Honors Program at the University of Rhode Island

Senior Honors Projects

University of Rhode Island *Year* 2006

Psychological Response to Injury, Recovery, and Social Support: A Survey of Athletes at an NCAA Division I University

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Running head: EMOTIONS OF INJURED ATHLETES

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Abstract

According to the National Athletic Trainers' Association, "In the last 10 years, college sports have flourished, with athletes required to train and compete year-round rather than seasonally . . .At the same time, athletes are getting bigger, stronger and more physical – which leads to a greater risk of injury." Sports injury can be traumatic for many athletes because it is an important component of their self-identity. In addition to the physical pain of an injury, athletes struggle psychologically, however little is known about their emotional response, recovery, and need for social support. The *Emotional Response of Athletes to Injury Questionnaire* (ERAIQ) was adapted to collect information from athletes at an NCAA Division I university about their response to injury. Two hundred fifty varsity athletes volunteered to participate (127 males and 122 females, mean age = 19.9 years). The athletes represented 14 different teams included individuals who had experienced injuries and those who had not. Frustration and anger were the most strongly experienced emotions. Family and teammates were important sources of social support during recovery. The results suggest several important implications for resources the address the emotional as well as physical rehabilitation from sports injury. Recommendations for college athletic staff are discussed and questions for future research are offered.

Keywords: Athlete, Division 1, emotional response, Emotional Response of Athletes to Injury Questionnaire, injury, NCAA, psychological response, rehabilitation, self-identity, social support, sports

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Psychological Response to Injury, Recovery, and Social Support:
A Survey of NCAA Division I Athletes

According to the National Athletic Trainers' Association, "In the last 10 years, college sports have flourished, with athletes required to train and compete year-round rather than seasonally . . .At the same time, athletes are getting bigger, stronger and more physical – which leads to a greater risk of injury." In addition to the physical pain of an injury, an athlete struggles psychologically. Because psychological variables influence injury onset, duration, and recovery, many researchers have concluded that "rehabilitation from sport injury involves not only physical, but psychological considerations" (Crossman, 1997).

Emotions

The emotional response to injury varies greatly among athletes. While it is apparent that some injured athletes struggle emotionally, not all athletes experience an observable or measurable emotional disturbance and 'take injury in stride'. Some researchers have attempted to generalize the emotional response to injury. However, the post-injury reactions of athletes are more complex and varied than originally thought (Crossman, 1997; Smith, 1990).

Although reactions to injury vary, some emotions are more commonly reported than others. At the Mayo Clinic Sports Medicine Program, the Emotional Responses to Athletes to Injury Questionnaire was used to evaluate emotional response to injury. Frustration, depression, anger and tension appeared most often and were the highest ranked emotions (Crossman, 1997; Smith, 1990 as cited in Smith, 1990). Among injured athletes of collegiate or elite status, common responses to injury were disbelief, fear, rage, depression, tension, and fatigue. (Weiss & Troxel, 1986 as cited in Smith, 1990) Johnston and Carroll (2000) studied differences between injured and uninjured athletes and reported that injured athletes disclosed greater negative affect, lower self-esteem, and higher levels of depression and anxiety. In congruence with Johnston and

Carroll's findings, research on psychological consequences of athletic injury among high-level competitors revealed that injured athletes exhibited greater depression and anxiety and lower self-esteem than control groups immediately following physical injury and at follow-up sessions (Leddy, 1994). Injured athletes express some of the common reactions seen in trauma victims outlined by the United States Department of Veterans Affairs and include: fear, anxiety, avoidance, anger, irritability, grief, and depression (Foa, 2005).

Fear is another emotion prevalent among injured athletes. Athletes are fearful about re-injury and because of this fear, they may be reluctant to train with full intensity (as cited in Shuer, 1997). Some athletes may be reluctant to return to training at all as a result of the fear.

Causes

Several researchers have investigated possible causes to the injured athletes' emotional response to injury. Being an athlete requires commitment, determination, and, most importantly, a passion. An athlete's sport dictates their life and is a component of their personal identity. In the article "Mind over Matter" (Ross, 2006), Dr. Aimee Kimball testifies, "A lot of times the sport is so important to the athletes, it is like they are losing a significant part of themselves." "Getting injured is a traumatic experience for athletes; what they have devoted so much time and energy to, can be suddenly, without warning, taken away" (Crossman, 1997, 334). Additionally, participating in athletics has many benefits. Deutsch (1985) recognizes that participation provides a "means of developing physical mastery, positive self-concept, autonomy, and self control." When the positive reinforcements of sport and the individual's association with the athletic role abruptly cease with the onset of injury, an athlete may question their identity and experience a sense of loss. Are they still an athlete if they are unable to practice and compete? And if they are no longer an athlete, then who are they? Because of the loss of health, loss of a sense of purpose, and loss of self-identity, some researchers (Gordon 1986; Pederson 1986;

Sample 1987 as cited in Smith, 1990) "have suggested that injured athletes progress through a grief cycle similar to that experienced by the terminally ill."

Athletes have difficulty coping with the changes that accompany injury. Weiss and Troxel (1986) found that athletes expressed an inability to cope with injury, activity restriction, long rehabilitation, and feelings of being externally controlled by their injury (as cited in Smith, 1990). Several other researchers have recognized that the lack of daily physical activity can affect an injured athlete psychologically. For instance, according to Little (1979), athletes are predisposed to neurotic illness when mandatory deprivation of exercise is necessary because of a preoccupation with fitness or sport (as cited in Smith, 1990). Often times an athlete will use physical activity to cope with stress. When athletes are injured and unable to engage in physical activity they may have difficulty dealing with their daily stresses. Smith (1990) states that "the development of neuroses in fitness fanatics deprived of exercise was at least partially because their life stress prior to injury or illness had been managed by physical activity rather than by articulating emotional concerns." Furthermore, the injury can actually produce additional stress that may induce emotional disturbance. Hardy (1992) suggests that "the major sources of stress that have been reported by sports performers include fear of failure, concerns about social evaluation by others, lack of readiness to perform and loss of internal control over one's environment."

Separation from the team takes an emotional toll on injury athletes. Athletes enjoy camaraderie among teammates and they rely on each other for support. Consequently, "an injury that even temporarily halts participation causes tear in the fabric of well being through which uncomfortable or unacceptable feelings may emerge" (Deutsch, 1985). Wilkerson and Dodder (1982) believe it is though sports that the individual seeks to reunite with the collective

consciousness. A disturbance to the fulfillment of that need causes anxiety and may be traumatic in the extreme (as cited in Deutsch, 1985).

Effects on Emotion

Research has shown that many different variables play a role in the emotional response to injury. For instance, Deutsch (1985) believes that the nature of the psychological disturbance accompanying athletic injury should be assessed based on personality type, stage of adult development, and circumstances of the injury.

Other studies have recognized the importance of injury severity and the mechanism of injury in emotional response. Wasley's study (1998) on Self-esteem and Coping Responses of Athletes With Acute versus Chronic Injuries, suggests that the type of injury may determine differences in self-esteem and coping behavior. Several studies have demonstrated that chronic injuries have a greater effect than acute injuries. For example, Smith and colleagues' (as cited in Smith, 1990) noted that when injured athletes were categorized according to the severity of injury, the least seriously injured athletes expressed less depression, tension, fatigue, and confusion than the college norms. "In contrast, the most seriously injured athletes experienced significantly more tension, depression, anger and decreased vigor compared to college norms" (p. 358). Shuer (1997) also recognized a unique emotional response among athletes with chronic injuries when using the *Impact of Event Scale* (IES), a 15- question instrument that measures subjective distress. Athlete scores on the IES items were compared with other traumatized groups. Results showed that the avoidance scores for the chronically injured athletes were significantly greater than those for both groups of fire and earthquake victims. When Smith et al (as cited in Smith, 1990) used the ERAIQ as a measurement of emotions following injury, the severity of the injury and the athlete's perception of recovery appeared to influence the emotional response.

An additional influence on an athlete's emotional response is the extent of involvement and time invested in sport. Johnston and Carroll (2000) found that those who were more involved in sport and exercise before injury registered higher levels of confusion and perceived their recovery to be less at the end of rehabilitation. A stronger connection between athletics and self-identity is created as the athlete invests more time in sport. For this reason, the emotional disturbance may be greater among those who invest more time in sport. Brewer (as cited in Crossman, 1997) found that "those athletes who possess a strong self-identity or sense or worth through the single social role of sport may experience a particularly difficult time adjusting to being injured" (p. 336).

Age is a crucial factor that must be considered when examining the emotional response to injury. According to Weiss (2003), children, adolescents, and young, middle, and older adults differ in their self-perceptions, social influences, emotional responses, motivations, and self-regulation skills relative to physical activity and sport involvement. In her research, Weiss used a developmental perspective, "considering variations in and interrelationships among thoughts, emotions, and behaviors at various periods across the life span." A study by Manuel et al. (2002) on adolescent athletes coping with sports injuries showed that depressive symptoms decreased over time in a sample of injured adolescent athletes. In addition, increased social support was associated with lower initial depressive symptoms. Newcomer and Perna (2005) investigated features of posttraumatic distress among adolescent athletes. Even after adolescent athletes had physically recovered from their injuries, they still experienced injury-related distress (Newcomer, 2003). In a study on the emotional responses of athletes to injury, Weiss and Troxel (as cited in Smith, 1990) interviewed collegiate or elite athletes. Common responses among this older group included disbelief, fear, rage, depression, tension, and fatigue in addition to somatic complaints of upset stomach, insomnia and loss of appetite.

Sex and gender are other important factors in emotional response to injury. Several studies have examined the emotions of male athletes versus female athletes. In a study of coping strategies among long-term injured competitive athletes, injured female athletes became more anxious and tense and had a stronger inclination to use emotion-focused coping strategies (Johnson, 1997). In Shuer's research (1997) on the psychological effects of chronic injury in elite athletes, chronically injured female athletes' Avoidance scores were significantly higher on the Impact of Event Scale than those of their male peers (1997).

Consequences of Emotion

While physical injury evokes psychological distress, psychological anguish can affect an athlete physically. Psychological distress can sensitize athletes to pain and alters the risk, response, and recovery of an injury (Ahern, 1997). Nideffer (1993, as cited in Ahern 1997) found that psychological stressors, such as the fear of injury or re-injury could elicit a cycle of physical and psychological effects that result in decreased performance and complications with rehabilitation. According to Crossman (1997) negative emotions experienced as a result of injury can influence the athlete's attitude toward and subsequent recovery form injury. Ultimately, "psychological predispositions and consequences play a critical role in determining the ultimate impact and duration of injury" (Ahern, 1997, 756).

Not only can an athlete's psychological state affect rehabilitation, but it also can predispose athletes to injury. Cryan and Alles (as cited in Deutsch, 1985) have "proposed that athletes who are under stress are more likely to be injured than those who are less stressed" (p. 237).

Role of Support in Rehabilitation

While factors such as stress can hinder an athlete's rehabilitation, other aspects such as social support can aid in rehabilitation. Ahern (1997) found that an athlete's coping resources

influence injury outcome. Johnson (1997) also concluded that social aspects of rehabilitative work are important (1997). Further confirming the importance of social support in rehabilitation, Fischer (as cited in Crossman, 1997) discovered that "for injured intercollegiate athletes, treatment adherence was positively related to social support, self-motivation and pain tolerance" (p. 336).

Treatment

Several studies have revealed that athletes are hesitant to seek out psychological counseling. In studies on college athletes by Carmen and Pierce (as cited in Smith, 1990), "non-injured athletes seemed to prefer physical activity to verbalization as a mode of expressing feelings and athletes were less likely than non-athletes to avail themselves of psychiatric counseling services" (p. 357). In agreement, Shuer (1997) found that athletes resist seeking psychiatric treatment or admitting a need for help. Athletes are reluctant to seek help for several reasons. Many view emotional disturbance as a weakness. Smith (1990) suggests that athletes may prefer the physical discomfort occurring with injury to any emotional discomfort. In a study by Pierce (as cited in Smith, 1990), "student athletes were less verbal, less intellectually oriented and had more negative views of emotional disturbances of non-athletes."

Thus, attacking an injury from the psychological perspective is just as important to recovery as the physiological rehabilitation. As said by Crossman (1997), "while many athletes spend hours and much energy each day physically preparing for competition, more often than not they are unprepared psychologically to handle the stress associated with an unforeseen or unexpected injury" (p. 335). Athletes have access to resources for physical rehabilitation, but often the psychological distress caused by injury goes untreated. According to Smith et al. and Chan (as cited in Smith, 1990), "emotional disturbance does occur post-injury and injured athletes should be given the opportunity to discuss their feelings." In fact, patients express relief

at being given the opportunity to confide concerns privately, away from the presence of persons who may have a vested interest in their athletic performance.

The purpose of the research was to investigate the psychological response to injury, recovery, and social support of athletes. Overall, the research is a valuable addition the growing field of sports psychology. Results will also have practical implications, showing athletes, coaches, trainers, and therapists the benefits of addressing both the physical and psychological aspects of injury. Recommendations are discussed and questions for future research are offered.

Methods

Participants

Two hundred fifty Division I varsity athletes at an NCAA Division I university volunteered to participate (128 males and 122 females, mean age = 19.9 years). The athletes represented 14 different teams: baseball, softball, Women's track, Men's track, volleyball, swimming and diving, field hockey, Men's soccer, Women's soccer, football, gymnastics, golf, Men's basketball, and Women's basketball. The sample included both athletes who had experienced injuries and those who had not. Sixty athletes had been injured before competing at the university (32 male, 28 female), 136 athletes were injured while competing at the university (68 male, 68 female), and 54 (28 male, 26 female) athletes had never been injured (See Table A1).

Measures

Emotional Response of Athletes to Injury Questionnaire- Adapted. The *Emotional Response of Athletes to Injury Questionnaire* (ERAIQ) was adapted for the purposes of collecting information from athletes about their response to injury. The ERAIQ was initially developed from clinical interviews and is a psychosocial assessment for injured athletes. Although the ERAIQ does not have established psychometric properties, it has been published in

various formats and frequently used to conduct assessments of injured athletes (Smith, Hartman, &Detling, 2001, as cited in Crossman, 2001). Through personal contact with Dr. Anysley M. Smith from the Mayo Clinic in Rochester permission was granted to use the ERAIQ. While the original version of the ERAIQ was intended to be an interview administered by a medical practitioner, in this study a survey format was better suited to the objectives of the project. Personal questions including name, address, and phone number were omitted to maintain anonymity. Items were added in order to assess supportive resources available to injured athletes. In this adapted version, questions were altered so answers were quantitative rather than qualitative. Before finalizing this adapted version of the survey, an athlete was asked to review the questions and identify any items that were unclear. Consequently, the wording of some questions was changed for clarification. Three different forms of the survey were then created, one for athletes injured while competing at the university, one for athletes injured before competing for the university, and one for athletes who had never been injured. Questions in the survey for athletes who had never experienced injury, asked athletes how they may react to hypothetical injury situations.

Surveys for injured athletes consisted of 30 items while surveys for non-injured athletes were composed of 19 items. Additional questions on the surveys for injured athletes asked for details about their injury and rehabilitation program. All surveys included questions concerning demographics. The survey format included rating, closed-ended, open-ended, Likert scale, and yes/no style questions.

Procedures

The project was submitted to the university's Institutional Review Board (IRB). The Office of Compliance accepted the proposal on May 4, 2005. The senior associate athletic director and head athletic trainer reviewed and approved of the proposed project. The athletic

director contacted all coaches to inform them of the project. The student investigator contacted coaches by phone, email, or in person to establish meeting times to distribute the surveys. For some teams, the student investigator introduced the project and administered the survey. For other teams, the head coach was provided with an introduction to read to the athletes before administering the survey. Each participant received an informed consent form that explained the purpose of the study, and the voluntary and anonymous nature of the survey. Athletes were instructed to choose one of the three surveys based on most recent injury. For instance, if an athlete suffered an injury at the university, but had also been injured in high school, the athlete would fill out a survey for athletes injured while competing at the university. Completed surveys were collected in a manner that protected the anonymity of the participants. A coding system was established to develop a quantitative value for each survey item. The coding system included a rating for injuries, which was established by a licensed physical therapist. The therapist was provided with a list of the types of injuries sustained and the mechanism of injury involved. Injuries were rated on a 1 – 5 scale with 1 = Muscle Strain/ Ligament sprain/ Laceration, 2 = Tendonitis, 3 = Joint Dysfunction/ Head injury 4 = Muscle/ Ligament tear 5 = Fracture/ Surgery.

Results

Responses to each item were numerically coded and entered into an Excel spreadsheet. Data were sorted and compared in several different ways. Initially data was separated by survey type: injured at the university, injured before the university, and non-injured. Next, data from both groups of injured athletes and non-injured athletes was categorized by sex and sport. In addition, data from injured athletes was sorted by recentness, severity, and time out of competition.

Descriptive

Although 250 athletes took the survey, some athletes neglected to answer several items. Consequently, instead of using the total number of participants, the number of total responses was used in calculating any averages or percentages.

Out of the 250 athletes who took the survey, 21.6% had never been injured and 78.4% had been injured. Of the injured athletes, 30.6% were injured before competing for the university and 69.4% were injured while competing at the university (Table A1, Table A2, Table A3).

Two hundred and seventeen athletes answered the dream question. Almost half of these athletes (45.6%) stated that their dream goal was sports related. When categorizing data by sex, 67.24% out of 116 males reported that their dream goal was sports related. On the contrary, only 20.79% of the 101 female athletes had dream goals relating to sports. At 35.64%, female athletes were more likely than the 17.82% of male athletes to report professional dream goals such as careers in education, medicine, and law.

When athletes were asked to list in order of preference the sports and activities in which they participate, 97.4% (n= 234) of the athletes listed a sport as their top preference. In addition, 78.6% of the athletes listed only sports for preferred sports and activities.

Athletes were asked to rate reasons for participating in sport on a scale of 0 to 10 depending on importance with 0 being not important and 10 being very important. The most important reason for sports participation for both non-injured and injured athletes was fun with average ratings of 8.85 and 9.11 respectively. Competition, fitness, and personal improvement were the next most important reasons for both non-injured and injured athletes. The least important reasons for sports participation were weight management and outlet of aggression.

Overall, the average ratings for each reason were relatively high. The lowest mean rating was 5.85 for weight management (Table A4).

Two hundred and thirty six athletes stated their specific goals in sports. Seventy three percent of the athletes reported personal goals, 14.0% had team goals, and 12.3% had both personal and team goals.

There were several questions only asked of the injured athletes. One hundred and eighty-two athletes specified the date of their injury. Thirty-one percent of the injured athletes had very recent injuries (within 0 to 4 months of May 2006), 19% percent had recent injuries (within 5 to 8 months), 6% had fairly recent injuries (9-12 months), 40% had dated injures (12 or more months). Thirty five percent of the injuries occurred during preseason, 24.04% early in the season, 21.86% during mid-season, 11.48% at the end of the season, 4.92% post-season, and 2.73% had injuries that lasted for more than one part of the season.

Athletes reported the amount of time kept out of competition. Out of the 178 athletes who provided the amount of time they were kept out of competition, 37.6% were kept out for a short period of time (two weeks or less, or 1-2 games), 23.6% were kept out for a moderately long time (3-6 weeks or 3- 5 games), and 37.1% were kept out for a long time (7 weeks to 6 months or an entire season). The injuries reported by athletes were ranked by a licensed physical therapist using the following scale: 1= Muscles strain/ ligament sprain/ laceration, 2= Tendonitis, 3= Joint dysfunction/ head injury, 4= Muscle/ Ligament tear, 5= Fracture/ surgery. Out of the 185 athletes who provided the type of injury sustained, 29.73% had a Severity One ranked injury, 7.57% had a Severity Two ranked injury, 20% had a Severity 3 ranked injury, 14.05% had a Severity Four ranked injury, and 28.65% had a Severity Five ranked injury. Participants were also asked to specify the mechanism of injury. Out of 178 injured athletes, 29.21% experienced over-use injuries, while 67.98% had traumatic injuries.

For a number of questions, injured athletes reported on their actual experience, while non-injured athletes were asked how they might react to a hypothetical athletic injury that prevented them from competing and/or practicing with their team. From the 52 non-injured athletes that completed the goal question, 28.85% believed that their goals would not change at all after injury, 55.7% thought their goals would change a little, 13.46% believed their goals would change a lot, and 1.92% believed their goals would change completely. Regarding the goals of the 186 injured athletes, 68.28% didn't change at all, 18.28% changed a little, 9.14% changed a lot, and 4.30% changed completed (Table A5).

When categorizing data from the goal question by sex (Table A5), 59.38% of the 96 injured females stated that their goals did not change at all while 20.83% experienced a little change in their goals change. The amount of goal change perceived by injured females can be compared to that of the injured males. Seventy eight percent of injured males reported that their goals did not change at all and 15.56% reported that their goals changed a little. Furthermore, differences are evident when responses from males and females are further separated into injured and non-injured athletes. Out of the 25 non-injured females, only 16% believed they would experience no change at all in their goals and 64% believed they would experience a little change in their goals. Out of the 27 non-injured males, 40.74% thought they would experience no change at all in their goals and 48.15% thought they would experience a little change in their goals upon being injured.

Athletes were questioned about emotions felt during injury. Non-injured athletes believed that frustration would be experienced most strongly after injury with an average of 8.24 (0 to 10: 0= not experienced at all, 10= experienced strongly). Relief had the lowest average rating of 1.50. The emotions that non-injured athletes believed they would experience as a result of a hypothetical injury, coincided with the emotions felt by athletes who had actually been

injured. The emotion experienced most strongly by injured athletes was also frustration with an average rating of 8.40. The emotion least experienced was relief with an average rating of 1.53 (Table A6). When separated by injury severity rating and recentness of the injury, the most strongly experienced and least strongly experienced emotions remained the same (Table A7).

Of the 52 non-injured athletes who answered the question concerning fear, 34.6% said they would have fears about returning to sport. The percent of non-injured athletes who predicted they would be fearful about returning to sport as a result of a hypothetical injury was comparable to the percent of injured athletes who reported experiencing fear. Out of the 180 injured athletes, 35.0% had fears about returning to sport. Some of the fears listed were fear of re-injury, fear of making the injury worse, fear of falling behind, and fear of not returning at the same strength, skill, or level (Table A8).

When categorizing data from the fear question by sex, 48.35% of injured females (n= 91) compared to 21.35% of injured males (n=89) reported having fears about returning to sport. Furthermore, differences are evident when responses from males and females are further separated into injured and non-injured athletes. Out of the 25 non-injured females, 52.00% believed they would have fears about returning to sport while out of the 89 non-injured males, only 21.35% believed they would be fearful (Table A8).

Disparities are seen in the fear question response among different severity groups. The percent of injured athletes that had fears about returning to sport increased gradually as severity of the injury increased. For example, 24% of the 54 athletes with Severity One ranked injuries reported having fears about return to injury, while twice as many athletes (50.00%, n= 52) with Severity Five ranked injuries reported similar fears. A correlation analysis was completed between severity of injury and fear of returning to sport. The resulting Pearson's correlation coefficient was r_{xy}= 0.95 indicating a very strong positive correlation. (Chart B2)

Data from the fear question was separated by sport. Women's teams had the highest percentage of athletes who reported having fears. Seventy one percent of the injured gymnastic athletes (n= 12), 50.00% of injured Women's soccer athletes (n= 7), 60.71% of injured Women's Track athletes (n= 17) reported having fears about returning to sport.

Athletes were inquired to rate their motivation for exercise from 1 to 5 (1= not motivated at all, 5= extremely motivated). The mean rating for non-injured athletes was 4.28. Similarly, the mean rating for injured athletes was 4.22. The average rating for how well non-injured athletes handle pain was 4.02 and for injured athletes 4.23 (1= not well at all, 3= somewhat, 5= very well). The average rating for encouragement in sports by family and friends for non-injured athletes was 4.44 and for injured athletes 4.50 (1= not encouraged at all, 3= somewhat, 5= very encouraged). When asked whether this encouragement was pressure, the mean rating was 2.00 for non-injured athletes and 2.38 for injured athletes (1= no pressure at all, 3= some pressure, 5= a lot of pressure). According to data, 75.98% of injured athletes and 68.52% of non-injured athletes, most of the pressure to perform in sports is intrinsic. Thirteen percent of non-injured athletes (n= 52) and 10.61% of injured athletes reported that coaches exert the most pressure to perform in sports.

Sources of stress were analyzed. Out of 178 injured athletes, 67.98% reported academic stresses first when asked to list the major sources of current stress in their lives, while 12.92% listed athletics first, and 19.10% listed other stresses first. When comparing the two different injured groups, 60.38% of athletes injured before competing for the university and 71.2% of athletes injured while competing for the university listed academic stresses at the top of the list. A higher percentage of athletes injured before competing for the university (20.75%) than athletes injured while competing for the university (9.6%) listed athletic stress as the top major source of stress in their lives. When asked how much stress experienced before an injury,

injured athletes (n=186) reported an average of 2.90 using the scale 1= no stress at all, 3= some stress, and 5= a lot of stress. When the non-injured injury status group was asked to list major sources of current stress, 70.59% listed academic stresses first, 15.69% listed athletics first, and 13.73% listed other stresses first. Differences in responses are evident when data is separated by sex. A higher percentage of the 96 injured females, 71.88%, than the 63.41% of the 82 injured males listed academics as their top major source of stress. On the contrary, 14.63% of injured male athletes compared to 11.46% of injured female athletes listed athletics as the number one major source of stress in life (Table A9).

Additional stresses experienced before the injury were recorded in the data. Seventy-one percent out of 51 non-injured athletes and 67.98% of 178 injured athletes listed academics as the top source of stress in their life. Other stresses included finances, athletics, family, relationships, injury, and the future. When injured athletes rated the amount of stress experienced before injury, the mean was 2.89 using a scale from 1 to 5 with 1= no stress at all and 5= a lot of stress.

Athletes were inquired about the most important thing they believed to be necessary for a successful recovery. Thirty one percent of the non-injured athletes (n= 52) and 42.29% of injured athletes (n= 175) claimed that a combination of many different things is needed for a successful recovery. Some of the most important things required for recovery included patience, time, hard work, determination, persistence, motivation, optimism, focus, and following rehabilitation.

When asked to rate how optimism about fully recovering from injury/surgery, the average rate for injured athletes was 4.10 (1= not optimistic at all, 3= somewhat optimistic, 5= very optimistic).

Athletes were asked to describe their rehabilitation program. Athletes injured at the university reported spending an average of 5.88 times per week on their rehabilitation program. Athletes injured before the university spent an average of 5.15 times per week on their

rehabilitation program. Out of the 141 injured athletes, 80.11% were able to work out using exercise equipment or other forms of exercise as a part of rehabilitation. A majority of injured athletes were able to work out using exercise equipment or other forms of exercise as a part of rehabilitation: 74.55% of the 55 athletes injured before the university and 82.64% of the 121 athletes injured at the university. Eighty percent of the non-injured athletes believed they would have access to exercise equipment or other forms of exercise. Out of 178 injured athletes, only 6.74% included psychological counseling support in rehabilitation. Of the athletes who sought out psychological assistance, 1.69% were injured before competing at the university and 5.05% were injured at the university. Twenty-two percent of 50 non-injured athletes reported that they would include psychological counseling support as a part of their rehabilitation program.

All athletes were asked to respond to several statements about services available to injured athletes, social support, and emotions of injury (5= strongly agree, 4= agree, 3= undecided, 2= disagree, 1= strongly disagree). When pooling the answers from all athletes, the highest mean was 4.68 for the statement, "I have a strong family support system or close friends who know or knew about my injury." The lowest mean was 2.81 for the statement, "After my injury there were times when I just wanted to give up." Athletes agreed that their trainer was sensitive to emotional needs and provided individual attention while recovering from injury. Athletes also agreed that their teammates understood the emotions experienced while recovering from injury. Athletes agreed that they felt upset watching other teammates work out when they could not and that talking to other athletes who had successfully recovered from their injuries helped keep them positive. Athletes were undecided about how supportive professors were during rehabilitation and whether the university offers a sufficient number of psychological resources to provide athletes with psychological rehabilitation. Furthermore, athletes were undecided about whether recovering emotionally from sports injury was harder than expected

and whether a support group of other injured athletes would be helpful in injury rehabilitation. (Table A10)

Discussion

The overall goal of this action research study was to gather information about the emotional response of athletes to injury. Survey methodology was used to collect responses from a sample of NCAA Division I athletes and results confirmed that an athlete's psychological response and recovery from injury includes a variety of emotions. Although several common emotions were discovered, the emotional response to injury is unique for every athlete and development of a fully explanatory model may require future studies beyond this exploratory research. The emotions experienced among athletes as a result of injury were consistent with previous research (Crossman, 1997; Smith, 1990), which shows that the most strongly experienced emotion is typically frustration. On the other hand, the least strongly experienced emotion was a sense of relief. The types of emotions experienced did not change with severity or recentness of injury. Injured athletes expressed similar emotions at varying intensities. This finding suggests that it is probable for any athlete to experience some emotional response to injury, regardless of injury severity or recentness. Therefore, the widespread emotional reaction to injury among athletes indicates that it is important for athletes, coaches, and training staff to understand the psychological aspect of any injury.

Results indicated that an athlete's emotional response and recovery is influenced by a number of factors such as the importance of sport in an athlete's life, time invested in sport, gender, stress, pressure, and severity of injury. The high percentage of athletes whose dream goal in life was sports-related suggests that many athletes view their sport as an integral part of

their life and would like to continue to participate in their sport after college. Being identified as an athlete is highly esteemed among sport participants. Moreover, results showed that some athletes are not discouraged by injury. For instance, when asked the amount of goal change since an injury, injured athletes reported that their goals in sport were either unaffected or changed very little following the injury. Additionally, athletes disagreed there were times when they wanted to give up while coping with their injury. One possible interpretation is that sports are such an important part of an athlete's life that they are reluctant to let injury alter their goals or prevent them from fulfilling their aspirations. The importance of sport in the athlete's life is further emphasized by results regarding the order of preference of sports and activities. For instance, the majority of athletes listed a sport as their top preferred sport or activity. Therefore, not only is much of their time committed to their sport, but competing in sport is something athletes enjoy doing. In fact, when asked to rate reasons for participating in sports, all specified reasons received high ratings, suggesting that athletes participate in sport for a variety of reasons and an athlete's motivation to compete in sports is multi-faceted. Accentuating the significance of sport in a collegiate athlete's life is the average rating of 4.22 among injured athletes, when asked to rate motivation toward exercise (1= not motivated at all, 5= extremely motivated). Athletes are dependent on the many benefits of sports competition, ranging from the physiologically benefits of physical activity to the social support from teammates. Consequently, when the ability to participate is taken away, secondary losses are felt as several sources of pleasure in life are also removed. With changes in daily routine, a decrease in sources of pleasure, and modifications in team participation, the athlete may question their self-identity.

It is also crucial to recognize that typically, college athletes have accumulated years of experience in their specific sport before starting their collegial athletic careers. Throughout their development and life changes, participation in sport has remained constant. For some athletes

the loss of self-identity may be temporary and for others more permanent. Consider the high school basketball player who began playing at the age of five, continues to play throughout middles school and high school, and is given an athletic scholarship to play for a big-name basketball university. The athlete is injured in the final game of their high school career and is told by doctors that they will never be able to play basketball again. What does that athlete do after being dependent on sport throughout his life? Although not every injury leads to the cessation of sports participation it is evident why an injured athlete would begin to question their self-identity.

There were several interesting findings related to gender differences when injury status was considered. When uninjured athletes in the sample were asked about goal change as a result of a hypothetical injury, more females (84%) than males (59%) thought they would experience a change in athletic goals as a result of injury. In fact, among the injured participants, more injured male athletes (78%) compared to injured female athletes (59.38%) reported experiencing no change at all in their sports goals since injury. Discrepancies among gender were also apparent when athletes were asked about future personal goals. The high percentage of males whose dream goal in life was sports-related suggests that males place a greater emphasize on sports participation than females. On the contrary females were more likely to report dreams of a professional career such as a teacher, doctor, lawyer, than males. Likewise, when asked to list the current major sources of stress in life, a greater percentage of injured male athletes than injured female athletes listed athletics first. On the contrary, a higher percentage of injured female athletes than the percentage of injured male athletes listed academic stresses first. Several possible speculations can be made to explain the discrepancies between male and female athletes. The role of athlete could be esteemed higher among males than females. Additionally, results suggest that male athletes may rely on sport as a source of self-worth more than females.

Variation in gender was evident when athletes were asked about having fears about returning to sport. More non-injured female athletes suspected they would experience fear in response to a hypothetical injury than non-injured male athletes. In support of this finding, more injured female athletes than injured male athletes reported having fears about returning to sport. Women's teams had the highest percentage of athletes who reported having fears. Differences in emotional response between genders raise many intriguing questions that could lead to future investigations: For instance, why don't more women dream about becoming a professional athlete? Is it easier for females than males to recognize their skills outside of their athletic ability? Do more males wish to pursue careers in sport because of stereotypical gender roles in society? Clearly, there are questions that have yet to be answered.

Another important implication emerging from the findings is the effect of stress on the emotions of injured athletes. Stress level should be considered when studying injury rehabilitation because studies have shown that psychological stress may hinder recovery (Broadbent, 2003). When asked to rate how much stress injured athletes experienced before their injury (1= no stress at all, 3= some stress, 5= a lot of stress), surprisingly, the average rating was 2.66. This indicates that athletes perceived a relatively low level of stress. Student-athletes competing at the collegiate level are required to balance both their responsibilities as a student and their responsibilities as an athlete. Student-athletes are expected to perform well in the classroom and on the field. Because of the academic and athletic responsibilities and pressures, it is challenging for an athlete to manage their time and energy. Because the student-athlete is fulfilling two roles at once, stress from both activities become intertwined. For example, stress caused from coursework can easily exhaust a student athlete and eventually affect athletic performance. Conversely, stress resulting from an injury may affect the athlete's functioning in the classroom.

Another specific source of psychological stress in an athlete's life can derive from pressure to perform well in sports. A high percentage of athletes reported that most of the pressure to perform in sports was intrinsic. This implies that these athletes may place a lot of pressure on themselves to rehabilitate and recover from injury independently. These internally imposed pressures could further complicate rehabilitation, because these athletes may be reluctant to seek help from professionals. Not only do athletes feel pressure to recover from injury unaided, but many athletes view seeking help as a weakness (Shuer, 1997). Athletes also reported feeling pressure from their coach, which could lead to the athlete's unwillingness to ask for help. Some coaches pressure athletes to play through injury and believe in the theory of "no pain, no gain." Athletes may feel like their position on the team would be threatened if they took time off for rehabilitation and could not compete. It is evident that stress plays a large role in an athlete's rehabilitation from injury.

Severity of injury is an additional influence on an athlete's emotional response to injury. The percent of injured athletes reporting having fears about returning to sport increased as the severity of the injury increased (Smith, cited in Smith, 1990, 358). For example, data showed a strong positive correlation between injury severity and fears about returning to sport.

An athlete's support system can affect injury rehabilitation. Strong social support from family, trainers, coaches, and teammates was reported among all surveyed athletes. Athletes agreed that talking to other athletes who had successfully recovered from their injuries helped keep them positive throughout recovery. The encouragement, support, and understanding from others may help an athlete cope with injury.

Limitations

There were several limitations to the research. The sample was limited to one NCAA Division I university. In order to be able to make assumptions about college athletes in general,

future studies must include a sample involving a number of Division I schools or universities from different divisions. In addition, all of the athletes at the university did not participate in the survey.

Conclusion

The results suggest several important implications that underscore the need for college coaches, trainers, and athletic staff to address the emotional as well as physical rehabilitation from sports injury. However, the importance of the psychological aspects of injury is not widely recognized. For instance, only 6.74% of injured athletes sought out counseling to cope with the emotions associated with injury, which is consistent with previous findings that athletes are less likely than non-athletes to make use of psychiatric counseling services and "often the psychological distress caused by injury goes untreated." More athletse, coaches, and athletic training staff need to realize the possible benefits of establishing a multi-faceted and versatile their approach toward injury recovery.

In 2005, a group of psychologists associated with NCAA institutions' athletic departments participated in a seminar, focusing on "the counseling needs and resources to address the mental health of the student-athlete as an athlete and as a person" (Hosick, 2005). During the seminar, Carr, a clinical sports psychologist stated, "

> If you really want to provide for the total health care of student-athletes, it's important to understand that there are psychologists who have backgrounds in and experiences with counseling issues regarding athletes . . . maybe when we're sending our kids to the student counseling center, they're not seeing somebody who knows what a 20-year-old collegiate athlete who plays in a revenue producing sport experiences, understands their stressors . . .maybe we need to look at being a little smarter at taking care of our student-athletes' psychological and mental health issues (Hosick, 2005).

Although the NCAA is beginning to acknowledge the psychological aspects of being a student-athlete, additional changes in the approach to athletic injury are necessary for further improvement in the rehabilitation of injured athletes. To help prevent the a loss of identity when injury occurs in athletes, parents, coaches, and training staff should help athletes recognize other strengths in addition to their athletic skills. As children begin to play sports, parents and coaches should be certain that young athletes are active in a variety of activities. Coaches and trainers must recognize disparities between genders in emotional response to injury in order to understand and treat their athletes.

Some athletes are reluctant to seek psychological counseling to cope with athletic injury. Therefore, strategies should be developed to ensure injured athletes that the emotions that occur because of injury are normal. Such efforts should also encourage athletes to seek help if their emotional response and coping to athletic injury begins to interfere with their day-to-day functioning.

Two types of support can easily be provided to injured athletes. As a result of this project, a website has been established where athletes can share their experience with injury while remaining anonymous (http://web.mac.com/courtney.uri). Although the website is not a substitution for psychological counseling, it enables injured athletes to realize that other athletes are emotionally upset by injury. Once athletes recognize that their emotions are common, they may be more inclined to seek other forms of support. Another suggestion is to form support groups for injured athletes in which athletes who have overcome injury can assist athletes struggling with injury.

Changes in the approach to athletic injury could result in several improvements. As more people involved in athletics recognize the importance of sport psychology, they could help erase the stigma surrounding psychological assistance. A more inclusive approach may encourage

athletes to face the emotional challenges that come along with athletic injury and consequently, rehabilitation could be expedited. Overall, the research is a valuable addition to our current understanding of the emotional response, recovery, and the need for social support of injured college athletes.

Acknowledgements

The author would like to express sincere gratitude to faculty sponsor Paul Bueno de Mesquita for his guidance, enthusiasm, and relentless support. The author gratefully thanks Lynne Johnson for her assistance in creating an injury severity ranking system. The author offers special thanks to Lauren Anderson for her cooperation and assistance.

Appendix A

Table A1

Percentage of Athletes by Sport, Injury Status, and Sex

		Injured		Non-injured	Total Out of All Athletes
Sport	Total of Sport	Injured Before	Injured At		
Baseball	15.31%	16.67%	14.71%	7.41%	13.6%
Women's Track	15.31%	6.67%	19.12%	9.26%	14.0%
Men's Track	9.18%	1.67%	12.50%	5.56%	8.4%
Volleyball	3.57%	0.00%	5.15%	0.00%	2.8%
Swimming	0.51%	0.00%	0.74%	11.11%	2.8%
Field Hockey	3.06%	0.00%	4.41%	7.41%	4.0%
Men's Soccer	6.63%	6.67%	6.62%	16.67%	8.8%
Football	12.24%	10.00%	13.24%	9.26%	11.6%
Women's Soccer	7.14%	15.00%	3.68%	9.26%	7.6%
Gymnastics	8.67%	13.33%	6.62%	3.70%	7.6%
Golf	2.04%	5.00%	0.74%	7.41%	3.2%
Softball	6.63%	6.67%	6.62%	1.85%	5.6%
Men's Basketball	5.61%	13.33%	2.21%	3.70%	5.2%
Women's Basketball	4.08%	5.00%	3.68%	7.41%	4.8%
Sex					Total
Male	78.7%	32.0%	68.0%	22.05%	51.2%
Female	78.69%	29.17%	70.83%	21.31%	48.8%
					100%

Table A2

Percentage of Total Number of Athletes Responding by Sport

	Injury Status Group				
Sport	Injured Before University	Injured At University	All Injured	Non-injured	Total
Baseball	4.0%	8.0%	12.0%	1.6%	13.6%
Women's Track	1.6%	10.4%	12.0%	2.0%	14.0%
Men's Track	0.4%	6.8%	7.2%	1.2%	8.4%
Volleyball	0.0%	2.8%	2.8%	0.0%	2.8%
Swimming	0.0%	0.4%	0.4%	2.4%	2.8%
Field Hockey	0.0%	2.4%	2.4%	1.6%	4.0%
Men's Soccer	1.6%	3.6%	5.2%	3.6%	8.8%
Football	2.4%	7.2%	9.6%	2.0%	11.6%
Women's Soccer	3.6%	2.0%	5.6%	2.0%	7.6%
Gymnastics	3.2%	3.6%	6.8%	0.8%	7.6%
Golf	1.2%	0.4%	1.6%	1.6%	3.2%
Softball	1.6%	3.6%	5.2%	0.4%	5.6%
Men's Basketball	3.2%	1.2%	4.4%	0.8%	5.2%
Women's Basketball	1.2%	2.0%	3.2%	1.6%	4.8%
		Total	78.40%	21.60%	100.00%

Table A3

Number of Participants by Sex and Injury Status Group

Survey Type	Males	Females	Total
Injured Before URI	32	28	60
Injured While Competing at URI	68	68	136
Never injured	28	26	54
Total	128	122	250

Table A4

The Average Rating of Importance of Reasons for Participation in Sports by Injury Status

	Injury Status Group			
Reason	Injured Before University	Injured At University	All Injured	Non-injured
Self Discipline	8.28	7.76	7.92	7.83
Stress Management	6.47	6.63	6.58	6.61
Competition	8.82	8.86	8.85	8.74
Personal improvement	9.03	8.77	8.85	8.32
Socialization	7.82	7.57	7.65	7.78
Outlet of Aggression	5.73	6.60	6.34	6.17
Fitness	8.38	8.70	8.60	8.46
Weight Management	6.70	6.32	6.43	5.85
Fun	9.25	9.04	9.11	8.85
Well being	8.10	8.24	8.20	7.72
Scholarship	7.07	6.89	6.94	7.12

Note: Rating scale of 0 to 10 with 0= not important and 10= very important

Table A5

Percentage of Varying Degrees of Goal Change by Injury Status and Sex

	Injury Status Group		Male		Female	
Degree of Change	Injured	Non-injured	Injured	Non-injured	Injured	Non-injured
Didn't change	68.28%	28.85%	77.78%	40.74%	59.38%	16.00%
Changed a Little	18.28%	55.77%	15.56%	48.15%	20.83%	64.00%
Changed a Lot	9.14%	13.46%	5.56%	11.11%	12.50%	16.00%
Changed Completely	4.30%	1.92%	1.11%	0.00%	7.29%	4.00%

Table A6

Average Rating of Emotions Experienced Because of Injury By Injury Status and Injury Severity

	Injury Status Group		Injury Severity Rank				
Emotion	Injured	Non-injured	Rank One	Rank Two	Rank Three	Rank Four	Rank Five
Helpless	5.57	6.08	5.44	4.57	5.06	6.12	6.04
Tense	6.03	6.45	5.94	4.79	5.86	6.58	6.31
Bored	5.49	7.18	5.20	3.93	5.11	6.04	6.22
Depressed	5.96	6.18	6.24	5.14	5.64	6.12	6.12
Angry	7.24	7.37	7.30	5.93	7.44	7.58	7.25
Frustrated	8.40	8.24	8.23	8.86	8.25	8.35	8.65
Shocked	4.48	5.84	4.23	2.86	4.44	5.08	4.94
Discouraged	5.87	6.43	5.40	5.93	5.67	5.73	6.51
Frightened	4.11	4.82	3.67	3.43	3.92	4.77	4.47
Optimistic	4.31	5.02	4.34	4.14	4.00	4.50	4.42
In pain	7.73	6.92	7.48	8.00	7.89	7.81	7.71
Relieved	1.53	1.50	1.44	2.43	1.67	1.50	1.20

Note: Rating scale of 0 to 10 with 0= did not experience at all and 10= experienced strongly

Table A7

Average Rating of Emotions Experienced Because of Injury By Injury Recentness

	Recentness				
Emotion	Very Recent	Recent	Fairly Recent	Dated	Unsure of Date
Helpless	4.98	5.60	6.82	5.90	4.33
Tense	5.85	5.69	6.27	6.30	5.50
Bored	4.58	5.66	6.09	6.10	5.17
Depressed	5.80	5.74	6.09	6.21	5.50
Angry	6.96	7.37	7.09	7.39	6.83
Frustrated	8.16	8.91	8.64	8.33	8.67
Shocked	3.48	5.06	3.91	5.13	3.00
Discouraged	5.57	5.77	7.64	6.01	5.33
Frightened	3.63	3.91	5.00	4.59	1.50
Optimistic	3.62	5.09	4.09	4.38	3.67
In pain	8.05	7.20	7.70	7.75	7.33
Relieved	1.20	1.73	1.45	1.41	2.17

Note: Rating scale of 0 to 10 with 0= did not experience at all and 10= experienced strongly

Table A8

Percentage of Athletes Reporting Fears About Returning to Sport by Injury Status and Sex

	Injury Status Group		Male		Female	
Fear	Injured	Non-injured	Injured	Non-injured	Injured	Non-injured
Yes	35.00%	34.62%	21.35%	18.52%	48.35%	52.00%
No	65.00%	65.38%	78.65%	81.48%	51.65%	48.00%

Table A9

Percentage of Varying Major Sources of Stress in the Lives of Athletes by Injury Severity and Sex

	Injury Severity Group				Sex	
Top listed stress	Injured Before	Injured At	All Injured	Non-injured	Male injured	Female injured
Academics	60.38%	71.20%	67.98%	70.59%	63.41%	71.88%
Athletic	20.75%	9.60%	12.92%	15.69%	14.63%	11.46%
Other	18.87%	19.20%	19.10%	13.73%	21.95%	16.67%

Table A10

Average Rating for Support and Emotion Question

	Injury Status Group				
Question	Injured Before University	Injured at University	All Injured	Non-injured	All Athletes
Strong family support system or close friends	4.81	4.62	4.68	4.70	4.68
Supportive professors	3.81	3.51	3.60	3.52	3.58
Friends sensitive to emotional needs	4.11	4.07	4.08	4.13	4.09
Trainer sensitive to emotional needs	4.28	3.97	4.07	4.35	4.13
Trainer understood emotions experienced	4.16	3.75	3.88	4.17	3.95
Trainers provided individual attention	4.25	3.88	3.99	4.11	4.02
Coach understood emotions	3.93	3.56	3.68	4.20	3.80
Teammates understood emotions	4.16	3.92	3.99	4.26	4.05
Sufficient number of psychological resources	3.54	3.30	3.37	3.54	3.41
Recovering emotionally was harder than expected	3.00	3.04	3.03	3.70	3.18
Times when wanted to give up	2.84	2.68	2.73	3.06	2.81
Talking to others helped	3.86	3.62	3.69	4.26	3.82
Felt upset watching other teammates	4.39	3.99	4.11	4.11	4.11
Support group would be helpful	3.68	3.43	3.51	3.56	3.52

Mean (1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, 5 = strongly agree)

Appendix B

Figure B1

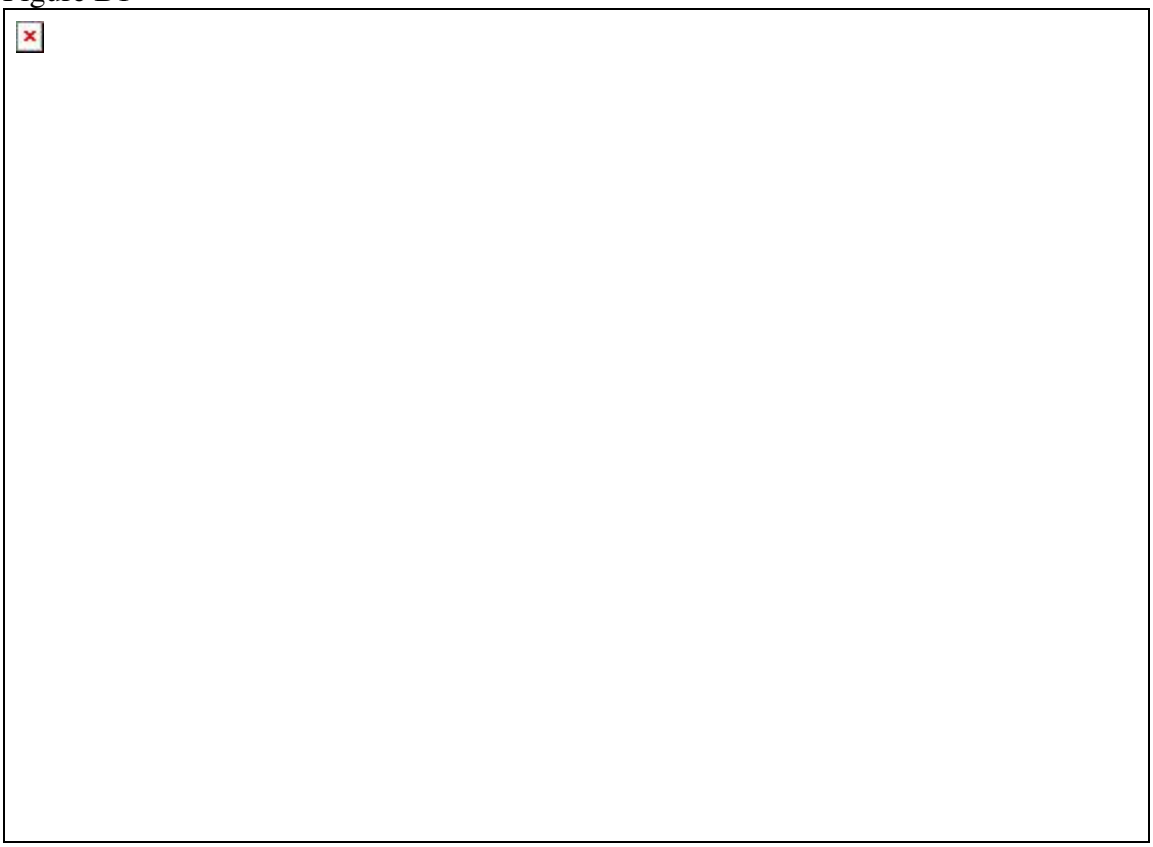
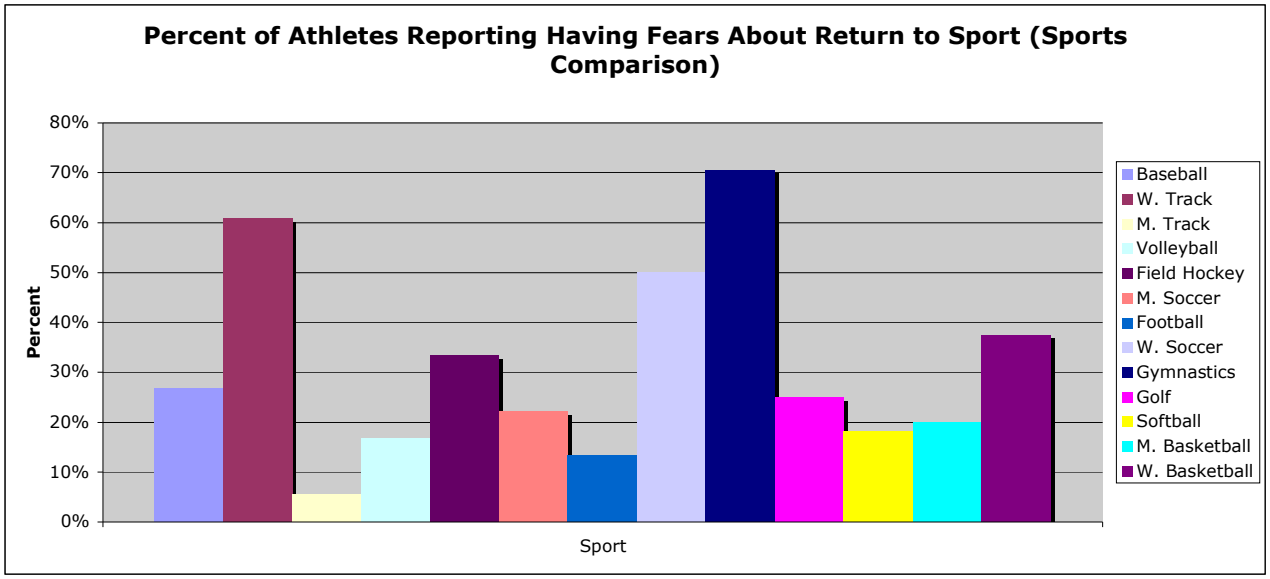


Figure B2


Percent of Athletes Reporting Having Fears About Return to Sport (Sports Comparison)
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent
Sport
Baseball
W. Track
M. Track
Volleyball
Field Hockey
M. Soccer
Football
W. Soccer
Gymnastics
Golf
Softball
M. Basketball
W. Basketball

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