RECOVERY AND RESPONSE TO INJURY: ATHLETE COPING

by

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LIST OF ABBREVIATIONS

Abbreviation **Description**

COPE - Coping Orientation Problems Experienced

DRS - Dispositional Resilience Scale

LESCA - Life Events Survey for Collegiate Athletes

LOC - Locus of Control

PRSII - Psychological Responses to Sport Injury Inventory

SAS - Sports Anxiety Scale

SMTQ - Sports Mental Toughness Questionnaire

SPSS - Statistical Package for the Social Sciences

SSP - Scales of Personality

ABSTRACT

Athletic injury is a devastating occurrence in any sport. Injured athletes require resources and treatment to return to the field of play. As the length of recovery time increases, there is more involved with the treatment of athletes, both physical and psychological factors. Recent research suggests that there may be personality traits that directly correlate to athletic injury. Utilizing the Andersen and Williams Model (1988), the object of the purposed study is to investigate if there is any correlation between the personality traits, specifically locus of control, hardiness, and competitive trait anxiety, with recovery time. This will determine if there are differences between physical and psychological factors associated with ready to return to play. Participants for the study will be recruited from all scholarship-based sports at Texas State University. The anticipated results will indicate that athletes with a higher internal locus of control will have an increased readiness to return to play over athletes with a high external locus of control.

I. INTRODUCTION

As participation in organized sports increases, so does the risk of sustaining an athletic injury. These unfortunate injuries result in missed time from practice and inevitably, the field of play. Recovery time plays a pivotal role in the overall rehabilitation of the athlete. With time and rehabilitation, an athlete's physical injury can be properly treated. However, there are currently no measures to ensure psychological readiness. Although an athlete has been cleared to return to play, there may be lingering doubt in their injury. Overall, there is a vast difference between physically cleared and psychologically ready to return to play. Certain personality traits may serve as predictors of an individual's rate of psychological recovery from an injury.

The purpose of the current study is to determine whether there is a correlation between athletes' personality factors and their recovery from injury. In order to thoroughly assess targeted personality traits, athletes will be tested to determine their locus of control, hardiness, and competitive trait anxiety. Anticipated results of the study will indicate if specific personality types can facilitate faster recovery. Another hypothesis is athletes with a high internal locus of control will have a higher perceived readiness to return to play than athletes with an external locus of control.

II. LITERATURE REVIEW

Introduction

This section will examine the related literature of this study. Specifically, examining how locus of control has been utilized through other studies and can be beneficial to the current study. Additionally, this section will examine the link between hardiness and coping strategies. In the current study, mental toughness is being tested but it is important to determine the link in these two concepts. Hardiness and coping strategies are closely related and can play a major role in an athlete's mental toughness. Lastly, this section will examine competitive trait anxiety. This will illustrate perceived anxiety during athletic competition.

Andersen and Williams Model

The basis for this study was derived from a model created by Andersen and Williams (1988). Overall, the purpose of this model was to provide a framework for the prediction and prevention of stress-related injuries (See Figure 1). Researchers attempted to address the relationship between psychosocial factors and stress on athletes and their impact on injury outcome, and also, to examine the extended role of personality and the prediction and prevention of athletic injury. Researchers hypothesized the greater the stress on an athlete, the greater the risk of injury. Although stress is not included, the personality factors addressed by researchers can be used as a basis for this research. Specifically, the role of hardiness and locus of control can support the hypothesis of the current study.

Locus of Control

An aspect of personality that needs to be addressed is an individual's locus of control (LOC). Locus of Control is a concept first introduced by Rotter (1966). Rotter explained that LOC considers the tendency of people to believe control is internally with them or externally controlled by others. However, most research conducted on locus of control addresses issues in academia or the workplace. Therefore, literature on locus of control cannot be directly applied to the current study but rather use the concepts as a basis. According Ng, Sorensen, and Eby (2006), LOC can be differentiated by two separate categories. Individuals with an internal LOC believe that they are in control of their own destiny. As a result, these individuals tend to be more confident and assertive in their abilities. In contrast, those with an external LOC believe that they are not in direct control of their fate. Therefore, externals attribute the outcomes of events to an outside force or luck.

In the study by Ng, Sorensen, and Eby (2006), researchers investigated LOC in the workplace. They categorized LOC into three outcome categories. These included LOC and well-being, LOC and motivation, and LOC and behavioral orientation. LOC and well-being is derived from the external beliefs in the environment. LOC and motivation explains an individual's response to the environment. The more perceived control an individual feels in their environment, the increased likelihood of a positive response. LOC and behavioral orientation examines the social situations an individual is likely to engage in. Individuals will seek a situation that has greater perceived control. Also, this explains how an individual is likely to behave in the workplace. The results of the study indicated that internal LOC was positively associated with work, given tasks,

and social experiences. Overall, individuals that perceived greater control in the workplace, received greater satisfaction from their work than individuals with an external belief.

In a related study, Ajzen (2002) examines LOC in conjunction with perceived behavioral control, self-efficacy, and the theory of planned behavior. Overall, these theories relate to an individual's perception of control, specifically, how they respond to any environmental situation. In contrast to previous beliefs, Ajzen (2002) speculated that the perceived control of an outcome is independent of the internal or external LOC. "For instance, fear of flying is an internal factor but people may nevertheless feel that they have little control over it" (Ajzen, 2002, p. 676).

Overall, LOC is an underlying personality trait that may be associated with recovery from athletic injury. In order to establish the relevance of LOC, this study will survey collegiate athletes that have suffered an athletic injury. This will serve to determine the amount of perceived control an individual feels toward their injury and recovery time. Depending on the severity of the injury, rehabilitation can be a long and grueling process. The amount of control the athlete feels in their rehabilitation may directly correlate to the time until they return to the field of play. LOC may be a major personality factor indicative of psychological readiness to return.

Hardiness

When examining an athletes' time in rehabilitation, it is necessary to examine their hardiness. In general, it may be useful to determine the athletes' hardiness before an injury and hardiness through the sports injury process. According to Kobasa (1979),

hardiness can be characterized in individuals who experience adversity without experiencing any negative health related side effects. Hardiness is divided into three subcategories. These include commitment, control, and challenge. Overall, individuals high in hardiness are deeply committed to the activities in their lives, they also in control of most situations, and they are not threatened by change (Kobasa, 1982). In fact, these individuals are highly excited by the challenge of change.

In a study by Wadey, Evans, Hanton, and Neil (2012), researchers examined hardiness as a predictor of athletic injury and the direct effects of athletes' response to injury. Participants in the study were recruited from 8 team sports and 18 individual sports. Their competitive level ranged from recreational to international. Although the level of competition varied, most participants averaged three years in the same sport. Experience may be a factor that needs to be more thoroughly examined. Individuals that have participated in the same sport for an extended amount of time may be more likely to be resilient in the sport. It may be valuable to keep in mind the amount of time spent in each sport. Perhaps the more experience playing leads to an increase in the individual's hardiness.

Measures of the study included hardiness, major life events, coping strategies, and psychological responses. The Dispositional Resilience Scale (DRS) was used to examine hardiness and all three of its subcomponents. In order to examine major life events, the Life Events Survey for Collegiate Athletes (LESCA) was used pre-injury to examine major life events. This also measured the athletes' perceived impact of the event. The Coping Orientation Problems Experienced (COPE) was given to participants post injury. The purpose of this was to assess coping strategies related to injury over a

desired period of time. This included problem-focused coping, emotion-focused coping, and avoidance coping. Lastly, the Psychological Responses to Sport Injury Inventory (PRSII) was used to measure post injury psychological responses.

Overall, the results of the study indicated a correlation between life events and injury. Negative life events indicated susceptibility to athletic injury. As these negative life events increased, the probability of an injury also increased. In regards to hardiness, researchers indicated that athletes high in hardiness are less likely to sustain an injury. Interestingly, post-injury data analysis indicated that athletes high in hardiness that sustain an injury can enable their psychological recovery. In contrast, athletes low in hardiness encountered more difficulties recovering from injury. Hardiness also has a significant impact on coping abilities. Athletes high in hardiness were more likely to use problem-focused coping. The effect of this coping increased feelings of recognition throughout the athlete's recovery. Researchers found it was vital for athletes to recognize the severity of their injury from the beginning. Their recognition of their injury positively correlated with faster recovery and rehabilitation time. This increased their confidence and mental strength. In general, an individual's hardiness can determine their response to an adverse situation. Athletes that report high levels of hardiness are more likely to transform negative life events to experiences of growth and success (Wadey, 2012).

In conjunction with hardiness, toughness is an important personality trait to identify among athletes. A study conducted by Petrie, Deiters, and Harmison (2013), examined the effects of social support, athletic identity, and mental toughness on injury outcome of Division I football players. It is important to state that this study only examined males playing football. Therefore, these personality constructs may vary based

on gender. Researchers defined mental toughness as the collection of attitudes and emotions that impact how athletes assess and manage negative and positive situations to reach their goals (Petrie et al, 2013). Along with toughness, social support affects the resilience of athletes. In general, individuals with more social support are healthier than individuals with low social support. These individuals show an increase in both physical and psychological health. Also, individuals with more social support report fewer injuries through their athletic career (Petrie, 2013). Participants in the study were Division I collegiate football players from a southern school. Athletes were given questionnaires at the beginning of the season that contained instruments that measured life stress, social support, athletic identity, mental toughness, and athletic injury. In addition to the initial questionnaire, injury data were collected throughout the season.

The results of the study indicated that high positive life stress is correlated to time missed. High social support reduced the number of missed practice days from over 35 to under 10. According to Petrie, Deiters, and Harmison (2013), researchers suggested that social support from family is more effective than support from peers or significant others. Although there was not a significant direct effect between the two, mental toughness did moderate positive life stress. Overall, the research suggests that mental toughness may assist athletes through an injury recovery. Athletes with higher mental toughness may possess dispositional characteristics that aid recovery. These include optimism, hardiness, and positive affectivity. Over time, these characteristics allow athletes to appraise obstacles as events that can be overcome.

Coping Strategies

In addition to locus of control and hardiness, it is essential to explore an athlete's ability to cope. Although coping is not directly measured in this study, coping strategies play a large role in the Andersen and Williams Model (1988) which was used as a basis for the current study. Also, coping strategies can be linked with hardiness. In a previously cited study by Wadey et al. (2012), researchers used coping strategies as a basis to measure hardiness in collegiate athletes. Under stress, some individuals perform poorly, whereas others can remain resilient (Bolger, 1990). As competitive sports increase in difficulty, the likelihood of injury also rises. Therefore, it is reasonable to expect an injury throughout an athlete's career. Without the proper ability to cope with injury, the return to play can be difficult.

In a study conducted by Dias, Cruz, and Fonseca (2012), researchers examined the relationship between competitive trait anxiety, cognitive threat appraisal, and coping styles. As part of the study, coping was divided into three categories: problem-focused, emotion-focused, and avoidance coping. Problem-focused coping refers to cognitive and behavioral efforts aimed at solving the stressful relationship between the individual and environment. Emotion-focused coping aims to regulate the response to a form of distress. The goal of emotion-focused coping is to regulate the emotional response to a problem or lessen the emotional distress. Typically, avoidance coping is considered a form of emotion-focused coping. Participants in the study consisted of 550 athletes over 13 individual and team sports. Athletes were given several questionnaires to assess levels of coping. The scales included the Sport Anxiety Scale, COPE, and the Cognitive Appraisal Scale in Sport Competition- Threat Perception. Results of the study indicated that threat

appraisal and anxiety play an important role with coping. In general, athletes with higher levels of worry were more likely to completely disengage from the behavior. Also, athletes with higher concentrations of problems were more apt to vent their problems and engage in self-distraction. Overall, these methods of coping supported the link between cognitive anxiety and poor-performance.

In a similar study, researchers examined psychological risk factors as predictors of injury (Ivarsson & Johnson, 2010). The purpose of the study was to examine the relationship between personality factors, coping variables and stress and injury risk. Participants in the study consisted of 48 soccer players from three different teams. Measurements of the study included the Football Worry Scale, Swedish universities Scales of Personality (SSP), Life Events Survey for Collegiate Athletes (LESCA), Daily Hassles Scale, and Brief COPE. Participants were instructed to complete four out of the five measures at the beginning of the season. Also, the athletes were required to complete the Daily Hassles Scale once a week during the season. Once a player was injured, they were excluded from the weekly test during their rehabilitation. Overall, the results of the study indicated that anxiety, stress susceptibility (coping), and trait irritability were significant predictors of injury. However, these strategies can be considered maladaptive if used to avoid the stressor. They are also considered maladaptive if the individual is not willing to invest any effort to overcome the adverse stressor. Self-blame and acceptance can be used to explain the majority of injury occurrences.

Overall, coping is an integral aspect of the rehabilitation process. If an athlete does not utilize the proper coping techniques, the rehabilitation will not be success. In many instances, positive coping techniques produce a faster recovery. In conjunction

with locus of control and hardiness, these personality traits develop a framework for rehabilitation. The perceived control of recovery correlates with the athletes' effort in rehabilitation.

Competitive Trait Anxiety

In addition to other personality factors, Competitive trait anxiety is the tendency or predisposition to perceive competition as threatening. Overall, it is the difference between what an athlete perceives is required for success and his or her response capability. In a study conducted by Eisenbarth and Petlichkoff (2012), researchers studied the correlation between defined successes and the tendency to perceive an event as threatening. Participants in the study were 200 college athletes who came from three sports classifications: intercollegiate, intermural, and recreational. Participants were given two questionnaires as part of the survey. The first questionnaire assessed goal orientations and the second questionnaire assessed competitive trait anxiety. Competitive trait anxiety was measured through the Sports Anxiety Scale (SAS). The purpose of this scale is measure an individual's disposition to perceive competition as threatening. Overall, the results of the study indicated that goal orientation rather than ego was more significant in predicting anxiety. However, there was not a clear goal oriented profile to determine competitive trait anxiety.

Purpose of Study and Hypotheses

The purpose of the current study is to determine whether there is a correlation between athletes' personality factors and their recovery from injury. In order to thoroughly assess targeted personality traits, athletes will be tested to determine their

locus of control, hardiness, and competitive trait anxiety. Anticipated results of the study will indicate if specific personality types can facilitate faster recovery. It is hypothesized that athletes with higher mental toughness will require less rehabilitation from an injury than athletes with low mental toughness. Another hypothesis is athletes with a high internal locus of control will have a higher perceived readiness to return to play than athletes with an external locus of control.

III. RESEARCH DESIGN & METHODS

Participants

A total of 56 subjects were recruited to participate in the study. The age of participants in the study ranged from 18-34 and the average age was 22.2 years old. Overall, most participants were African-American 35.4%, Caucasian 33.3% and Hispanic/Latino 25.8%. Additionally, 3% of participants identified themselves as Asian and only 1.5% as other. Athletes were asked to identify any sport that they either currently participate in or have previous participated in. Most participants in the study indicated their sport to be football, basketball, track and field, and baseball and softball (see Table 1).

Procedure

All participants in this study were given an online survey regarding their time as an athlete and any potential injuries. Each participant was asked to complete a survey that would last between 15-20 minutes. Each survey was conducted online through Qualtrics survey software. The participants were recruited through both the academic study halls and through an online research system (SONA) that recruited students from Introduction to Psychology courses and Introduction to Statistics laboratories. Whether the survey was distributed through SONA or the academic study halls, all participants received the same demographic survey with personality measurements.

Potential athletes were recruited from their academic study halls. All participants consented to participate in the study. This study was approved by the Texas State University Institutional Review Board After completing the survey, participants were

given an additional consent form for their records and were reminded of their contribution to the psychological body knowledge.

Participants that took the survey online through the SONA system experienced a different procedure. Once logged into to SONA, these participants were directed to a consent screen before the survey. This screen was comprised of the same information as on the consent forms received by the study hall athletes. Once these participants agreed to the terms of the survey they were directed to the questionnaire. In order minimize the risk of repeat participants, the online questionnaire began by asking participants if they had previously completed the survey. If "yes" was selected, participants would be automatically directed to the end of the survey.

Measures

Demographic information was collected. Participants were asked what type(s) of sports they participated in, how long they played, and if they had sustained an athletic injury. Additional information collected included type and severity of injury, the amount of rehabilitation required before returning to play, and athlete perception of readiness to return to play. All participants were assessed on their hardiness, locus of control, and competitive trait anxiety.

Hardiness was assessed with the Sports Mental Toughness Questionnaire (SMTQ; See Appendix A; Sheard, Golby, van Wersch, 2009). This 14-item questionnaire assesses mental toughness as a personality factor on three dimensions: confidence, constancy, and control. Each item is scored on a four point Likert Scale. The four point Likert Scale is anchored by "not at all true" and "very true." However, there is no cut off in scoring the

scale. In accordance with the questionnaire, confidence is the belief in one's ability to achieve goals and be better than your opponent. Constancy is the determination, personal responsibility, and unyielding attitude of the participant. Lastly, control is the belief one is personally influential, can bring about desired outcomes, and regulate emotions. Sheard, Golby, & van Wersch (2009), took steps to validate this scale while examining mental toughness in athletes. Researchers determined the SMTQ possessed satisfactory psychometric properties, adequate reliability, divergent validity, and discriminative power.

In order to assess locus of control, participants were given an eight-item scale to determine their perception of control (See Appendix B; Parada; 2006). The scale measures the degree that participants feel in control of their own lives. Locus of control is useful to determine their perception of events in their lives outside of athletics. The scale is scored on a 6 point Likert Scale. The scale is anchored by "completely disagree" and "agree". Overall, the average Cronbach's score for the scale was .71-.85. Researchers validated this scale through a bullying and victimization study in adolescent students (Marsh, Nagengast, Morin, Parada, Craven, & Hamilton, 2011).

The last personality trait measured was competitive trait anxiety. In order to measure competitive trait anxiety, participants were given the Three-Dimensional Performance Anxiety Inventory (See Appendix C; Cheng, Hardy, & Markland; 2009). The three dimensions of performance anxiety were cognitive, physiological, and regulatory function. Cognitive anxiety is reproduced by worry and self-focus. The physiological effects are reflected by hyperactivity and somatic tension. Lastly, the regulatory dimension reflected by perceived control. Survey items were measured on a 5

point Likert Scale. The scale was anchored by "totally disagree" and "totally agree." Wen-Nuan Kara, Hardy, & Woodman (2011), validated the questionnaire through work with students in a martial arts course.

Statistical Analysis

All data were assessed for missing values, outliers and normality. Independent t-Tests were run on all continuous variables and chi-square tests of independence were run on categorical variables. Locus of Control, Mental Toughness, and Competitive Trait Anxiety were analyzed as independent variables to predict presence of injury and readiness to return to play after injury. All analyses were conducted with the Statistical Package for the Social Sciences (SPSS) and alpha was set at $p = .05$.

IV. RESULTS

It was hypothesized that personality factors would differ between athletes who sustained injuries and those who did not (see Table 2). Results showed that Mental Toughness did not differ between those injured and non-injured [t (41) = .342, p>.05]. The trends in the data show that there is not an association between mental toughness and readiness to return to play. Likewise, no significant differences in locus of control were found [t (41) = .105, p > .05]. However, the trends in the data show that there may be an association between internal locus of control and readiness to return to play. Additionally, no significant differences in competitive trait anxiety were found [t (40) = .732, p > .05].

It was hypothesized that personality factors would differ between athletes who perceived themselves ready to return to play following an injury. Data collected from mental toughness [t (41) = .342, p>.05] did not follow any previous trends. Likewise, the data associated with competitive trait anxiety [t (40) = .732, p > .05] did not yield any significant results. The final variable tested, locus of control [t (41) = .105, p > .05], did not produce any significant data. However, there were noticeable trends that could be drawn from the data. These trends were related to internal locus of control and athletes' perceived readiness to return to play. The higher an athletes' internal locus of control, the higher their readiness to return to play. Overall, the trends in the data support the hypothesis that individuals who display a readiness to return to play, may have a higher internal locus of control.

These tests were executed to examine mental toughness, locus of control, and performance anxiety. These factors were used as independent variables in the analysis. The dependent variable is the analysis was the athletes' perceived readiness to return to

play. This T-Test was conducted to evaluate the hypothesis that high internal locus of control will determine readiness to return to play. However, once the analysis was complete, there was not a statistical significance between the personality variables and the perception of readiness to return to play. Due to the lack of significance, there was not a need to conduct a further ANOVA or regression on these variables. This is due to not only the lack of significance, but the data was not near to a significant mark or factor.

Despite the results of the first analysis, a second test was run to determine significance of personality and injury. The second test examined if personality traits could predict injury among the athletes surveyed. The independent variables in the second analysis were the same personality factors (Mental toughness, Locus of control, and Performance anxiety) and the dependent variable was injury during athletic participation. As evident by Table 3, most athletes that participated in this survey have sustained an injury at one point in their athletic career. Once the analysis was complete, the results indicated there was not a significant relationship between personality and injury. Similarly to the first set of tests run, there was not a need for an ANOVA or regression due to the lack of significance between these variables.

V. DISCUSSION

The aim of the current study was to determine if there were any links between personality characteristics and athletic injury. It was hypothesized that certain personality characteristics (mental toughness, locus of control, and performance anxiety) could predict readiness to return to play from an athletic injury. Secondly, it was predicted that these personality characteristics could predict the likelihood of sustaining an athletic injury. The current results from this analysis indicated these personality traits do not play a significant role in conjunction with athletic injury. Data reflective of competitive trait anxiety indicated there was not any significance between this variable and readiness to return to play. Similarly, the results of mental toughness showed there was not a difference between athletes injured and those that were not injured. Lastly, the data reflective of locus of control did not produce any significant results. Based on the review of the literature, the data did not follow any of the anticipated trends. Mental toughness was a variable that did not assist through recovery or aid in rehabilitation (Petrie, Deiters, and Harmison, 2013). However, the results of the current study can be attributed to the small sample size surveyed. Although the study did not produce significant data, there were several trends that could be drawn from the results of the study.

Although these results did not produce any significant data, there are assumptions that can be drawn from the results. Based on the results, it can be inferred that locus of control is related to athletic injury. The data illustrated a possible trend between internal locus of control and injury. As internal locus of control increased, so did the individual's perceived readiness to return to athletic play. Despite the lack of significant data, this was one trend that aligned with the previous hypothesis. The results of this variable aligned

with similar findings in the related research. In the article by Ng, Sorensen, and Eby (2006) researchers determined high internal locus of control resulted in positive responses from participants. The greater perceived control an individual possessed, the higher their satisfaction and well-being.

An implication of this study was the importance of an individual's internal locus of control. This personality factor was proven to be very important in multiple areas of research. The study determined this variable can be used to determine an athlete's perceived readiness to return to play. Additionally, it aligned with the findings of previous studies in the workplace. Overall, this variable implied a specific personality trait may effect readiness to return to play. In a real world setting, it would be useful to test all athletes to determine their locus of control. Once this is determined, it may help to predict injury and the individual athlete's readiness to return from injury. This can tie back to the Andersen and Williams model of injury and more importantly injury prevention.

Limitations

A significant limitation in the study was the sample size of participants. Although recruiting was done through the athletic study halls and psychology classes, it became increasingly difficult to attract interest in athletes. Most athletes were in study hall to complete previously designated work and could not spare extra time to complete the questionnaire. Additionally, most participants that reported to the athletic study halls were the same students throughout the semester. Therefore, the probability of recruiting new participants decreased as the semester progressed.

Another limitation to this study was the lack of incentives offered to potential participants. Although participants were eligible for extra credit in their courses, there was no monetary incentive for their participation. Despite the lack of any physical or mental risks to all participants, there were not any direct benefits to any participants.

Another significant limitation to the study was the language of the questionnaire given to the participants. Aside from the demographic portion of the questionnaire, all other sections were pre-constructed by the original author of the survey. As a result, there were a few issues that arose during the completion of the questionnaire. While administering the questionnaire during the athletic study hall, many athletes were confused at the wording or meaning of the questions. Once the question was addressed and clarified participants continued answering questions. However, if this arose during the study hall it can be inferred there was a similar problem in the SONA distribution of the survey. Without direct access to a researcher to clarify the question, participants may have answered incorrectly. Moving forward, it will be beneficial to simplify the wording of the survey to ensure it is understood for all participants.

Conclusion

In conclusion, the current study did not find that specific personality characteristics had a significant impact on injury. However, as stated in the discussion, a trend can be inferred from the data. High internal locus of control can be associated with an athletes' readiness to return to play. An athlete ready to return to play may have a higher internal LOC. Despite the limitations to the study, it can be used as a foundation for future research for valid results. These futures implications can benefit coaches, players, and athletic trainers within the athletic organization.

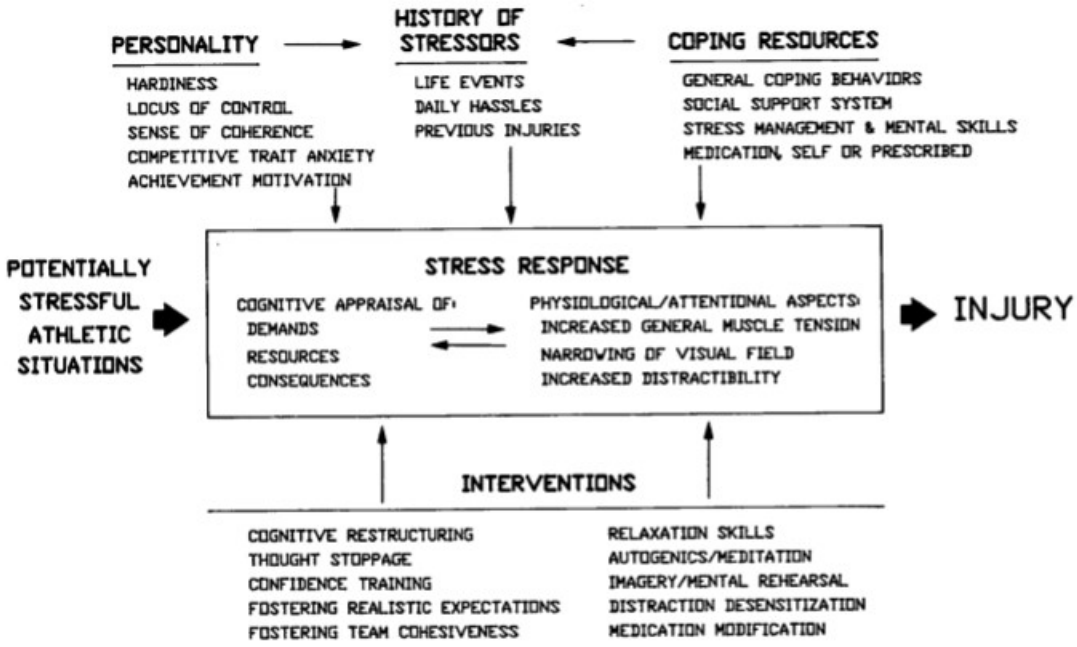

Figure 1 — A model of stress and athletic injury.

Figure 1. Andersen and Williams Model

Table 1. Demographic Variables

Variables	
Age: Mean (St. Dev)	22.2 (4.18)
Gender (%) Male Female	 64.3% 35.7%
Ethnicity (%) African American Caucasian Hispanic/Latino Other	 35.4% 33.3% 26.8% 4.5%
Sustained an Injury (%) Yes No	 82.1% 17.9%
Current Sport Identity Football Soccer Basketball Track & Field Baseball & Softball	 32.1% 14.3% 10.7% 8.9% 5.4%
Injury Location (%) Upper Body (Shoulder, Abdominal, etc.) Lower Body (Knee, Ankle, etc.) Concussion	 17.4% 78.3% 4.3%

Table 2. Return to Play Readiness T-Test

Variables	Ready to Return Yes	Ready to Return No	Statistical Comparison *p* value
Mental Toughness: Mean (St. Dev)	44.16 (5.49)	42.31 (6.58)	p=.342
Locus of Control Mean (st. dev)	40.63 (5.16)	37.62 (6.31)	p=.105
Performance Anxiety Mean (st. dev)	66.90 (14.46)	68.46 (11.38)	p=.732

Table 3. Injury Occurrence T-Test

Variables	Sustained an Injury Yes	Sustained an Injury No	Statistical Comparison *p* value
Mental Toughness: Mean (St. Dev)	43.46 (5.59)	43.50 (4.22)	p=.982
Locus of Control Mean (st. dev)	39.11 (5.57)	39.90 (4.65)	p=.678
Performance Anxiety Mean (st. dev)	37.93 (13.93)	66.40 (9.78)	p=.743

APPENDIX SECTION

Appendix A: Demographic Information

1. Gender:

   _____

2. Age in Years:

   _____

3. Ethnicity:

   _____

4. Classification in College:

   _____

5. What sport(s) did you play prior to college?

   _____

6. What sport do you participate in at Texas State?

   _____

7. Years of Experience in Sport:

   _____

8. Did you Redshirt?

   Yes No

9. If yes, was it a medical redshirt?

   Yes No

10. Did you sustain an injury prior to attending Texas State?

    Yes No

11. If yes, what was the injury?

    _____

12. Did the injury require surgery?

    Yes No

13. Have you sustained an injury while at Texas State?

    Yes No

14. If yes, what was the injury?

_____

15. Did the injury require surgery?

Yes No

16. How long before you were physically cleared to return to team activities (Months, weeks, days)?

_____

17. Did you feel ready to return to play before being cleared?

Yes No

18. If yes, why?

_____

19. Once cleared, did you feel ready to return to play?

Yes No

20. Why or why not?

_____

Appendix B: Sports Mental Toughness Questionnaire

Directions: Circle the number that best describes you.

21. I interpret potential threats as positive opportunities.

    1-Not at all true

    2-Somewhat true

    3-Mostly true

    4-Very true

22. I have an unshakeable confidence in my ability.

    1-Not at all true

    2-Somewhat true

    3-Mostly true

    4-Very true

23. I have qualities that set me apart from other competitors.

    1-Not at all true

    2-Somewhat true

    3-Mostly true

    4-Very true

24. I have what it takes to perform well while under pressure.

    1-Not at all true

    2-Somewhat true

    3-Mostly true

    4-Very true

25. Under pressure, I am able to make decisions with confidence and commitment.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

26. I can regain my composure if I have momentarily lost it.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

27. I am committed to completing the tasks I have to do.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

28. I take responsibility for setting myself challenging targets.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

29. I give up in difficult situations.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

30. I get distracted easily and lose my concentration.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

31. I worry about performing poorly.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

32. I am overcome by self-doubt.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

33. I get anxious by events I did not expect or cannot control.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

34. I get angry and frustrated when things do not go my way.

1-Not at all true

2-Somewhat true

3-Mostly true

4-Very true

Appendix C: Locus of Control

Directions: Circle the number that best describes you

35. Other people and events dominate my life.

    1-Completely Disagree

    2-Disagree

    3-Somewhat Disagree

    4-Somewhat Agree

    5-Agree

    6-Completely Agree

36. My future is mostly in the hands of other people.

    1-Completely Disagree

    2-Disagree

    3-Somewhat Disagree

    4-Somewhat Agree

    5-Agree

    6-Completely Agree

37. Luck and or other people and events control most of my life.

    1-Completely Disagree

    2-Disagree

    3-Somewhat Disagree

    4-Somewhat Agree

    5-Agree

    6-Completely Agree

38. External things mostly control my life.

1-Completely Disagree

2-Disagree

3-Somewhat Disagree

4-Somewhat Agree

5-Agree

6-Completely Agree

39. Most good things that happen to me are the result of my own actions.

1-Completely Disagree

2-Disagree

3-Somewhat Disagree

4-Somewhat Agree

5-Agree

6-Completely Agree

40. What I do and how I do it will determine my successes in life.

1-Completely Disagree

2-Disagree

3-Somewhat Disagree

4-Somewhat Agree

5-Agree

6-Completely Agree

41. If I succeed in life, it will be because of my efforts.

1-Completely Disagree

2-Disagree

3-Somewhat Disagree

4-Somewhat Agree

5-Agree

6-Completely Agree

42. My own efforts and actions are what will determine my future.

1-Completely Disagree

2-Disagree

3-Somewhat Disagree

4-Somewhat Agree

5-Agree

6-Completely Agree

Appendix D: Three-Dimensional Performance Anxiety Inventory

Directions: Circle the number that best describes you

43. I am worried that I may not perform as well as I can.

    1-Completely Disagree

    2-Disagree

    3-Neither Agree nor Disagree

    4-Agree

    5-Completely Agree

44. I am worried about making mistakes.

    1-Completely Disagree

    2-Disagree

    3-Neither Agree nor Disagree

    4-Agree

    5-Completely Agree

45. I am worried about the uncertainty of what may happen.

    1-Completely Disagree

    2-Disagree

    3-Neither Agree nor Disagree

    4-Agree

    5-Completely Agree

46. I am worried about the consequences of failure.

    1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

47. I tend to dwell on shortcomings in my performance.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

48. I find myself evaluating myself more critically than usual.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

49. I am very conscious of every movement I make.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

50. I am conscious that others will judge my performance.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

51. I am conscious that people might disapprove of my performance.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

52. I dwell on how I might fail to impress important others.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

53. I am very aware of the possibility of disappointing important others.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

54. My heart is racing.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

55. My hands are clammy.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

56. My mouth feels dry.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

57. I feel the need to go to the toilet more often than usual.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

58. I have a slight tension headache.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

59. I feel easily tired.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

60. My body feels tense.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

61. I feel restless.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

62. I am confident that I can stay focused during my performance.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

63. I believe in my ability to perform.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

64. I feel ready for my performance.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

65. I believe that I have the resources to meet this challenge.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

66. I believe my performance goal is achievable.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

67. I feel confident about my upcoming performance.

1-Completely Disagree

2-Disagree

3-Neither Agree nor Disagree

4-Agree

5-Completely Agree

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