as ignoring their mistakes, had more severe injuries. Overall, however, these results provided little evidence indicating any substantial relationships between player-perceived negative coaching behaviors and severity of injury.

Other Variables and Their Relation to Injury

Life-stress

The second hypothesis stated that there is a positive relationship between life-stress events and the number and severity of injuries. Life-stress information was gathered during the pre- and postseason data sessions. At both of these sessions, life-stress was measured in four separate, though interrelated ways. These included

a positive, a negative, a total, and an absolute life-stress change score. The individual means for pre- and post measures of each score and their correlations with the number and severity of injury are detailed in Table 7. The means presented in Table 7 indicate that there was a greater amount of life-stress at the beginning of the season than there was at its conclusion. During both measures, though, negative life-stress was higher (pre- M = 12.91, SD = 9.57, n = 120; post- M =10.43, SD = 11.73, n = 102) than positive life-stress (pre- M= 7.55, SD = 6.21, n = 120; post- M = 5.26, SD = 5.40, n = 102).

Table 7

Life-stress Scores for Pre- and Postseason

	Pre			Post		
Life-stress Scores	M	SD	n	M	SD	n
Positive	7.55	6.20	120	5.26	5.40	102
Negative	12.91	9.57	120	10.43	11.73	102
Total Change	-5.36	9.87	120	-5.17	12.06	102
Absolute	20.46	12.76	120	15.69	13.71	102

With regard to the number of injuries, pre- and postseason negative and positive life-stress revealed positive and negative directional, but not significant correlations. See Table 8 for a complete listing of these correlations. Postseason life-stress total change was found to be positively correlated (r = .23) with the number of injuries. Therefore, athletes experiencing more negative than positive postseason life-stress (life-stress total change) had more injuries than those experiencing less life-stress total change.

This supports the hypothesis that a positive relationship between life-stress (as measured by this total change score) and injury number exists. The other measures of life-stress, however, did not significantly correlate with the number of injuries, nor offer support to the hypothesis.

Life-stress' relationship to injury severity was also examined by conducting a Pearson Product-moment correlation. The results of these correlations are presented in Table 8. No significance was found between any of the life-stress scores and injury severity.

Table 8

Correlations Between Life-stress and the Number and Severity of Injuries (N = 92).

Life-stress Scores	Number of Injuries	Severity of Injuries
Positive Life-change		
Pre-season	-.05	.14
Postseason	-.14	.09
Negative Life-change		
Pre-season	.16	.07
Postseason	.21	.06
Total Life-change		
Pre-season	.15	.02
Postseason	.23*	-.02
Absolute Life-change		
Pre-season	.04	.12
Postseason	-.04	.09

*$p < .05$

Competitive Trait Anxiety

The third hypothesis stated that there is a positive relationship between sport competitive trait anxiety and the number and severity of injuries. In order to test this hypothesis, Pearson Product-moment correlations between sport competitive trait anxiety scores (from the SCAT) and the number of injuries were used. The results were not significant. The results suggested, however, that there was a slightly negative correlation (r = -.17) between sport competitive trait anxiety and number of injuries. This theme was also echoed in the relationship between sport competitive trait anxiety and the severity of injury which was also negative, but again, not significant. Overall, though, no support was found for the hypothesis.

Experience

The fourth hypothesis stated that there is a positive relationship between prior playing experience and the subsequent number and severity of injuries. Pearson Product-moment correlations were used to determine the relationship between playing experience (number of years of organized soccer participation) and number and severity of injuries. Both relationships were positive, but only the correlation with severity of injury (r = .21) proved to be significant. This implies that more experienced athletes were more likely to sustain injuries that had a greater severity than less experienced athletes. This finding lends partial support to the hypothesis.

Skill

This section begins with a brief description of the two types of skill ratings. This is followed by an examination of the relationship between skill and the number and severity of injuries through the analyses of the two proposed hypotheses.

Each athlete rated her skill level in soccer compared to other athletes on her team. In addition, coaches rated each athlete's skill level. Overall, athletes' ratings (M = 3.19, SD = 0.82, n = 120) were slightly lower than coaches' ratings (M = 3.25, SD = 0.96, n = 101). Using a Pearson Product-moment correlation, these two ratings were found to be positively correlated (r = .50). In other words, coaches and athletes were similar in their assessment of the athletes' skill levels.

The fifth hypothesis stated that there is a negative relationship between inflated athlete perceptions of skill and the number and severity of injuries. To examine this hypothesis, an accuracy rating of skill was calculated by subtracting the athletes' individual ratings from the corresponding coaches' ratings. This accuracy score was then used in a Pearson Product-moment correlation with the number of injuries. No significant differences were found. Thus, the hypothesis was not supported.

The sixth hypothesis stated that there is a positive relationship between coaches' ratings of skill and the number and severity of injuries. The coaches ratings of the athletes' skill levels were assumed to be more indicative of actual skill level. From this assumption, the preceding hypothesis was derived. Using a Pearson Product-moment correlation, coaches' ratings of athletes' skill levels

was not significantly related to the number of injuries, although it was positive (r = .21) and approached significance (p = .07). Thus, although some evidence was found suggesting that skill level is positively related to the number of injuries, the findings were not conclusive.

Athletes' ratings of skill were also correlated with the number of injuries. This correlation revealed a positive correlation (r = .24). This suggests that athletes higher in self-perceived skill level had more injuries than those lower in self-perceived skill level.

Accuracy scores, and coaches' and athletes' skill ratings were all correlated with injury severity as well. Pearson Product-moment correlations revealed that only coaches' skill ratings were positively correlated (r = .25) with the severity of injury. This finding supports the hypothesis and suggests that athletes who were rated higher in skill by their coaches, had more severe injuries than those rated lower.

The remaining variable assessments were not accompanied by hypotheses, but were, none-the-less, vital in understanding injuries. They were examined to determine their relationship with the number and severity of injury. They also were analyzed to provide the best possible description of the athletes' characteristics in this study.

Perceived Physical Condition

Perceived physical condition was measured using a self-report comparison of condition levels. Athletes rated their individual levels of physical condition on a scale of 1 (very low) to 5 (very high) compared to others on their respective teams. Overall, athletes

reported having relatively average levels of perceived physical condition (M = 3.29, SD = 0.77, n = 119). When these perceived levels of physical condition were correlated with the number of injuries using a Pearson Product-moment correlation, a positive correlation (r = .26) was found. This suggests that athletes with higher perceived levels of physical condition were injured less than those with lower levels.

When perceived physical condition was correlated with injury severity using a Pearson Product-moment correlation, a positive relationship (r = .30) was found. This finding indicates that athletes who percieved their level of condition to be higher in comparison with other athletes, had more severe injuries than those who perceived their level of condition to be lower.

Physical Characteristics

In attempting to examine the physical characteristics of the athletes in this study, four different measures were used. They included age, age of menarche, height, and weight. While these factors alone do not precisely describe the athletes, they do offer a good indication of the overall physical characteristics of the athletes.

These variables were correlated with each other to determine any relationships among them. Pearson Product-moment correlations revealed that weight and height were positively correlated (r = .47). Therefore, athletes with higher weights tended to be taller than those who weighed less. Weight was also negatively correlated with age of menarche (r = -.22). Thus, girls who reached menarche earlier weighed more than those who reached it later. When these four factors were correlated with the number of injuries, however, no

significant relationships were found. See Table 9 for these correlations.

The correlations between these factors and severity of injury also revealed no significant correlations. These results are presented in Table 9. Age was the only variable with a slightly positive correlation (r = .11). The remaining variables all had slightly negative correlations with injury severity. Of these, only age of menarche (r = -.16) showed much of a correlation with severity of injury.

Table 9

Correlations Between Physical Characteristics and the Number and Severity of Injuries (N = 92).

Physical Maturity Variables	Number of Injuries	Severity of Injuries
Age	-.09	.11
Age of Menarche	.01	-.16
Height	-.04	-.02
Weight	-.06	-.04

Playing Time

At the conclusion of the season, each coach estimated the percentage of match playing time for each athlete on his team. The average playing time of athletes in this study was 67.7% (n = 120).

A Pearson Product-moment correlation revealed a significantly positive relationship between playing time and the number of injuries (r = .31). Thus, the players who played more in matches were injured more. When examining playing time and severity of

injury no significant relationship was found, though the relationship was positive (r = .11).

Exploratory Questions

The analyses of the data also included statistics that attempted to assess two exploratory questions. The first of these, questioned what variables best predict injury rate (number). The second questioned what variables best predict severity of injury. In analyzing these hypotheses, the variables that demonstrated high correlative relationships with the number and severity of injury, respectively, were used to create multiple-regression equations. These equations attempted to offer the most efficient prediction of injury number and severity of injury for participants in this study. Both of these exploratory questions and their regressions follow.

Injury Rate Regression

The first exploratory question attempted to determine what variable(s) best discriminates among injury rates. First, the variables that had the highest correlations with injury number were correlated with each other to assess multicollinearity. The results indicated that no multicollinearity was found and that the coaching behavior Reward, perceived physical condition, athlete-rated skill level, playing time, and total change life-stress were the most appropriate to include in a multiple regression.

The overall multiple regression was significant, F (6, 71) = 4.72, $p < .001$, R = .53, R- square = .29. Reward, total change life-stress and previous injuries were all significant predictors. A summary of this regression is reported in Table 10. As is evident from the summary

table, previous injuries was the strongest predictor of the rate or number of injuries.

Injury Severity Regression

The second exploratory question attempted to determine which variables best predict the severity of injury. Again, the variables that had the highest correlations with severity of injury were correlated with each other to assess multicollinearity. The results indicated that

Table 10

Summary of Multiple Regression Analysis for Variables Predicting Injury Rate (N = 92)

Variable	B	SE B	ß
Reward	-0.22	0.11	-0.21*
Total Change Life-stress	0.02	0.01	0.21*
Physical Condition	0.22	0.17	0.14
Previous Injuries	0.12	0.05	0.24*
Playing Time	0.01	0.00	0.18
Athlete-rated Skill	0.15	0.16	0.11

*p <.05

the coaching behaviors Reward and Instruction, perceived physical condition, total previous number of injuries, and coach-rated skill level were the best to run in a multiple regression.

The overall multiple regression was significant F (5, 68) = 6.95, p < .001, R = .58, R-square = .34. Reward and physical condition were significant predictors. A summary of this regression analysis is presented in Table 11. As can be seen from the summary table,

physical condition was the strongest predictor of injury severity.

Table 11

Summary of Multiple Regression Analysis for Variables Predicting Injury Severity (N = 92)

Variable	B	SE B	ß
Coach-rated Skill	0.41	0.41	0.11
Reward	-1.10	0.41	-0.30*
Previous Injuries	0.21	0.13	0.16
Physical Condition	2.24	0.61	0.39*
Instruction	-0.19	0.41	-0.05

*$p < .05$

General Discussion

The purpose of this study was to examine the relationship between coaching behaviors and injury. The findings indicated that Reward, life-stress, previous injuries (number of injuries) and perceived physical condition (severity of injury) were the best predictors of injuries. These factors, however, were unrelated. Therefore, each variable is discussed individually. It is also important to note, that since this study was investigational and used primarily correlational data, the findings and discussion must be interpreted cautiously.

Coaching Behaviors and Injury

Smith and his associates (1978, 1983, 1989) have advocated the importance of coaching behaviors in youth sports. The participants in these youth sports base many of their actions and perceptions of sports on the actions and comments of their coaches. These perceptions have been found to be related to self-esteem (Smith et al., 1978) and athletes' attitudes toward sport (Smith et al., 1983). The information from this study suggests that at least one coaching behavior, Reward, is also related to a more consequential outcome, injury.

Previous research had not yet examined the possible relationship between coaching behaviors and the number and severity of injury. This study attempted to examine this relationship. In examining this relationship, athlete perceptions of coaching behaviors were used. The use of these perceptions was important because they were indicative of the athletes themselves, as opposed to some third party.

Results from this study suggest that there is a negative relationship between a coach's frequency of Reward and athletic injury. This finding can be examined further by incorporating it into Andersen and William's (1988) model of athletic injury. In their model, Andersen and Williams propose that social support, coming from significant others (e.g., coach), is influential in the injury process. The reinforcement of athletes' actions by coaches is an example of the social support referred to by these researchers. The data from this study partially supported the contention that coaches' behaviors are a social support that is related to injury. The results also suggest that certain coaches' behaviors may have an impact on athletes that is either positive or negative. Coaches should, therefore, attempt to maximize their positive influence by utilizing a more positive approach in their coaching methods, especially the frequency of Reward. Concurrently, they should avoid the use of negative behaviors.

Comparisons of coaching behavior perceptions. In comparing coaches' and athletes' perceptions of coaching behaviors, coaches were found to perceive themselves as more positive than athletes did. Previous research has determined that athletes are more accurate in assessing coaching behaviors than coaches, when compared to a trained observer (Smith & Smoll, 1991). The data from this study suggest that coaches tend to have overly-positive perceptions of their coaching behaviors. Therefore, the use of athlete perceptions is suggested for future research. In addition, coaches should have athletes, assistant coaches and other peers evaluate their performance and coaching behaviors periodically. This would

possibly enable coaches to more accurately assess and even improve their behaviors.

Comparisons were also made between athletes' pre- and postseason coaching behavior perceptions. These comparisons revealed that the majority of perceptions remained relatively constant over the course of the season. A few changes, however, were apparent. Pre-season levels of Instruction, Instruction After Mistake and Punishment behaviors were significantly higher than postseason levels. These findings could be related to the changes in the demands that coaches face during the course of the season.

Coaches may be instructing more at the beginning of the season, to enable athletes to learn new techniques and tactics. Whereas, at the end of the season, athletes are familiar with techniques and tactics, and coaches focus more on getting their athletes to use them in match situations. With regard to differences in pre- and postseason punishment, coaches may be setting the tone for discipline for the entire season during the early part of the season. Toward the end of the season, after the athletes have settled into their roles and know what is expected of them, the use of punishment by the coach may decrease.

Other Variables and Injury

Due to the intricate nature of athletic injuries, researchers have advocated that research on athletic injury should examine multiple variables. This study attempted to do this. In addition to evaluating the effects of coaching behaviors, other variables thought to be related to injury were also investigated. Several of the findings from

this study partially supported past research, but some differences were also uncovered.

Life-stress. Life-stress has received a great deal of recent attention in relation to athletic injury. Mounting empirical evidence has been put forth linking higher levels of life-stress to greater numbers of injuries (e.g., Hardy & Riehl, 1988; Passer & Seese, 1983). Life-stress affects attention, cue utilization and other factors that may increase an athlete's susceptibility to injury. The findings in this study partially supported this notion. Higher levels of negative, total change and absolute life-stress were all associated (though not significantly) with higher numbers of injuries. In particular, total change life-stress had a strong positive relationship with injury number.

Of note, is that Hardy et al., (1991) found no relationship between life-stress and injury number among female athletes. In contrast, this study, which consisted of all female participants, uncovered a significant relationship between life-stress (total-change) and injury number. Therefore, further research is needed to re-examine these contrary findings.

Previous injuries. This study also examined previous injuries that athletes have had. These injuries included chronic injuries or recently incurred (within the last five years) severe injuries. The results indicated that the number of previous injuries were positively related to the number and severity of injury. This finding further underlines the need for coaches to utilize medical history forms to better understand the medical histories of their athletes. From these forms, coaches, together with parents, athletes and

physicians, can determine whether participation in soccer is warranted. Therefore, medical history forms should be obtained from all participants in any sport.

Perceived physical condition. One would think that an athlete who is in better physical condition would have fewer injuries than an athlete who is in worse physical condition. Afterall, athletes strive to be in the best condition possible to maximize performance and reduce the likelihood of injury. In this study, however, this idea did not materialize. In fact, athletes who perceived their levels of physical condition to be higher were more likely to have a higher number and severity of injury.

One possible explanation for this finding is that athletes who perceived themselves to be in better physical condition, may have been more apt to take risks or play when injured. This may have been because these athletes believed that they were in "too good of shape" to be injured. They may have, as well, relied on their perceived levels of physical conditioning to carry them through the season injury free. They also may have neglected preparing themselves physically for the season, since they believed that they were in good condition to begin with. This could be avoided, if coaches would stress the importance of conditioning to even those athletes that are or believe they are in great condition. Because this study did not define specific measures for physical condition, athletes may have also had different meanings for the term. Some athletes may have been in shape to run a marathon, but they may have lacked the proper conditioning to play in a soccer match. Therefore, they may actually have rated themselves high in physical

condition, when in reality they were not in good physical condition for soccer. For this reason, coaches should also focus on developing sport-specific conditioning to better prepare athletes. In addition, this fact points out the need for future research to better define what physical condition means.

Competitive trait anxiety. This study hypothesized that athletes with high levels of competitive trait anxiety would have a greater number and severity of injury than those with low levels. Research concerning the relationship between competitive trait anxiety and injury has met with mixed results (Kerr & Minden, 1988). Blackwell & McCullagh (1990) and Petrie (1993), though, have found evidence for a positive relationship between competitive trait anxiety and the number of injuries. The findings of this study, however, provided no such evidence. On the contrary, a slight negative, though not significant, relationship was found. Higher levels of competitive trait anxiety may be negatively related to skill level, experience, and perceived physical condition, all of which were positively related to the number of injuries. In addition, athletes with higher levels of competitive trait anxiety may not receive as much playing time as their less anxious counterparts. Because of the contradictory findings in research, competitve trait anxiety may in fact not play a major role in injury occurrence.

Experience. Many studies of injuries in soccer have found that more experienced athletes have more injuries than less experienced athletes (e.g., Nilsson & Roass, 1978; Schmidt-Olsen et al., 1991). The hypothesis in this study also suggested that this was the case. The findings from the present study supported this statement, but only

in relation to the severity of injury. More experienced athletes had more severe injuries. This may have been because the more experienced athletes received more playing time in matches, where 70% of all injuries occurred. In addition, more experienced athletes may be more likely to take risks such as making difficult tackles, that less experienced athletes would tend to avoid. This would have the effect of increasing the exposure athletes have to potentially injurious situations.

Skill. Higher levels of skill have also been suggested to be related to higher numbers of injuries (Poulsen , Fruend, Madsen & Sandvej, 1991). This study also hypothesized that this was the case. The higher severity of injury found in athletes rated higher in skill by coaches, suggests that researchers should also examine skill in light of injury severity. In addition, the higher number of injuries found in athletes who perceived themselves higher in skill further supports the hypothesized relationship between skill level and injuries. Again, higher levels of skill may be associated, as experience is, with more risk taking, confidence, and playing time, leading to more injuries with greater severities.

Physical characteristics. The fact that none of this study's physical characteristics were related to the number or severity of injury, does not necessarily rule them out as variables that may influence athletic injuries. It is, however, possible that these characteristics do not contribute much to the incidence of injury. In contrast, Backous, Friedl, Smith, Parr & Carpine (1988) have reported a significant relationship between certain physical factors (grip strength, height and strength) and injury rates. The variables

investigated in this study, though, may not have accurately portrayed the athletes' physical characteristics. Future research examining these variables should include somatotyping, Tanner staging, grip strength and other variables to better assess physical characteristics.

Injury Trends in Soccer

Injuries in soccer have been the topic of a number of recent studies both in the United States and abroad (e.g., Andreasen, Fauno, Lund, Lemche & Knudsen,1992; McCarroll, Meaney & Sieber, 1984). In all of these studies, an injury was defined as resulting in at least one day away from practice or competition. These studies have attempted to determine trends in injury types, sites, severity and conditions. In this study, injuries were examined in light of these describing factors.

General trends. Most researchers have found that soccer has relatively low rates and frequencies of injuries (Andreasen et al., 1992). The severity of injury resulting from soccer has also been found to be relatively low (Andreasen et al., 1992). The results of this study indicated that the rate (15.9/1000 hours) and frequency (113/100 athletes) of injuries and the average severity of each injury (2.17 days) were in line with previous research (e.g., Backous et al., 1988). This further supports the notion that in soccer, injuries are neither prevalent nor severe.

The injury rate for the all-female sample in this study, 15.9/1000 hours, was lower than previous studies' findings. Nilsson and Roaas (1978) reported a much higher injury rate for girls of 32/1000 hours. This reduction in the rate of injuries could be

attributed to several factors. In the past, researchers believed that female soccer players were not as skilled, trained as much, or as strong as their male counterparts (Nilsson & Roaas, 1978; Schmidt-Olsen, Bunnemann & Lade, 1984). This trend is changing with the increase in training and skill of female players. The sample from this study primarily consisted of skilled and experienced athletes who have the advantages of quality equipment, good training, and better skill, that were not as prevalent in the past.

Another suggestion from researchers is that soccer injuries are much more common in matches than in practices (Poulsen et al., 1991). In addition, Andersen & Williams (1988) suggest that the condition of competition (i.e., practice or match) plays a role in injury occurrence. In this study, 70% of all injuries occurred in matches and only 30% occurred during practices. This affirms the findings of past research that have reported a greater number of injuries occurring in matches than in practices. It is slightly higher than Poulsen et al. (1991) who reported 63% of the injuries from matches and 37% from practices. This finding also supports Andersen and Williams' (1988) suggestion.

One reason for this difference, may be the higher intensity and duration inherent in match play. The matches in this study had a total duration of 80 minutes divided into two equal halves with a 10 minute break in between. Also, the teams in this study were all from very competitive conferences that played high-quality opposition. In addition, athletes may be more likely to take risks in matches, when the result is of importance, than they would in practice.

Injury sites. Researchers have found that soccer injuries are generally located in the lower extremity (Andreasen et al., 1992; Backous et al., 1988; Nilsson and Roaas, 1978). This is logical because of the emphasis of movement and use of this area of the body in soccer. The findings of this study further support this trend, with 86.7% of all injuries affecting the lower extremity. Specifically, the ankle (27.9%), lower leg (16.4%) and thigh (16.4%) were the most frequently injured areas.

The prevalence of injuries to these areas necessitates the need for better protection and physical preparation of these areas, as well as better knowledge of proper use of skills. To do this, shin guards should not only be mandatory in matches, but also in practices. Only properly fitting shin guards that cover the ankle and sides of the shin should be used. Coaches should also focus their training and conditioning efforts on the muscle groups surrounding these areas (e.g., quadriceps, hamstrings, calf muscles). In addition, proper instruction and use of techniques such as tackling and shooting should be emphasized.

Injury types. Most injuries in soccer result from impacts or overuse (Backous et al., 1988). These injuries often take the form of contusions, strains or sprains (Andreasen et al., 1992; Backous et al., 1988; McCarroll et al., 1984). The majority of injuries reported in this study fell into these three categories as well. This supports past research and underscores the relatively non-severe nature of injuries in soccer.

Although this study did not attempt to classify injury mechanisms, it is important to highlight the possible underlying

factors of these injuries. Contusions, which were the most common, are primarily the result of impacts with another athlete, the ground or the ball. Strains and sprains, second and third in total number respectively, can be caused by impacts as well, but may also be related to improper technique and weak musculature in the affected area. Again, if protective equipment and proper technique are combined with appropriate training and preparation, these injuries may be reduced.

Measuring injury. This study utilized a method of measuring injury that was different from those methods used in past research. The majority of studies involving athletic injuries gather injury data in one of two ways: (a) retrospectively from athletes or (b) prospectively from observable data recorded by researchers. In this study, data were gathered prospectively from coaches and athletic trainers. This was done because of the conflicting schedules of teams and number of matches and practices in the season. Overall, the injury rates, frequencies and severities reported in this study were very similar to those reported in studies using the previously mentioned methodologies. Therefore, utilizing coach and trainer reported data appears to be an effective means of gathering injury data. To further determine the reliability of such data, however, future research should simultaneously use two methodologies and compare the results.

Conclusion

This initial foray into the study of coaching behaviors and injury has produced partial support for a relationship between certain coaching behaviors and the number and severity of injury. It is clear, however, that further research is needed. Coaching behavior perception comparisons were also made, that highlighted differences in them. In addition, analyses on several other variables (i.e., life-stress & competitive anxiety) yielded information that is important to the overall understanding of injuries in athletics. Also, the specific injury data obtained in this study has added to the growing knowledge base of soccer injury information. This study also successfully utilized alternate approaches to collecting injury data and assessing coaching behaviors, both of which proved to be comparable to other methods. Overall, the data from this study have shed new light on the injury process and the effect of certain coaching behaviors and other variables on it.

APPENDICES

APPENDIX A

Previous Injury History

Place a check in the appropriate cell for each serious or chronic injury that you have had in the last five years (some cells may have more than one check)

Area	Injury						
	fracture	dislocation	sprain	strain	contusion	surgery	other
Head/neck							
Back (spine)							
Chest/Ribs/							
Trunk (waist)							
Shoulder							
Upper Arm							
Elbow							
Lower Arm							
Wrist							
Hand/Finger							
Hip							
Upper Leg							
Knee							
Lower Leg							
Ankle							
Foot							

APPENDIX B

Soccer Specific Self-report Inventory

Age _____ Position(s) played _____

Height (in feet and inches) _____ Weight (in pounds) ____

Maturation

1. When (approximately) was your first menstrual cycle? (please include (month or season and year if possible).

_____

Experience

1. How many years have you played soccer (including club level, organized recreational, indoor and high school or jr. high)? (please circle your response)

0 1 2 3 4 5 6 7 8 9 10+

Skill Level

1. Compared to other players on your high school team, how would you rate your overall soccer skill level? (please circle your response)

1	2	3	4	5
much lower than others	lower than others	same as others	higher than others	much higher than others

Conditioning

1. Compared to other players on your high school team, how would you rate your current overall level of conditioning (in how good of shape are you?)? (please circle your response)

1	2	3	4	5
much lower than others	lower than others	same as others	higher than others	much higher than others

APPENDIX C

Parental Consent Form

Informed Consent Form
Department of Physical Education and Exercise Science
Michigan State University

Investigator: Anthony Kontos

I have freely consented to allow my child to participate in a study conducted by Anthony Kontos, master's student in the Department of Physical Education and Exercise Science at Michigan State University.

The purpose of this study is to examine the relationship between coaching behaviors and other variables on injury occurrence in female soccer players.

I understand that my child is free to refuse to answer any questions or discontinue her participation at any time without penalty. I understand that if she chooses to participate in this study, it will take about 30 minutes per session (a total of two: preseason and post season) to complete the questionnaires. I understand that my child's identity and association with any data will remain confidential. Also, I understand that all research findings will be reported anonymously.

I agree to participate in this research.

_____
Parent/Guardian Signature

_____ _____
Student Signature Date

I, the undersigned, have fully explained the study to the above subject.

_____ _____
Investigator's Signature Date

APPENDIX D

Coaches' Consent Form and Letter to Principals

Informed Consent Form
Michigan State University
Department of Physical Education and Exercise Science

Investigator: Anthony Kontos (Dr. Deborah Feltz)

I, _____, hereby agree to allow the girls'
(print name)

soccer team at _____ participate in this study involving
(school name)
injury occurrence as an authorized part of the research program in the Department of Physical Education and Exercise Science at Michigan State University under the supervision of Dr. Deborah Feltz.

The purpose of this study is to examine the relationship between several variables and injury occurrence in athletes. You and the players on your team will be asked to complete several questionnaires before and after the soccer season, which will take approximately 20-30 minutes. You will also be responsible for collecting daily injury data for your athletes and having your athletes complete a bi-weekly injury self-report form. Both of these forms will be collected from you every two weeks by the investigator. All data are confidential and names will only appear on the injury forms, but will be immediately coded by the investigator and destroyed to protect confidentiality.

I understand that all data in this study are to be given only to the investigator (or assistants) and are not to be used by me or any one else in any manner. I also understand that any athlete on my team may choose not to participate in this study should she or her parents decide not to. I have been given the opportunity to ask any questions I have regarding the study and all such inquiries have been answered to my satisfaction.

I agree for my team and me to participate voluntarily in this study.

_____ _____
Coach's Signature Date

I, the undersigned, have defined and fully explained the study to the above participant.

_____ _____
Investigator's Signature Date

Name
Title
High School
Address
City, MI Zip Code

Dear Name:

Enclosed you will find the questionnaires/instruments that I will be using to collect the data for my thesis research. I have also enclosed the player/parent and coaches' consent forms. I have already explained the study to coach Name and obtained his consent as a participant.

The purpose of this study is to examine the relationship between coaching behaviors and several other variables (life stress, sport competitive anxiety, previous injury history and demographic variables) and injury occurrence in high school female soccer players.

The study will be explained to all players before parental/player consent is obtained. All participation is voluntary. Data will be collected from the girls and coaches at the beginning and end of the season. The coaches will also complete injury logs on a daily basis as well as have the girls complete bi-weekly injury summaries throughout the season.

All data will be confidential and accessible only to this researcher. Additionally, all results will be reported as anonymous group data.

After the study is completed I will be providing all participants with a written summary of the results. I will also conduct an oral presentation for coaches and anyone else interested, later in the summer.

If you have any questions, comments or concerns, please call me at (517) 351-5182.

Sincerely,

Anthony Kontos

APPENDIX E

Soccer Specific Written Version of the CBAS

A number of specific things that coaches do are described below. Indicate how often your high school soccer coach engages in each behavior. (please circle your responses)

1. One thing coaches do is reward or praise their players when they make a good play or try really hard. Circle the number that shows how often your coach REWARDS PLAYERS on your team.

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

2. Nonreward is when a coach says or does nothing after a player makes a good play or tries hard. Circle how often your coach DOES NOT REWARD or praise players for good plays or good effort.

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

3. Sometimes players goof and make mistakes. Some coaches give their players support and encouragement after that happens. For example, a coach may say, "That's OK, don't worry about it, you'll get it next time." Circle how often your coach gives PLAYER ENCOURAGEMENT.

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

4. Another thing a coach might do after a mistake is to show or tell a player how to do it right. For example, the coach might tell or show a player the correct way to perform a dribbling move after she has unsuccessfully performed it. This is called INSTRUCTION AFTER MISTAKES. Circle how often your coach does this.

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

5. PUNISHMENT includes things like scolding or yelling at a player who made a mistake. Circle how often your coach does this.

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

6. Sometimes a coach will show a player how to correct a mistake, but in a nasty way. This is a combination of PUNISHMENT and INSTRUCTION after mistakes. For example, a coach might angrily say, "Shoot with your instep, dummy!" or "How often do I have to tell you to head the ball with your forehead?!" Circle how often your coach does this.

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

7. Sometimes when a player makes a mistake coaches say or do nothing. They simply IGNORE MISTAKES. Circle how often your coach does this.

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

8. Coaches differ in how much actual teaching or instruction they do. Circle how often your coach GIVES INSTRUCTION on soccer skills and strategies (not after mistakes).

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

9. Some coaches encourage their players a lot, while others do it less often. They may do it at any time, even when things are going well. For example, a coach may clap his or her hands and say, "Let's go, you can do it!" Circle how often your coach GIVES ENCOURAGEMENT (not after mistakes).

1= Never 2= Hardly ever 3= Seldom 4= Sometimes

5= Quite often 6= Very often 7= Almost always

APPENDIX F

Coach's Rating of Player Skill Level

Player Name _____

1. Compared to other players on your team how would you rate this player's overall skill level in soccer? (circle one)

1	2	3	4	5
much lower than others	lower than others	same as others	higher than others	much higher than others

APPENDIX G

Athletic Life Experiences Survey

Directions: Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. *Please check those events which you have experienced in the past year.* Be sure that all check marks are directly across from the items to which they correspond.

Also, for each item *please circle the extent to which you viewed the event as having either a positive or negative impact on your life* . A rating of -3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating of +3 would indicate an extremely positive impact.

Section 1- General events

	Check here	Impact of Events						
		negative						positive
1. New job	__	-3	-2	-1	0	+1	+2	+3
2. Major change in sleeping habits (more or less sleep)	__	-3	-2	-1	0	+1	+2	+3
3. Death of a family member:								
a. mother	__	-3	-2	-1	0	+1	+2	+3
b. father	__	-3	-2	-1	0	+1	+2	+3
c. brother	__	-3	-2	-1	0	+1	+2	+3
d. sister	__	-3	-2	-1	0	+1	+2	+3
e. grandfather	__	-3	-2	-1	0	+1	+2	+3
f. grandmother	__	-3	-2	-1	0	+1	+2	+3
g. other	__	-3	-2	-1	0	+1	+2	+3

4. Major change in eating habits (more or less food)	__	-3	-2	-1	0	+1	+2	+3
5. Death of a close friend	__	-3	-2	-1	0	+1	+2	+3
6. Minor law violations (traffic tickets, etc.)	__	-3	-2	-1	0	+1	+2	+3
7. Changed work situation (change in responsibility, etc.)	__	-3	-2	-1	0	+1	+2	+3
8. Serious illness or injury of family member:								
a. mother	__	-3	-2	-1	0	+1	+2	+3
b. father	__	-3	-2	-1	0	+1	+2	+3
c. brother	__	-3	-2	-1	0	+1	+2	+3
d. sister	__	-3	-2	-1	0	+1	+2	+3
e. grandfather	__	-3	-2	-1	0	+1	+2	+3
f. grandmother	__	-3	-2	-1	0	+1	+2	+3
g. other	__	-3	-2	-1	0	+1	+2	+3
9. Trouble with employer (demoted or losing job)	__	-3	-2	-1	0	+1	+2	+3
10. Major change in financial status (better or worse)	__	-3	-2	-1	0	+1	+2	+3
11. Major change in closeness of family members	__	-3	-2	-1	0	+1	+2	+3
12. Gaining a new family member (birth, adoption, etc.)	__	-3	-2	-1	0	+1	+2	+3
13. Change of residence	__	-3	-2	-1	0	+1	+2	+3
14. Major change in church activities	__	-3	-2	-1	0	+1	+2	+3
15. Major change in type or amount of recreation	__	-3	-2	-1	0	+1	+2	+3

16. Borrowing money (to buy a car, for college, etc.)	__	-3	-2	-1	0	+1	+2	+3
17. Being fired from job	__	-3	-2	-1	0	+1	+2	+3
18. Major personal illness or injury	__	-3	-2	-1	0	+1	+2	+3
19. Major change in social activities- parties, movies, etc. (more or less)	__	-3	-2	-1	0	+1	+2	+3
20. Major change in living conditions (remodeled, new neighborhood, etc.)	__	-3	-2	-1	0	+1	+2	+3
21. Parental divorce or separation	__	-3	-2	-1	0	+1	+2	+3
22. Brother or sister leaving home	__	-3	-2	-1	0	+1	+2	+3
23. Serious injury or illness of close friend	__	-3	-2	-1	0	+1	+2	+3
24. Breaking up with boyfriend	__	-3	-2	-1	0	+1	+2	+3
25. Reconciliation with boyfriend	__	-3	-2	-1	0	+1	+2	+3
26. Major change in number of arguments with boyfriend	__	-3	-2	-1	0	+1	+2	+3
27. Major change in number of arguments with close friend	__	-3	-2	-1	0	+1	+2	+3

Section 2- School related events

27. Beginning a new school experience (high school or college)	__	-3	-2	-1	0	+1	+2	+3
28. Changing to a new high school	__	-3	-2	-1	0	+1	+2	+3
29. Academic probation	__	-3	-2	-1	0	+1	+2	+3
30. Detention	__	-3	-2	-1	0	+1	+2	+3
31. Failing an important exam	__	-3	-2	-1	0	+1	+2	+3
32. Failing a class	__	-3	-2	-1	0	+1	+2	+3
33. Dropping a class	__	-3	-2	-1	0	+1	+2	+3
34. Financial problems related to school (money for college)	__	-3	-2	-1	0	+1	+2	+3
35. Entering college	__	-3	-2	-1	0	+1	+2	+3

Section 3- Athletic events (pertains to all sports that you have participated in)

36. Troubles with head coach	__	-3	-2	-1	0	+1	+2	+3
37. Troubles with athletic director	__	-3	-2	-1	0	+1	+2	+3
38. Troubles with asst. coaches	__	-3	-2	-1	0	+1	+2	+3
39. Change in level of performance (JV to Varsity)	__	-3	-2	-1	0	+1	+2	+3
40. Major change in playing hours or conditions	__	-3	-2	-1	0	+1	+2	+3

41. Major change in responsibility on the team (captain, leader, etc.)	__	-3	-2	-1	0	+1	+2	+3
42. Change to a new position	__	-3	-2	-1	0	+1	+2	+3
43. Being dropped from a team	__	-3	-2	-1	0	+1	+2	+3
44. Being dropped to a lesser playing status	__	-3	-2	-1	0	+1	+2	+3
45. Changing to a new team	__	-3	-2	-1	0	+1	+2	+3
46. Difficulties with athletic trainer	__	-3	-2	-1	0	+1	+2	+3
47. Difficulties with eligibility	__	-3	-2	-1	0	+1	+2	+3
48. Discrimination from coaches or teammates	__	-3	-2	-1	0	+1	+2	+3
49. Discrimination from opponents or fans	__	-3	-2	-1	0	+1	+2	+3
50. Major errors in games	__	-3	-2	-1	0	+1	+2	+3
51. Difficulties in demonstrating athletic ability	__	-3	-2	-1	0	+1	+2	+3
52. Other _____	__	-3	-2	-1	0	+1	+2	+3

APPENDIX H

Sport Competitive Anxiety Test (for soccer)

Directions: Below are some statements about how persons feel when they compete in sports like soccer. Read each statement and decide if you Hardly Ever, Sometimes or Often feel this way when you compete in soccer. If for example, your answer to number 1 is Hardly Ever, put an "X" for number 1 under the column marked Hardly Ever. There are no right or wrong answers. Do not spend too much time on any one statement. Remember to choose the word that describes how you usually feel when playing soccer.

	Hardly Ever	Sometimes	Often
1. Competing against others is socially enjoyable.	____	____	____
2. Before I compete, I feel uneasy.	____	____	____
3. Before I compete, I worry about not performing well.	____	____	____
4. I am a good sport when I compete.	____	____	____
5. When I compete, I am calm.	____	____	____
6. Before I compete, I am calm.	____	____	____
7. Setting a goal is important when competing.	____	____	____

8. Before I compete, I get a queasy feeling in my stomach.	____	____	____
9. Just before competing, I notice my heart beats faster than usual.	____	____	____
10. I like to compete in games that demand considerable physical energy.	____	____	____
11. Before I compete, I feel relaxed.	____	____	____
12. Before I compete, I am nervous.	____	____	____
13. Team sports are more exciting than individual sport.	____	____	____
14. I get nervous waiting to start a game.	____	____	____
15. Before I compete, I usually get uptight.	____	____	____

APPENDIX I

Injury Log/Form and Instructions

Athlete _____ Date _____

Injury occurred in: Game ____ Practice ____

Is injury new (N) or continued (C) from previous report _____

Injured Area

Head/neck ___ Back/Abdomen ___ Trunk ___ Shoulder __

Arm/elbow ___ Wrist ___ Hand ___ Hip ___ Thigh ___

Knee ___ Lower leg ___ Ankle ___ Foot ___ Other _____

Type of Injury

Abrasion ___ Contusion ___ Sprain ___ Strain ___

Dislocation ___ Fracture ___ Concussion ___

Other_____

Number of Days Missed Due to Injury

__ 0 __ 1 __ 2 __ 3 __ 4 __ 5 __ 6 __ 7 __ 8 __ 9 __10
__ 11 __ 12 __ 13 __ 14

Injury Log Instructions

TEAM NAME: _____

COLLECTION DATE: _____

RECORDED BY: _____

- Only injuries that force an athlete to withdraw or be withdrawn (by a coach, trainer or physician) from a practice or match was to be recorded as an injury.
- Include all reported or observed injuries during both matches and practices.
- Do not report injuries that did nor occur during soccer (i.e., playing basketball, in phys. ed. class)
- Be sure to record the date of the injury and name of the injured player.
- If an injury is not on the sheet, write it in the space provided labeled "other".
- All injuries fitting the definition should be reported including, bruises (contusions), muscle pulls (strains), scratches/scrapes (abrasions), etc.
- Any reinjury that a player had recovered from is considered a new injury (N).
- If an injury lasts longer than the reporting period (up to fourteen days) on the present log, continue the injury on the new log and mark it as continued injury(C).
- If an injury is "season ending" indicate so in the margin next to the report in the injury log.
- When recording the number of days missed from an injury, be sure and include weekend days and days off (would have missed) together with actual days missed from practices and matches.
- THIS INFORMATION IS TO BE GIVEN TO AND USED ONLY BY THE RESEARCHER!!!
- If you have any questions or problems, please call Anthony Kontos at (517) 351-5182.
- Thank you for your participation!!!

APPENDIX J

University Committee on Research Involving Human Subjects
Approval Letter

TO: Anthony P. Kontos
1224 Woodcrest #204
E. Lansing, MI 48823

RE:

IRB#:	95-133
TITLE:	EFFECTS OF COACHING BEHAVIORS AND SELECTED VARIABLES ON INJURY OCCURRENCE IN FEMALE HIGH SCHOOL SOCCER PLAYERS
REVISION REQUESTED:	N/A
CATEGORY:	1-C
APPROVAL DATE:	03/22/95

The University Committee on Research Involving Human Subjects'(UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/ CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)336-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

cc: Deborah L. Feltz

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