EFFECTS OF MENTAL TRAINING ON COMPETITIVE STATE ANXIETY IN COLLEGIATE EQUESTRIAN ATHLETES

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CHAPTER I

INTRODUCTION

Introduction Statement

Most Sport Psychology research is based on traditional sports such as football, soccer, and basketball. While, nontraditional sports such as equestrian have not been fully investigated. The National Collegiate Athletic Association (NCAA) classifies equestrian as an emerging sport.[1] Which means it is a growing sport, but one that is not large enough in the collegiate setting to receive full funding from the NCAA.[1] According to the NCAA, there are approximately 300 females who participate in equestrian and 23 Division I & II universities who sponsor equestrian as a varsity sport.[1]

Equestrian athletes face a unique set of challenges when competing. They not only have to focus on their own mental and physical capabilities, but also that of an animal. In order to be successful, they must connect with the horse they are riding, just like a soccer player must connect with the rest of his or her teammates. According to Myers et al., "when compared to traditional athletes [at the elite level] of competition, psychological skill responses of equestrians were higher than reported in professional women's tennis, competitive rock climbers, and Olympic weight lifting." Myers et al. goes on to say, "Equestrian athletes exhibit distinctly different mood and psychological

skill profiles than observed in other traditional sports." Therefore more research is needed to identify specifically how equestrian athletes respond psychologically to competition

Purpose Statement

The purpose of this study was two fold, first to examine competitive state anxiety in collegiate equestrian athletes. Second, to examine the effects of psychological skills training on competitive state anxiety.

Research Hypothesis

H1: Equestrian athletes will experience competitive state anxiety during the beginning of the season.

Ho1: Equestrian athletes will not experience competitive state anxiety during the beginning of the season.

H2: Equestrian athletes will experience competitive state anxiety during the end of the season

Ho2: Equestrian athletes will not experience competitive state anxiety during the end of the season.

H3: Equestrian athletes will experience less competitive state anxiety after engaging in psychological skills training sessions.

Ho3: Equestrian athletes will not experience less competitive state anxiety after engaging in psychological skills training sessions.

Definition of Terms

Anxiety: A negative emotional state in which feelings of nervousness, worry, and apprehension are associated with activation or arousal of the body.[2]

Competitive Trait Anxiety (CTA): A behavioral disposition to perceive as threatening, circumstances that are objectively not dangerous and to then respond with disproportionate state anxiety.[2]

Competitive State Anxiety (CSA): A temporary, ever-changing emotional state of subjective, consciously perceived feelings of apprehension and tension, associated with activation of the autonomic nervous system. Made up of cognitive and somatic anxiety.[2]

Cognitive Anxiety: Concerns the degree to which one worries or has negative thoughts.[2]

Somatic Anxiety: Concerns the moment-to-moment changes in perceived physiological activation. This is not necessarily a change in one's physical activation but rather one's perception of such a change.[2]

Inverted U Hypothesis: At low arousal levels, performance will be below par (the individual is not psyched up). As arousal increases, so too does performance-up to an optimal point, resulting in the best performance. Further increases in arousal, however, cause performance to decline.[2]

Independent Zone of Optimal Functioning (IZOF): Top athletes have a zone of optimal state anxiety in which their best performance occurs. Outside this zone, poor performance occurs. This zone is different for each individual. An individual's zone may fall at the low end of a state anxiety continuum, while another's may fall at high end, or any-where in between.[2]

Multidimensional Anxiety Theory: Increases in cognitive anxiety will lead to decreases in performance. Conversely, increases in somatic anxiety work like the inverted U hypothesis. Somatic anxiety will increase the individual's performance to an optimal level. Beyond this optimal level of performance, if the somatic anxiety continues to increase the individual's performance will begin to decrease.[2]

Facilitative Anxiety: Anxiety that results in improved performance by an athlete.[3]

Debilitative Anxiety: Anxiety that results in diminished performance by an athlete.[3]

Pre-Competition Anxiety: Anxiety prior to the onset of competition which is reflective of the objective and perceived requirements of the individual or team to participate in the contest.[3]

Competition Anxiety: Anxiety that occurs during a competition.[3]

Post-Competition Anxiety: Anxiety that occurs after the completion of the competition.[3]

Competitive State Anxiety Inventory-2 (CSAI-2): Questionnaire designed to measure state and trait anxiety.

State-Trait Anxiety Inventory (STAI): Questionnaire designed to measure state and trait anxiety.

Profile of Mood States (POMS): Measures six mood factors: tension-anxiety, depression-dejection, anger-hostility, vigor-activity, fatigue-inertia, and confusion-bewilderment. The Profile of Mood States uses a different questionnaire to measure each mood factor.

Psychological Skills Training: Systematic and consistent practice of mental or psychological skills for the purpose of enhancing performance, increasing enjoyment, or achieving greater sport and physical activity self-satisfaction.

Breath Control/Centering: Controlling breathing during competition or practice.

Individuals breathe in, and imagine filling their lungs with air. They hold their breath for several seconds and exhale. By focusing on the lowering (inhalation) and raising (exhalation) of the diaphragm, the individual will experience an increased sense of stability, centeredness, and relaxation.[2]

Imagery (Cognitive Rehearsal): Re-create previous positive experiences or picture new events to prepare yourself mentally for performance.[2]

Goal Setting: Process by which athletes set goals which they strive to attain over a set period of time.[2]

Assumptions

1. Subjects will answer all questions on the CSAI-2 questionnaire honestly.
2. Subjects will not share which group they are participating in with other subjects.
3. Subjects in the psychological skills training group will not speak about the techniques that they learn or experience with the subjects in the control group.
4. Subjects in the psychological skills training group will attend all training sessions, and practice the techniques they have been taught outside the training sessions.
5. The CSAI-2, STAI, and POMS are valid and reliable measure of somatic and cognitive anxiety.

Delimitations

1. Subjects must not be engaging in outside sport psychology sessions during the study.
2. Subjects must be participating members of the Oklahoma State Equestrian Team.
3. Subjects will complete the CSAI-2, STAI, and POMS questionnaires.

Limitations

1. Subjects in the psychological skills training group will share what they have learned or experienced in their training sessions with the control group.
2. Outside influence from coaches on which athletes should be placed in the psychological skills training group.
3. Subjects may become injured or stop participating in team activities after the fall semester 2011, therefore they would not be available to compete in the scrimmage in January 2012.

CHAPTER II

REVIEW OF LITERATURE

Competitive Anxiety

Over the last 50 years anxiety in sports has become a popular topic of discussion.[4] There are two main types of anxiety associated with sports performance; competitive trait anxiety and competitive state anxiety. Within competitive state anxiety lie the two most researched areas of sport psychology: cognitive and somatic anxiety.

Competitive trait anxiety (CTA) refers to an athlete who perceives a situation as threatening, even when it is not, and responds to the situation with an unreasonable amount of state anxiety.[2,3] When determining how an athlete's CTA will affect their performance, one must also determine the athlete's level of competitive state anxiety (CSA). Competitive state anxiety is an ever-changing emotional state associated with feelings of apprehension and tension.[2,3] CTA and CSA levels are determined using psychological questionnaires specifically designed to measure each of these independently.

Athletes typically fall into one of three categories when being measured for CSA and/or CTA.[5,6] Athletes whose scores are high for CTA are typically classified as high trait anxious individuals.[5,6] Athletes whose scores are in the middle are considered

moderate trait anxious individuals, and lastly athletes whose scores are low are considered low trait anxious individuals.[5,6] Similarly for CSA, those whose scores fall on the high end when testing CSA are considered high state anxious people, those whose scores fall in the middle are considered moderate state anxious people, and those who score low are considered low state anxious people.[5,6]

Athletes who are high trait and high state anxious typically perform poorly in competitions.[5] Whereas, athletes who demonstrate low trait and low state or the moderate trait and moderate state categories typically perform the best.[5] Mullen et al. investigated CTA, but chose only to look at "worry." They found that individuals who were considered low trait anxious, perceived their cognitive and somatic anxiety symptoms as more facilitative than those who were members of the high trait anxious group.[6] However it should be noted that just because an athlete's score falls in the high trait anxious category does not mean that his or her state anxiety scores are going to fall in the high state anxious category as well.[5]

Athletes who participate in sports that are judged objectively (Ex. gymnastics, equestrian, diving) tend to experience higher levels of cognitive anxiety and lower levels of self-confidence then athletes who participate in sports that are judged subjectively (Ex. golf, basketball, soccer). [7] When comparing female gymnasts to female golfers, the gymnasts cognitive and somatic anxiety scores increased and their self-confidence decreased as competition neared.[7] While the golfers cognitive anxiety decreased, their self-confidence increased, and they experienced no change in their somatic anxiety.[7]

Cognitive Anxiety

Many athletes talk to themselves prior to competition to mentally prepare themselves, while others seem to allow their self-doubt to adversely affect their performance. Cognitive anxiety refers to emotions (worry, negative thoughts, etc.) that athletes experience prior to or during competition.[2] It is not uncommon for an athlete to experience thoughts of worry or nervousness prior to competition. It is how the athlete interprets those thoughts that will ultimately determine the outcome of his or her performance. [8,9]

Early research reported that individuals with high trait anxiety expected to play less (during a competition) during the season and experienced greater worry about making mistakes during competition then low trait anxious individuals.[10] Gould investigated the effects of high trait anxious wrestlers on their performance at a wrestling tournament. High trait anxiety wrestlers felt that they would lose a greater number of matches, and that their nervousness and worry about the match would be one reason for their poor performance.[11] Some researchers suggest that males perceive their worry and self-doubt as more debilitating than females, although no reason has been given to explain the differences.[12,13] Brustad completed a follow up study, and found that high trait anxious males and females experienced similar levels of worry in regards to their performance. One possible explanation for this difference in findings could be due to the small sample size of the original study.[14]

Recent developments in research have suggested that not all athletes perceive cognitive anxiety as debilitative to their performance. It has been suggested that since

elite athletes are more experienced in their sport then non-elite athletes, elite athletes will interpret their cognitive anxiety as more facilitative to their performance. [8,15] Even those elite athletes who experience high levels of state anxiety prior to a competition are more successful then their counterparts.[9,16] It has been suggested that these elite athletes methodically examine their situation before progressing through a task.[16] For example, Sanchez et al. examined elite rock climbers during an international competition. They found that successful climbers reported higher pre-performance levels of state anxiety and climbed the most difficult part of the route more slowly than their unsuccessful counterparts. [16]

Studies of non-elite athletes have reported findings of cognitive anxiety that have been facilitative for some athletes and debilitative for others.[17] Jones et al. investigated gymnasts' balance beam performances, and found that those gymnasts who had a good performance on the balance beam interpreted their cognitive anxiety as facilitative to their performance. Coincidentally those who had a poor performance on the balance beam interpreted their cognitive anxiety as debilitative to their performance.[17]

Somatic Anxiety

Many athletes experience the feeling of "butterflies" in their stomach, or their palms sweating before a competition.[18] These symptoms are indicative of someone experiencing somatic anxiety. Somatic anxiety refers to any and all physiological symptoms of anxiety.[3] The majority of athletes interpret these feelings as facilitative.[5,6,8,16,18-20] Athletes who perform in sports that are judged objectively experience higher levels of somatic anxiety than athletes who participate in sports that are

subjectively judged.[7]

Increasing somatic anxiety scores has a positive impact on performance, especially those sports involving fine motor skills.[18] In accordance with these findings, Klavora reports that high trait anxious individuals are easily aroused, and can therefore possibly become over aroused during competition. Since these individuals remained on their respective teams throughout the entire season, Klavora suggests that their high trait anxiety did not impair their performance.[6,21] Athletes who experienced high levels of somatic anxiety performed better than those who experienced lower levels of somatic anxiety.[16,22] Others suggest that athletes are able to control their level of somatic anxiety throughout a competition, therefore allowing their performance to remain stable.[8]

Theories of Competitive State Anxiety

In sport psychology, the three most common theories of competitive state anxiety evolved from new theories and the expanding of contemporary ones.

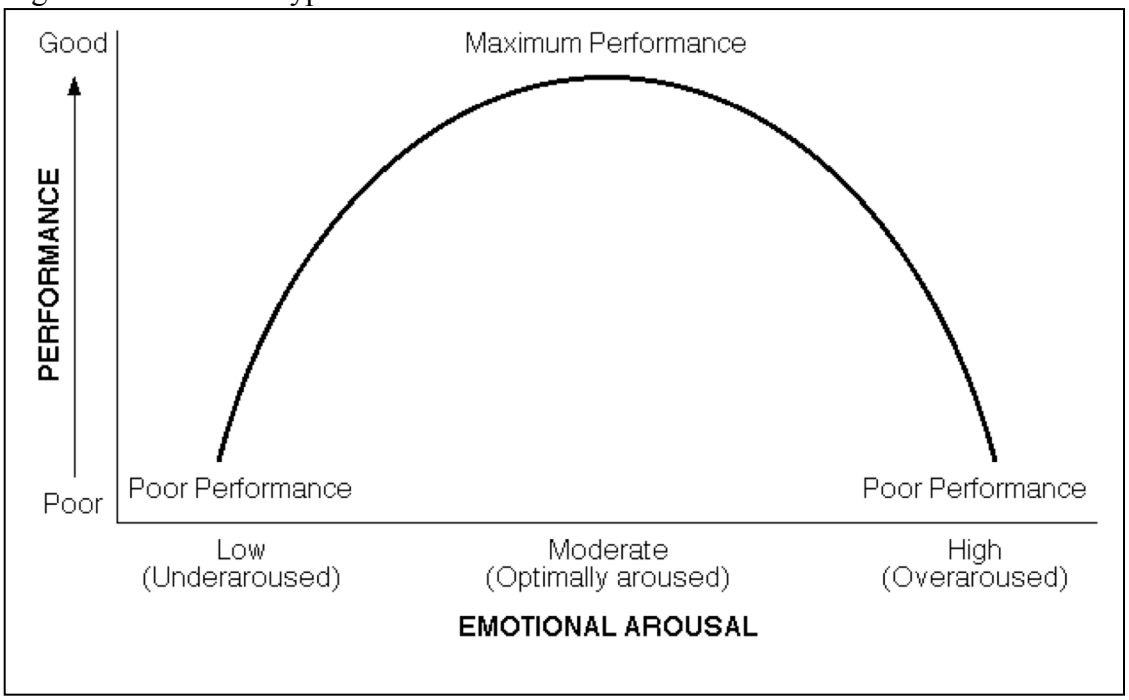
Inverted U Hypothesis

A theory becoming less popular with sport psychologists is the drive theory, which states that as arousal increased so did an athletes performance.[2] From this theory, Robert B. Malmo developed what is known today as the Inverted U Hypothesis. In the *Activation: A Neuropsychological Dimension* he describes developing an "Inverted U Curve" to examine arousal. He reports, "from low activation up to a point that is optimal for a given function, level of performance rises monotonically with increasing activation level, but beyond this optimal point the relation becomes non-monotonic: further increases in activation beyond this point produces a fall in performance level, this fall

being directly related to the amount of the increase in level of activation."[23]

The inverted U hypothesis is easy to understand and can be applied to explain an athlete's performance. Even though every athlete has a different level at which he or she will reach optimal arousal, that level more often will be located near mid-range of his or her arousal values.[5] It has been suggested that athletes need to learn how to control their level of arousal.[24] If an athlete can learn to control their arousal, they will often be able to perform at their best no matter the situation that is presented to them.[24] Some critics of the inverted U hypothesis question whether optimal arousal really occurs around the mid point of the curve for every athlete.

Figure1: Inverted U Hypothesis[25]

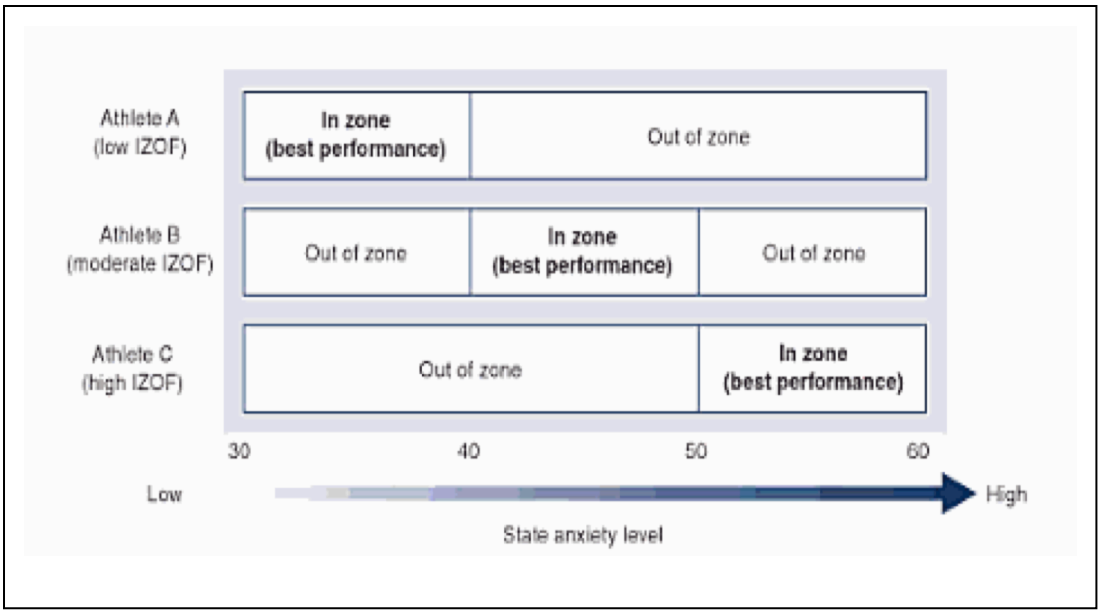


Individualized Zones of Optimal Functioning

In 1986, Yuri Hanin investigated whether the optimal arousal point always falls around the mid-range of the inverted U curve.[2] Hanin determined that an athlete's optimal arousal (state anxiety) zone actually differs considerably. He determined that while some athletes' optimal arousal zones do follow the Inverted U Hypothesis, others fall well below or well above the mid range. Hanin named his alternative to the Inverted U Hypothesis, the Individualized Zones of Optimal Functioning (IZOF).[2] He states that every athlete has a particular zone that his or her optimal arousal falls in, resulting in their best performance, outside of this zone the arousal levels can either be too high or too low to accomplish optimal performance.[2] Hanin also determined a second key difference in his theory, that an athlete's optimal arousal does not just occur at one point along a continuum, but rather along a bandwidth of that continuum.[2]

The research regarding cognitive anxiety, somatic anxiety, and IZOF are seemingly conflicting. It has been shown that swimmers whose cognitive anxiety fell within their predetermined IZOF had better performances then those whose cognitive anxiety fell outside their IZOF. There was not such a relationship for somatic anxiety.[20] Others found that somatic anxiety was a better predictor of IZOF.[20] One explanation for the differing results could be that younger less experienced athletes were examined in these studies. It is possible that these athletes' lack of experience did not allow them to be able to identify when they are performing optimally, like an elite athlete would.[20]

Figure 2: Individual Zones of Optimal Functioning[2]



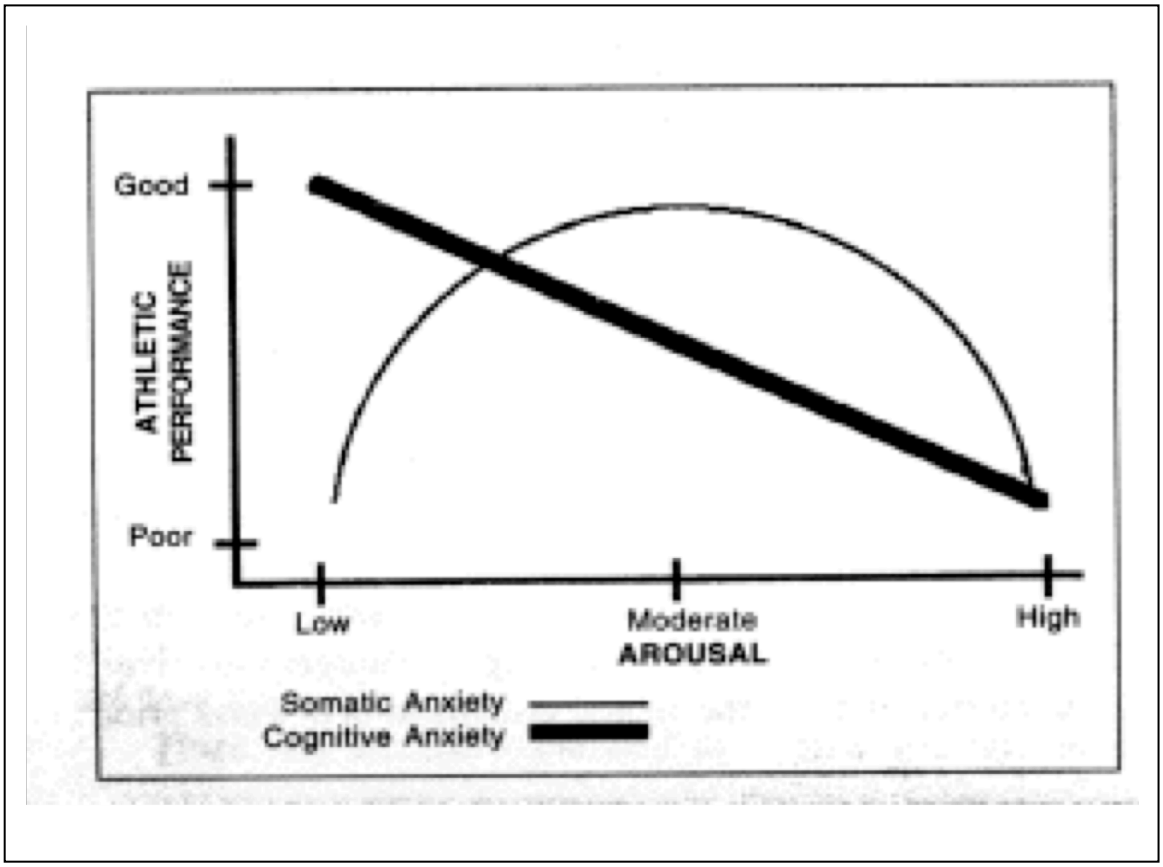
Multidimensional Anxiety Theory

The IZOF did not measure if the components of state anxiety affect performance the same or in different ways. The Multidimensional Anxiety Theory (MAT) was developed to address this issue. This theory predicts that cognitive anxiety is negatively related to performance, and that somatic anxiety is related to performance in an inverted U hypothesis manner. [2] As stated earlier, there is much debate in the literature as to whether or not cognitive anxiety and somatic anxiety are perceived as facilitative or debilitative to athletes during competition.[16,17] Earlier research viewed cognitive anxiety as debilitative to performance. The more current research suggests that some athletes could actually perceive cognitive anxiety as facilitative.

Research that has focused solely on the MAT continues to support the thought process that cognitive anxiety is detrimental to performance, while other research suggests somatic anxiety is going to enhance performance.[18] Another study suggested

that a certain level of state anxiety (both cognitive and somatic) is needed in order for athletes to be prepared for competition.[21] Due to the inconsistent nature of the research to support MAT, many clinical sports psychologists have stopped viewing it as a valid theory.[2]

Figure 3: Multidimensional Anxiety Theory[26]



Psychological Skills Training

Athletes could significantly improve their performance if they knew how to properly control their state anxiety. Many coaches consider sports to be at least 50% mental, while some sports such as, golf, tennis, and figure skating are considered by some to be as much as 90% mental.[2] It is thought that through the use of psychological skills training athletes can learn how to control their state anxiety and increase their

performance in their perspective sport. There are many of options available to athletes in terms of psychological skills' training. This review focuses on three: breath control/centering, imagery, and goal setting.

Breath Control/Centering

Breath control/Centering is a rather simple task for athletes to perform. When athletes breath properly, they can control their anxiety, and allow the release of tension from their muscles.[2,24] Proper breathing starts with taking a deep breath in, allowing your lungs to fill completely.[2,24] Pushing your diaphragm down, raising your rib cage out, and elevating your shoulders slightly.[2] Allow yourself to hold this breath for a couple seconds, and then exhale slowly.[2,24] Allowing your diaphragm to rise, and your ribs and shoulders to lower.[2] Many athletes take a deep breath before a competition begins or before they are to make a critical play in a game (ie. free throw shooting in basketball, or penalty kicks in soccer). Most of these athletes do not realize they are subconsciously participating in psychological skills training.

One study showed that breath control positively affected subjects' performance during high pressure tasks.[27] While this study did show significance, the subjects had a short time period to learn the psychological skill and then utilize it during their task performance. Savoy and Beitel also found that centering positively affected performance by reducing state anxiety symptoms scores. Their study investigated the use of psychological skills training over an entire basketball season, which could lend to more significant results.

Goal Setting

Goal setting is a more complex psychological skill to incorporate into athletes training programs. There are three main types of goals that athletes typically use: outcome goals, performance goals, and process goals.

Outcome goals refer to the athlete setting a goal to accomplish a specific task in terms of the outcome of his or her performance.[2] This type of goal is usually fairly simple in nature, such as finishing a race, or scoring more points than an opponent in a game. However, an athlete may have their personal best performance, but their opponent may still out perform them and win the competition.[2]

Performance goals are those in which athletes set a goal for their personal performance, these are usually based on the individual athletes previous performances.[2] These goals are often easier for an athlete to achieve since they do not have to out perform an opponent. One example is an athlete who is competing in a race. He or she sets a goal of running the race 30 seconds faster then the last time he or she ran the race. This sets athletes up for a greater chance of success in reaching their goal since they are only comparing their results to themselves.

Discrepancies between goals set by athletes and their actual performance were found to be strong predictors of negative self talk experienced by athletes during their competition.[28] Hatzigeorgiadis and Biddle go on to report that "regardless of performance quality in relation to the goal, interpretation of cognitive anxiety symptoms before the race [were] associated with negative self talk during the race."[28]

When athletes are allowed to determine their own goals, the effort put forth by the

athlete to achieve those goals is much greater.[29] It has also been shown that if an athlete has the ability to be involved in choosing the process by which he or she goes about attaining his or her goal, he or she is more motivated to reach the goal.[29]

If athletes are able to help set their goals and be involved in the process of determining how to achieve those goals, the likelihood of achievement is much greater. In regards to anxiety reduction and goal setting, the relationship is not as clear. Even though athletes may be able to reach their ultimate goal, they may still enter a competition with doubts or debilitative state anxiety.

Imagery/Cognitive Rehearsal

Imagery/Cognitive Rehearsal is the most complex psychological skill for an athlete to learn. Athletes have to continually practice this skill in order to become proficient. Imagery requires an athlete to re-create previous positive experiences or picture new events to prepare themselves mentally for performance.[2] A soccer player may imagine himself or herself walking up to the penalty kick line to execute a shot that determines if their team wins the game. Using imagery, a player could practice every step in their routine before he or she ever reaches the field. Once players experience this situation in a game they are mentally prepared, and are able to control their state anxiety.[2]

The literature on imagery indicates inconclusive results as to its effectiveness on reducing state anxiety during performance. Halvari found that no differences were seen between two groups (one that practiced mental imagery and one that did not) in the number of errors made during performance.[30] The authors suggest that this could be due to the fact that the mental imagery group did not practice their imagery, or that the non-

mental imagery group in fact did practice mental imagery in preparation for their performance.[30] High anxious individuals may need more time to familiarize themselves with the psychological skills training program they were assigned to than their low anxious counterparts.[30]

In contrast to Halvari's study, Savoy and Beitel showed significant reduction in the state anxiety symptom scores of the individuals who engaged in imagery training. An explanation of the differences in the results could be because in the Savoy study the subjects received imagery training from a clinical sports psychologist three days a week over an extended period of time. While in the Halvari's study the subjects were explained the imagery process once, and then asked to practice on their own prior to returning for their performance.

Anxiety Questionnaires

Competitive State Anxiety Inventory-2

Martens, Burton, Rivkin, and Simon developed the Competitive State Anxiety Inventory (CSAI) in 1980; by modifying Spielberger et. al.'s Sport Anxiety Inventory (SAI). They identified 10 items of the SAI's 20 item inventory that related most to the competitive sport environment.[31,32] In 1983 Martens et. al. revised the CSAI due to its inadequacy and added a section which would measure self confidence, renaming the CSAI the CSAI-2.[32] In 1995, Jones et. al. examined the CSAI-2 and added a directional subscale [CSAI-2 (d)], allowing subjects to identify if the symptom they were feeling was perceived to be facilitative or debilitative toward their performance.[33]

The CSAI-2 has been widely used by researchers in the last 2 decades as a valid

measure of state anxiety in sports.[32] Beginning in the late 1990's researchers began to question the validity of the CSAI-2. Lane et. al. examined the original validation study of the CSAI-2, which he explains was flawed. The methods of the study did not include enough factorial variation or number of subjects and never reached the minimum recommended 5:1 ratio (participants to items) for significant results. Computer software that is able to compute confirmatory factor analysis was also developed in the late 1990's which would allow researchers to test the factor structures of psychological questionnaires.[34] The use of the term "concerned" in the cognitive section of the CSAI-2 could influence athletes' responses to those questions.[34,35] Lane gives contends that "Athletes who are about to take part in an important competition are likely to report feeling concerned about performance and produce a higher score for cognitive anxiety, even though many remain confident in their ability to meet the demands of the task." It has been suggested that the term "worried" should be used in the cognitive section in replace of "concerned," because worry encompasses the true feelings of the athletes' cognitive anxiety better.[34]

It is difficult to determine if an athlete is experiencing true anxiety or if the symptoms they are experiencing are due to excitement about the upcoming competition. The CSAI-2(d) is able to distinguish between athletes who are experiencing anxious states and those who are experiencing excited states.[36] The anxious group typically scores higher on both cognitive and somatic anxiety, while the excited group reported a more facilitative perception of their symptoms.[36]

When investigating athletes' ability to recall their pre-competition anxiety levels, the CSAI-2 was shown to produce approximately equal levels of accuracy as the State-

Trait Anxiety Inventory (STAI).[37]

State-Trait Anxiety Inventory

Spielberger developed the State-Trait Anxiety Inventory in 1964.[4] The goal of the STAI was to create a single questionnaire that could provide objective state and trait anxiety measures depending on which set of instructions were read to the subjects (Form A).[4] The items used to create the STAI were comprised from previously existing trait anxiety questionnaires and were rewritten to create state anxiety items.[4] Dr. Spielberger realized that the same items could not be used to measure both state and trait anxiety by simply reading two different sets of instructions.[4] Therefore the items were divided into two questionnaires, one measuring state anxiety and one measuring trait anxiety (Form X).[4]

The STAI was administered to 6,000 high school and college students, 600 neuropsychiatric and medical surgical patients, and 200 prison inmates to test the development, standardization and validity of form X.[4] Individual items on the S-Anxiety and T-Anxiety questionnaires were "consistently loaded on different factors [anxiety-present and anxiety-absent]."[4] It was suggested that these factors "may be tapping different sources of variance."[4] The S-Anxiety questionnaire had equal numbers of anxiety-present and anxiety-absent items, and was more stable and consistent than the T-Anxiety questionnaire.[4] The T-Anxiety questionnaire had thirteen anxiety-present and seven anxiety-absent items, which contributed to the instability of the questionnaire.[4]

In 1980, Dr. Spielberger replaced six state anxiety and six trait anxiety items, which allowed for a more balanced representation of anxiety-present and anxiety-absent items

(eleven anxiety-present, and nine anxiety-absent).[4] The twelve weaker items from Form X were replaced with the twelve stronger items to create Form Y.[4] Form Y was examined for standardization and validity on 5,000 subjects.[4] Form Y shows clear-cut distinctions between state and trait anxiety.[4]

Profile of Mood States

The original Profile of Mood States (POMS) contained 100 different adjective scales, but through a series of six factor analytical studies the current 65 adjective scales were identified.[38] The POMS evaluates and measures 6 individual mood states. The 6 mood states are tension-anxiety, depression-dejection, anger-hostility, vigor-activity, fatigue-inertia, and confusion-bewilderment. Each mood state has an individual questionnaire that is used to measure that specific mood state.

Table 1: Literature Review of Pertinent Competitive State Anxiety Article

Author/ Year	Questionnaire Used	Somatic Anxiety	Cognitive Anxiety	Number of Subjects	Results
Barnett 2011	NEO PR-R and DES-IV	-	-	39	CTA was a key moderator of the relationship between cognitive appraisal and affective states
Butt 2003	Mental Readiness Form-Likert	Remained stable through out competition	↓as competition progressed	62	Strongest predictors of performance were self-confidence, intensity, direction, and CA direction
Davids et al 1995	CSAI-2	Facilitative	Debilitative	11	↑ in cognitive anxiety results in ↓ in performance, and ↑in somatic anxiety results in ↑in performance
Hannon 1996	Irritability, Depression, and Anxiety Scale	-	-	26	Elite non-pro athletes have higher anxiety levels then their non-sporting counterparts
Klavora 1975	State-Trait Anxiety Inventory	-	-	300	Competition ↑state anxiety levels immediately prior to competing
Sanchez et al 2010	CSAI-2	Facilitative	Debilitative	19	Successful climbers reported higher levels of SA prior to competition
Sonstroem 1982	CSAI	-	-	30	High A-State scores were associated with poorest performances in all 3 trait groups

CHAPTER III

METHODS

Subjects

A total of 40 subjects who participated in this study; with 22 subjects in the control group and 18 subjects in the psychological skills training group (Ages . All subjects were members of the Oklahoma State University, NCAA Division 1 Equestrian Team. Inclusion criteria included: no current treatment by a sports psychologist, must have been actively participating on the team, and could not have been being treated for a concussion during the course of the study.

Study Design

The study was constructed in a (2x3) repeated measure design. Independent variables included psychological skills training (received psychological skills training, control,) and time (baseline, 1st scrimmage, 2nd scrimmage). The dependent variables were the subjects' score on the Competitive Sport Anxiety Inventory-2 (CSAI-2), the State-Trait Anxiety Inventory (STAI), and the Profile of Mood States (POMS) questionnaire.

Instruments

The CSAI-2 consists of 27, 4-point likert type statements describing how the subjects may feel prior to a competition (appendix E). Each statement on the 5-point scale is assigned a weight starting with 1 (not at all) to 4 (very much so), subjects are asked to report how they are feeling "right now." The answer to question number fourteen is to be reversed upon scoring the questionnaire (ex. someone who selects the score of 4, would really score a 1 when grading the questionnaire). See Appendix F for a full explanation of scoring. A low score on the measure of cognitive anxiety would be 9 and a high score would be 36. For the measure of somatic anxiety a low score would be 12 and a high score would be 33. When examining self-confidence a low score would be 9 and a high score would be 36. Cognitive anxiety and self-confidence should have an inverse relationship.

For the purpose of this research study only the State Anxiety portion (form Y-1) of the STAI questionnaire (appendix B) will be used to evaluate the subjects. The state anxiety questionnaire consists of 20, 4-point likert type statements describing how the subject may feel prior to a competition. Each statement on the 4-point scale is assigned a weight starting with 1 (not at all) to 4 (very much so), subjects are asked to report how they feel "right now". See appendix C for the STAI scoring key. A low score on the STAI would be 20 and a high score would be 80.

The POMS consists of 65, 5 point likert type adjective rating scales (appendix D).[38] Each modifier on the 5-point scale is assigned a weight starting with 0 (not at all) to 4 (extremely), Subjects are asked to report how they have been feeling in the last week.[38]

The factor structure was not altered significantly when the time period being examined was reduced to "Right Now" instead of "Over The Last Week."[38] For the current research study the time period of "Right Now" will be used to assess the subjects subjective state one hour prior to competition.[38] A low score would be a 0 and a high score would be a 260.

The POMS Profile Sheet, College Form will be used for the current research study to compare the subjects' scores to the norm.[38] The college form will be used because the subjects will all be current college students.[38] The college form is based on a sample of 340 male and 526 female college students, who were administered the questionnaire either during a psychopharmacological experiment or when they volunteered to participate in "psychological test batteries for standardization."[38] The norms for the college form are presented as a combination of male and female scores as there was no significant difference in the scores based on sex. [38]

Psychological Skills Training Sessions

The PST program is a comprehensive intervention program designed to teach each athlete how to intervene on his/her behalf when preparing for an athletic event. Each athlete is taught how to use a formal program of goals in order to provide structure for their performance activities. Further each athlete is taught how to use progressive relaxation exercises to achieve the proper arousal level for a given athlete performance. And lastly, each athlete is taught how to use a structured program of mental imagery in order to aid their practice performances as well as their competitive performances.

Procedures

Subjects were recruited for participation in this study through a formal preseason meeting where study methods were reviewed. Subjects who wished to discontinue participation in the study were allowed to with no penalty. Subjects reported for their preseason physical, at this time they read and signed an IRB consent form describing the purpose, risks, and benefits involved in participation of the study. Subjects filled out a baseline CSAI-2, STAI, and POMS questionnaires. The preseason baseline testing was considered a baseline, as this should have been a non-stressful event for the subjects.

Subjects were randomly assigned to one of two groups (psychological skills training or control). The subjects assigned to the psychological training group completed four psychological skills training sessions with a sport psychologist throughout the fall semester. The psychological skills training sessions began after the completion of the first scrimmage. Subjects completed a refresher psychological skills training course upon their return to campus for the second semester, before they competed in their second scrimmage, for a total of 5 psychological skills training sessions.

The sport psychologist met with the subjects in the psychological skills training group for four consecutive weeks in October/November 2011. Each psychological skills training session lasted approximately one hour. See appendix A for a script of the psychological skills training sessions.

Subjects in the control group did not change their daily routine, and did not engage in any psychological skills training.

Subjects in the psychological skills training and control groups reported for the first and second scrimmage. The 1st scrimmage took place the 2nd week of September 2011. The 2nd scrimmage took place the 3rd week of January 2012. Subjects completed the CSAI-2, STAI, and POMS questionnaires within 1 hour before competing. The subjects reported to the classroom of the Animal Science Arena to complete the CSAI-2, STAI, and POMS questionnaires.

CHAPTER IV

FINDINGS

Results

A repeated measures ANOVA was conducted with the independent variables being psychological skills training and time; and the dependent variables being the CSAI-2, STAI, and POMS scores.

Competitive State Anxiety Inventory-2

The CSAI-2 measures Cognitive Anxiety (CA), Somatic Anxiety (SA) and Self Confidence (SC). The means and standard deviations for these three measurements are summarized in Tables 2-4. There was a significant decrease in CA levels for the total group (TG) between the baseline/ 1st Scrimmage and the 2nd Scrimmage ($F_{2,38}$; $P < .01$) an ANOVA source table can be found in Table 5. There was also a significant decrease in SA levels for the TG between the baseline/1st scrimmage and the 2nd scrimmage ($F_{2, 38}$; $P < .01$) an ANOVA source table can be found in Table 6. There was a significant increase in SC from the baseline/1st scrimmage to the 2nd scrimmage ($F_{2, 36}$; $P = .038$) an ANOVA source table can be found in Table 7.

Table 2. CSAI-2 cognitive anxiety scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	18.9±5.43	16.0±5.75	13.9±3.92
Control	18.5±6.28	16.8±6.04	13.8±5.04
Total	18.7±5.84	16.4±5.85	13.9±4.51

Table 3. CSAI-2 somatic anxiety scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	15.4±5.36	14.5±5.65	11.4±1.80
Control	15.4±4.72	15.2±3.99	12.8±4.00
Total	15.4±4.95	14.9±4.75	12.2±3.25

Table 4. CSAI-2 self-confidence scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	25.9±6.47	27.0±6.59	28.3±5.12
Control	24.6±6.88	25.4±5.04	28.4±5.04
Total	25.2±6.63	26.2±5.81	28.4±5.52

Table 5. CSAI-2 cognitive scores anxiety repeated measures ANOVA

Source	SS	df	MS	F
Group	0.1	1	0.1	0.01
Error	1212.2	38	31.9	
Time	463.5	2	231.7	7.87*
Group X Time	9.3	2	4.6	0.16
Error	2238.1	76	29.4	

*Sig at .01 level

Table 6. CSAI-2 somatic anxiety scores repeated measures ANOVA

Source	SS	df	MS	F
Group	14.5	1	14.5	0.54
Error	942	38	24.8	
Time	244.5	2	122.2	7.25*
Group X Time	10.4	2	5.2	0.31
Error	1282.1	76	16.87	

*Sig at .01 level

Table 7. CSAI-2 self-confidence scores repeated measures ANOVA

Source	SS	df	MS	F
Group	26.7	1	26.7	0.49
Error	1961.9	36	54.5	
Time	189.5	2	94.7	3.42*
Group X Time	16.9	2	8.5	0.3
Error	1996	72	27.7	

*Sig at .01 level

State-Trait Anxiety Inventory

The STAI measures state and trait anxiety, only state anxiety was measured in this study. The means and standard deviations for state anxiety are summarized in Table 8. There was a significant decrease in state anxiety levels for the TG between the baseline/ 1st Scrimmage and the 2nd Scrimmage ($F_{2,38}$; $P < .01$) an ANOVA source table can be found in Table 9.

Table 8. STAI state anxiety scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	36.8±12.14	36.5±8.68	30.6±5.93
Control	36.2±9.97	37.1±11.64	32.3±10.19
Total	36.5±10.86	36.8±10.29	31.5±8.48

Table 9. STAI anxiety scores repeated measures ANOVA

Source	SS	df	MS	F
Group	9.8	1	9.8	0.05
Error	7678.8	38	202.1	
Time	733.3	2	366.6	7.3*
Group X Time	25.2	2	12.6	0.25
Error	3817.1	76	50.2	

*Sig at .01 level

Profile of Mood States

The Profile of Mood States (POMS) measures anger, confusion, depression, fatigue, tension, and vigor. The means and standard deviations for the POMS are presented in Tables 10-15. The results of the repeated measures ANOVA showed that there was a significant decrease in anger scores for the TG between the baseline/1st Scrimmage and the 2nd scrimmage ($F_{2, 38}$; P< .01) an ANOVA source table can be found in Table 16. The results of the repeated measures ANOVA showed that there was a significant decrease in confusion scores for the TG between the baseline/1st Scrimmage and the 2nd scrimmage ($F_{2, 38}$; P< .01) an ANOVA source table can be found in Table 17. The results of the repeated measures ANOVA showed that there was a significant decrease in depression scores for the TG between the baseline/1st Scrimmage and the 2nd scrimmage ($F_{2, 38}$; P< .01) an ANOVA source table can be found in Table 18. The results of the repeated measures ANOVA showed that there was a significant decrease in fatigue scores for the TG between the baseline/1st Scrimmage and the 2nd scrimmage ($F_{2, 38}$; P< .01) an ANOVA source table can be found in Table 19. The results of the repeated measures ANOVA showed that there was a significant decrease in tension scores for the TG between the baseline/1st Scrimmage and the 2nd scrimmage ($F_{2, 38}$; P< .01) an ANOVA source table can be found in Table 20. There was no significant difference found in any of the groups for the measure of vigor, an ANOVA source table can be found in Table 21.

Table 10. POMS anger scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	8.1±9.45	7.4±9.80	2.4±2.25
Control	7.0±8.27	7.6±7.97	4.6±6.58
Total	7.5±8.72	7.5±8.72	3.6±5.17

Table 11. POMS confusion scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	8.1±4.89	7.8±4.27	2.5±1.88
Control	5.6±3.71	5.9±4.43	3.3±3.06
Total	6.7±4.41	6.7±4.41	2.9±2.59

Table 12. POMS depression scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	9.9±11.21	8.4±9.38	1.9±3.72
Control	6.1±7.10	7.4±9.33	3.2±4.69
Total	7.8±9.24	7.8±9.24	2.6±4.28

Table 13. POMS fatigue scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	7.5±5.46	7.6±5.07	3.5±5.00
Control	5.5±3.35	5.5±3.78	4.7±5.00
Total	6.4±4.48	6.4±4.48	4.1±4.98

Table 14. POMS tension scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	12.0±7.43	10.8±5.92	5.2±3.73
Control	9.7±5.11	10.7±6.69	5.2±4.18
Total	10.7±6.28	10.7±6.28	5.2±3.94

Table 15. POMS vigor scores by group across time (Mean ± SD)

Group	Baseline	1st Scrimmage	2nd Scrimmage
Sports Psych	17.8±3.62	18.7±5.26	18.1±5.17
Control	19.0±5.74	18.3±4.67	17.5±7.08
Total	18.5±4.88	18.5±4.88	17.8±6.22

Table 16. POMS anger scores repeated measures ANOVA

Source	SS	df	MS	F
Group	5.9	1	5.9	67.12
Error	2560.6	38	67.4	
Time	426.5	2	213.2	3.72*
Group X Time	52.8	2	26.4	0.46
Error	4352.9	76	57.3	

*Sig at .01 level

Table 17. POMS confusion scores repeated measures ANOVA

Source	SS	df	MS	F
Group	44.4	1	44.4	2.24
Error	751.2	38	19.8	
Time	408.2	2	204.1	16.8*
Group X Time	57.7	2	28.8	2.37
Error	923.5	76	12.2	

*Sig at .01 level

Table 18. POMS depression scores repeated measures ANOVA

Source	SS	df	MS	F
Group	38.1	2	38.1	0.443
Error	3269.7	38	86	
Time	766.5	2	383.3	7.38*
Group X Time	127	2	63.5	1.22
Error	3945.6	76	51.9	

*Sig at .01 level

Table 19. POMS fatigue scores repeated measures ANOVA

Source	SS	df	MS	F
Group	26.5	1	26.5	0.81
Error	1244.4	38	32.7	
Time	155.9	2	77.9	4.99*
Group X Time	71.4	2	35.7	2.29
Error	1186.6	76	15.6	

*Sig at .01 level

Table 20. POMS tension scores repeated measures ANOVA

Source	SS	df	MS	F
Group	19	1	19	263.79
Error	1371.4	38	36.1	
Time	819.8	2	409.9	13.81*
Group X Time	32.3	2	16.2	0.54
Error	2255.5	76	29.7	

*Sig at .01 level

Table 21. POMS vigor scores repeated measures ANOVA

Source	SS	df	MS	F
Group	0.311	1	0.311	0
Error	1914.2	38	50.4	
Time	11.2	2	5.6	0.3
Group X Time	19.3	2	9.7	0.51
Error	1435.6	76	18.9	

CHAPTER V

DISCUSSION

Our objective was to observe competitive state anxiety levels in collegiate equestrian athletes. As well as, to determine if completing psychological skills training would decrease competitive state anxiety overtime. We hypothesized that equestrian athletes would experience CSA at the beginning of the season as well as, as the season progressed. We also hypothesized that after completing psychological skills training equestrian athletes CSA would decrease.

Much of the psychological skills training research investigates how psychological skills training (PST) affects an athlete's performance, but fails to look at how it affects the athlete's actual level of anxiety.[27,30] We chose to look at competitive state anxiety since it has been shown that psychological skills training can positively influence an athlete's performance. We also chose to use a control group, while the majority of psychological skills training research only uses one group where everyone receives the psychological skills training. We were unable to find a significant difference in anxiety levels between the control group and the PST group. However, when combining the groups and looking at them as a whole, the level of CSA decreased significantly between the baseline/1st scrimmage and the 2nd scrimmage. The subjects' anxiety levels could have been high during the baseline/1st scrimmage due to the fact that it was the beginning

of a new school year and new competitive season. The high anxiety level could also help explain why the particular team we investigated had a competition record of 2-3 during the fall semester of 2011. While they have combined a 6-1 record in the spring semester of 2012, when their CSA has significantly decreased.

When looking at the individual anxiety questionnaires, the CSAI-2 measures cognitive anxiety, somatic anxiety and self-confidence. The cognitive anxiety scores and the self-confidence scores should be inversely related, which is exactly what we found. The cognitive anxiety scores decreased significantly overtime, while the self-confidence scores increased overtime. This supports the research done by Krane and Williams in 1987, which found that collegiate golfers cognitive anxiety decreased during the 24 hours prior to a competition, while their self-confidence increased during this time. Our research also disagrees with Krane and Williams findings that objectively judged sports would increase their cognitive anxiety and decrease their self-confidence as competition approaches.

Savoy et. al. investigated whether group psychological skills training or individual PST would have a greater impact on CSA reduction, and found that both groups anxiety levels decreased significantly, but there was no difference between groups. They did not use a control group however, so it is difficult to determine if the reduction in anxiety was due to the PST or the subjects' progressing through their season.[24] While our research went a step father in using a control group, it still leaves us to ask the question how much effect did the PST have on the subjects CSA, since both groups anxiety levels decreased.

We choose to use group PST sessions as they have been shown to be successful in reducing CSA.[24] We cannot determine if the subjects in the PST group practiced the skills they learned outside of the training sessions, or that they utilized the skills prior to competing. Some subjects may have been more engaged in the PST then others which would allow them to "get more out of" the PST sessions, then those who were less engaged during the sessions. Several subjects verbally told the primary investigator that they enjoyed the PST sessions and felt that they had learned a lot from them. A few even said that they had tried using the skills they learned during the PST sessions prior to practicing or competing and felt that they were more relaxed upon entering the competition.

Clinically our results show that collegiate equestrian athletes do experience CSA, and that these levels of CSA significantly decrease through out the season. Psychological skills training could be beneficial to equestrian athletes but further research will need to be done to fully examine the affects it has on CSA levels. By utilizing an individual PST approach athletes may be able to better grasp the skills they are learning and be able to apply them to their competitions. Using actual competitions instead of scrimmages may give the researchers more accurate results as well, as anxiety levels may change between a scrimmage and an actual competition. Overall, I think that this research has been beneficial clinically. Prior to this, there was very little research that had been completed on the effects of PST on CSA. Athletes who choose to practice PST could reduce their CSA significantly and increase their competitive performance as a result.

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APPPENDICES

Appendix A: Psychological Skills Training Script

Make yourself comfortable.... the way you usually like to sit. Now I would like you to look at the _____ and as you look at _____I want you to concentrate on your breathing. That's fine. Now, each time you exhale---you relax more deeply. (PAUSE) Each time you breathe out---let all your tensions go with it and let yourself relax completely,---inside and out---from head to toe.

Allow yourself to feel the heaviness in your eyelids. As you listen you will feel your eyelids get heavier and heavier. Any time they want to close they can do so. (EYES CLOSE)* Relax your scalp---relax your forehead---relax all the muscles around your eyes. Let the tension go out of your jaws and relax all the muscles around your mouth. Let your tongue relax so it sinks down into the floor of your mouth. Relax your neck muscles---let those shoulders sag. Relax all the muscles across your back between your shoulder blades----relax all the muscles down your spine. Let your arms relax down to your elbows---down to your wrists and down to the very tips of your fingers. Relax your chest muscles so your breathing is easy and regular and be aware that each time you breathe out you become more and more relaxed---each breath out carries you deeper and deeper. Relax your stomach muscles---relax your legs down to your knees---way down to your ankles and way down to the very tips of your toes.

Be aware of how comfortable you are and how easy it is go right on going deeper and deeper. The deeper you go the more comfortable you feel---the more comfortable you feel the deeper you go.

> *Be aware of how extremely heavy your eyelids have become and it's alright for them to close now. It's so comfortable to sink way down in the chair and really enjoy the relaxation---really enjoy that comfortable feelings and those sensations that you are getting all over. Enjoy a deeper feeling of comfort as you go deeper and deeper.

“Allow yourself to...” “When it’s appropriate for you...” “You will find out that you”

“You will be surprised...” “Nothing you have to think, do, say...”

Following the relaxation procedure, subjects will be asked to imagine going to a mental room where they follow instructions to mentally practice physical skills. This is accomplished by having the subjects place a motion picture screen (MPS) in the room. The MPS is then utilized in a three-step process:

1. The subject sees a few trials of the image to be practiced on the screen

2. The subject then sees those images once again making any necessary changes to the images

3. The subject then changes visual perspective to actually see themselves practicing the skills just as it would be seen in real life.

Appendix B: State-Trait Anxiety Inventory Questionnaire

MIND GARDEN
Palo Alto, California

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-1

Subject Number: _____ For Investigators Use Only

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate value to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady	1	2	3	4
20. I feel pleasant	1	2	3	4

STAIS-AD Test Form Y

Appendix C: State-Trait Anxiety Inventory Scoring Key

State-Trait Anxiety Inventory for Adults Scoring Key

To use this stencil, fold this sheet in half and line up with the appropriate test side, either Form Y-1 or Form Y-2. Simply total the scoring **weights** shown on the stencil for each response category. For example, for question # 1, if the respondent marked 3, then the **weight** would be **2**. Refer to the manual for appropriate normative data.

Form Y-1	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1.	4	3	2	1
2.	4	3	2	1
3.	1	2	3	4
4.	1	2	3	4
5.	4	3	2	1
6.	1	2	3	4
7.	1	2	3	4
8.	4	3	2	1
9.	1	2	3	4
10.	4	3	2	1
11.	4	3	2	1
12.	1	2	3	4
13.	1	2	3	4
14.	1	2	3	4
15.	4	3	2	1
16.	4	3	2	1
17.	1	2	3	4
18.	1	2	3	4
19.	4	3	2	1
20.	4	3	2	1

Form Y-2	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21.	4	3	2	1
22.	1	2	3	4
23.	4	3	2	1
24.	1	2	3	4
25.	1	2	3	4
26.	4	3	2	1
27.	4	3	2	1
28.	1	2	3	4
29.	1	2	3	4
30.	4	3	2	1
31.	1	2	3	4
32.	1	2	3	4
33.	4	3	2	1
34.	4	3	2	1
35.	1	2	3	4
36.	4	3	2	1
37.	1	2	3	4
38.	1	2	3	4
39.	4	3	2	1
40.	1	2	3	4

STAIS-AD Scoring Key

Appendix D: Profile of Mood States Questionnaire

Subject Number: _____ For Investigators Use Only

Directions: Below is a list of words that describe feelings people have. Please read each one carefully. Then fill in ONE space under the answer to the right which best describes HOW YOU HAVE BEEN FEELING DURING THE PAST WEEK INCLUDING TODAY.

Turn the Page and Begin

	NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	EXTREMELY
1. Friendly	☐	☐	☐	☐	☐
2. Tense	☐	☐	☐	☐	☐
3. Angry	☐	☐	☐	☐	☐
4. Worn out	☐	☐	☐	☐	☐
5. Unhappy	☐	☐	☐	☐	☐
6. Clear-headed	☐	☐	☐	☐	☐
7. Lively	☐	☐	☐	☐	☐
8. Confused	☐	☐	☐	☐	☐
9. Sorry for things done	☐	☐	☐	☐	☐
10. Shaky	☐	☐	☐	☐	☐
11. Listless	☐	☐	☐	☐	☐
12. Peeved	☐	☐	☐	☐	☐
13. Considerate	☐	☐	☐	☐	☐
14. Sad	☐	☐	☐	☐	☐
15. Active	☐	☐	☐	☐	☐
16. On edge	☐	☐	☐	☐	☐
17. Grouchy	☐	☐	☐	☐	☐
18. Blue	☐	☐	☐	☐	☐
19. Energetic	☐	☐	☐	☐	☐
20. Panicky	☐	☐	☐	☐	☐
21. Hopeless	☐	☐	☐	☐	☐
22. Relaxed	☐	☐	☐	☐	☐
23. Unworthy	☐	☐	☐	☐	☐
24. Spiteful	☐	☐	☐	☐	☐
25. Sympathetic	☐	☐	☐	☐	☐

	NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	EXTREMELY
26. Uneasy	☐	☐	☐	☐	☐
27. Restless	☐	☐	☐	☐	☐
28. Unable to concentrate	☐	☐	☐	☐	☐
29. Fatigued	☐	☐	☐	☐	☐
30. Helpful	☐	☐	☐	☐	☐
31. Annoyed	☐	☐	☐	☐	☐
32. Discouraged	☐	☐	☐	☐	☐
33. Resentful	☐	☐	☐	☐	☐
34. Nervous	☐	☐	☐	☐	☐
35. Lonely	☐	☐	☐	☐	☐
36. Miserable	☐	☐	☐	☐	☐
37. Muddled	☐	☐	☐	☐	☐
38. Cheerful	☐	☐	☐	☐	☐
39. Bitter	☐	☐	☐	☐	☐
40. Exhausted	☐	☐	☐	☐	☐
41. Anxious	☐	☐	☐	☐	☐
42. Ready to fight	☐	☐	☐	☐	☐
43. Good natured	☐	☐	☐	☐	☐
44. Gloomy	☐	☐	☐	☐	☐
45. Desperate	☐	☐	☐	☐	☐
46. Sluggish	☐	☐	☐	☐	☐
47. Rebellious	☐	☐	☐	☐	☐
48. Helpless	☐	☐	☐	☐	☐
49. Weary	☐	☐	☐	☐	☐
50. Bewildered	☐	☐	☐	☐	☐

		NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	EXTREMELY
51.	Alert	☐	☐	☐	☐	☐
52.	Deceived	☐	☐	☐	☐	☐
53.	Furious	☐	☐	☐	☐	☐
54.	Efficient	☐	☐	☐	☐	☐
55.	Trusting	☐	☐	☐	☐	☐
56.	Full of pep	☐	☐	☐	☐	☐
57.	Bad-tempered	☐	☐	☐	☐	☐
58.	Worthless	☐	☐	☐	☐	☐
59.	Forgetful	☐	☐	☐	☐	☐
60.	Carefree	☐	☐	☐	☐	☐
61.	Terrified	☐	☐	☐	☐	☐
62.	Guilty	☐	☐	☐	☐	☐
63.	Vigorous	☐	☐	☐	☐	☐
64.	Uncertain about things	☐	☐	☐	☐	☐
65.	Bushed	☐	☐	☐	☐	☐

Appendix E: Competitive State Anxiety Inventory 2 Questionnaire

ILLINOIS SELF-EVALUATION QUESTIONNAIRE (5)

Name: _____ Sex: M F Date: _____

Directions: A number of statements which athletes have used to describe their feelings before competition are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate *how you feel right now*—at this moment. There are no right or wrong answers. Do *not* spend too much time on any one statement, but choose the answer which describes your feelings *right now*.

	Not At All	Somewhat	Moderately So	Very Much So
1. I am concerned about this competition	1	2	3	4
2. I feel nervous	1	2	3	4
3. I feel at ease	1	2	3	4
4. I have self-doubts	1	2	3	4
5. I feel jittery	1	2	3	4
6. I feel comfortable	1	2	3	4
7. I am concerned that I may not do as well in this competition as I could	1	2	3	4
8. My body feels tense	1	2	3	4
9. I feel self-confident	1	2	3	4
10. I am concerned about losing	1	2	3	4
11. I feel tense in my stomach	1	2	3	4
12. I feel secure	1	2	3	4
13. I am concerned about choking under pressure	1	2	3	4
14. My body feels relaxed	1	2	3	4
15. I'm confident I can meet the challenge	1	2	3	4
16. I'm concerned about performing poorly	1	2	3	4
17. My heart is racing	1	2	3	4
18. I'm confident about performing well	1	2	3	4
19. I'm worried about reaching my goal	1	2	3	4
20. I feel my stomach sinking	1	2	3	4
21. I feel mentally relaxed	1	2	3	4
22. I'm concerned that others will be disappointed with my performance	1	2	3	4
23. My hands are clammy	1	2	3	4
24. I'm confident because I mentally picture myself reaching my goal	1	2	3	4
25. I'm concerned I won't be able to concentrate	1	2	3	4
26. My body feels tight	1	2	3	4
27. I'm confident of coming through under pressure	1	2	3	4

Appendix F: Scoring Instructions for the Competitive State Anxiety Inventory 2 Questionnaire

SCORING INSTRUCTIONS FOR REVISED CSAI

The Revised Competitive State Anxiety Inventory (CSAI) no longer has a total score. Instead, three separate subscale totals are calculated. The cognitive worry subscale is scored by totalling every third item beginning with item 1 (e.g., items 1, 4, 7,..., 25). The somatic (physical tension) subscale is scored by adding every third item beginning with item 2 (e.g., items 2, 5, 8,...26). The self confidence subscale includes every third item beginning with item 3 (e.g., items 3, 6, 9,..., 27). The somatic score should be highest just prior to competition and then decreases when moved forward or backward in time from that point. Worry and self confidence should demonsrate an inverse relationship. Worry may also be a function of a change in the athlete's expectancies, although that is a matter of debate in the literature. Item 14 should be reversed when scored.

Appendix G: IRB Approval Letter

Oklahoma State University Institutional Review Board

Date:	Wednesday, August 24, 2011
IRB Application No	ED11133
Proposal Title:	Effects of Mental Training on Competitive State Anxiety in Collegiate Equestrian Athletes
Reviewed and Processed as:	Expedited

Status Recommended by Reviewer(s): Approved **Protocol Expires: 8/23/2012**

Principal Investigator(s):

Elizabeth Frankland
4599 N. Washington St. Apt 8C
Stillwater, OK 74075

Matthew O'Brien
180 Colvin Center
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia H. Kennison

Shelia Kennison, Chair
Institutional Review Board

VITA

ELIZABETH FRANKLAND

Candidate for the Degree of

Master of Science

Thesis: EFFECTS OF MENTAL TRAINING ON COMPETITIVE STATE ANXIETY IN COLLEGIATE EQUESTRIAN ATHLETES

Major Field: Applied Exercise Science

Biographical:

Education:

Completed the requirements for the Master of Science in Applied Exercise Science at Oklahoma State University, Stillwater, Oklahoma in May, 2012.

Completed the requirements for the Bachelor of Science in Athletic Training at University of New Hampshire, Durham, NH in 2009.

Experience:
Graduate Assistant Athletic Trainer-Oklahoma State Univeristy-2010-2012
Intern Athletic Trainer-Appalachian State University 2009-2010

Professional Memberships:
National Athletic Trainers Association

Name: Elizabeth Frankland Date of Degree: May 4, 2012

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: EFFECTS OF MENTAL TRAINING ON COMPETITIVE STATE ANXIETY IN COLLEGIATE EQUESTRIAN ATHLETES

Pages in Study: 52 Candidate for the Degree of Master of Science

Major Field: Applied Exercise Science

Scope and Method of Study: The purpose of this study was two fold, first to examine competitive state anxiety in collegiate equestrian athletes. Second, to examine the effects of psychological skills training on competitive state anxiety. Forty female subjects (age 19.89±1.25) were recruited for this study. Subjects were randomly assigned to two groups with 22 subjects in the control group and 18 subjects in the psychological skills training group. The psychological skills training group received 5 sessions of psychological skills training with a sport psychologist. Both groups filled out 3 anxiety questionnaires (CSAI-2, STAI, and POMS) during their preseason physical (which served as a baseline), 1 hour before their first scrimmage in the fall of 2011, and before their second scrimmage in January of 2012.

Findings and Conclusions: A repeated measures ANOVA was conducted for all three-anxiety questionnaires. The total group decreased their anxiety from the baseline/first scrimmage to the second scrimmage for cognitive anxiety, somatic anxiety, state anxiety, anger, confusion, depression, fatigue, and tension ($P<.01$). The total groups increased their self-confidence from baseline/first scrimmage to the second scrimmage ($P<.01$). The only measure that did not change over time was vigor. The data shows that PST has little to no effect on competitive state anxiety as compared to no intervention.

ADVISER'S APPROVAL: Dr. Matt O'Brien