1987

Effects of mastery and coping rehearsal on competitive state anxiety

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EFFECTS OF MASTERY AND COPING REHEARSAL ON COMPETITIVE STATE ANXIETY

by

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An Abstract

of a thesis submitted in partial fulfillment

of the requirements for the degree of

Master Of Science in the School

of Health, Physical Education,

and Recreation at

Ithaca College

December 1987

Thesis Advisor: Dr. A. Craig Fisher

ABSTRACT

The effectiveness of mastery and coping rehearsal strategies on lowering competitive state anxiety prior to a gymnastic skill performance was assessed. The subjects (N = 12) were freshman and sophomore physical education students enrolled in either a stunts and tumbling or a gymnastic apparatus class (6 of whom volunteered to participate in a cognitive intervention program). All class members completed a SCAT and PAQ. The 6 treatment subjects were matched to 6 students with comparable scores. Following a training session, the treatment subjects submitted lists of anxiety producing situations, coping statements, and mastery statements related to their gymnastic skill performance. From the content of these lists composite mastery and coping scripts were created. The treatment subjects listened to these scripts following a prescribed listening schedule. The students in the classes completed the CSAI-2 before the first class session of each week during the 3-week training period and immediately prior to each of the two test sessions. The CSAI-2 data were averaged, graphed, and compared to assess whether treatment subjects were lower in competitive state anxiety than control subjects. The data were also examined intraindividually. The mastery and coping rehearsal program did not significantly lower competitive state anxiety prior to a gymnastic skill performance. The data indicate that mastery and coping rehearsal program aided 4 treatment subjects in lowering cognitive worry and/or increasing self-

confidence.

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the School of Health, Physical
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Ithaca College

In Partial Fulfillment of the
Requirements for the Degree
Master of Science

by
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December 1987

Ithaca College
School of Health, Physical Education, and Recreation
Ithaca, New York

CERTIFICATE OF APPROVAL

MASTER OF SCIENCE THESIS

This is to certify that the Master of Science Thesis of

Michael D. Poetzsch

submitted in partial fulfillment of the requirements for the degree of Master of Science in the School of Health, Physical Education, and Recreation at Ithaca College has been approved.

Thesis Advisor:

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Date: 12.28.87

ACKNOWLEDGMENTS

The investigator would like to extend sincere appreciation to the following people:

1. To my thesis advisor, Dr. A. Craig Fisher, for his infinite patience and knowledge in guiding me to the successful completion of this study.

2. To my subjects, for putting the time and effort in the successful completion this study.

3. To my parents, for their moral support in the successful completion of my education.

4. To the Ithaca College faculty, for their encouragement in the completion of my graduate education.

DEDICATION

To my wife and children, for whom my graduate degree was successfully completed, to enrich our life together.

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Chapter 1

INTRODUCTION

In his investigations of anxiety, Spielberger (1966) found that anxiety is composed of two different aspects--trait and state. Trait anxiety is a predisposition to be anxious in several types of situations. State anxiety, on the other hand, is the response to a particular set of conditions. Task performance can be influenced by both trait and state anxiety. Although an individual may have the predisposition to be anxious in a situation, it is the interpretation of that situation and the reaction of the individual that controls one's anxiety level (Carron, 1971).

Task performance is limited, of course, by an individual's ability. The individual might not be able to perform a skill perfectly (being limited in ability), but the individual should be able to maximize the task performance by managing state anxiety. Skill performances in competitive situations are particularly influenced by the individual's capacity for control of state anxiety levels. Wenz and Strong (1980) reinforced this assertion by stating that athletes of equal ability will perform differently according to their ability to cope with stress (i.e., either adjust the levels up or down). Athletes' reaction to the stress of competitive situations and management of the accompanying state anxiety can be a determining factor in skill performance.

The investigation of managing anxiety in competitive situations has been approached from many directions. Biofeedback is used to teach people to relax and make them aware of the stress they are experiencing (Budzynski & Stoyva, 1984). Learning to attain a state of relaxed attention has been found to increase skill performance by lowering muscle tension, while simultaneously maintaining a mentally alert state (Nideffer, 1976). Self-directed verbalizations and visualizations have been used to restructure individuals' interpretations of stressful situations. Girodo and Wood (1979) stated that replacing negative self-statements with positive affirmation statements and visualization strategies can add an extra dimension to improving performance. Ravizza and Rotella (1981) used relaxation with thought stopping and self-statement restructuring in their work with gymnasts to lower anxiety and increase performance.

This investigation assessed the use of mastery and coping rehearsal strategies to manage the competitive state anxiety level of college students preparatory to and during a gymnastic skill performance. The investigation was based on having the subjects mentally rehearse the gymnastics skills. The mastery rehearsal program consisted of a dialogue of the routine or skills being performed perfectly without any stress or anxiety. The coping rehearsal program comprised a dialogue that rehearsed the skill performance with all

conceivable anxiety-producing situations and offered strategies to regain control of each situation.

In performing a gymnastic skill routine, especially one that is being evaluated, most athletes experience anxiety (Kroll, 1979). Excessive anxiety will interfere with the performance of a gymnastic skill routine (Ravizza & Rotella, 1981). This excessive anxiety level for a performance will cause an increase in muscle tension and decrease the effectiveness of the performance (Oxendine, 1980). The investigator hypothesized that mastery and coping strategies practiced by college students for a gymnastic skill performance will lower competitive state anxiety levels.

Scope of Problem

The purpose of this study was to assess whether or not a mastery and coping rehearsal program would lower the competitive state anxiety of gymnastics students in preparation for the performance of a gymnastic skill test.

Ithaca College physical education undergraduates ($N = 6$) volunteered to act as subjects for the cognitive intervention program. All members of four gymnastic classes took part in pretreatment questionnaires to match 6 control subjects with the treatment subjects. The pretreatment questionnaires consisted of the Personal Assessment Questionnaire (PAQ) and the Sport Competition Anxiety Test (SCAT) to match the treatment subjects and the control subjects for their predisposition to be anxious in competitive situations and

perceived gymnastic ability and success.

The treatment subjects underwent an educational phase that involved learning mastery and coping theory and listening to a sample of mastery and coping self-dialogue scripts. The treatment subjects next constructed lists of anxiety producing situations, coping statements, and mastery statements of the skill performances. The composite lists were then transferred into mastery and coping scripts and recorded onto cassette tapes.

The training phase involved listening to the mastery and coping cassette tapes following a prescribed schedule for the 21 days prior to the test sessions. The Competition State Anxiety Inventory (CSAI-2) was administered immediately prior to the first class of each of 3 weeks during the treatment period and also immediately prior to the gymnastic skill performance.

Statement of Problem

The effects of a cognitive intervention program on competitive state anxiety over time were investigated.

Hypothesis

Subjects using mastery and coping rehearsal will reveal lower competitive state anxiety than control subjects prior to a gymnastic skill performance.

Assumptions of Study

For the purposes of this study, the following assumptions were made:

1. The PAQ (Form G) was an accurate measure of subjects' perceived gymnastic ability and success.

2. The SCAT was an accurate measure of subjects' general predisposition to be anxious in competitive situations.

3. The CSAI-2 was an accurate measure of the parameters of competitive state anxiety.

4. Treatment subjects listened to the rehearsal strategies according to the planned schedule.

5. Treatment subjects did not discuss their strategy programs with control subjects.

6. Subjects truthfully filled out all questionnaires.

Definition of Terms

The following terms were operationally defined for the purpose of this study:

1. Cognitive worry. The conscious thought component of state anxiety.

2. Somatic worry. The perceived physical manifestations of state anxiety.

3. Self-confidence. The state of possessing assurance in one's own ability.

Delimitations of Study

The following decisions served as delimitations for this study:

1. Cognitive intervention was applied only to students who expressed concern with their subsequent gymnastic

performance (i.e., they were more worried about performance).

2. Only 6 subjects volunteered for cognitive intervention.

3. Only a 3-week treatment period was utilized.

4. Subjects' gymnastic ability and success, competitive trait anxiety, and competitive state anxiety were measured subjectively.

Limitations of Study

The limitations of this study were as follows:

1. The small number of subjects precludes much generalizability.

2. Results are limited by the acceptance, content, and utilization of the rehearsal strategies.

3. Results apply only where anxiety is measured subjectively.

Chapter 2

REVIEW OF RELATED LITERATURE

The review of related literature for this investigation will concentrate on the following areas: (a) anxiety, (b) state and trait anxiety, (c) strategies for managing anxiety, (d) mastery and coping rehearsal, and (e) summary.

Anxiety

"Anxiety has been defined by both existential philosophers and scientists as an unavoidable unpleasant experience having physiological, phenomenological, and behavioral manifestations" (Sieber, 1977a, p. 21). She further defined anxiety as the fear of failure to meet a standard or fear that one does not hold the appropriate standard.

The first part of anxiety to look at is the phenomenological aspect, or in other words cognition. Sieber (1977b) described this as the individual regarding a situation as dangerous, distressing, or worrying about the inability to do well. The individual needs to make a cognitive assessment of the situation to evoke an anxiety reaction. If the individual does not interpret the situation as threatening, then there will not be a physiological reaction to the situation (at least not a reaction that will have anxiety correlates).

If the individual does interpret the situation as threatening, then there will be a physiological reaction.

The physiological reaction to the situation is termed arousal. The arousal reaction includes an increase in heartrate, systolic blood pressure, and muscle tenseness (Sieber, 1977b).

Duffy (1959) stated that arousal can be measured on a continuum from deep sleep to high excitement, with high excitement being the highest level of arousal. In researching arousal, Landers (1980) investigated the inverted U hypothesis of arousal and quality of performance. He found that excessive arousal causes a decrease in the efficiency of performance.

The optimum or best performance point is the position along the inverted U where alertness and efficiency of performance are highest. This has been substantiated by researchers who have employed at least three or more levels of stress (Martens & Landers, 1970). Testing three levels of stress revealed that a moderate level of arousal resulted in the most efficient level of performance.

Following the cognition and arousal aspect of anxiety is the behavioral aspect. The behavioral reaction is comprised of a cognitive reappraisal with either coping, defensive, or avoidance behavior (Sieber, 1977b). The cognitive reappraisal is the individual's attempt to deal with the stressful situation. The effectiveness of the cognitive reappraisal is important to the success of the individual in the situation.

Sieber (1977b) discussed the conditions affecting the anxiety process. Internal and external conditions both guide the individual's reaction. These include the situation, the prior learning of the individual, and the individual's actual physiological reaction to the situation. The conditions may be modified through training and instructions.

In summary, anxiety can be defined as the fear to meet or hold an appropriate standard. Anxiety has three manifestations: phenomenological (cognition), physiological, and cognitive reappraisal. Researchers have found it difficult to investigate anxiety as a one-dimensional construct. Both the conditions of the individual's predisposition to be anxious and actual reactions have been investigated as separate constructs (Spielberger, 1966).

State and Trait Anxiety

Spielberger (1966) proposed that anxiety as a trait (A-trait) is an acquired personality disposition. The individual is likely to interpret a large number of nondangerous situations as threatening and, therefore, responds disproportionately with A-state reactions to the actual danger. A-trait is a measure of the individual's likelihood to be anxious in specific situations. This is based on past experiences and develops as part of a personality.

A-trait is measured with self-report questionnaires. Investigators have created specific questionnaires to assess

situation specific A-trait. Spielberger developed the State-Trait Anxiety Inventory (STAI) (1973), and Martens (1977) developed the Sport Competition Anxiety Test (SCAT) to be used as a specific measure of A-trait in competitive situations.

Spielberger (1966) proposed that anxiety as a state (A-state) is a subjective set of feelings by an individual. He claimed it is a momentary condition, "characterized by subjective consciously perceived feelings of apprehension and tension, accompanied by or associated with activation or arousal of the autonomic nervous system" (pp. 16-17). The feelings of apprehension or tension are in response to either an external condition or an internal thought. It is the interpretation of the individual and not the actual stimuli that produces the feelings (Carron, 1971). A-state may change over time and may vary in intensity (Finch, Kendall, Montgomery, & Morris, 1975; Newmark, Faschingbauer, Finch, & Kendall, 1975; Spielberger, 1966).

In researching A-state, Liebert and Morris (1967) separated A-state into two components--cognitive worry and somatic worry. These two components are separate and are evoked by different conditions. The Competition State Anxiety Inventory (CSAI) (Martens, Burton, Rivkin, & Simon, 1979) was developed to assess cognitive worry and somatic worry in competitive settings. In the process of developing the CSAI, Martens et al. (1979) found a third component of A-

state, namely self-confidence. A second shortened form, the Competition State Anxiety Inventory-2 (CSAI-2), was later developed by Martens, Burton, Vealey, Smith, and Bump (1983). Martens et al. (1983) asserted that this inventory would provide more complete information about an athlete's response to a competitive situation. Recent research utilizing this inventory suggests that the cognitive worry and self-confidence components of anxiety do not change prior to competition, while the somatic anxiety tends to increase (Cox, 1985). Liebert and Morris (1967) also found that somatic anxiety increases prior to evaluation or competition, while cognitive worry does not change unless the performance changes.

In summary, there are two types of anxiety to be measured. A-trait is a predisposition to interpret a situation as threatening and to react to that situation with different levels of A-state. A-state is the reaction to a situation with varying degrees of tension and apprehension (Spielberger, 1966). Martens et al. (1983) found that A-state is a multidimensional construct with three components: cognitive worry, somatic worry, and self-confidence. Researchers have found that prior to competition somatic worry increases and cognitive worry and self-confidence do not change (Cox, 1985; Liebert & Morris, 1967). Researchers have also tried to develop ways to manage anxiety. The next section will discuss several methods that have been used to

manage A-state.

Strategies for Managing Anxiety

One strategy for managing anxiety is biofeedback. Biofeedback is broadly defined as "electronic feedback of a subject's physiological response . . ." (DeWitt, 1980, p. 288). Olton and Noonberg (1980) described biofeedback as information about the effects of a response that is given to a person to improve control over that response. Budzynski and Stoyva (1984) claimed that biofeedback is most successful with individuals unable to relieve the physiological tension or who are unaware of the tension that they are experiencing.

Although biofeedback was originally used with stress disorders in a clinical setting, it has also been used in sport settings primarily to reduce muscle tension (Daniels & Landers, 1981), blood flow to the extremities (Wenz & Strong, 1980), and heartrate (DeWitt, 1980).

Wenz and Strong (1980), in working with superior athletes, used biofeedback to improve athletes' ability to cope with anxiety. The investigation used biofeedback with self-regulation, relaxation, and other psychological approaches to overcome stress responses to performance. Subjects were trained using either electromyograph (EMG) for testing muscle activity or finger temperature to measure blood flow to the extremities. Wenz and Strong stated that both are measures of the physiological component of anxiety. Learning to control these two physiological elements would

reduce the arousal aspect of anxiety. They reported that subjects responded positively to the biofeedback mechanisms and most showed improvement in reducing anxiety.

DeWitt (1980) used biofeedback with other cognitive strategies for both football and basketball players. The football players reduced muscle tension in the frontalis, masseter, and/or trapezius muscle groups by use of feedback of the muscle activity. Basketball players received feedback from the same muscle groups as the football players and also feedback from their heartrate. Both groups showed performance ratings increase from pretest to posttest. The subjects also stated that they felt more relaxed, in greater control over tension, and "looser" during games.

Zaichkowsky (1982) provided an in-depth review of the use of biofeedback in sports. He stated that clinical experience and some research evidence suggest that biofeedback with other self-regulatory techniques, such as relaxation, autogenic phrases, and imagery, have great promise in assisting the psychological preparation of athletes.

A second strategy used for controlling anxiety or arousal levels is the attainment of a state of relaxed attention. The state of relaxed attention is a balance of relaxation and attention that is appropriate to deal with the task at hand (McKim, 1972). The level of muscle tension is decreased while a mentally alert state is attained. This

decrease in muscle tension helps the new skill to be performed more efficiently (Nideffer, 1976). Oxendine (1980) generalized that a high level of arousal will interfere with complex skills such as fine motor control, steadiness, and general concentration. Relaxed attention has been used in many investigations to enhance the mental state for learning of cognitive strategies and lowering anxiety levels (Fitzpatrick, 1981; Kellner, 1978; Ravizza & Rotella, 1981).

The relaxed attention state can be achieved by using a number of methods. One method involves sitting in a relaxed atmosphere (a quiet, private room) and repeating a one syllable sound such as the word "one" for approximately 20 min. The concentration on the word will take the mind away from distracting thoughts and the tension of them (Benson, 1976). A second method was developed by Girdano and Everly (1979). This involved a visualization of a relaxing scene coupled with a controlled breathing pattern.

The relaxed attention state helps one to manage anxiety by increasing mental concentration and lessening physical tension (Oxendine, 1980). A person or athlete can use one of the techniques to attain the relaxed attention state to prepare for a cognitive or physical skill performance or as a lead-in to other anxiety management strategies.

Self-directed verbalization is a strategy that can be used both with relaxed attention and/or other strategies. Self-directed verbalization is defined as soundless mental

speech occurring the instant a person thinks about something (Sokolov, 1972). Meichenbaum (1975) has pointed out that self-directed verbalization is important to behavior and subsequent performance. He also argued that the content and pattern of self-directed verbalization can be cognitively altered under certain conditions to produce a change in performance or behavior.

Maltz (1960) claimed that a person's brain cannot differentiate between real or imagined experiences. The brain will then respond as if an imagined situation is the same as a real situation. It follows that a self-directed verbalization with an imagined situation can produce the same response. If the situation is interpreted as a negative or A-state producing situation, then the brain and body will respond to the situation negatively. Conversely, a positive thought and perception will elicit a positive response. A self-directed verbalization, eliminating negative experiences by restructuring them as positive thoughts and beliefs, will help the body behave in a positive, constructive manner (Maltz, 1960; Meichenbaum, 1975).

Meichenbaum (1975) offered a cognitive strategy called stress inoculation training. The subject is brought to examine the reality of the situation. The subject must understand that it is his/her response to the situation that is stressful or anxiety producing and not the situation. By negative self-directed verbalizations and reactions, the

subject's fears are reinforced. Once this is recognized the individual can use affirmation statements and positive self-directed verbalizations to control emotions and feelings. Reinforcement can also come from successfully dealing with a situation that was previously negative.

Self-directed verbalizations can alter negative reactions to anxiety producing situations when the strategies are believable, meaningful, and personalized to the subject's needs (Averill, 1973). The subject has to be able to cognitively believe the verbalizations. If the statements are not personalized or realistic, then the subject will not be able to properly utilize the strategies.

Girodo and Wood (1979) stated that the importance of replacing negative self-statements with positive affirmation statements cannot be overemphasized. They also claimed that self-affirmation statements are the preferred technique during the educational phase of learning to cope with stress, but they are not the only strategy. When combined with visual strategies, affirmation statements can add an extra dimension to performance improvement.

Self-directed visualization is the process of using mental images in a rational and cognitive manner. Nideffer (1976) defined mental rehearsal (or imagery) as thinking systematically about past or future athletic behavior. He further clarified it as active study of an image or series of images. Richardson (1967) stated that mental practice is a

symbolic rehearsal of a physical activity in the absence of any gross motor skill.

Imagery (self-directed visualization) is divided into two categories, internal and external (Mahoney & Avener, 1977). Internal imagery is kinesthetic in nature. Athletes pretend to be within their own bodies while performing. Athletes feel themselves perform and concentrate on the kinesthetic cues of their skill performance. External imagery is primarily visual in nature. Athletes visualize themselves from the outside and watch their bodies perform (Cox, 1985). Mahoney and Avener's (1977) research with elite gymnasts seems to indicate that internal imagery is superior. One explanation for the superiority of internal imagery is that it results in subliminal muscle activity in the muscles associated with the imagined actions (Cox, 1985).

Meichenbaum (1979) used self-directed imagery in self-instructional training of impulsive children. A toy turtle was introduced to the subject. The subject imagined himself/herself as the turtle when performing a task. The subject would imagine performing slowly as a turtle would. Later the subject would use the image as a mediator to control and guide behavior if the action deviated from a self-set standard.

General rules for the use of mental imagery or self-directed visualization are recommended by Nideffer (1976). The imagery should be limited to one task with a distinct

beginning and end. Select the cues to be used and decide whether learning a new skill, maintaining a skill level, or reducing anxiety are the objectives. The subject should have knowledge of the correct skill performance and practice the activity through the whole task. A mentally prepared composite of the correct performance should be compared to the subject's own techniques. Finally, correct only one part at a time. Suinn (1980) also advised subjects to visualize the event completely and to use an inner frame of reference. Lane (1980) also agreed with Suinn (1980) and Mahoney and Avener (1977) that it is more effective to experience the self-directed visualization from the subject's viewpoint. The subject's vividness of image helps to determine the concentration of the subject. If the concentration is low, then more focus should be placed on specific cues in the environment. Skiers, for example, could concentrate on the texture of the snow or the coldness of the air in their mental images (Lane, 1980).

One investigation using self-directed visualization was conducted by Suinn (1972). Suinn developed a visuo-motor behavioral rehearsal program (VMBR) for United States Olympic skiers. The skiers would attain a state of relaxed attention by following progressive relaxation exercises. Next, the skiers were instructed to imagine themselves performing the ski run successfully. The self-directed visualization would include seeing every detail of the experience, feeling the

muscular sensations, the texture of the snow, and all sensations of the experience. Suinn also had the athletes use the self-directed visualizations to help overcome injuries. The skiers imagined skiing successfully despite the pain or imagining the pain did not exist.

Mastery and Coping Rehearsal

Imagery training has been utilized in a variety of ways, as was previously discussed. Two other types of imagery training being used are mastery and coping rehearsal. These originally developed from modeling procedures. Bandura (1969) claimed that modeling procedures are ideally suited for reduction of fears and anxiety.

Mastery rehearsal is best explained as athletes imagining themselves performing perfectly without stress or anxiety (Rotella, Malone, & Ojala, 1985). Bandura (1969) stated that a modeled approach response with positive expressions would cause less anxiety and arousal and would foster extinction, as opposed to a model showing fearful reactions while performing the same behavior. Bandura further contended that positive modeling can condition emotional or fearful responses to extinction.

Coping rehearsal is described as athletes imagining themselves in situations where they experience difficulty or loss of emotional and mental control prior to and during a performance and then regaining that control and concentration (Rotella et al., 1985). An important investigation of coping

rehearsal was conducted by Meichenbaum (1971). He compared the effectiveness of mastery and coping modeling for snake phobia. The investigation was a 2 x 2 factorial design, assessing both mastery versus coping modeling and self-verbalization versus non-verbalizations. All the groups showed some improvement. The coping groups showed the most improvement, with the most significant improvement realized from the coping with self-verbalizations.

Ravizza and Rotella (1981) used mastery and coping rehearsal in their work with gymnasts. One of the keys to their program was the assertion that gymnasts have limited control of their external environment but total control of their response to it. The athletes were given instructions on how to recognize anxiety. They were helped to understand the role of self-perception in interpreting a situation as stressful or nonstressful. Cognitive and somatic skills to cope with that stress were taught to the athletes. Self-talk, thought stoppage, counter arguments, imagery (both mastery and coping), relaxation, stretching, breath control, and concentration were the skills taught to the gymnasts. A list of anxiety producing self-statements and images were elicited from the gymnasts. The statements were then modified to coping statements. The gymnasts would imagine themselves in the anxiety producing situations and, when an inappropriate emotional response would occur, the gymnasts would repeat the word "stop" and take a breath. Next, they

would imagine and repeat a positive self-enhancing statement to themselves. The gymnasts also used mastery rehearsal during the precompetition warmup. The gymnasts tried all the techniques and chose those that worked best.

The following steps constitute the steps in the construction of a mastery script. The emphasis is on how the athlete feels before, during, amd after a perfect performance. Technical terminology that is meaningful is important for focusing attention. The athlete should kinesthetically feel all aspects of the performance. The script length should be approximately the same length as the performance, if possible. The script is then checked over with coaches for approval. The mastery script is then transferred to a cassette tape. Rotella et al. (1985) suggested the use of background music to enhance the taped message. The athlete narrates the tape with a voice that she/he feels is appropriate, showing the appropriate emotional involvement.

Coping tapes are made similarly. The athlete records anxiety provoking situations that may occur during the performance. Strategies for coping with these situations are planned out. The total is put together and compiled into a script. After reviewing the script, it is narrated onto a cassette tape for listening. Rotella et al. (1985) suggested a four-step approach to the planning of coping strategies. The first step is to recognize the distraction. The second

and third steps are to think "stop" and breathe deeply to "let go" of muscle tension. The last step is to use a concentration word to bring the athlete back to concentration on the strategy.

Summary

Anxiety is the fear to meet or hold an appropriate standard (Sieber, 1977a). Anxiety has three manifestations: phenomenological (cognitive worry), physiological (arousal), and cognitive reappraisal (Seiber, 1977b). Landers (1980) described arousal by hypothesizing an inverted-U relationship between arousal and the quality of performance, with the maximum performance level for the task along the top of the U. The control of the arousal level is influenced by the individual's reaction to a particular situation. By controlling the anxiety level, the individual can influence the performance of the task.

Researchers (Carron, 1971; Martens et al., 1983; Spielberger, 1966) have found that anxiety has two separate constructs. The first type of anxiety is A-trait, this is a permanent quality of personality that demonstrates the individual's predisposition to be anxious in specific situations (Spielberger, 1966). The second type of anxiety is A-state, which is the response to a particular set of environmental conditions (Carron, 1971).

Martens (1977) developed the SCAT, a specific questionnaire to measure A-trait in competitive situations.

Martens et al. (1983) developed the CSAI-2 to assess the three components of competitive state anxiety that they found, namely cognitive worry, somatic worry, and self-confidence. Researchers (Cox, 1985; Liebert & Morris, 1967; Martens et al., 1983), using the CSAI-2 and other measures, have found that, prior to competition, somatic worry tends to increase whereas cognitive worry and self-confidence remain constant.

Strategies to assist anxiety management work from two different directions. The first approach is to lower the physiological reactions to anxiety. Biofeedback and relaxed attention programs have been found to lower the physiological responses (Budzynski & Stoyva, 1984; Kellner, 1978; Ravizza & Rotella, 1981; Wenz & Strong, 1980). The reduction of muscle tension and heartrate decrease anxiety levels and increase concentration (Oxendine, 1980). The second approach that has been used is controlling the cognitive reactions. Maltz (1960) stated that a person's brain cannot tell the difference between a real or an imagined experience. Self-directed verbalizations and visualizations can restructure negative experiences to positive experiences (Maltz, 1960; Meichenbaum, 1975). The use of positive models can also increase the ability to overcome anxiety producing experiences (Bandura, 1969).

Self-directed visualizations are divided into two categories, external and internal (Mahoney & Avener, 1977).

External visualizations are visual in nature; in essence, the subject views the performance as a spectator. Internal visualizations are kinesthetic, in that the subject pretends to "feel" the performance (Cox, 1985). Mahoney and Avener (1977) found that internal visualizations worked best with elite gymnasts. Cox (1985) suggested that internal visualization results in subliminal muscle activity. The subliminal muscle activity aids in the body "remembering" the correct response for the actual performance.

Two specific strategies for controlling competitive A-state are the use of mastery and coping rehearsal. Originally mastery and coping rehearsal were used separately as modeling strategies (Bandura, 1969; Meichenbaum, 1971). The strategies have been used clinically with snake phobias and other fear responses to extinction. Later programs used mastery and coping in combination and as a self-rehearsal program (Ravizza & Rotella, 1981; Rotella et al., 1985).

Chapter 3

METHODS AND PROCEDURES

This chapter outlines the methods and procedures used in gathering the data for this investigation. It is divided into the following areas: (a) selection of subjects, (b) testing instruments, (c) training instruments and procedures, (d) method of data collection, (e) scoring of data, (f) treatment of data, and (g) summary.

Selection of Subjects

The population that served as subjects (N = 12) for this investigation consisted of freshman and sophomore physical education students enrolled in either a stunts and tumbling or gymnastic apparatus class, each of which required a gymnastic skill performance. Six treatment subjects volunteered to participate in a cognitive intervention program prior to the test session(s). Matching control subjects were chosen from the remainder of the students in the respective classes, all of whom completed two testing instruments. The control subjects were selected on the basis that their SCAT and PAQ scores were comparable to those of the treatment subjects.

Testing Instruments

The following tests were administered to the subjects: the SCAT (Appendix A), the PAQ (Appendix B), and the CSAI-2 (Appendix C).

The SCAT is a self-report questionnaire to assess

competitive trait anxiety. The SCAT includes 10 competitive anxiety and 5 filler items, which are evaluated using a 3-point scale. Martens (1977) reported impressive reliability and validity for the SCAT.

The PAQ is a self-report questionnaire designed to assess both perceived gymnastic ability and previous success in gymnastics. The PAQ includes 9 perceived gymnastic ability and 5 previous success items, using a 5-point scale. The PAQ was modified from Coulson and Cobb's (1979) Generalized Expectancy of Sport Success Scale, which revealed internal consistency of r = .96 and test-retest reliability of r = .90.

The CSAI-2 is a self-report questionnaire to assess three components of competitive state anxiety: cognitive worry, somatic worry, and self-confidence. The CSAI-2 includes 27 items, which are evaluated using a 4-point scale. Martens et al. (1983) reported content, concurrent, and construct validity, as well as reliability in comparison with other self-report anxiety inventories.

Training Instruments and Procedures

The treatment subjects were first given an explanation of the rationale and the principles of mastery and coping strategies. Next, instructions on the construction of mastery and coping scripts were given. Examples of the mastery and coping scripts were read to the treatment subjects and they were asked to create lists of anxiety

producing situations, coping statements, and mastery statements related to their gymnastic skill performance (either a balance beam routine or a series of gymnastic tumbling skills). The training instruments consisted of composites of these lists that were incorporated into mastery and coping scripts. The subjects utilized the instruments following the cassette listening schedule (Appendix D). The treatment lasted for 3 weeks immediately prior to the test sessions.

Method of Data Collection

The freshman and sophomore physical education students enrolled in either a stunts and tumbling or gymnastic apparatus class completed the PAQ and SCAT prior to the start of the training period. The students completed the CSAI-2 before the first class session of each week during the 3-week training period and immediately prior to the test sessions. Competitive state anxiety was, therefore, assessed three times during the treatment period and twice just prior to the test sessions.

Scoring of Data

The CSAI-2 was scored and recorded for the 3 treatment weeks and the two test sessions.

Treatment of Data

The data from the three treatment and two test sessions were averaged, graphed, and compared to assess whether treatment and control groups differed on three components of

competitive state anxiety. The data were also examined intraindividually.

Summary

Subjects for this study were 12 freshman and sophomore physical education students enrolled in either a stunts and tumbling or gymnastics apparatus class. Following the administration of pretreatment questionnaires (PAQ and SCAT) to match the 6 treatment subjects and 6 control subjects for their predisposition to be anxious in competitive situations and their perceived gymnastic ability and success, treatment subjects underwent an educational session. The treatment subjects were asked to construct lists of anxiety producing situations, coping statements, and mastery statements of their gymnastic skill performances. These lists were combined to create the composite mastery and coping rehearsal scripts used by the treatment subjects.

Treatment subjects listened to the mastery and coping dialogue tapes following the cassette listening schedule for the 3-week period immediately prior to the test sessions. During the training and test sessions, subjects' competitive state anxiety was assessed. The data were recorded and the treatment and control subjects' data were compared, both between groups and intraindividually, for significant changes in competitive state anxiety levels.

Chapter 4

ANALYSIS OF DATA

This chapter presents the data that were collected for the three treatment and two test sessions, using the CSAI-2. The CSAI-2 data consisted of cognitive worry, somatic worry, and self-confidence scales, comprising competitive state anxiety. The data were assessed for the five trials between the treatment and control groups. In addition, this chapter examines the data intraindividually.

Group Data Assessment

Treatment and control subjects' scores were averaged, graphed, and compared for the three categories of competitive state anxiety. These scores were collected on 3 treatment and 2 test days. Data for the three aspects of competitive state anxiety, over the five sessions, of the CSAI-2 are illustrated in Figures 1, 2, and 3.

The first category was cognitive worry. The treatment group showed a slight rise, from 22.40 to 23.33, before the test and then a decrease to 19.00 for the test sessions. The control subjects showed a decrease, from 21.67 to 19.00, after the first treatment session and then no change until the second test day where there was a decrease to 15.67. The treatment group was slightly less than 1 point above the control group on the first treatment day. The treatment group remained higher throughout the sessions, ending 4 points higher on the second test session.

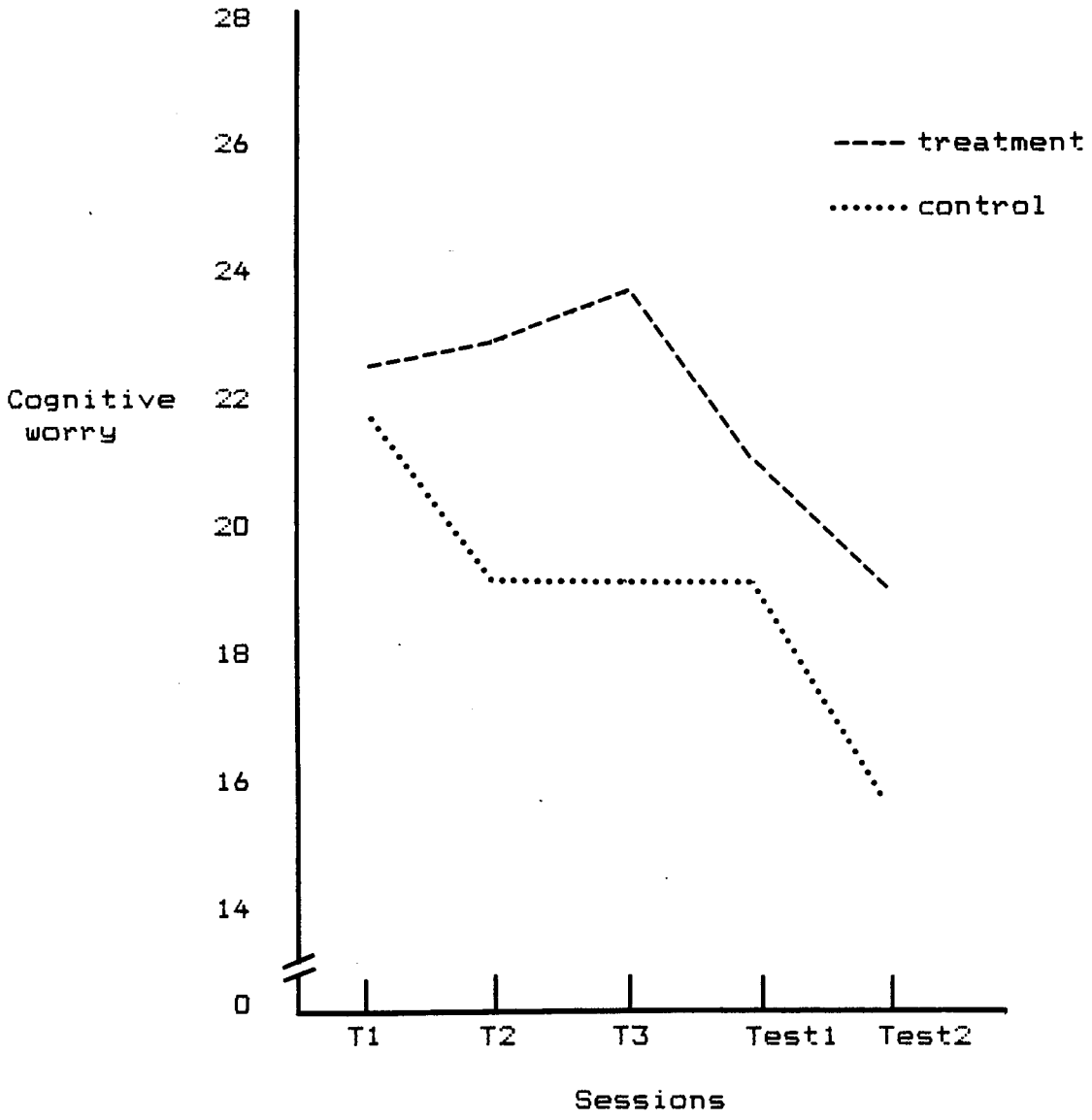

Figure 1. Cognitive worry scores.

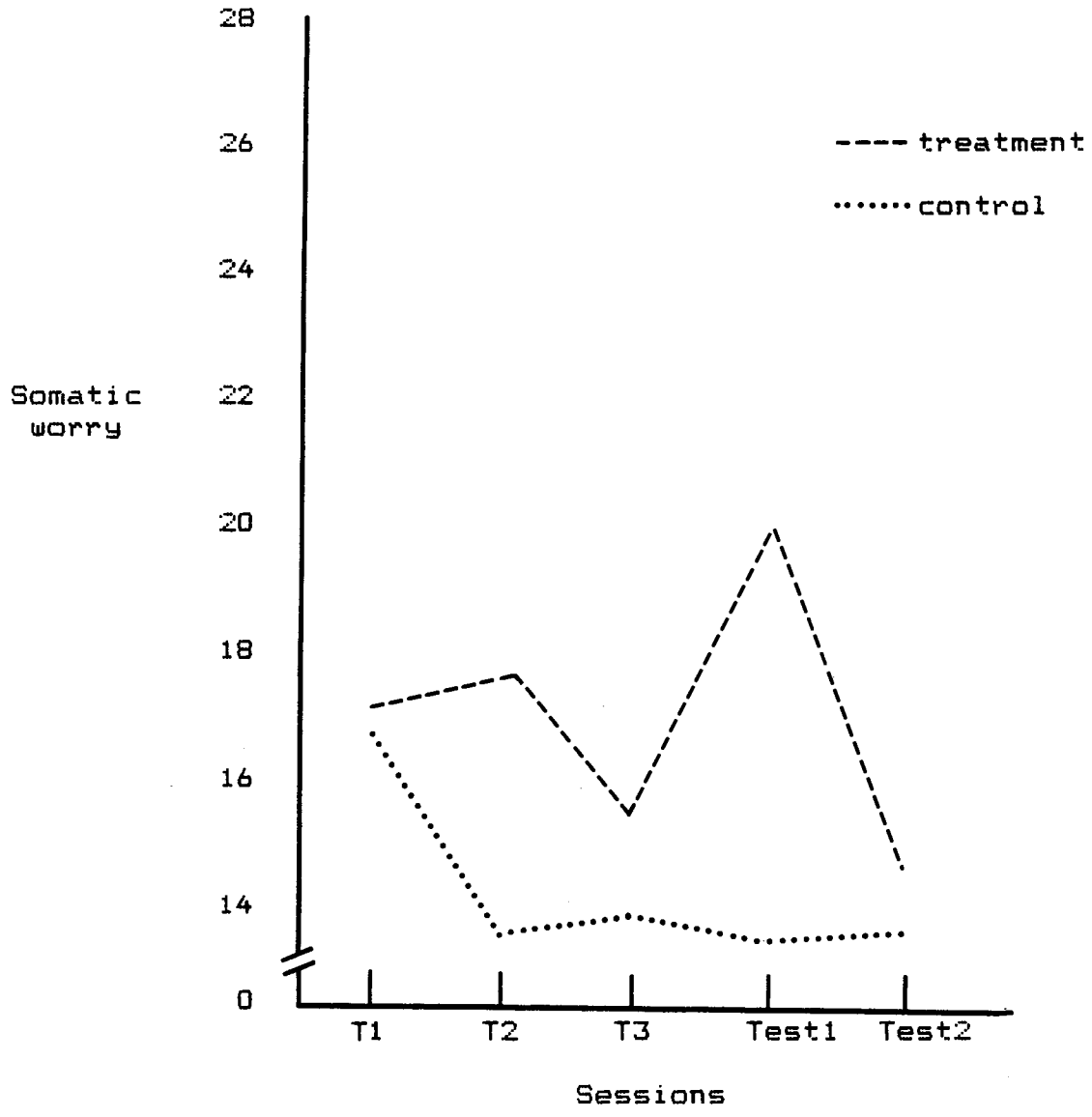

Figure 2. Somatic worry scores.

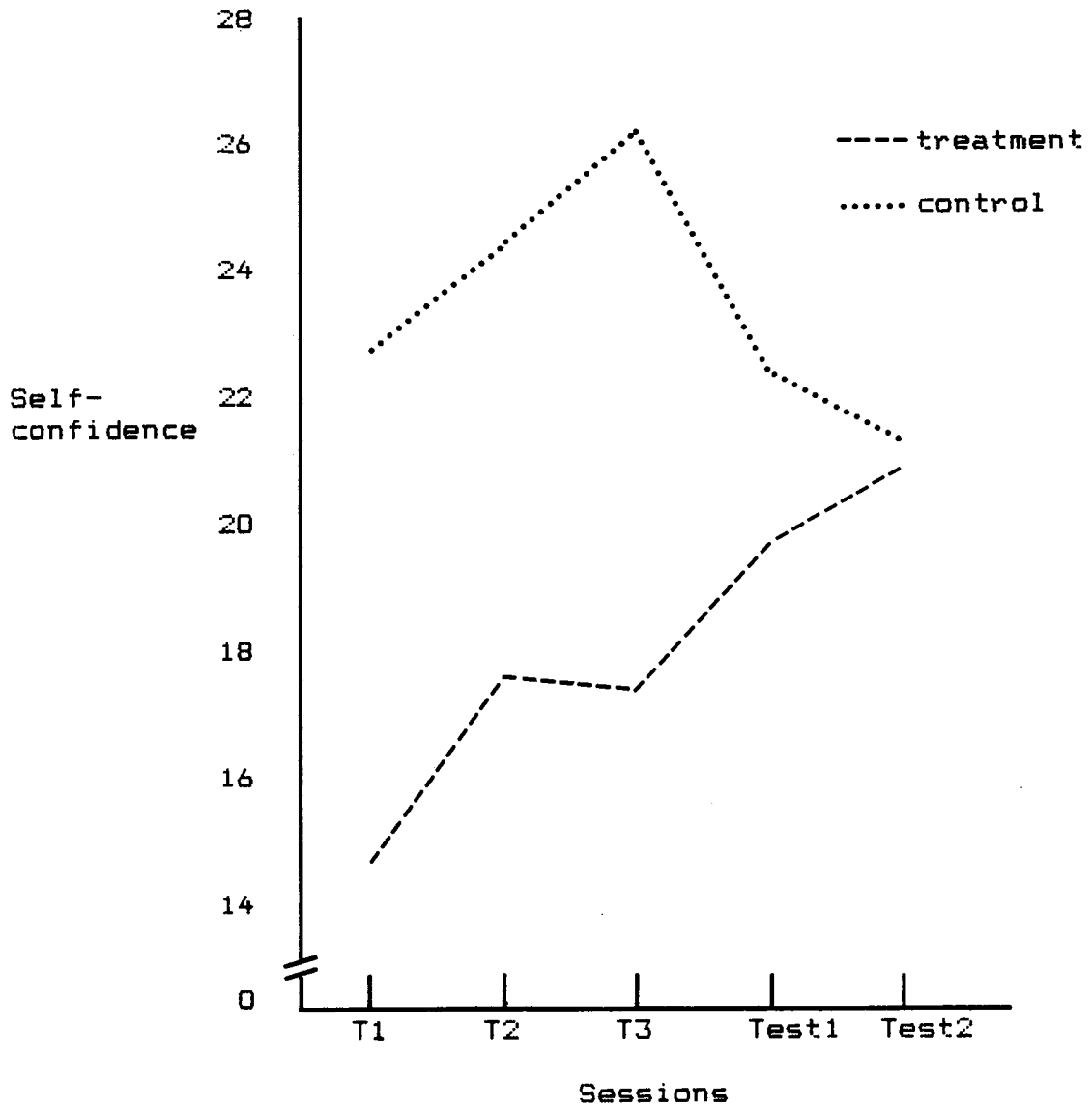

Figure 3. Self-confidence scores.

The second category was somatic worry. The treatment group showed a slight decrease, from 17.00 to 15.50, before the first test session. A sharp increase of 5 points, to 20.50, was recorded for the first test session. The second test session showed a 6-point drop to 14.50. The control group scores decreased slightly less than 3 points, from 16.33 to 13.40, after the first treatment session and then remained at approximately the same level through the test sessions. The treatment group was slightly less than 1 point higher than the control group for the first treatment session. The treatment group remained higher than the control group with a separation of over 7 points on the first test day and ending 2 points higher on the second test day.

The third category was self-confidence. The treatment group showed a steady increase (except for the third treatment session where the score was constant with the previous score), from 14.67 to 20.67, throughout the treatment period. The control subjects showed an increase, from 22.50 to 26.33, in the treatment sessions and then a decline of almost 5 points to 21.40 in the two test sessions. The treatment group was slightly less than 8 points lower than the control group for the 1st treatment day. The treatment group increased while the control group decreased during the test sessions to end up less than 1 point below the control group on the last test day.

Individual Data Assessment

Treatment Subject JE showed an initial drop of 3 points for cognitive worry from treatment Day 1 to treatment Day 2. JE's cognitive worry increased by 6 points from treatment Day 2 through the first test session and decreased 4 points for the second test session. Her somatic worry showed the same pattern with an initial drop and then an increase for the test sessions. The self-confidence component showed an initial increase of 3 points from treatment Day 1 to treatment Day 2 and then a decrease of 7 points by the second test session. The data indicate that the cognitive intervention program did not work for this test subject.

In contrast, JE's control subject, MS, showed a decrease of 8 points in cognitive worry from treatment Day 1 to test Day 1, with a 1-point increase on the second test session. The subject showed a slight increase in somatic worry and then a decrease through the test sessions, with the fluctuation being only 4 points. Self-confidence gradually increased 6 points, except on the second test session where it decreased 4 points.

The second treatment subject, ET, showed an increase in cognitive worry of 13 points from the first treatment session through the first test session and then a drop of 6 points for the second test session. The somatic worry data showed a slight fluctuation in the treatment sessions with an overall increase of 2 points, followed by a 12-point increase for the

first test session and a 13-point drop for the second test session. The self-confidence component showed great fluctuation. The scores rose for the second treatment session and for the first test session, whereas they decreased for the third treatment session and second test session. The scores all remained within a 3-point range for the self-confidence component. The data indicate that the cognitive intervention program did not work for this subject.

Comparatively, ET's control match showed an initial decrease in cognitive worry, from the treatment Day 1 to treatment Day 2, and then remained the same for the last treatment session and the test session in which she was involved. The somatic worry increased from treatment Day 1 to treatment Day 2 and from treatment Day 3 to test Day 1, but involved an increase of only 3 points. The self-confidence component showed a decrease of 3 points from the treatment to the test sessions.

The third treatment subject, MT, showed a drop in cognitive worry of 14 points over the duration of the investigation. MT did show a slight rise in cognitive worry for the third treatment session but then a decrease for the test sessions. The somatic worry scores showed a decrease of 5 points for treatment Day 2 and remained the same for treatment Day 3, a 7-point rise for the first test session and a decrease of 9 points for the second test session. The self-confidence component showed an increase of 5 points

during the three treatment sessions. The first test session revealed a 1-point drop and then an increase of 2 points for the second test session. The data indicate that the cognitive intervention program aided this treatment subject in competitive state anxiety management in the areas of cognitive worry and self-confidence.

Comparatively, MT's control subject, AH, provided data for the treatment sessions only. The cognitive worry component score dropped from 18 to 9 points, 9 points being the lowest score on the inventory, for the last treatment session. AH's somatic worry scores also dropped from 12 points on treatment Day 1 to 9 points on treatment Day 3, also the lowest score on the inventory. Self-confidence increased from 25 points, for treatment Days 1 and 2, to 36 points for treatment Day 3, 36 being the highest score on the inventory.

The fourth treatment subject, DP, showed a 1-point increase in cognitive worry for the second treatment session and then a steady decrease of 7 points through the second test session. Her somatic worry scores showed an increase of 5 points for the second treatment session and then a decrease of 8 points through the second test session. The self-confidence component remained uniform for the treatment sessions and then increased for the two test sessions. These data indicate that the cognitive intervention strategies aided the treatment subject in competitive state anxiety

management in the area of cognitive worry and self-confidence.

Comparatively, DP's control subject, SM, showed a 2-point fluctuation over the five sessions for cognitive worry. SM increased slightly in cognitive worry for the treatment sessions and decreased slightly for the test session. SM's somatic worry scores decreased by 8 points throughout the treatment and test sessions. The self-confidence component increased for the second treatment session and then decreased for the third treatment session and the test session, but only fluctuated by 3 points.

The fifth treatment subject, KP, showed a slight increase of cognitive worry for the third treatment session and then a decrease of 8 points for the two test sessions. KP's somatic worry scores decreased from the second treatment session to the third by 3 points, increased by 6 points for the first test session, and decreased by 2 points for the second test session. The self-confidence component steadily increased 10 points from the second treatment session to the second test session. The data indicate that the cognitive intervention program aided this treatment subject in competitive state anxiety management in the areas of cognitive worry and self-confidence.

Comparatively, KP's control subject, LB, showed a slight decrease of 3 points for cognitive worry through the treatment sessions and stayed uniform for the test sessions.

LB's somatic worry scores dropped by 4 points for the second treatment session and then remained relatively uniform for the rest of the treatment and test sessions, with a 1-point fluctuation. The self-confidence component stayed uniform throughout the treatment and test sessions.

The sixth treatment subject, KS, showed a decrease for the cognitive worry component of 1 point for the three treatment sessions. The score dropped 8 points from the third treatment session to the first test session and then increased 6 points for the second test session. Somatic worry scores increased 3 points for the second treatment session and then decreased 12 points for the third treatment. The test sessions' scores rose 4 points for the first and decreased 6 points for the second. The self-confidence scores increased steadily 20 points over the five recording sessions. The data indicate that the cognitive intervention program aided this treatment subject in managing competitive state anxiety in the area of self-confidence.

KS's control subject, CB, showed a steady decrease of cognitive worry and somatic worry. Cognitive worry decreased 5 points and somatic worry decreased 9 points. CB showed a uniform score for self-confidence with only a slight increase of 2 points on the last test session.

Summary

The group data indicate that there was no significant decrease in competitive state anxiety. The research

hypothesis, that subjects using mastery and coping rehearsal will be lower in competitive state anxiety than control subjects prior to a gymnastic performance test, was rejected.

The individual data indicate that there was no significant decrease in competitive state anxiety. Two of the treatment subjects (JE and ET) did not show a decrease in competitive state anxiety. Three treatment subjects (MT, DP, and KP) showed a slight decrease in cognitive worry and an increase in self-confidence, and one treatment subject (KS) showed an increase in self-confidence, all of which indicated that the cognitive intervention program may have aided the subjects in these aspects of competitive state anxiety.

Chapter 5

DISCUSSION OF RESULTS

This investigation used mastery and coping rehearsal, as desrcibed by Rotella et al. (1983) to lower competitive state anxiety of college female physical education students during training for and immediately prior to a gymnastic skill performance. This chapter provides a discussion of the results of the treatment and control groups' CSAI-2 scores for the three components of competitive state anxiety. This chapter also analyzes treatment subjects' results, both intraindividually and in comparison with matching control subjects.

The group results for the treatment and control groups were averaged, graphed, and compared for the three components of competitive state anxiety. The results indicated that there was no significant decrease in competitive state anxiety as a result of the mastery and coping rehearsal program. This finding led to the rejection of the research hypothesis that stated that subjects using mastery and coping rehearsal strategies will be lower in competitive state anxiety, than control subjects, prior to a gymnastic performance test.

The first category of competitive state anxiety was cognitive worry. The treatment group remained uniform during the first two treatment sessions and increased slightly prior to the third test session. Immediately prior to the first

test session there was a decrease in cognitive worry, which continued through the second test session. The use of the cognitive intervention program may have caused the treatment group to anticipate the skill performance test and to heighten their anxiety during the treatment sessions. However, immediately prior to the skill performance test the treatment subjects had lower cognitive worry because of the mastery and coping rehearsal program.

The control subjects (who did not receive any outside intervention) showed an immediate drop of 2.67 for the second treatment session and remained the same for treatment session 2 and test session 1. Their initial cognitive worry score may have been a result of the administration of the CSAI-2. Completing the CSAI-2 for the first time may have heightened their cognitive worry, but subsequent administrations of this inventory diminished this effect. The uniform scores for the last two treatment sessions and the first test session agrees with previous research on competitive state anxiety. Cox (1985), Liebert and Morris (1967), and Martens et al. (1983) all found that cognitive worry did not increase prior to competition.

Both groups experienced a drop for the second test session. This may have been caused by the realization that the skill performance was not as difficult as anticipated. If the subjects did not perceive the performance as being anxiety provoking, then expectedly the cognitive worry should

be lower.

Comparing the two groups, the control group had less cognitive worry than the treatment group. One explanation for the treatment group's higher level of cognitive worry was their desire to maximize their performance on this skill test, as shown by their voluntary participation in the cognitive intervention program. The control group did not perceive as much a threat from the outcome of the gymnastic skill performance and subsequently chose not to participate in the cognitive intervention program. This is shown throughout the data.

The second category of competitive state anxiety was somatic worry. The treatment group showed a decrease for the third treatment session and then an increase of 5 points for the first test session and a decrease of 6 points for the second test session. The data seem to indicate that, although the treatment group was cognitively worried on the last treatment day, they were not somatically worried. On the first test day the treatment group showed an increase that agrees with previous research findings (Cox, 1985; Liebert & Morris, 1967; Martens et al., 1983) that somatic worry tends to increase immediately prior to competition. The 6-point drop from the first test session to the second may indicate that the subjects did not perceive the skill performance test to be as difficult or threatening as initially anticipated.

The control group showed a drop of slightly less than 3 points from the first treatment session to the second and then remained at approximately the same level throughout the test sessions. Their initial somatic worry score may have been a result of the administration of the CSAI-2. Completing the CSAI-2 for the first time may have heightened their somatic worry (similar to their initial higher cognitive worry), but subsequent administrations of this inventory diminished this effect.

The lack of an increase on the first test session, contrary to reseachers' findings (Cox, 1985; Liebert & Morris, 1967; Martens et al., 1983) that somatic worry tends to increase immediately prior to a competition, also indicates little concern by the control group for the outcome of the gynastic performance test. Karteroliotis and Gill (1987) found this to be true for subjects involved in a pegboard task. In their study they concluded that the subjects did not perceive the task as threatening and, therefore, did not show the state anxiety that was expected.

Comparing the two groups shows that the control group did not demonstrate the somatic worry that research suggests should occur. The treatment group's data agreed with Cox (1985), Liebert and Morris (1967), and Martens et al. (1983) who found that somatic worry increases immediately prior to competition.

The third category of competitive state anxiety was

self-confidence. The treatment group revealed low self-confidence on the first administration of the CSAI-2. This indicated the treatment subjects' reason for volunteering for the cognitive intervention program. They did not feel self-confident about the gymnastic situation they were in. The treatment subjects exhibited a steady increase of self-confidence throughout the treatment and test sessions. The increase may indicate the treatment subjects' feelings of having prepared sufficiently and being confident in their ability to perform at the maximum of their gymnastic skill level.

The control subjects also exhibited an increase for the treatment sessions but experienced a decrease in self-confidence for both test sessions. The control subjects may have given themselves a "false" sense of self-confidence concerning the skill performance test, telling themselves that they were prepared to handle the skill performance test. The anxiety of the test sessions dispelled the false confidence and the scores decreased for both the first and second test sessions.

Comparing the two groups, the treatment subjects started 8 points below the control subjects. Both groups increased in self-confidence during the treatment sessions. The treatment group continued to increase in self-confidence during the test sessions while the control group decreased. The treatment group finished less than 1 point less than the

control group. The treatment group's increase during the test sessions might indicate the cognitive intervention program's effects.

To subjectively assess and discuss the influence of individual scores on the results of the study, the individuals were grouped into three categories. The first category included those athletes who felt slightly successful, had a slightly higher than average level of ability, and had a moderate level of competitive trait anxiety. The second group included those athletes who felt a slightly less than median level of success, had a perceived median level of ability, and had a higher level of competitive trait anxiety than the first group. The third group included those athletes who felt a low level of success, had a low level of ability, and revealed low competitive trait anxiety.

Two treatment subjects (JE, ET) met the criteria for the first category. These two subjects revealed previous success scores of 16 (JE) and 19 (ET) out of 25; perceived ability scores of 32 out of 45; and SCAT scores of 20 (JE) and 15 (ET) out of 30. Both treatment subjects showed an increase in cognitive worry for the first test session and then a decrease for the second test session. Their somatic worry scores decreased after the first treatment session and then increased through the first test session with a decrease for the second test session. Their self-confidence scores were

inconsistent. JE showed a slight increase for the second treatment session and then a decrease through the rest of the sessions, whereas ET showed a fluctuation for each session either increasing or decreasing within a 3-point range. The lower cognitive and somatic worry for the treatment sessions may represent the influence of their previous success and perceived ability. Their increase of cognitive worry on the first test day may show their predisposition to be anxious in competitive situations. This increase of cognitive and somatic worry with either a decrease (JE) or fluctuating changes (ET) in self-confidence show that the cognitive intervention program did not work for these subjects.

The matching control subjects had a decrease of cognitive worry over the treatment and test sessions. The control subjects did not show a change in somatic worry of more than three points. Self-confidence increased for JE's control subject, whereas it went down slightly for ET's control subject. The control subjects' scores indicate that they did not feel a threat about the outcome of the skill performance test. If there is no perception of threat, then subjects will not experience the same degree of anxiety as a subject who perceives the situation as threatening (Karteroliotis & Gill, 1987).

The data indicate that subjects with some previous success, who report a higher than average level of perceived ability, and are relatively anxious in competitive situations

will not be aided by mastery and coping rehearsal as presented in this study.

Three treatment subjects (KP, DP, MT) met the criteria for the second category. These three subjects had previous success scores of 12 (KP), 11 (DP), and 13 (MT) out of 25: perceived ability scores of 23 (KP), 22 (DP), and 27 (MT) out of 45; and SCAT scores of 23 (KP), 26 (DP), and 26 (MT) out of 30. The three treatment subjects showed a decrease of cognitive worry and an increase of self-confidence throughout the treatment and test sessions. The subjects' somatic worry scores differed in that KP and MT showed a decrease in the treatment sessions and then an increase in the first test session with a decrease in the second test session. DP showed an increase in the second treatment session and then a decrease in the last treatment session and the two test sessions. The data indicate that the mastery and coping rehearsal program did aid these subjects in competitive state anxiety management in the areas of cognitive worry and self-confidence. The median level of perceived success and ability with a higher SCAT score might show that the cognitive intervention program will assist these type of athletes with cognitive worry and self-confidence. The somatic worry differences between the treatment subjects can be explained by the cognitive intervention program not including a somatic component. The treatment subjects revealed individualized responses without the management

techniques.

The control subjects for KP and DP showed a fluctuation of 3 or less points for cognitive worry with KP's control decreasing 3 points and DP's control subject increasing 2 points over the treatment sessions and decreasing 1 point for the test session. Both control subjects decreased in somatic worry and remained relatively uniform for self-confidence. The control subjects revealed a decrease in competitive state anxiety that does not agree with previous research. Researchers (Cox, 1985; Liebert & Morris, 1967; Martens et al., 1983) stated that cognitive worry and self-confidence remain unchanged prior to competition while somatic worry will increase. The control subjects decreased in somatic worry for the gymnastic skill performance. This indicates that the control subjects in this group did not interpret the test as threatening and, therefore, did not show competitive state anxiety. The third matching control subject did not participate in the gymnastic performance test and her scores for the last treatment session indicate her knowledge of this. She scored the lowest possible score on cognitive and somatic worry and the highest possible score on self-confidence.

The data indicate that subjects with a median level of previous success and perceived ability and a high predisposition to be anxious in competive situations will be aided by mastery and coping rehearsal in decreasing cognitive

worry and increasing self-confidence.

One treatment subject (KS) belonged in the third group. This subject had a previous success score of 5 out of 25; a perceived ability score of 15 out of 45; and a SCAT score of 12 out of 30. KS's cognitive worry decreased for the first test session and then increased for the second test session. The somatic worry scores decreased on the last treatment day and then increased for the first test session and decreased for the second test session. The self-confidence scores increased steadily from the lowest score possible to a 20-point increase. The data indicate that mastery and coping rehearsal aided her self-confidence. The decrease and then increase in cognitive worry for the test sessions indicate that she anticipated the skill performance test as being less anxiety provoking than it was. This explains the decrease of cognitive worry for the second test session. The somatic worry increase for the first test session agrees with research that somatic worry will increase prior to a competition.

The matching control subject steadily decreased in cognitive and somatic worry over the treatment and test sessions. Her self-confidence remained uniform until the second test session where it increased 2 points. The decrease in somatic worry indicated that this control subject did not perceive the outcome of the skill performance test as threatening and did not reveal competitive state anxiety.

The data indicate that subjects with low previous success, low perceived ability, and low competitive trait anxiety will be aided by mastery and coping rehearsal in increasing self-confidence.

Because the mastery and coping rehearsal program was not individualized, the treatment subjects may not have been satisfied with the program. A dissatifaction with the program would cause the treatment subjects to be unmotivated in its use. The lack of motivation to use the program would reduce the subjects' ability to experience the potential changes. Averill (1973) agreed with this when he stated that a cognitive strategy program must be personalized and meet individual's needs to be effective.

Summary

The directional hypothesis, stating that subjects using mastery and coping rehearsal will reveal lower competitive state anxiety than control subjects prior to a gymnastics skill performance, was rejected. The treatment group results, even though they were higher in competitive state anxiety, did reveal a decrease in cognitive worry and an increase in self-confidence. The treatment groups increase in somatic worry revealed by the data prior to the first test session agreed with previous findings (Cox, 1985; Liebert & Morris, 1967; Martens et al., 1983) that somatic worry tends to increase prior to competition.

The control group revealed less competitive state

anxiety for the gymnastic skill performance. The lack of increase prior to the first test session for somatic worry indicated that the control group did not feel a threat for the outcome of the gymnastic skill performance. Karteroliotis and Gill (1987) stated that subjects who do not perceive a task as threatening will not exhibit the physiological component of competitive state anxiety.

The individual results for the treatment subjects showed an increase in cognitive and somatic worry and a decrease or no change in self-confidence for 2 subjects; a decrease of cognitive worry and an increase of self-confidence for 3 treatment subjects; and an increase of self-confidence for 1 treatment subject. Therefore, the mastery and coping rehearsal program seemed to aid 4 subjects in one or two components of competitive state anxiety.

The treatment subjects' results indicate that subjects with some previous success, a higher than average level of perceived ability, and a predisposition to be anxious in competitive situations will not be aided by mastery and coping rehearsal as presented in this study. Subjects with a median level of previous success and perceived ability and a predisposition to be anxious in competitive situations will be aided by mastery and coping rehearsal in decreasing cognitive worry and increasing self-confidence. Subjects with low previous success, low perceived ability, and low competitive trait anxiety will be aided by mastery and coping

rehearsal in increasing self-confidence.

The control subjects' individual results reinforced the group results that these subjects did not feel a threat from the anticipated outcome of the gymnastic performance test and, therefore, did not manifest the physiological component of competitive state anxiety.

Finally, there are two deficiencies in the mastery and coping rehearsal programs. The first deficiency in the mastery and coping rehearsal program was the lack of a somatic component. This was revealed in the group and individual data by the increase in somatic worry for all but 1 treatment subject. A second deficiency is a lack of personalization of the cognitive intervention program, which may have prevented competitive state anxiety management for treatment subjects to take place.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

This study assessed the effectiveness of mastery and coping rehearsal in lowering competitive state anxiety prior to a gymnastic skill performance. The subjects were 12 freshman or sophomore physical education students enrolled in either a stunts and tumbling or gymnastic apparatus class (6 of whom volunteered to participate in the cognitive intervention program).

All class members completed a SCAT and PAQ. The 6 treatment subjects were matched to 6 students with comparable scores. The treatment subjects underwent a training session that included an explanation and examples of mastery and coping rehearsal. Next, the treatment subjects were asked to create lists of anxiety producing situations, coping statements, and mastery statements related to their gymnastic skill performance. The training instrument consisted of composites of these lists that were incorporated into mastery and coping scripts. The treatment subjects listened to these scripts following a prescribed listening schedule.

The students in the classes completed the CSAI-2 before the first class session of each week during the 3-week training period and immediately prior to the test sessions. The CSAI-2 was scored and recorded for the three treatment

and two test sessions. The data were then averaged, graphed, and compared to assess whether treatment and control subjects differed on the three components of competitive state anxiety. Data were also examined intraindividually.

Group results indicated that there was no significant decrease in state anxiety. The research hypothesis, that subjects using mastery and coping rehearsal will be lower in competitive state anxiety than control subjects prior to a gymnastic skill performance, was rejected.

The individual results indicated that, where the subjects had a lower than median level of perceived ability and previous success, mastery and coping rehearsal increased self-confidence and decreased cognitive worry. However, with a higher than median level of perceived ability and previous success, mastery and coping rehearsal did not aid the subjects. The control subjects' results indicated that the outcome of the gymnastic skill performance test was not perceived as a threat and, therefore, they did not manifest the physiological component of state anxiety.

The treatment subjects showed increases in somatic worry immediately prior to the test sessions. Somatic worry was caused by the lack of a somatic component in the mastery and coping rehearsal program.

Conclusions

The results of the study yielded the following conclusions:

1. Subjects using mastery and coping rehearsal strategies do not significantly decrease their competitive state anxiety, compared to control subjects, prior to a gymnastic skill performance.

2. Subjects with lower than median levels of perceived ability and previous success increase their self-confidence and decrease their cognitive worry immediately prior to a gymnastic skill performance.

Recommendations for Further Study

1. A study should be undertaken with a somatic component included in the mastery and coping rehearsal strategies.

2. A study should be undertaken with the mastery and coping rehearsal strategies individualized for each subject.

3. A study should be undertaken which includes an evaluation of the mastery and coping rehearsal strategies by the subjects.

4. A larger pool of subjects should be sought. This would allow for generalizability of results as well as an assessment of the comparative effectiveness of mastery and coping rehearsal strategies.

Appendix A

ILLINOIS COMPETITION QUESTIONNAIRE - FORM A

Name:_____ Age:___ Sex:___

DIRECTIONS: Below are some statements about how persons feel when they compete in sports and games. Read each statement and decide if you HARDLY-EVER, or SOMETIMES, or OFTEN feel this way when you compete in sports and games. If your choice is square HARDLY-EVER, blacken the square labeled A, if your choiced is SOMETIMES, blacken the square labeled B, and if your choice is OFTEN, blacken the square labeled C. There are no right or wrong answers. Do not spend too much time on any one statement. Remember to choose the word that describes how you usually feel when competing in sports and games.

	Hardly-Ever	Sometimes	Often
1. Competing against others is socially enjoyable.	[_] A	[_] B	[_] C
2. Before I compete I feel uneasy.	[_] A	[_] B	[_] C
3. Before I compete I worry about not performing well.	[_] A	[_] B	[_] C
4. I am a good sportsman when I compete.	[_] A	[_] B	[_] C
5. When I compete I worry about making mistakes.	[_] A	[_] B	[_] C
6. Befopre I compete I am calm.	[_] A	[_] B	[_] C
7. Setting a goal is important when competing.	[_] A	[_] B	[_] C
8. Before I compete I get a queasy feeling in my stomach.	[_] A	[_] B	[_] C

9. Just before competing I notice my heart beats faster than usual.	[_] A	[_] B	[_] C
10. I like to compete in games that demand considerable physical energy.	[_] A	[_] B	[_] C
11. Before I compete I feel relaxed.	[_] A	[_] B	[_] C
12. Before I compete I am nervous.	[_] A	[_] B	[_] C
13. Team sports are more exciting than individual sports.	[_] A	[_] B	[_] C
14. I get nervous wanting to start the game.	[_] A	[_] B	[_] C
15. Before I compete I usually get up tight.	[_] A	[_] B	[_] C

Appendix B

PERSONAL ASSESSMENT QUESTIONNAIRE (FORM G)

Name:_____

Class:_____

Please mark X in the space that best represents your personal assessment of the statements. Example: If you have always been a successful gymnastics student, mark X in the left hand space; if you have been unsuccessful as often As successful, mark X in the middle space; if you have been an unsuccessful gymnastics student, mark X in the right hand space.

As a gymnastics student I have been generally

successful	__	__	__	__	__	unsuccessful
unnoticed	__	__	__	__	__	recognized
frustrated	__	__	__	__	__	rewarded
happy	__	__	__	__	__	sad
uncertain	__	__	__	__	__	confident

My gymnastic ability is

above average	__	__	__	__	__	below average
bad	__	__	__	__	__	good
ridiculed by instructors	__	__	__	__	__	praised by instructor
superior	__	__	__	__	__	inferior
limited	__	__	__	__	__	broad
praised by others	__	__	__	__	__	ridiculed by others
encouraging	__	__	__	__	__	frustrating
strong	__	__	__	__	__	weak
worse than most	__	__	__	__	__	better than most

Appendix C

ILLINOIS SELF-EVALUATION QUESTIONNAIRE

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 D

CASSETTE LISTENING SCHEDULE

Stunts and Tumbling

Date		Tape Choice
4/11		C
4/12		C
4/13		C
4/14		M
4/15		C
4/16		C
4/17		M
4/18		C
4/19		M
4/20		M
4/21		C
4/22		C
4/23		M
4/24		C
4/25		M
4/26	Testing	M
4/27		M
4/28	Testing	

Note. C = Coping. M = Mastery.

REFERENCES

Averill, J. R. Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin*, 1973, 80, 286-303.

Bandura, A. *Principles of behavior modification*. N.Y.: Holt, Rinehart, & Winston, 1969.

Benson, H. *The relaxation response*. New York: Avon, 1976.

Budzynski, T. H., & Stoyva, J. M. Biofeedback methods in the treatment of anxiety and stress. In R. L. Woolfolk & P. M. Lehrer (Eds.), *Principles and practice of stress management*. New York: The Guilford Press, 1984.

Carron, A. V. Reactions to "anxiety and motor behavior". *Journal of Motor Behavior*, 1971, 3, 181-188.

Coulson, R., & Cobb, R. B. *Development and assessment of a scale to measure generalized expectancy of sport success*. Paper presented at the meeting of the American Alliance for Health, Physical Education, Recreation, and Dance, New Orleans, March, 1979.

Cox, R. H. *Sport psychology: Concepts and applications*. Dubuque, Ia.: Brown, 1985.

Daniels, F. S., & Landers, D. M. Biofeedback and shooting performance: A test of disregulation and systems theory. *Journal of Sport Psychology*, 1981, 4, 271-282.

DeWitt, D. J. Cognitive and biofeedback training for stress reduction with university athletes. *Journal of Sport Psychology*, 1980, 2, 288-294.

Duffy, E. The psychological significance of the concept of "arousal" or "activation." Psychology Review, 1959, 66, 183-201.

Finch, A. J., Kendall, P. C., Montgomery, L. E., & Morris, T. Effects of two types of failure on anxiety. Journal of Abnormal Psychology, 1975, 84, 583-585.

Fitzpatrick, G. F. Cognitive mediations in basketball foul shooting. Unpublished master's thesis, Ithaca College, 1981.

Girdano, D., & Everly, G. Controlling stress and tension: A holistic approach. Englewood Cliffs: Prentice Hall, 1979.

Girodo, M., & Wood, D. Talking yourself out of pain: The importance of believing that you can. Cognitive Therapy and Research, 1979, 3, 23-33.

Karteroliotis, C., & Gill, D. L. Temporal changes in psychological and physiological components of state anxiety. Journal of Sport Psychology, 1987, 9, 261-274.

Kellner, S. Taking it to the limit with basketball cybernetics. East Setauket, N.Y.: Author, 1978.

Kroll, W. The stress of high performance athletics. In P. Klavora & J. V. Daniel (Eds.), Coach, athlete, and the sport psychologist. Toronto: University of Toronto School of Physical and Health Education, 1979.

Landers, D. M. The arousal-performance relationship revisited. Research Quarterly for Exercise and Sport, 1980, 50, 77-90.

Lane, J. F. Improving athletic performance through VMBR. In R. M. Suinn (Ed.), Psychology in sports: Methods and applications. Minneapolis: Burgess, 1980.

Liebert, R. M., & Morris, L. W., Cognitive and emotional components of test anxiety: A distinction and some initial data. Psychological Reports, 1967, 20, 975-978.

Maltz, M. Psycho-cybernetics. Englewood Cliffs: Prentice-Hall, 1960.

Mahoney, M. J., & Avener, M. Psychology of an elite athlete: An exploratory study. Cognitive Therapy and Research, 1977, 1, 135-141.

Martens, R. Sport Competition Anxiety Test. Champaign, Il.: Human Kinetics, 1977.

Martens, R., Burton, D., Rivkin, F., & Simon, J. Reliability and validity of the Competitive State Anxiety Test (CSAI). In C. H. Nadeau, W. R. Halliwell, K. M. Newell, and G. C. Roberts (Eds.), Psychology of motor behavior and sport-- 1979. Champaign Il.: Human Kinetics, 1980.

Martens, R., Burton, D., Vealey, R. S., Bump, L. A., & Smith, D. E. Competitive State Anxiety Inventory-2. Unpublished manuscript, University of Illinois, 1983.

Martens, R., & Landers, D. M. Motor performance under stress: A test of the inverted U hypothesis. Journal of Personality and Social Psychology, 1970, 16, 29-37.

McKim, R. H. Experience in visual thinking. Monterey, Ca.: Brooks/Cole, 1972.

Meichenbaum, D. A self-instructional approach to stress management: A proposal for stress inoculation training. In C. D. Spielberger & I. G. Sarason (Eds.), Stress and anxiety (Vol. 1). Washington, D. C.: Hemisphere, 1975.

Meichenbaum, D. Examination of model characteristics in reducing avoidance behavior. Journal of Personality and Social Psychology, 1971, 17, 298-307.

Meichenbaum, D. Cognitive-behavior modification--An integrative approach. New York: Plenum, 1979.

Newmark, C.S., Faschingbauer, T. R., Finch, A. J. & Kendall, P. C. Factor analysis of the MMPI-STAI. Journal of Clinical Psychology, 1975, 31, 449-452.

Nideffer, R. M. The inner athlete. New York: Crowell, 1976.

Olton, D. S., & Noonberg, A. R. Biofeedback: Clinical applications in behavioral medicine. Englewood Cliffs, N.J.: Prentice-Hall, 1980.

Oxendine, J. B. Emotional arousal and motor performance. In R. M. Suinn (Ed.), Psychology in sports: Methods and applications. Minneapolis: Burgess, 1980.

Ravizza, K., & Rotella, R. Cognitive somatic behavior interventions for maximizing gymnastic performance. Paper presented at the Second Annual Pre-convention Symposium of the Sport Psychology Academy, Boston, Massachusetts, 1981.

Richardson, A. Mental practice: A review and discussion, Part 1. Research Quarterly, 1967, 38, 95-107.

Rotella, R., Malone, C., & Ojala, D. Facilitating athletic performance through the use of mastery and coping tapes. In L. K. Bunker, R. J. Rotella, & A. S. Reilly (Eds.), Sport psychology: Psychological considerations in maximizing sport performance. Ann Arbor, Mi.: McNaughton and Gunn, 1985.

Sieber, J. E. Development of the concept of anxiety. In J. E. Sieber, H. F. O'Neil Jr., & S. Tobias (Eds.), Anxiety, learning and instruction. Hillsdale, N.J.: Lawrence Erlbaum, 1977. (a)

Sieber, J. E. How shall anxiety be defined? In J. E. Sieber, H. F. O'Neil Jr., & S. Tobias (Eds.), Anxiety, learning and instruction. Hillsdale, N.J.: Lawrence Erlbaum, 1977. (b)

Sokolov, A. N. [Inner speech and thought] (G. T. Onischenko, trans.). New York: Plenum, 1972.

Spielberger, C. D. STAI preliminary manual. Palo Alto, Ca.: Consulting Psychologists Press, 1973.

Spielberger, C. D. Theory and research on anxiety. In C. D. Spielberger (Ed.), Anxiety and behavior. New York: Academic Press, 1966.

Suinn, R. M. Body thinking: Psychology for Olympic champs. In R. M. Suinn (Ed.), Psychology in sports: Methods and applications. Minneapolis: Burgess, 1980.

Suinn, R. M. Behavior rehearsal training for ski racers. Behavior Therapy, 1972, 3, 103-106.

Wenz., & Strong, D. An application of biofeedback and self-regulation procedures with superior athletes: The fine tuning effect. In R. Suinn (Ed.), Psychology in sports: Methods and applications. Minneapolis: Burgess, 1980.

Zaichkowsky, L. D. Biofeedback for self-management of competitive stress. In L. D. Zaichkowsky (Ed.), Stress management for sport. Reston, Va.: American Alliance for Health, Physical Education, and Recreation, 1982.