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UNIVERSITY OF ALBERTA

Stress Management Training for High Performance Female Athletes

by

Helen Williamson

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

Master of Arts

Department of Physical Education and Sport Studies

EDMONTON, ALBERTA

Fall, 1991

ISBN 0-315-70063-7

UNIVERSITY OF ALBERTA

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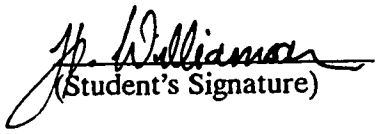
DEGREE:	Master of Arts
YEAR THIS DEGREE GRANTED:	1991



(Student's Signature)

19 Reahill Road, Carntall,

Newtownabbey, Co. Antrim,

Northern Ireland, BT36 8SF.

Date: July 23, 1991

When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge.

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Stress Management Training for High Performance Female Athletes submitted by Helen Williamson in partial fulfillment of the requirements for the degree of Master of Arts in Physical Education and Sport Studies.

Dr. Rikk Alderman

Dr. Gerry Redmond

Dr. Tim Burton

Date: July 23, 1991

DEDICATION

To my parents

Wilby and Marie

Abstract

The objective of this study was to investigate the effectiveness of the Cognitive-Affective Stress Management Training (SMT) program in reducing pre-game stress in high performance female soccer players (n = 18). The players were assigned to one of two groups: treatment or control. Factors potentially related to competitive stress, situation-specific coping tendencies and imagery use were assessed at pretreatment, posttreatment, and follow-up periods. Results indicated a significant reduction in the treatment group's tendency to experience disruption of concentration pretreatment to posttreatment. High levels of somatic A-state were reported in the treatment group at posttreatment without increments in cognitive A-state. These findings supported the cognitive-somatic distinction of the anxiety response. Both the treatment and the control groups engaged in significantly more active coping pretreatment to posttreatment, which then decreased noticeably to follow-up. The treatment group used more external imagery perspectives and more imagery after soccer practice and during unrelated activities than the control group. There is a demand for further empirical verification of the contribution of the components of SMT to overall program effectiveness.

Acknowledgements

I would like to extend my gratitude to the members of my thesis committee: Dr. Rikk Alderman (Chairman), Dr. Gerry Redmond and Dr. Tim Burton.

I would also like to extend special thanks to my Chairman, Dr. Rikk Alderman, for his encouragement, guidance and support throughout my program at the University of Alberta.

To Dr. Marcel Bouffard for his statistical expertise.

To Jan 'M' Harris for typing and organizing this thesis.

To the coaches and players of the Panda Soccer Team.

To Mr. David and Noella Lee Pong for their support and friendship.

To my family, friends and colleagues.

* * *

Finally, I would like to acknowledge Tim
and Rose-Marie, two special people, who
gave me precious memories, and saw me
through.

My heart knows them well.

* * *

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CHAPTER I

Plan of the Study

A. Introduction

The paradoxical nature of sport and the multidimensionality of stress render complex the relationship between sport and stress. Sport is a paradox because it is a human endeavour that may be playful or serious, important or trivial, expressive or instrumental, and intrinsically or extrinsically rewarding (Santomier, 1983). The competitive ethos permeating the ideologies of modern societies has resulted in the near neurotic obsession with winning, an obsession found at all levels of organized sport. This emphasis upon the "performance principle" (Ingram, 1975) in sport has placed excessive demands upon athletes by coaches, parents, peers, and the athletes themselves.

Stress in sport occurs when participants are confronted with demands, constraints, or opportunities which are perceived as threatening to important values or goals, or as exceeding the capabilities of the players to meet the demands. High levels of athletic stress may appear in the form of negative emotions (e.g., anxiety, fear, lack of enjoyment); motor behavioural responses (e.g., sport performance problems); impaired or enhanced cognitive functioning; increased likelihood of injury (Cryan and Alles, 1983) and various physiological responses (Santomier, 1983).

The range of stimuli and situations capable of producing stress reactions in humans is exceedingly wide and depends upon the age, experiences, and intellectual capacities of the individuals. Stress responses that appear in a specific manner in children may appear differently in adults, and vice versa. Sport situations that may be stressful to children may not provoke stress in adults, and vice versa.

Lazarus and his colleagues (Lazarus, 1966, 1968, 1975; Lazarus and Averill, 1972;

Lazarus, Averill, and Opton, 1970; Lazarus and Cohen, 1977; Lazarus and Launier, 1978) developed a conceptual framework which suggests that stress relationships occur as a result of a transaction between the person factors and the environment. The transactional approach to psychological stress emphasizes cognitive appraisal processes. Lazarus and Folkman (1984) proposed three prominent stress appraisals: harm/loss, threat, and challenge. Harm/loss refers to psychological or physical injury already done e.g. head injury or lack of self-confidence. Threat refers to the potential for loss or harm. Challenge refers to the potential for benefit or the opportunity for growth, mastery or gain.

Traditional research on stress, coping, and adaptation has been primarily concerned with discovering the antecedents or causal variables of the adaptational outcome. The variables are regarded as static, structural, unchanging phenomena. This antecedent-consequent approach is motivated by the assumption that life-event demands and personality variables have predictive value for somatic, subjective, or behavioural adaptation. This type of research fails to provide the opportunity to observe the ongoing process created by the dynamic interplay between causal agents such as environmental demands, perception of the demands, and individuals ability to manage these demands.

Contemporary research in the behavioural sciences (see Epstein, 1983; Nygard, 1981, 1982) is moving towards a process-orientated definition and conceptualization of coping. Coping was defined by Lazarus and Folkman (1984) as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p.141). This definition recognizes the limitations of trait-orientated approaches. Consequently, the implications are that in order to gain a greater understanding of stress, coping and

adaptation, theoretical emphasis must be given to these phenomena as dynamic processes. For example, in stressful encounter, feelings and thoughts, constantly change in quality and intensity as appraised significance of the person-environment relationship shifts from stage to stage of the transaction (Carver, Scheier, and Weintraub, 1990; Crocker, 1988; Lazarus and Folkman, 1984). Several self-report measures of coping exist, namely, The Ways of Coping Checklist (WCC) (Lazarus and Folkman, 1980); Ways of Coping Questionnaire (WCQ) (Folkman and Lazarus, 1988); Multidimensional Coping Inventory (MCI) (Endler and Parker, 1990); COPE (Carver, Scheier, and Weintraub, 1989). Research by Carver et al. (1989) demonstrated that the COPE inventory has superior psychometric properties to the other coping instruments.

At the highest level of competition players require psychological assistance to play at their peak and maximise their potential (Davey, 1987). Therefore, it is essential that coaches, players, administrators and parents understand how and why stress mechanisms operate in sports settings, and to possess a means of coping with these stressors. In the field of sport psychology stress management programs provide athletes with a means of controlling dysfunctional stress processes in an individualized manner. Coaches believe that there is an optimum level of arousal for each athlete in different situations. However, achievement and maintenance of an appropriate arousal state has been a hit and miss affair. Most coaches are not certain which intervention strategies are most effective or suitable for the player or how to implement a program (Feltz and Landers, 1981). Coping skills training programs that help individuals acquire, develop, practice, and apply appropriate skills have been advocated to help reduce or eliminate stress problems (Meichenbaum, 1985; Smith, 1986). Three coping skills intervention programs represent attempts to combine a number of effective clinical techniques into an

educational program for self-regulation of emotional responses in athletes; anxiety management training (Suinn and Richardson, 1971), stress inoculation training (SIT) (Meichenbaum, 1977) and the cognitive-affective stress management training program (SMT) (Smith, 1980). To date, few studies have been conducted which prove the worth of the SMT or the other stress management programs.

Despite claims that cognitive-affective stress management training is an effective means of controlling potentially stressful situations and enhancing sports performance, further scientific verification is required (Crocker, 1988; Smith and Smoll, 1982). Evidence within the literature (Smith and Smoll, 1978; Nye, 1979; Smith, 1980; Ziegler, Klinzing and Williamson, 1982) consists primarily of case studies or group studies that lack control conditions. Crocker, Alderman and Smith (1988) conducted a controlled quasi-experimental exploratory study that assessed SMT with high-performance youth volleyball players. This research provided converging evidence that SMT has the potential to help athletes manage stressful situations. Crocker et al. (1988) found assessments at pretreatment and posttreatment revealed significant improvements in service reception performance and fewer negative self-statements to volleyball-specific stressors for the SMT group compared to the control group. However, the anxiety measures did not reveal any significant differences or distinguishable trends between groups. The lack of consistent anxiety-suppressing effect, despite the evidence that players reported relaxation as a preferred and effective coping strategy, lead Crocker et al. (1988) to a more controversial speculation that challenges the theoretical foundations of the coping skills model. The primary premise of cognitive arousal theories, is that changes in cognitions should produce alterations in affect (Lazarus, 1984; Weiner, 1985; Vallerand, 1987). Similiarily, Smith (1986) stated that change in one component of the

stress process should exert influence on the other components.

In a 6-month follow-up of this initial study (Crocker et al., 1988), Crocker (1989) found that the female players significantly reduced anxiety effects from pretreatment to follow-up. Further evidence suggested that the women maintained or improved upon treatment effects in modifying inner dialogue compared to the men. The social psychological literature provides evidence to suggest that women engage in more psychological intervention programs in an attempt to actively solve stressful problems (Astor-Dubin and Hammen, 1984; Kleinke, Staneski, and Mason, 1982). This research prompted Crocker (1989) to suggest women may be more willing, not only to acknowledge distress, but actively practice and implement the coping strategies advocated in the SMT program.

How can the methodological limitations in previous research into SMT be eliminated or reduced? The need for further inquiry is especially evident in view of the lack of controlled studies to support the effectiveness of SMT in athletic settings. Furthermore, there are no studies which examine exclusively the response of female soccer players to SMT in the sport psychology literature.

B. Statement of the Problem

Is SMT an effective means of reducing pre-game competitive stress of female soccer players from pretreatment to follow-up under controlled conditions?

C. Purposes and Hypotheses of the Study

The main purpose of this study was to investigate the effectiveness of the SMT program in reducing pre-game stress in high performance female soccer players. It was

difficult to formulate specific hypotheses for this study. First, the move toward cognitive-based interaction analyses of stress in sport psychology has meant that competition is no longer perceived uniformly as stressful. Sport competitive stress may be interpreted negatively by some but as a challenge by others (Jones and Hardy, 1990). Most of the studies investigating the competitive stress response (Silva and Hardy, 1984) have focused on the pre-competition period for four main reasons:

1. It is assumed that the mental set of athletes prior to competition influences subsequent performance;
2. During the pre-competitive period athletes can exert control over their mental preparation;
3. The pre-competitive phase is more accessible for data collection;
4. The sport psychologist can stimulate the development of an appropriate pre-game mental state and thus reduce the possibility of performance variance due to pre-game anxiety.

Secondly, competitive state and trait anxiety are now regarded as multidimensional constructs (Martens et al. 1990; Smith, Smoll and Schutz, 1990). Because of these two major influences in this area of study, the following hypotheses were formulated:

Ho(1): The experimental group (SMT) will experience lower levels of somatic trait anxiety, worry and concentration disruption prior to stressful competitive conditions than the control group.

Ho(2): The SMT group will experience less cognitive and somatic state anxiety and greater self-confidence than the control group (Martens et al. 1980; Wine, 1980).

Hardy and Nelson (1988) recognized that stress management programs play a crucial role in performance enhancement. In the experimental literature, the four metacognitive skills important for peak performance are goal-setting, imagery, anxiety and activation control, and attention control skills (Hardy, 1989). Mahoney, Gabriel and Perkins (1987) agreed that elite performers are characterized by greater motivation and self-confidence, more highly developed attention control strategies and lower levels of anxiety than lesser performers, and a further development in this area relates to the intervention program under investigation. Some research findings (e.g. Mace, Eastman and Carroll, 1986) have indicated that multimodal intervention programs may have a specificity of stress effect according to the emphasis of the treatment package (Mace, 1990). However, no attempt has been made to examine specific components of the SMT program which emphasize different response modalities (e.g. somatic relaxation vs cognitive restructuring). Thus, it was hypothesized that:

Ho(3): The SMT group will employ more problem-focused than emotion-focused coping strategies in an attempt to deal with stressful soccer situations (Carver et al. 1989).

Any attempt to successfully determine the efficacy of SMT requires a delicate balance between 'sound' scientific research design and a dynamic ecologically-valid environment. Therefore, this research should further evaluate the efficacy of SMT and provide additional verification that coping skills training can indeed buffer stress processes in sports settings, maximize performance potential and contribute to the holistic development of the athlete. As a result, the subsidiary purposes of this research

will be:

1. to examine the effects of SMT on competitive state anxiety and competitive trait anxiety.
2. to examine the effect of SMT on the player's coping styles during potentially stressful situations.
3. to examine the durability of SMT under controlled conditions.

CHAPTER II

Review of Literature

The purpose of this chapter is to provide a comprehensive and critical review of literature concerned with stress, coping, and adaptation. The review and theoretical discussion focus on the implications of this body of research for investigation into the efficacy of Smith's (1980) Cognitive-affective Stress Management Training Program, in reducing stress in competitive soccer. The review of literature is divided into six sections: cognitive theories of emotion, the concept of stress, a cognitive perspective of stress and athletic performance, four models of anxiety reduction, the SMT program, and summary.

A. Cognitive Theories of Emotion

In sport, emotion appears to be the cornerstone of a complex network of behavioural consequences for the athlete, coach, referee, or fan. Therefore, it is surprising that very little research has been conducted on emotion or affect[1] in sports settings. Researchers have experienced difficulty in arriving at a comprehensive definition of emotion (Vallerand, 1983). Consequently, Vallerand (1984) reviewed three research areas pertaining to categories, dimensions, and components of emotion, in an attempt to evoke a better understanding of this concept. Seven basic categories of emotion are based on extensive research on judgement of facial expression (e.g. Ekman, Friesman, and Ellsworth, 1982). These are happiness, sadness, anger, fear, surprise, disgust/contempt, and interest. Reduction analyses (e.g. Bush, 1973; Fridja, 1969)

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[1]Emotion and affect will be considered as synomymous in this study

revealed two fundamental dimensions of emotion, pleasure-displeasure, and sleep-tension (activation). For example, angry people exhibit displeasure and high levels of tension. Young (1973) identified three components of emotion which have been studied experimentally; conscious or subjective experience of emotion (e.g. feelings of happiness), physiological changes (e.g. increased heart-rate), and observable emotional behaviour (e.g. teeth-grinding).

In the 1960's cognitive approaches to emotion evolved due to increasing dissatisfaction with the principles of tension reduction and drive as explanations of learning and adaptation. Traditionally, emotion has been viewed as separate from cognition. The cognitive theories of emotion now emerging share very similar assumptions about the important role of cognitive processes in the emotional experience. These theories are all meaning-centred, relational, process-centred, and responsive at each phase to feedback and change (Lazarus and Folkman, 1984; London and Nisbett, 1974). The following section provides a brief overview of three prominent cognitive theories from Arnold (1960), Weiner (1980), and Lazarus (1966), which have the potential to significantly contribute to the understanding of subjective emotional experience in sport.

Arnold's appraisal theory. In Arnold's (1945, 1960, 1968, 1970) theory of emotion great emphasis is placed on the cognitive evaluation of the situation. This theory comprises of phenomenology, cognition and physiology (Strongman, 1978). The fundamental postulate of the model states that it is the cognitive appraisal of events that produces emotion. Arnold suggested that any situation encountered is evaluated immediately and automatically according to one's well-being "here and now". The cognitive appraisals can be intuitive (almost automatic) and reflective (deliberate) in

nature. Intuitive evaluation involves minimal cognitive processing and mainly involves left-brain activity. For example, with respect to sport performance, the mere knowledge that one has or has not performed well represents the most important form of intuitive evaluation of performance. Reflective or rational appraisal processes involve deliberate cognitive processing of information in the external or internal (e.g. memory) environment. These processes involve mainly right-brain cognitive activity (Vallerand, 1987).

The role of cognitive appraisals is to treat incoming information from the environment in a coherent and meaningful way. Firstly, incoming information is appraised through intuitive appraisal. If this evaluation reveals that outcomes or goals are consistent with the basic self-structures, further cognitive activity would be unnecessary as the event is sufficient to lead to affective experiences (Fiske, 1981; Mandler, 1985). However, if the incoming information is perceived as being inconsistent with basic self-structures, arousal is experienced. This arousal stimulates further reflective appraisal in an attempt to assimilate the information into existing structures or place the information in new structures and thus reduce the arousal. For instance, two opposing ice-hockey players collide during a play. The referee calls a foul and skates towards the players in order to designate the culprit. As one player perceives the referee moving towards him, he becomes angry and prepares to verbally retaliate. Then, he realizes that the referee was moving towards his opponent. The first athlete's emotion changes from anger to relief. The secondary, reflective appraisal of the situation allowed the player to re-evaluate the referee's behaviour, and subsequently change his emotional response and behaviour (Vallerand, 1984).

Arnold (1967) referred to emotion as a strong "felt action tendency" towards

situations appraised as "good", away from situations evaluated as "bad", and ignorance of "indifferent" situations. This response is reinforced by specific physiological changes relative to the type of emotion experienced. Arnold (1945) argued that this dynamic impulse is the major basis of emotional experience which leads to action. However, the action defined by the initial intuitive appraisal is not final. The present situation, relevant affective memories of past experiences, and future expectations cause the individual to devise a plan of action which also involves possible means of coping with the situation (Strongman, 1978). For example, a soccer player may have a strong desire to retaliate after being badly fouled in a breakaway situation. Yet, she realizes that her team could be penalized for such a "gut reaction", instead she walks away. Thus, intuitive appraisal was counterbalanced, or as in some cases reinforced, by deliberate judgement. Alternatively, deliberate judgement can be disrupted when intuitive appraisal diverts attention from the planned course of action to an event which is appraised as more desirable or intensely threatening (Arnold, 1970). For instance, a jockey approaching a steeple-chase fence in the Grand National may have his attention diverted from preparing his horse to clear this difficult jump, if one of his stirrup leathers suddenly snapped.

The psychological aspects of Arnold's theory have been criticized as speculative and couched in terms which are too nebulous to lead to clear prediction. Strongman (1978) submitted that it may not be necessary to distinguish primary appraisal from the perception process, if as Arnold suggested, it is almost automatic. Furthermore, Buck (1976) suggested that such a primary cognitive evaluation process may be parsimoniously explained by a conditioning process. Nevertheless, Arnold's theory accounted for the human propensity to evaluate things in relation to oneself; it described how increases in

arousal and physiological changes come about; and how it encompassed both positive and negative emotions.

Weiner's attribution theory. No previous research had indicated which type of cognitions lead to what type of emotions. So, Weiner (1971, 1985) and Weiner, Russell and Lerman (1979) proposed a dynamic expectancy-value theory of motivation in which motivated behaviour is directed by expectancy and emotion. Behaviour is largely determined by the perceived likelihood or the subjective expectancy of goal attainment, and the anticipated incentive value of the goal. The majority of literature within this domain has linked attributions of outcomes to four primary causes: ability, effort, luck and task difficulty. Weiner et al. (1971) suggested that these causes varied along two dimensions: locus of control and stability. The locus of control dimension, a measure initially conceptualized by Rotter (1966), concerned the degree to which a cause was related to factors within the person (internal cause) or the external environment (external cause). Internal causes included both ability and effort attributions, whereas external causes included variables such as luck and task difficulty (Weary, Stanley and Harvey, 1989).

The second dimension of stability refers to whether the causal element is fixed or variable. Weiner et al. (1971) noted that both internal and external causes could fluctuate across time as well as situations. For example, although ability and effort are internal variables, ability is perceived to be a relatively enduring personal characteristic whereas effort fluctuates more easily over time and across situations. Additionally, luck is regarded as an external, changeable cause whereas task difficulty is perceived as a less variable aspect of the environment.

A third dimension of causality, termed controllability, was proposed by Weiner

(1979) to overcome some conceptual difficulties, like the ones mentioned above. The concept of controllability suggests the person 'could have done otherwise' (Crocker, 1988). Specifically, it was noted that variability in the nature of a cause could occur based on the extent to which it was perceived to be within an individual's control. For example, mood and effort could be classified as internal and unstable. But mood is usually perceived as being outside an individual's control whereas effort is seen as being personally controllable (Weary et al. 1989).

In recent accounts of his theoretical standpoint, Weiner (1985, 1986) has focused on the relationship between affect and the general dimensions of attributions (e.g., locus, stability, and controllability). He offered a description of a sequential process linking attributional thinking to emotional experience. He suggested that following an achievement outcome, a general positive or negative emotional reaction is produced based on the perception that one has succeeded or failed, for example, success usually produces happiness.

Perception of success or failure initiates a search to determine the causes of the performance outcome. Once the appropriate causal attributions have been identified, they are located in dimensional space, being characterized as internal/external, controllable/uncontrollable and stable/unstable. As a result, the dimensional properties of attributions have psychological consequences that influence future performance expectancies and create dimension-related affective states as well as dimension-related expectancies and behaviour (Fiske and Taylor, 1984 Weary et al. 1989; Weiner, 1985, 1986).

Weiner (1985) stated that the locus of causality dimension is the crucial determinant of self-related affects. Thus, the tennis player who loses but perceives the

outcome to be due to bad luck or an exceptional opponent experiences less shame than a player who fails and thinks this is due to poor effort. Conversely, an athlete who perceives that victory was the result of luck, experiences less pride in that outcome than one who attributes an outcome to ability.

Nicholls (1975) reported that stability of attributions moderates the intensity of emotions. For example, athletes could derive satisfaction from the knowledge that possessing the stable attribute of ability, they would be assured of additional pleasure during future performances. The unstable attribute of effort would not guarantee that athletes would experience further success in subsequent achievement settings.

Weiner (1985) reviewed how affective states are influenced by perceived controllability of causes. Firstly, blame attributions are elicited by negative outcomes attributed to factors controllable by others, and are usually associated with anger reactions (Averill, 1982, 1983). For example, if a doubles tennis player (athlete 1) perceives that his/her partner (athlete 2) played carelessly and as a result they lost the match, athlete 1 is likely to feel angry with athlete 2. Secondly, self-blame and guilt may occur due to negative outcomes perceived to be the result of factors controllable by oneself (Weiner, Graham and Chandler, 1982). For instance, if athletes believed that poor performance occurred as a result of factors that they could have controlled (e.g., not training hard enough), some type of guilt feelings might be experienced. Finally, feelings of pity are evoked by a negative self-related outcome attributed to uncontrollable factors (Weiner et al. 1982).

The impact of Weiner's theory has been relatively recent. Despite the model's popularity, several methodological flaws exist which make it unclear as to whether Weiner's theory is one of emotion or a model of thoughts about emotion (Vallerand,

1983). Differences occurred in the definitions of affective states under investigation across studies and also in subjects' ratings of the importance of achieving a certain outcome (Brown and Weiner, 1984). Furthermore, research has been restricted to situations wherein individuals had ample time to make causal attributions. Since these studies used imaginary scenario methodologies the subjects may have revealed how they thought they should feel, rather than how they actually felt (Fiske and Taylor, 1984).

Lazarus' transactional theory. Lazarus and his colleagues (Lazarus, 1966, 1968, 1975; Lazarus and Averill, 1972; Lazarus, Averill, and Opton, 1970; Lazarus and Cohen, 1977; Lazarus and Launier, 1978) developed a conceptual framework which suggests that stress relationships occur as a result of a transaction between the person factors and the environment. The transactional approach to psychological stress emphasizes cognitive appraisal processes. Cognitive appraisal is an evaluative process, focused on categorizing an encounter with respect to its meaning and significance for well-being (Folkman, Schaefer and Lazarus, 1979). The way an individual evaluates an encounter strongly influences the person's emotional reaction and the coping process. Therefore, cognitive activity is an necessary condition of emotion, since it provides the evaluation of meaning on which emotion depends (Vallerand, 1987).

Three main evaluative processes identified by Lazarus and his colleagues were primary appraisal, secondary appraisal and reappraisal. During primary appraisal an encounter can judged as irrelevant, benign-positive or stressful. If there is nothing to be lost or gained in a transaction between the person and the environment, it is categorized as irrelevant. Benign-positive appraisals are characterized by emotions such as joy, love, happiness and exhilaration. The three prominent stress appraisals are: harm/loss, threat and challenge. Harm/loss refers to psychological or physical injury already done, for

example, head injury or lack of self-confidence. Threat refers to the potential for harm or loss. Challenge refers to the potential for benefit or the opportunity for growth, mastery or gain.

Secondary appraisal is used to evaluate what might and can be done. This complex evaluative process assesses which coping options are available, whether a particular coping strategy will accomplish what it is supposed to, and the likelihood that this coping strategy will be applied effectively. Further, cognitive appraisal determines the consequences of utilizing specific strategies to cope with other internal and/or external demands or constraints. Reappraisal occurs when new information from the environment and/or the person triggers changes in an earlier cognitive appraisal in the same encounter and modifies it (Lazarus and Folkman, 1984).

Lazarus' theoretical suggestion is that different individuals will have different interpretations and reactions to the same environmental stimulus situation. This means that even though an identical stimulus may impinge on two different athletes, the resulting reaction may not be the same. For example, in a one-on-one situation in basketball, one player might feel challenged, while another player may feel threatened. Lazarus posits that each individual brings specific values, beliefs, and goals to a situation which set the stage for an emotion by making the person responsive to particular facets of the environment.

Averill, Opton and Lazarus (1969) conceived emotion as a complex system involving a transaction between three interrelated subsystems; stimulus properties, emotional responses (cognitive, behavioural, and expressive) and the appraisal process. They argued that the elegant simplification of emotion into several distinct dimensions is purchased at the expense of understanding the individual's true emotional experience.

Furthermore, Lazarus and Folkman (1984) agreed that it is erroneous to view emotion and cognition as separate entities when they are naturally conjoined to form a meaningful unit.

Lazarus' theory of emotion is illustrated in the following sport example. A basketball player dribbles the ball towards a known aggressive opponent. The attacking player assesses through primary appraisal that the opponent (stimulus) is a threat (physically and ego-wise). Once the opponent is judged as threatening the secondary appraisal mechanism is triggered to cope with the threat. Emotional responses such as feelings of fear or anxiety (cognitive), increased heart rate (expressive), and passing the ball instead of continuing to dribble (instrumental) could result. Subsequent actions would provide new information to update the appraisal system and change the player's cognitive appraisal and emotional experience (Crocker, 1988; Vallerand, 1983).

Critics towards Lazarus' theory state that he fails to clarify the nature of the interaction between primary and secondary appraisals (Arnold, 1968), or how threatening a stimulus must be judged before secondary appraisal is triggered (Vallerand, 1983). Lazarus' model has been used as the conceptual framework for Smith's (1980) stress management training program for athletes, which will be discussed at a later stage of this review.

B. The Concept of Stress

A universally acceptable definition of psychological stress has never evolved due to an abundance of diverse and contradictory theoretical interpretations (Burchfield, 1979; Hamberger and Lohr, 1984). Researchers have failed to develop a unified theory of stress which enables one to fully comprehend the dynamics of the stress process.

Numerous conceptualizations of stress have resulted in terminological confusions in the literature because this word is used to refer to either stimulus, response, or intervening variable or any combination of these factors. Therefore, stress is being perceived as both an independent and a dependent variable (Cox, 1978; Meister, 1981).

As a stimulus or independent variable, stressful situations are characterized as novel, intense, rapidly changing and constantly challenging the subjects' upper limits of tolerance (e.g., natural disasters, illness, divorce, or 'daily hassles'). Stress could also be evoked by situations characterized by deficits in sensory stimulation, (e.g., boredom or hunger). This approach failed to consider the importance of individual differences in response to stressful situations (Lazarus and Folkman, 1984). Dependent or response based definitions are denoted by a disturbance of homeostatis such as produced by environmental change Selye, 1976), for example, anxiety and motor behavioral reactions such as muscular tension, stuttering and rapid speech (Appley and Trumbull, 1967). Arnold (1967) proposed that the term "stress" be reserved for those conditions characterized by "disturbed functioning". Burchfield (1979) stated that disturbance referred to the individual's response to an extraordinary stressor, characterized by intense goal-directed activity in an effort to re-establish psychological homeostatis. Such behaviour is accompanied by emotional and physiological arousal. The problem with this approach is that it is difficult to establish a baseline on which to measure the extent of disturbance, and if indeed this disturbance will trigger a stress response.

Any general explanatory concepts risk being vague, overinclusive, and beyond the realm of analytical scientific research. Lazarus (1966) suggested that difficulties in definition could be overcome by using stress as an organizing concept for understanding a wide range of phenomena of great importance in human and animal adaption.

Lazarus and Folkman (1984) reiterated this viewpoint stating stress was a rubic consisting of many variables and processes. They suggested that the concept of stress must be examined at multiple levels of analysis within a systematic theoretical framework which specifies antecedents, processes, and outcomes relevant to stress phenomena. Hence, the cognitive theorists of emotion have defined psychological stress as the relationship between a person and the environment that is appraised as taxing or exceeding the individuals' coping resources and endangering the individuals' well-being (Lazarus and Folkman, 1984).

Contemporary studies in psychological stress have shifted focus towards a more cognitive and phenomenological approach. Stress is viewed as the product of complex adaptive transactions between the person and a particular environment. Lazarus, Averill, and Opton (1970) stated that the person-environment transaction could be judged as either damaging, threatening, challenging, or conducive to positive well-being. The stress responses are thought to be self-initiated and self-propagated. This is due to the fact that the same stimulus configuration will produce quite different patterns of stress response in different individuals and groups (Everly and Rosenfeld, 1981). For example, some sport performers will cope very well with the 'stress' of competition. People depend on this perceptual-cognitive warning system for survival and growth. So, they need to be able to make subtle and complex distinctions between benign and harmful stimulus configurations to achieve satisfactory adaptation. This dynamic process depends upon cognitive appraisal and reappraisal of divergent situational demands and the individual's resources or coping abilities. The coping activities are crucial mediating processes that may involve a series of physical and/or cognitive responses that function to regulate the environment and restore psychological equilibrium (Crocker, 1988;

Lazarus, 1975).

This recognition of the crucial role of cognition in the stress response has had important implications for sport psychology. In cognitive sport psychology athletes are active information processors, requiring exceptional powers of perception, response execution and decision-making (Jones, 1990). Consequently, Lazarus's transactional perspective has provided the appropriate basis for much of the research on competitive stress in sports environments (see Scanlan, 1984 and Long, 1980). Smith (1980) utilized the transactional perspective of the stress process in his cognitive-affective stress management training program. He viewed the stress response as a transaction between situational demands, cognitions, physiological arousal responses, and personality and motivational factors.

C. A Cognitive Perspective of Stress and Athletic Performance

Answers to the questions arising from the complex relationship between stress and performance in sports settings have proved elusive for many years but continue to intrigue researchers (Jones, 1990). Athletes are subjected to stress which, may in turn, lead to anxiety that can adversely affect their ability to perform. The concepts of stress and anxiety have been examined in numerous studies to determine why some individuals are more susceptible than others (Berger and Owen, 1987; Gerson and Deshaies, 1978; Martens, 1977; Passer, 1983; Weinberg, 1979). Scanlan and Lewthwaite (1984) defined competitive stress as "the acute state anxiety reaction to competitive situations that the participant perceives as threatening to self-esteem" (p. 209). There are many specific causes of anxiety in sports, but these can be reduced to two general factors that integrate to produce high levels of competitive stress. These factors are the uncertainty

individuals have about the outcome of the competition and the importance attached to these outcomes. The more uncertain athletes are about being able to successfully meet the demands of the competitive situation and the more important these outcomes are, the greater the levels of competitive stress (Martens, 1988; Scanlan, 1984). For example, coaches who keep players uncertain about the starting lineup and whether they will get to play in an important game, could cause high levels of stress in their athletes.

Spielberger (1966) defined anxiety states as "subjective, consciously perceived feelings of apprehension and tension, accompanied by or associated with activation or arousal of the autonomic nervous system" (p.17). Spielberger differentiated between trait and state anxiety, two independent but interacting components of anxiety. Trait anxiety is described as a personality disposition reflecting the tendency to perceive a wide range of objectively nondangerous circumstances as threatening. State anxiety is characterized by a transitory emotional state of unpleasant, consciously perceived feelings of tension, worry or concern (Martens, 1977).

The major reason for the interest of coaches and athletes in anxiety, without a doubt, is to understand how it influences performance. Why do some athletes 'rise to the occasion in intense competitions while others 'buckle under the pressure' and fail to realize their potential? Various explanatory constructs have been used to account for performance under stress. Morris, Brown, and Halbert (1977) suggested that thoughts and worries about failure and other irrelevant activities are crucial determinants of performance disruption. The test anxiety (Meichenbaum and Butler, 1980; Wine, 1980), stress (Lazarus,1967) and stress management literatures (Smith and Smoll, 1982) have clearly demonstrated the important influence that cognitions have on induction and reduction of stress (Scanlan and Lewthwaite, 1984).

When athletes are interviewed by the media they often mention that concentration is an important quality in sports performance. Close attention to the task at hand is an important prerequisite to learning and various perceptual judgements. For example, an ice-hockey player might report that his injury was the result of a mental lapse by stating:

"I let my mind wander, towards the end of the game"

Nideffer (1976) suggested that an athlete's range of attentional behaviour is likely to be reduced when anxiety or tension are present. In other words, if the athletes have task irrelevant self-defeating thoughts, performance will be disrupted because they are not concentrating on the task-relevant cues. This 'narrowing' of attentional capacity could be highly detrimental to a boxer or a player in a complicated team sport. Decrements in performance due to task-irrelevant thoughts are predicted by models of attention (Crocker, 1988).

Theories of attention. The early theories of attention (e.g., Broadbent, 1958; Deutsch and Deutsch, 1963; Welford, 1952), while different in detail, shared some important features in regards to explaining deterioration in performance (Schmidt, 1988). Initially, theorists believed that attention had a fixed, undifferential capacity for processing information. Performance deteriorated if this capacity was approached or exceeded by the task demands.

In contrast to fixed capacity models of attention, Kahneman (1973) argued that attention capacity was more flexible, changing as task requirements dictate. As the difficulty of two simultaneous tasks increases, more capacity becomes available for processing. When maximum capacity is exceeded, decrements occur in one or both of the simultaneously presented tasks (Schmidt, 1988). For example, during a fast-break

tactic in handball the player must receive and control the ball moving at speed, while being conscious of the opposition in relation to court markings and the goal. If the player experiences a loss of peripheral sensitivity, thus eliminating task-relevant cues, he/she may lose the advantage by failing to detect the initiation of a block by defenders.

Recent theories (Navon and Gopher, 1979; Wickens, 1980) suggested that attention should be conceptualized as a set of pools of resources, each with its own capacity to handle particular kinds of information processes. Thus, multiple resource theorists would suggest that the resources that allow a soccer player to direct the first stages of movement e.g. receiving and trapping a ball, and resources that monitor gross body and specific limb orientation correctly to shoot at goal are separate. Hence, each system could coincide without interference to make a separate contribution to the total complex perceptual-motor task.

The concept of attention has also been operationalized by physiological measures of arousal. There is some evidence to suggest that an optimal level of arousal exists for athletic performance. The relationship between unidimensional arousal and performance has been most popularly conceptualized by the Yerkes-Dodson Law (1908) that predicts an inverted-U relationship, best explained by Easterbook's (1959) cue-utilization hypothesis. This hypothesis states that an increase in arousal to moderate levels reduces the number of task irrelevant cues and improves performance. However, when arousal levels continue beyond an optimal point, relevant cues are no longer included, causing a tunnelling effect, and performance diminishes again. Eysenck (1984) suggested that individuals may adopt an active coping response by restricting attention when information processing demands are too great for the available processing capacity. Hockey and Hamiliton (1983) argued that arousal states have specific effects upon

different subcomponents of performance, rather than general effects upon global performance. Therefore, the inverted-U hypothesis may merely relate to global performance effectiveness rather than specific processing efficiency (Eysenck, 1984).

Jones (1990) suggested that research development and our understanding of the relationship between stress and performance has been hindered by continued acceptance of such unidimensional descriptions as the inverted-U hypothesis. Clearly, at the theoretical level the effects of stress on performance cannot be explored within the confines of one general arousal system. This mechanistic notion ignores the fact that athletes actively attempt to cope with and ameliorate potentially harmful stressors within the sports environment. However, multidimensional arousal system approaches (e.g. Broadbent, 1971; Eysenck, 1982; Hockey and Hamiliton, 1983) provide the basis on which to construct much more detailed analysis of the stress-performance relationship, which could attempt to accommodate this active coping response. Several investigations (e.g. Silva, Shultz, Haslam, Martin, and Murray, 1983; Silva, Shultz, Haslan, and Murray, 1981) examining the relationship between precompetitive affect and performance suggested a directed, focused and positive precompetitive psychological set is conducive to successful performance at elite level competition. The implications are that athletes with more positive precompetitive affect are better suited to cope with stress and maintain a positive performance expectancy. However, further confirmation on the mechanisms responsible for this relationship are required (Silva and Hardy, 1984).

In summary, Orlick (1980) suggested that sport psychologists interested in the intervention process should recognize the intimate relationship between the cognitive-affective-behavioural chain. More consistent, confident athletes are able to control and channel their cognitions and emotions in a productive manner, as well as being able to

quickly recover from negative affective experience (e.g. losing an important game). It can only be agreed that affective phenomena deserve far more attention than they have previously received (Zajonc, 1980).

Multidimensional sport anxiety. Over the past forty years the concept of anxiety has undergone considerable theoretical refinement. These conceptual advances have been reflected in the evolution of the instruments used to measure the construct (Smith, Smoll, and Schutz, 1990). In the 1950's, early research involved the use of global trait inventories, such as the Manifest Anxiety Scale (Taylor, 1953), the IPAT Anxiety Scale (Cattell, 1957), and the General Anxiety Scale (Sarason, Davidson, Lighthall, Waite, and Ruebush, 1960). These scales were designed to assess the general tendency to experience anxiety across a wide variety of situations (Smith et al., 1990).

Three important conceptual distinctions in anxiety research stimulated the development of new measures. First, Spielberger (1966) distinguished between momentary anxiety states and more enduring anxiety traits and provided parallel measures of these constructs in the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, and Lushene, 1970). Second, researchers concluded that global trait inventories of anxiety were limited and unacceptable predictors of behaviour across situations (Martens, 1977). Therefore, the 1970's witnessed a shift in focus from personality orientated research to identifying situational anxiety scales. Several investigators found that these situation-specific measures proved to be stronger predictors of behaviour than general anxiety scales. For example, instruments were developed to measure test anxiety (Sarason, 1961), and social anxiety (Watson and Friend, 1969).

Thirdly, Morris and Liebert (1970) made a conceptual distinction between

cognitive and somatic components of the anxiety response. The prominent theories of emotion, stress, and anxiety (e.g. Arnold, 1960; Lazarus, 1966) assert that although the cognitive and physiological components of anxiety are functionally related to one another, they are distinct aspects of the anxiety process that are reflected in the individual differences of anxiety response (Davidson and Schwartz, 1976; Liebert and Morris, 1967).

The study of anxiety in sports environments, and the instruments utilised in this research parallel those used in general areas of anxiety research. Martens (1977) developed the first sport-specific trait anxiety measure, the Sport Competition Anxiety Test (SCAT). Later Martens, Burton, Rivkin, and Simon (1980) developed the Competitive State Anxiety Inventory (CSAI), a global measure of state anxiety experienced in competitive sport environments. The CSAI has subsequently been revised to the CSAI-2, which provides three independent state subscales for cognitive anxiety, somatic anxiety and self-confidence (Martens, Burton, Vealey, Bump and Smith, 1983).

Smith et al. (1990) developed the Sport Anxiety Scale (SAS), a multidimensional measure of cognitive and somatic trait anxiety. The SAS measures individual differences in Somatic Anxiety and in two aspects of cognitive anxiety Worry and Concentration Disruption. Smith et al. (1990) felt that the development of such a scale would help advance our understanding of the antecedents and consequences of individual differences in sport-related anxiety. The conceptual development of multidimensional sport-specific anxiety scales has created the potential for more reliable and valid examinations of the interrelated response systems that constitute anxiety-sport performance relationships. Currently, there is little convergent or conclusive evidence available in the literature regarding the relationship between sporting performance and anxiety. Reviews of the

sport anxiety literature indicate that cognitive and somatic anxiety, depending upon the nature of the task, have differential effects upon performance. For example, Gould, Petlichkoff, Simons, and Vevera (1987) found that there was a curvilinear relationship between somatic state anxiety scores and pistol shooting performance. However, evidence indicated cognitive anxiety was unrelated to performance. Burton (1988) reported a similar curvilinear relation between somatic state anxiety and the performance of competitive swimmers. But in contrast to Gould et al.'s (1987) research, Burton reported a negative linear relationship between cognitive state anxiety and performance.

In conclusion, the stress-performance relationship involves a complex interaction between the nature of the stressor, the cognitive and motor demands of the task and the psychological characteristics of the sports performer. Recent research and theory make it evident that even with these conceptual developments, theoretical and methodological problems such as, individual differences, within versus between subject analysis, and construct validity, must be rectified in order to make any significant progress in sport-performance-anxiety research. Hopefully, this can be achieved through a satisfactory combination of experimental rigour and ecological validity involving a multidimensional conceptualization of anxiety (Crocker, 1988; Davids, 1988; Jones, 1990; Martens et al. 1983; Smith et al. 1990).

D. Four Models of Anxiety Reduction

Four conceptual models of anxiety reduction and the therapeutic techniques they have inspired, will be described in this section. Smith (1984) suggested that the treatment techniques could be employed to reduce athletes' dysfunctional anxiety

reactions in sport settings. The four models are: extinction, counterconditioning, cognitive mediational, and coping skills.

The Extinction Model. The principles of learning developed by Ivan Pavlov, that conceptualize anxiety as an emotional response, provide the basis for the extinction model. Pavlov found that if a conditioned stimulus (CS) is paired several times with an unconditioned stimulus (UCS), it will gradually develop the capacity to elicit a response similar to the unconditioned response (UCR); namely a conditioned response (CR). This process is referred to as classical conditioning (Bootzin and Max, 1980). For example, this process may occur when a Formula One racing-car driver sustains serious injuries during an accident in a race. Later, he may find that driving a car elicits intense anxiety, because of the previous pairing of these stimuli with the primary aversive stimuli (pain and fractures).

In some cases, it is possible for the anxiety and avoidance behaviours to develop in particular situations in the absence of the aversive classical conditioning. If an observer responds emotionally to a performer's unconditioned emotional response, then vicarious classical conditioning has occurred. Vicarious instigation can be dependent upon the performer's unconditional response (UCR) or unconditioned stimulus (UCS). For example, a mother watching her child perform gymnastics may react with fear and anguish when she sees her child fall off the beam, only to find the child was unhurt and undisturbed. The mother's emotional response (ER) was vicariously instigated, because she inferred the child's unconditioned emotional response (UER) from her perception of what had happened to the child (UCS) rather than from the child's reaction (UCR). Anxiety is an aversive state that people strive to reduce, escape or avoid. Successful removal or reduction of noxious anxiety-provoking stimuli provides negative

reinforcement and motivation for the continuance of avoidance behaviours (Smith, 1984).

Classically conditioned responses can be eliminated through the process of extinction, whereby the CS is presented repeatedly in the absence of the UCS. Problems arise when individuals experience avoidance responses that remove them from the primary anxiety-arousing stimuli or situation before extinction can naturally occur. The persistence of such anxiety-motivated avoidance behaviour has been demonstrated in many animal studies. The therapeutic technique of response prevention or 'flooding' has been shown to be an effective means of controlling this anxiety reaction (Baum, 1970; Mineka, 1979).

Flooding is a general treatment that is administered after the avoidance response has been learned. This technique consists of forcing athletes to confront the stimulus or situation they fear, while preventing or blocking the occurrence of avoidance reactions (Baum, 1970). Exposure to the treatment occurs either through the use of imagined scenarios or actual physical presentation of the feared stimuli. During the assessment phase of flooding, prior to treatment, the clinician should determine the type of stimuli and situations that trigger anxiety and distress within the athlete. Furthermore, the athlete should receive imagery training to enhance experiencing events in the visual, auditory, kinaesthetic, and olfactory-gustatory sensory modalities (Crocker, 1988; Smith, 1984). Accordingly, flooding produces prolonged exposure to the aversive stimuli or situations, which results in the Pavlovian extinction of classically conditioned anxiety.

Implosive therapy is a psychodynamic approach which incorporates concepts from the learning-based extinction model in a flooding procedure known as the 'avoidance serial cue hierarchy'. The avoidance serial cue hierarchy is derived from the athlete's reports of anxiety-producing stimuli and the clinician's hypothesized psychodynamic cues.

These underlying cues, of which the client is unaware, are believed to be ordered in a serial hierarchy in terms of the extent to which they are repressed or avoided i.e. the cues most closely associated with the primary reinforcement would have the highest anxiety loading. Stampfl and Levis (1967) categorized the hypothesized sequential cues under the themes of aggression and hostility, punishment, oral and anal scenes, sexual material, rejection, guilt, bodily injury, and loss of impulse control. In the implosive procedure, the emphasis is on the sequential extinction of anxiety-evoking conditioned stimuli which provide emotional and reinforcing properties for perpetuating avoidance reactions.

Implosive therapy requires the individual to visualize the anxiety-evoking stimulus, and consequently, experience the elicited anxiety. Implosive therapists maintain that, in absence of the stressful event, the anxiety-provoking power of the stimulus is dissipated, and avoidance responses are diminished or eliminated. Stampfl and Levin (1967) maintain that complete identification of the stimulus complex, i.e. of the situational or symptom-contingent cues and the hypothesized sequential cues, is required for total elimination of anxiety.

Mineka (1979) stated that flooding and implosion are effective, if somewhat aversive means (Smith, 1984), of hastening extinction of avoidance responses. Furthermore, the existence of different kinds of avoidance response extinctions has important repercussions on the nature of the treatment strategy. Behaviour therapists must speculate which contingencies it is most important to remove first during therapy. Often, flooding and implosion are only implemented when less severe treatment techniques have failed to reduce the anxiety symptoms (Smith, 1984).

The Counter Conditioning Model. The counter conditioning or reciprocal

inhibition model provides an alternative means of extinguishing conditioned emotional responses. Joseph Wolpe, the chief proponent of this approach, suggested that reciprocal inhibitory conditioning of responses that are incompatible with the anxiety-arousing cues will reduce maladaptive behaviour. His general principle of the counterconditioning approach suggests that:

> If a response antagonistic to anxiety can be made to occur in the presence of anxiety-evoking stimuli so that it is accompanied by a complete or partial suppression of the anxiety responses, the bond between these stimuli and the anxiety responses will be lessened. (Wolpe, 1958, p. 71)

The technique used to eliminate undesirable fear and anxiety-motivated behaviour is termed "desensitization by reciprocal inhibition" or systematic desensitization. Systematic desensitization involves employing a counteracting emotion to overcome an undesirable emotional response. The incompatible response used by Wolpe (1958) to countercondition anxiety was muscular relaxation. Other incompatible responses suggested by Wolpe were assertion, sexual activity, and eating. However, the preferred alternative response is relaxation, presumably because the autonomic effects that accompany deep muscular relaxation are diametrically opposed to those effects characteristic of anxiety.

Systematic desensitization is operationalized in four phases:

1. Introduction of the subjective anxiety scale.
2. Deep muscular relaxation training.
3. The construction of anxiety hierarchies.
4. Desensitization procedures.

The first phase involves determining the magnitude of the athlete's anxiety responses to specific stimuli using a subjective anxiety scale. Each athlete reports his or

her anxiety levels on a private scale of 0 to 100, where 100 represents the highest anxiety level experienced and 0 equals no anxiety. The second phase is training in Jacobson's (1938) progressive relaxation procedure. The third phase is the construction of the anxiety hierarchy. An anxiety hierarchy is a thematically related list of stimuli or situations that trigger anxiety and fear in the athlete. The hierarchy construction begins at the same time as the relaxation training. However, the data collection is done in an ordinary conversational way and not under relaxation. The hierarchies are constructed from the raw data obtained from four main sources: (a) the athlete's case history; (b) interpersonal responses to the Willoughby questionnaire; (c) Wolpe and Lang's (1964) fear Survey Schedule; and (d) special investigation of any unadaptive anxiety-provoking situations (Wolpe, 1982). The hierarchy usually consists of 10-15 scenes arranged related to their anxiety-arousing potential from the lowest to the highest.

Once the athlete has attained a capacity to elicit a state of relaxation, and the therapist has established appropriate hierarchies, the stage is set for the desensitization program. The session begins by the therapist inducing a deep state of relaxation in the athlete. When the individual is sufficiently relaxed, he or she is asked to imagine the least anxiety-evoking scene in the hierarchy for five to seven seconds. Since the accepted principle in this approach is to use weak anxiety-evoking stimuli, the scene is quickly terminated if the athlete indicates strong anxiety and relaxation is reinstated. Exposure to a very disturbing scene could partially undo the desensitization process (Smith, 1984). Each scene is repeated until anxiety is completely eliminated, before continuing to ascend the stimulus hierarchy. Usually one to four hierarchies are drawn up in a session lasting 15 to 30 minutes. For example, the stimulus hierarchy of a soccer player returning from serious injury might be as follows:

1. the athlete imagines the doctor has given him/her permission to return to training.
2. the athlete imagines himself/herself jogging along a straight path.
3. the athlete imagines himself/herself sprinting along a straight path.
4. the athlete imagines himself/herself sprinting then abruptly changing direction.
5. the athlete imagines himself/herself dribbling the ball towards a defending player.
6. the athlete imagines himself/herself being tackled and falling on the previously injured leg.

Systematic desensitization has been an extremely effective and efficient anxiety-reduction technique. Extensive research has indicated that this behaviour therapy procedure eliminates a wide variety of anxiety-based disorders (Kazdin and Wilcoxon, 1976; Rimm and Masters, 1979) and could prove invaluable to athletes (Smith, 1984). However, it succumbs to snags and pitfalls, where inadequate relaxation acquisition. misleading or irrelevant hierarchies, or an inability to conjure up either visual or auditory images could make the program a long and arduous process for the therapist, and ultimately could lead to failure (Crocker, 1988; Smith, 1984; Wolpe, 1982).

The Cognitive Mediational Model. In recent years, cognitive mediational models of emotion have received increasing theoretical and empirical attention (Rohsenow and Smith, 1982). Theorists such as Arnold (1960), Beck (1976), Ellis (1962), Lazarus and Folkman (1984), and Weiner (1980) have recognized that cognition modification is a powerful means of reducing maladaptive emotional responses. These theorists have stimulated research identifying the ability of covert verbalizations and symbolic events to elicit dysfunctional behaviour. Beck (1976) and Ellis (1962) hypothesized that certain

irrational thoughts, values and beliefs underlie the covert verbalizations that generate anger, fear and/or anxiety. For example, a male squash player's definition of success is winning. After losing an important game, the disappointment he experiences is accompanied by self-statements such as "I am a loser" and "I played really poorly". These responses are based on his belief that losing at squash means he is a loser in life. He failed to acknowledge the positive experiences of his game and instead magnified his mistakes (Gallwey, 1976). The process of changing such maladaptive cognitive styles is termed cognitive restructuring.

Cognitive restructuring therapies such as Ellis' (1977) rational-emotive psychotherapy or Beck's (1976) cognitive therapy identify and modify distorted or irrational attributions that cause athletes to appraise situations in a stress-producing manner. For instance, if a successful ice hockey team loses five consecutive games, the players may believe that they are incapable of playing good hockey, which then has a deleterious effect on future performances. The cognitive therapist would help the players restructure these negative attributions, to restore their confidence in their playing abilities (Feltz and Lauders, 1980). Cognitive restructuring is an essential component of Smith's stress management program, thus the rationale and procedures of Ellis and Beck merit extended consideration.

Rational-Emotive Therapy. The central contention of Albert Ellis (1962, 1977) is that maladaptive thoughts cause maladaptive behaviour. Rational-Emotive Therapy (RET) recognizes the importance of cognitions - ideas, beliefs, assumptions, interpretations, thinking processes - in the origins and treatment of emotional disturbance. The conceptual framework of RET encourages individuals to respond to psychological or verbal stimuli impinging on them with strong, rational, appropriate

emotions rather than self-defeating, irrational, inappropriate emotions. RET therapists assume that people can control their emotions when they recognize and modify irrational ways of viewing the world and events. The main essence of RET is symbolized as an A-B-C-D-E sequence of personality and emotional disturbance. The basic components are an activating event (A), belief system (B), and the consequences (C). Ellis (1962) emphasized that it is not the experiences at A that cause the emotional response at C, but rather it is the mediational thought processes at B regarding the events at A. Consequently, in the next phase, the cognitive therapist teaches individuals to dispute (D) their irrational beliefs and values through systematic training in discrimination and evaluation of B responses. The final phase symbolizes the adaptative effects of this cognitive restructuring. Gallwey (1976) provided the following sport example:

> .... the greatest difficulty in returning a deep backhand lies not in the speed and placement of the ball itself, but in his mind's reaction to that ball: his own thinking makes the shot more difficult than it really is (p. 31).

Athletes may at times respond to the demands of their sport and certain crises, such as injury, in an emotional irrational manner. Such emotional responses often become grossly exaggerated and even nonsensical resulting in self-defeating and counterproductive behaviour (Gordon, 1986). A greater understanding of RET can be gained by examining the belief system of the injured athlete as described by Gordon (1986). The ABCDE method of RET is as follows:

A ction - the activating event, situation or experience is acknowledged e.g. serious knee injury.

B elief - the player believes either:

1. rB "I've damaged my knee ligaments - that is sad, frustrating and untimely."
2. iB "I've torn my knee ligaments - I'm ruined my athletic days are over!"

C onsequence - the consequence of either belief is:

1. rB the player seeks out, and adheres to advice on treatment and rehabilitation (appropriate consequence).

2. iB the player takes no positive action, feels depressed, angry and alone and agrees to neither treatment or rehabilitation (inappropriate consequence).

At this point the sport psychologist would focus on the irrational beliefs and inappropriate self-defeating behavioural consequences and:

D ispute - dispute and challenge the irrational beliefs:
"How could you possibly already know that you have torn knee ligaments?"
"What makes you so sure your soccer career is over"?
"Why is knee surgery and rehabilitation so terrible?"

E ffect - The intervention eventually leads to a new cognitive-emotive behavioural effect in the player's mind.

"OK, I was upset because I do think my ligaments have gone - but I'd better get this confirmed as soon as possible. I'll do what the qualified staff advice me and take things from there. Even if surgery is required my friend had the same injury and return to the game after surgery. This way at least I'll know that I did everything I could for myself."

Recognition of the beliefs that underlie negative self talk and generate negative feelings, allows one to challenge these maladaptive cognitive behaviours and seek a positive alternative. Such recognition leads to increased objectivity lessening the impact of self-deprecating comments. The ultimate purpose of discriminating between rational and irrational beliefs, is to change actions that are self-defeating to actions that are constructive and could improve performance (Butler, 1981).

Cognitive Therapy. Beck (1976) developed treatment techniques to identify and correct unrealistic, cognitive distortions that cause maladaptive behaviour. For example, he hypothesized that specific cognitive distortions of anxiety neurosis included repetitive thoughts of danger, "stimulus generalization" whereby an increasingly wider range of situational variables evoke the 'fear' concept and reduced capacity to rationalize anxiety-evoking thoughts. Beck (1976) suggested that the modification of distorted cognitions associated with anxiety could be accomplished by a broad range of techniques. The sequence of cognitive therapy advocated by Beck is as follows; (a) self-observations of the distorted ideation preceding anxiety, (b) establishing the relationship between such maladaptive thoughts and the anxiety response, (c) learning to view thoughts objectively

in a rational manner through the process of 'distancing', (d) establishing the underlying assumptions that generate these thoughts, and (e) demonstrating how a rational belief system allows a more realistic, reasonable assessment of subsequent situations (Beck, 1970; 1974).

Beck (1970) suggested four common cognitive distortions. Arbitrary inference involves drawing conclusions based upon irrelevant or inadequate information. An example would be a soccer player interpreting being substituted out of the game as evidence of personal failure. Overgeneralization occurs when a single event is regarded as a never-ending pattern of defeat. Often athletes will use 'always' or 'never' when they think about the situation (e.g., "I always miss an open goal"). The tendency to exaggerate the importance of personal problems and shortcomings, or of minimizing desirable qualities is called magnification. An athlete may perceive criticism from the coach during practice as an indication that he/she will fail to make the starting line-up for the next game. Finally, cognitive deficiency involves failure to attend, integrate, or utilize relevant experiential information in a particular situation. For example, a soccer player witnesses a team-mate getting booked for giving verbal abuse to the referee, yet fails to utilize this information and gets booked himself/herself, moments later, for giving verbal abuse (Mahoney, 1975).

The cognitive restructuring approaches have proven effective in helping people cope with undesirable emotional reactions. Smith (1984) suggested that such techniques could be implemented with anxiety-prone athletes. However, the documented effectiveness of cognitive restructuring techniques is largely based on successful case studies. The controlled experimental research evaluating the efficacy of this type of intervention has been sparse and methodologically poor. Again, as with rational-emotive

therapy, a well-trained and competent therapist is required to implement this approach.

The Coping Skills Model. The conceptual analysis of stress and coping offered by Lazarus and Folkman (1984) argues that stress consists of three processes. The process of perceiving a threat to oneself is primary appraisal. The process of mentally formulating a possible response to this threat is secondary appraisal. Coping is the process of executing that response (Carver et al. 1989). The coping skills model adopts the transactional perspective which states that stress is the product of dynamic interplay between these three processes. Lazarus and Folkman (1984) defined coping as:

> constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person (p. 141).

Thus, in the coping skills model, the person is an active shaper of the stress experience and assumes more personal responsibility for developing and applying coping responses in demanding situations (Roskies and Lazarus, 1980; Smith, 1984). This cognitive-phenomenological approach emphasizes how the individual appraises what is being experienced and uses information in coping with events that happen in the past, present and future.

A distinction has been made between two general types of coping: problem-focused coping and emotion-focused coping. Problem focused coping is directed at managing or altering the sources of distress, either by changing the problem, maintaining behaviour or by changing environmental conditions. Emotion focused coping is aimed at reducing or managing emotional distress that is associated with the stressful encounter. Cognitive strategies of emotion focused coping include denial, positive reinterpretation of events and among others, avoidance (Carver et al. 1989). Generally, emotion focused

forms of coping occur when people feel that the harmful, threatening, or challenging environmental conditions must be endured. Problem-focused coping is more probable when people feel that something constructive can be done (Folkman and Lazarus, 1980). The latter embraces several problem-orientated strategies directed at the self and the environment, such as planning, taking direct action, learning new procedures and developing new behaviour standards (Lazarus and Folkman, 1984).

The way in which people cope is dependant upon the available resources and the personal and environmental constraints that mitigate the use of such resources. Folkman, Schaefer and Lazarus (1979) identified six categories of resources; health and energy; morale; problem solving skills; systems of beliefs; social support; and material resources. Roskies and Lazarus (1980) stated that ineffective coping can result in direct tissue damage (e.g., addictive drug-use), harmful, physiological disturbances (e.g., coronary heart disease), and adaptive behaviour interference (e.g., ignoring chest pains). The coping skills training approach attempts to help the individual discover the role of cognitions in stress production, the origins of poor coping behaviours and how to develop a repertoire of cognitive and physiological coping skills to manage stressful encounters (Meichenbaum, 1977).

In recent years four coping skills training programs have been developed to deal with stressful life events: anxiety-management training (Suinn and Richardson, 1971), self-control desensitization (Goldfried, 1971), stress inoculation training (Meichenbaum, 1977, 1985), and cognitive-affective stress management training (Smith, 1980). Goldfried (1971) and Suinn and Richardson (1971) used muscle relaxation and visualization as active coping skills to reduce and/or ameliorate anxiety. They proposed several reconceptualizations of the counter-conditioning paradigm that have influenced the

development of mutimodal stress management intervention packages like stress inoculation training (Meichenbaum, 1977, 1985) and cognitive-affective stress management training (Smith, 1980).

Stress Inoculation Training (SIT). Meichenbaum's (1977) stress inoculation training (SIT) program is a comprehensive treatment package which teaches cognitive and physiological skills for coping with stress. The coping skills include muscle relaxation, cognitive restructuring, self-monitoring, imagery rehearsal, role playing, modelling and didactic teaching (Meichenbaum, 1985). The SIT program is learned through self-instructional training and imagery procedures. Self-instructional training is the major cognitive strategy used to overcome the stress reaction (Meichenbaum and Cameron, 1983). The objective of SIT is to provide individuals with a comprehensive and flexible repertoire of coping behaviours that can be employed in anxiety-arousing situations.

The SIT program comprises three treatment phases: education, rehearsal, and application (Meichenbaum, 1985). The first phase provides the individual with a conceptual framework for understanding the nature of the stress transactions. As part of this initial educational phase individuals have to differentiate various kinds of stress-related problems by means of self-monitoring procedures, imagery, interviews and behavioural assessment. Thus, the first step in self-instructional training is for the person to view stress responses as a series of stages, rather than one complete reaction. Four stages were proposed by Meichenbaum (1975): preparing for a stressor; confronting and handling a stressor; coping with feelings of being overwhelmed; and reinforcing self-statements for effective coping.

During the second phase, the individuals develop and rehearse a number of

behavioural and cognitive coping skills: planning and problem solving, physical relaxation, and self-talk/cognitive restructuring. This phase helps athletes break stress encounters into 'small manageable doses' in order to make the experience easier to deal with (Burton, 1990). The application phase provides an opportunity for athletes to apply and practice the acquired coping techniques during exposure to variety of real-life stressors. Stress inoculation training has been successfully employed to reduce anxiety (Meichenbaum, 1975), control anger (Feindler and Fremouw, 1983; Novaco, 1975, 1977), increase pain tolerance (Meichenbaum, 1977; Novaco, 1975), and enhance stress reduction in scuba diving (Diekis, 1983), basketball (Harrison and Feltz, 1981), abseiling (Mace and Carroll, 1985, 1986a), gymnastics (Mace, Eastman and Carroll, 1986b; Mace and Carroll, 1989), and running (Ziegler et al. 1982), and it would seem to be highly applicable to other athletic populations (Smith, 1984).

Cognitive-affective Stress Management Training (SMT). Cognitive-affective Stress Management Training (SMT) is a coping skills program designed to teach athletes a specific 'integrated coping response' for dealing with competitive stress (Smith, 1980a, 1986; Smith and Ascough, 1985; Smith and Smoll, 1978, 1982). The conceptual model which underlies the SMT program encompasses a transactional perspective of the stress process (Lazarus, 1966; Schacter, 1966; Arnold, 1967; Ellis, 1962). The model (Figure 1) emphasizes the primary premise of cognitive psychology, namely that emotion and behaviour are determined by the individual's interpretation of dynamic situations. SMT postulates that cognitive interpretations involve interactive perceptions of physiological responses and primary (i.e. perceived personal threat), secondary (i.e. one's perceived coping ability), and tertiary appraisal (i.e. the consequences of such coping strategies) processes (Burton, 1990).

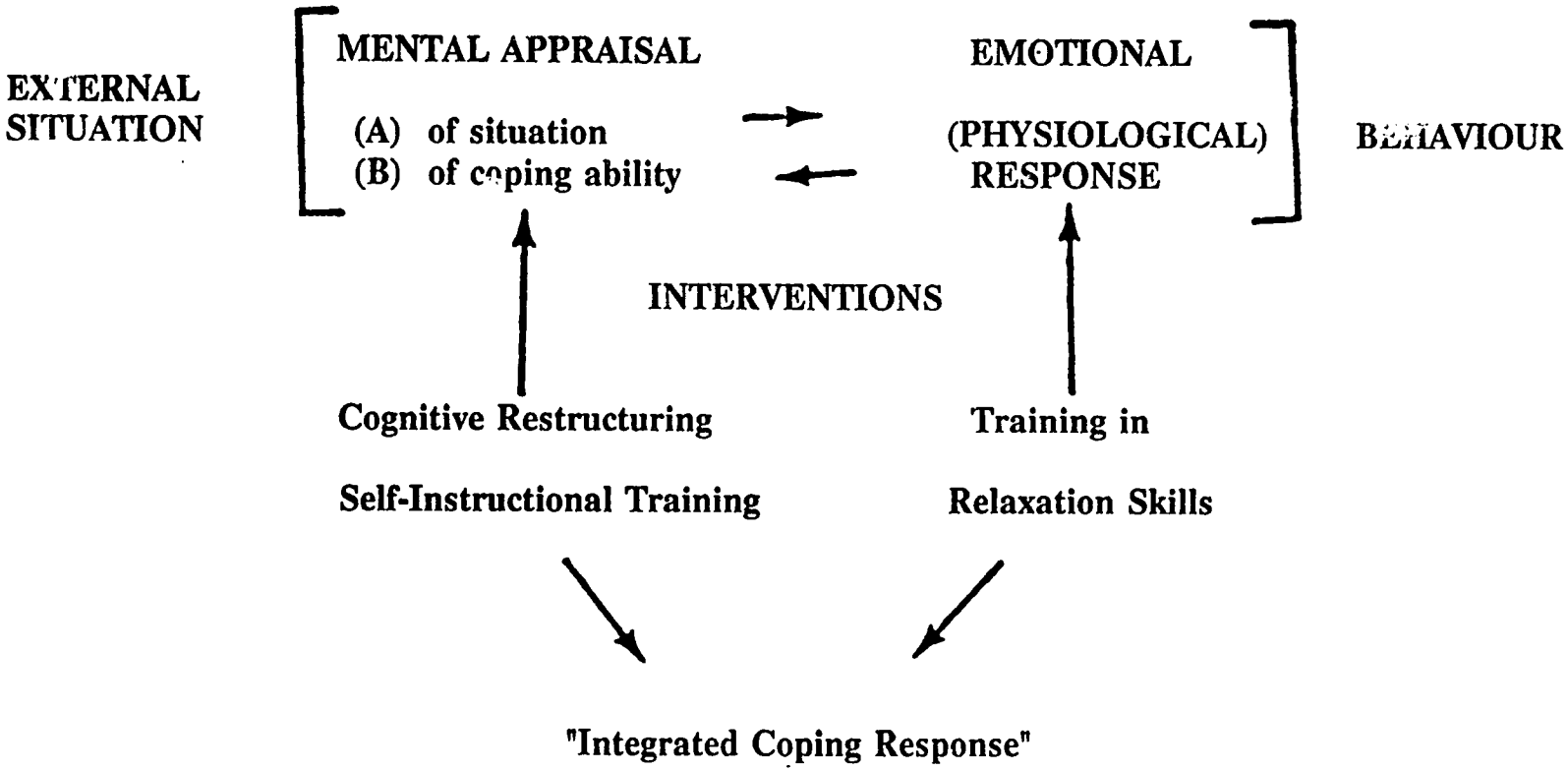


Figure 1. Mediational model of stress underlying the cognitive-affective stress management program together with the major intervention techniques utilized in development of the integrated coping response (Smith, 1986).

The first component of the SMT model, situational demands, may originate from either internal or external sources. In the athletic environment, emotional responses are usually stimulated by external factors such as high competitive demands, interpersonal difficulties (see Passer, 1983; Scanlan and Passer, 1978; Smoll, 1986), time and energy demands, and insufficient skills and boredom (Gould, 1983; Gould, Feltz, Horn and Weiss, 1982; Orlick and Botterill, 1975). Internal factors such as thoughts, images, expectations or memories of past performances may stimulate psychological stress (Smith and Smoll, 1982).

The inclusion of cognitive components in the SMT model illustrates the crucial role of cognitive mediators of emotionality. The nature and intensity of emotional responses are a function of any imbalance between perceived situational demands and the athlete's ability to cope successfully with them (Crocker, 1988; Smith, 1986). Cognitive mediational concepts, such as expectancies, perceptions, attributions, and self-instructions form close conceptual links with the appraisal component of the model (Smith, 1986).

Physiological responses are related bidirectionally to the cognitive appraisal processes. These responses contribute to the ongoing process of appraisal and reappraisal by providing feedback about the intensity of the emotion being experienced (Schacter, 1966). For example, an athlete who experiences somatic manifestations of increasing arousal in a potentially stressful situation is likely to appraise the situation as threatening. This appraisal may result in a spiralling acceleration of emotional arousal (Smith, 1984).

The fourth component of the SMT model consists of the output behaviours that constitute the individual's attempt to cope with situational demands. These task-

orientated, social and other classes of coping behaviours are affected by the situational demands, cognitive appraisal processes and physiological responses. Each of the four components can be affected by motivational and personality variables which predispose athletes to seek out particular situations and to perceive, think and respond emotionally and behaviourally in a certain manner (Smith, 1986).

Coping and intervention strategies may occur at the situational, cognitive, physiological or behavioural levels of the SMT model. At the situational level, a variety of approaches could be implemented to affect the balance between the demands and resources of the sports environment. Coaches, parents and peers often place unnecessary demands on athletes. Intervention programs designed to modify problematic coaching and inappropriate parent behaviours and social support could be beneficial (Orlick, 1986). Athletic, social, and problem-solving skills training could enhance both individual and situational resources and reduce the demands of the athletic setting. Stress reduction can be implemented at the physiological level by utilizing muscular relaxation techniques, meditation, hypnosis, and biofeedback.

Intervention strategies directed at the cognitive level represents the key component of the SMT model. Weiner (1980) suggested that, if therapy is ever to be effective it must constitute procedures capable of tapping the abstract rules which literally are the client's mind, and redirecting their activity so that a better attunement between the client and his environment results (p. 383). This statement complies with Lazarus and Folkman's (1984) theoretical approach to intervention, whereby a given problem of adaptation is viewed transactionally, as a product of the interplay between the person and his or her environment. Therefore, it is the cognitive appraisal of the situation that stimulates physiological arousal and triggers behaviour. Since, people are

not passive recipients of environmental demands they can be taught to discover, challenge and change the internal self-statements that create their psychological reality. Self-talk can be constructive (i.e., positive, rational, and appropriate) or destructive (i.e., dysfunctional, irrational, and inappropriate) in nature (Acton and Fischer, 1988; Eschenroeder, 1982; Ross, Gottfredson, Christensen and Weaver, 1986; Schomer, 1986; Showers, 1988). Self-statements or self-talk influence some of the most basic cognitions. Consequently, processes such as goal setting, decision making, generation of feelings of satisfaction, attention deployment and pleasure are all affected by self-talk (Butler, 1981). If athletes succeed in changing inappropriate cognitive appraisals, one of the powerful conditions of change in feeling and action has been created. Furthermore, if the athletes develop effective coping skills there is greater likelihood that they will handle adverse circumstances in a manner which facilitate performance enhancement (Lazarus and Folkman, 1984; Smith, 1984).

E. The SMT Program

As the above model implies, a stress management program, to be effective, must stimulate individuals to appraise situations and/or cope with perceived demands in a number of different ways (Lazarus and Folkman, 1984; Smith, 1984). The SMT program is designed to provide the opportunity to acquire, rehearse and apply a variety of coping skills. It combines several clinical treatment techniques into an educational program of emotional self control. The SMT program consists of five partially overlapping phases: a) pretreatment assessment, b) treatment rationale, c) skill acquisition, d) skill rehearsal, and e) post-treatment evaluation (Smith and Ascough, 1985).

Pretreatment Assessment. This phase is directed at assessing athletes' cognitive

and behavioural strengths and weaknesses. A variety of assessment procedures are employed during this phase to help athletes determine the nature and rationale of their stress responses, such as interviewing, questionnaires, rating scales and self monitoring techniques (Smith, 1986).

Treatment rationale. The initial conceptualization phase is used to obtain commitment and compliance to the SMT program. It should be understandable, plausible and have clear intervention implications. The athletes are encouraged to elicit descriptions of situational, cognitive, physiological and behavioural components experienced in a recent stressful incident, to ensure they arrive at the SMT conceptual model of stress. During an overview of the skills training program and throughout training two vital points are emphasized: 1) the SMT program is an educational program that enables athletes to learn specific coping skills to gain self-control of emotion; 2) the concepts of self-responsibility and self-regulation are crucial to the success of the program. Consequently, individuals must devote considerable effort, time and practice to the acquisition of coping skills and abilities. Smith and Ascough (1985) stated that the goal of treatment is to ensure positive changes are attributed to the athlete rather than to the trainer.

Skill Acquisition. The purpose of the SMT program is to teach athletes an 'integrated coping response', having somatic and cognitive components (Smith and Ascough, 1985; Smoll, 1986). This phase involves learning cognitive and somatic relaxation skills and the identification, discrimination, and replacement of dysfunctional stress-provoking self-statements with functional cognitions to reduce stress (Smith and Smoll, 1982).

Somatic relaxation training involves an abbreviated version of Jacobson's (1938)

progressive muscle relaxation technique. Most somatic relaxation training is accomplished during daily practice sessions in the form of homework assignments.

Cognitive relaxation is taught using Benson's (1975) meditation technique. Meditation training is designed to bring about a mental state of calm, tranquillity and peace. The aim of meditation practice in stress management training is to reduce precompetitive anxiety, conserve energy and deal with other dysfunctional thought processes. Cognitive coping skills are developed through cognitive restructuring and self-instructional training. Athletes are taught that at times they respond to demands of their sport in an emotional-irrational manner, because of self-defeating automatized thought patterns, images and ideas. Cognitive restructuring (Beck, 1976; Ellis, 1977) is used to help athletes identify, monitor and rationally examine and replace those self-deprecating thoughts, beliefs, and values, which generate maladaptive emotional responses. The important consequence is that recognition of beliefs that underlie negative self-talk gives athletes a better understanding of the sources of their stress responses. So, by pinpointing the source of difficulty, athletes can direct themselves towards a positive alternative, whereby a destructive internal cognition is changed to one of self-support (Butler, 1981).

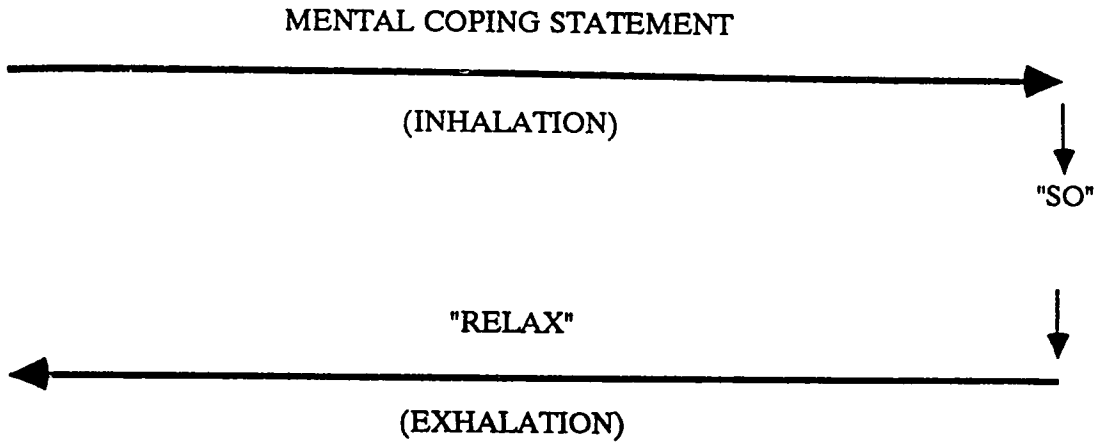
The primary emphasis of self-instructional strategies involves disrupting the flow of negative ideation while utilizing specific task-relevant self-commands (Meichenbaum and Cameron, 1983). Examples of such commands are: "Breathe deeply and relax". "I am powerful". Young athletes or athletes who are not psychologically-minded can profit a great deal from self-instructional training (Smith and Smoll, 1982).

Skill Rehearsal. Stress coping skills must be rehearsed and practised under simulated conditions that reflect real-life situations in order for them to be maximally

effective. The SMT program employs a variant of a psychotherapeutic procedure known as induced affect (Sipprelle, 1967; Smith and Ascough, 1985) to allow rehearsal of coping responses under high emotional arousal.

In the induced affect technique, athletes are asked to imagine a stress-provoking competitive situation and then to focus on the feelings induced by the situation. The trainer suggests that the feelings will intensify and continues to verbally reinforce and encourage the physical indications of arousal in order to shape the strong affective response (Smith and Ascough, 1985). When players obtain high arousal levels, they are instructed to "turn it off" with their coping responses. Initially, muscular relaxation is the predominant coping skill. Later, only self-statements are used to reduce the high arousal levels. Finally, the cognitive and somatic responses are combined into the integrated coping response, which incorporates both the self-statements and the relaxation response with the breathing cycle (see Figure 2). The integrated coping response integrates an adaptive self-statement (e.g. I need to focus) with the transitionary cue 'so' during inhalation and then repetition of the relaxation cue 'relax' on exhalation. The induced affect technique is comparable to Meichenbaum's procedure of 'learning to cope with small, manageable units of stress' (1977, p. 149). The practical effectiveness of SMT could be increased by using non-specific emotional cues common to different emotional responses across varying situations. This procedure should enhance individuals' appraisal of their coping resources and maximize the coping skills' generalizability to a variety of stressful situations (Lazarus and Folkman, 1984).

Effectiveness of the SMT Program. Initial empirical research in the general psychology literature has indicated that the SMT program was successfully employed with medical students (Holtzworth-Munroe, Munroe and Smith, 1985), problem drinkers



E.G., "I NEED TO CONCENTRATE ....SO.... RELAX"

"I'M IN CONTROL ....SO.... RELAX"

Figure 2. Schematic diagram of integrated coping response built into breathing cycle (Smith, 1980).

(Rohsenow, Smith and Johnson, 1985), and test-anxious college students (Smith and Nye, 1989). In recent years, research involving multimodal stress management techniques like SMT has gained momentum. However, a number of methodological flaws evident in the sport literature make clear interpretation of results difficult.

No attempt was made to study systematically the effects of specific interventions in the SMT program. Failure to measure precisely "stress indicators" before, during, and following treatment prevents any firm conclusions from being made regarding the efficacy of the intervention technique. The SMT program has been found to reduce stress and/or enhance performance in sports such as football (Smith and Smoll, 1978), figure-skating (Smith, 1980), cross-country running (Ziegler, Klinzing, and Williamson, 1982), and volleyball (Crocker, Alderman and Murray, 1988). With the exception of Ziegler et al. (1982) and Crocker et al. (1988) the experimental design of these studies lacked controlled conditions. Consequently, the observed changes in the components of the stress processes could not be clearly attributed to the specific intervention technique. Furthermore, Ziegler et al. (1982) used only physiological indicators of stress to evaluate the efficacy of the SMT program.

Crocker et al. (1988) provided inconclusive evidence that SMT reduced negative thoughts in response to videotaped simulation of stressful situations, and only suggestive evidence for improved service reception performance in volleyball players. However, a significant gender effect emerged at follow-up assessment on several measures. The female volleyball players maintained or improved their inner dialogue modification and significantly reduced anxiety effects compared to the men. Burton (1989) obtained similar gender results. He found that female swimmers employed more goal-setting exercises and frequently practised on their own, and consequently enhanced competitive

cognitions and performance more so than their male colleagues.

F. Summary

Despite the paucity of literature concerned with the application of intervention techniques to reduce anxiety in athletes and the methodological shortcomings of those studies that have been reported, there is reason to be optimistic about the future role of multimodal stress management programs in the sports setting. Clearly, the problem of dysfunctional stress is sufficiently wi sport to justify further application and assessment of techniques, such as the gram (Smith, 1980). Smith (1984) stated that a number of methodological prob regarding design and control need to be addressed in future research to clarify the processes involved in effective stress management. First, controlled outcome procedures are needed with well defined and competently administered treatment procedures. Second, the experimental design should incorporate dependent variable indicators that tap behavioural, physiological, psychological, coping and self-report indices. A noted issue concerns assessing the environmental contingencies that control the individual's behaviour. A systematic analysis of the situation is required to determine what variables in the athlete's environment maintain incompatible behaviours (Ince, 1976).

The main goal of multimodal stress management programs is to provide athletes with a repertoire of behaviours and flexible coping skills that will help them adapt and function to their potential in sport and everyday life. If these acquired behaviours and skills cannot be maintained in the real world, then ultimately the treatment has failed. This problem of generalization or transfer of training thwarts many intervention efforts (McGlynn, 1990). Unfortunately, few studies have systematically assessed the degree to

which treatment effects generalize to the natural sports environment. Clearly, the use of follow-up assessments (e.g. Crocker et al. 1988) must increase in order to facilitate the growth of an accurate body of knowledge regarding the durability of sport psychological intervention programs (Greenspan and Feltz, 1989). It is evident from the literature that future inquiry must utilize more sophisticated research designs and attempt to standardize stress management programs and techniques intended to enhance the performance of athletes in competition (Greenspan and Feltz, 1989). Davidson and Schwartz (1976) argued that empirical verification of the contribution of each subcomponent is needed to ensure valid assessment of the total treatment package. In addition, Burton (1990) suggested that future research should evaluate the extent to which personality and situational moderator variables influence SMT treatment effects.

CHAPTER III

Methodology

A. Subjects

Twenty elite female soccer players who played for the University of Alberta Panda soccer team participated in this study. The soccer players were classified as the top eligible players in their division. All players were requested to participate in the study. The players were assigned to one of two groups; treatment or control. Two subjects were deleted from the study due to the following criteria; leaving the Panda soccer team and serious injury.

B. Design

The players were assigned to one of two conditions: Cognitive-affective Stress Management Training (SMT), or control. The dependant variables were:

(i) sport competitive trait anxiety,

(a) somatic trait anxiety

(b) cognitive trait anxiety

(i) Worry

(ii) Concentration Disruption

(ii) sport competitive state anxiety,

(a) state cognitive anxiety,

(b) state somatic anxiety,

(c) state self-confidence,

(iii) soccer situation-specific coping tendencies

The independent variables were type of treatment, SMT or control, and time assessment (pretreatment, posttreatment and follow-up). In the pretreatment phase, the athletes filled in a questionnaire for descriptive purposes. This data was used to assess the nature of their stress response, sources and effects of stress, modes of coping and their experiential playing base (see Appendix A).

The dependant measures were collected for all subjects pretreatment, posttreatment and follow-up (Figure 3 and 4). The follow-up assessment occurred two months after the completion of the SMT program. In addition to this data, an Imagery Use Questionnaire (Hall, Rodgers, and Barr, 1989) was administered to the players to assess the contribution of the visual imagery component technique within the total SMT package.

C. Measures

Sport Competitive State Anxiety. Self-reported state anxiety was measured by the Competitive State Anxiety Inventory II (CSAI-2) (Martens, Burton, Vealy, Bump and Smith, 1983). The CSAI-2 is a psychological measure developed specifically for competitive sport. This instrument measures an immediate, situation-specific stress response reflecting feelings of apprehension and tension related to an upcoming sports competition. It contains three subscales: cognitive anxiety (CSAI-cog), somatic anxiety (CSAI-som), and self-confidence (CSAI-sc). Martens et al. (1983) defined cognitive anxiety as conscious awareness of unpleasant feelings about oneself or external stimuli, worry, and disturbing visual images. Cognitive anxiety is characterized by negative self-talk, attentional distraction, and unpleasant visual imagery (Burton, 1990). While somatic anxiety refers to psychological affective elements of the anxiety experience which

TIME	PHASE I	PHASE II
Pretreatment	SAS CSAI-II COPE	SAS CSAI-II COPE
Treatment	IUQ STRESS MANAGEMENT TRAINING PROGRAM TREATMENT	IUQ
Postreatment	SAS CSAI-II COPE	SAS CSAI-II COPE
Follow-up	IUQ CSAI-II COPE IUQ	IUQ CSAI-II COPE IUQ

Figure 3: Procedure for test administration of experimental group.

TIME	PHASE I	PHASE II
Pretreatment	SAS CSAI-II COPE	SAS CSAI-II COPE
Treatment	IUQ NO TREATMENT	IUQ
Postreatment	SAS CSAI-II COPE	SAS CSAI-II COPE
Follow-up	IUQ SAS CSAI-II COPE IUQ	IUQ SAS CSAI-II COPE IUQ

Figure 4: Procedure for test administration of control group.

develop directly from autonomic arousal.

A number of studies have examined the reliability, concurrent and construct validity of CSAI-2. Internal consistency, which measures the degree to which items in the same subscale are homogeneous, showed coefficients ranging from r=0.79 to 0.90. Concurrent validity was assessed by comparing CSAI-2 to a number of trait and state anxiety inventories. The results indicated respectable concurrent validity.

Form E of the CSAI-2 consists of twenty-seven items to be ranked on a four point scale:

1. Not at all
2. Somewhat
3. Moderately so
4. Very much so.

The range of scores on each subscale is from 9 to 36. The CSAI-2, shown in appendix B, was administered as the Illinois Self-Evaluation Questionnaire in order to reduce response bias to the inventory.

Sport Competitive Trait Anxiety. Self-reported trait anxiety scores were measured by the Sport Anxiety Scale (SAS) (Smith, Smoll, and Schutz, 1990). SAS is a multidimensional sport specific measure of individual differences in somatic anxiety and two components of cognitive anxiety, Worry and Concentration Disruption. The SAS and its subscales have demonstrated high internal consistency and satisfactory test-retest reliability. High correlations with the SCAT (Martens, 1977) sport-specific anxiety measure indicated that SAS had convergent validity. Preliminary research on the SAS suggested that this research tool could be superior to the SCAT, which is primarily a

measure of somatic anxiety.

The SAS scale, shown in appendix C, consists of twenty-one self-descriptive statements to be ranked on a four-point scale:

1. Not at all
2. Somewhat
3. Moderately so
4. Very much so

Coping. Self-reported coping was measured by the COPE (Carver, Scheier, and Weintraub, 1989) inventory. This instrument was developed using two theoretical models as guidelines: the Lazarus stress model and a model of behavioural self-regulation. The COPE inventory incorporates 13 conceptually distinct scales based on the functional or less functional properties of coping strategies. Five scales measure conceptual dimensions of problem-focused coping (active coping, planning, suppression of competing activities, restraint coping, seeking of instrumental social support); five scales measure aspects of emotion-focused coping (seeking of emotional social support, positive reinterpretation, acceptance, denial, turning to religion); and three scales measure less useful coping responses (focus on and venting emotions, behavioural disengagement, mental disengagement). Cronbach's alpha reliability coefficient values indicated that COPE had acceptably high internal consistency. Test-retest correlations illustrated that the self-reports of coping tendencies measured by COPE are relatively stable (Carver et al. 1989).

The COPE was developed to be applicable to assessment of coping dispositions as well as situational coping responses. A dispositional coping style refers to what a

person usually does under stress. A situational coping style refers to how the person behaves in a specific period of time. Carver et al. (1989) investigated the adequacy of the COPE to measure the relation between dispositional or general coping styles and situation-specific coping responses to a particular stressful event. The results indicated that people's rating had greater internal consistency when appraising specific behavioural situations opposed to rating general tendencies. This data was consistent with that obtained by Folkman and Lazarus (1980). In this study, a situation-specific response format was used to investigate how the subjects dealt with an actual stressful event that they experienced in soccer during the last two months. The COPE is shown in Appendix D.

Imagery. The use of imagery by players was assessed by administering a modified soccer-specific version of the Imagery Use Questionnaire (IUQ) (Hall, Rodgers, and Barr, 1989). The IUQ is a 37 item self-report questionnaire which uses a 7-point Likert scale, except for two items that require yes/no responses. Formal psychometric instrument evaluation was not conducted on the IUQ. Sport-specific versions of the instrument (e.g. IUQ- rowing) have been evaluated and appear to elicit reliable self- evaluations on imagery use. The average test-retest correlation scores on the IUQ-rowing is 0.71 (Hall et al. 1989). The preliminary section of the IUQ-soccer will cover the soccer players' background including past experiences with other mental training techniques. The majority of the questions addressed when the soccer players image, how easily they can image, and what they see or feel when they image. Caution was to be exercised when the specific results of the IUQ-soccer were interpreted, since no formal evaluations of its psychometric properties have yet been undertaken. The IUQ-soccer is shown in Appendix E.

The SMT Program. The SMT program consisted of seven modules, each lasting approximately one hour. The program was administered by the investigator according to the guidelines proposed by Smith and Rohsenow (1987). The purpose of the SMT program was to have soccer players acquire the "integrated coping response". The athletes learned relaxation skills, rational thinking skills and self-instructional strategies, and visualisation techniques to effect self-control over dysfunctional behaviour by modifying their appraisal processes and inner experiences. The players rehearsed these skills under high arousal "induced affect" imaginal conditions, and finally utilised the integrated coping response in practice and competitive game situations.

The problem of experimental contamination was reduced by instructing all players not to discuss the contents or procedures of the training sessions with players outside their group or with the coaches. Self-responsibility is a major component in the implementation of intervention strategies. Knowledge of coping skills is not a sufficient condition to control and ultimately alleviate excessive amounts of stress. The players must systematically practice the coping skills to effectively utilise them in managing stress. Consequently, the players received homework assignments which were reviewed in each session. These assignments were used to facilitate adherence to the SMT program.

D. Procedure

The players were assigned to one of two conditions: treatment or control. Prior to testing, all subjects were informed that data was being gathered on their thoughts about different soccer situations, their feelings about competing, and soccer performance. They were told that the information would be used to evaluate soccer players' modes of

stress management and that their responses would be strictly confidential.

In the pretreatment phase, all the players completed the descriptive questionnaire, the SAS, CSAI-II, COPE and IUQ. The experimental group underwent the SMT program while the control group received no treatment. Posttreatment assessment occurred one week after completion of the SMT program, for all the players. These data collection procedures replicated the pretreatment sessions with the exception of the descriptive questionnaire. Further data collection occurred one month after posttreatment in a follow-up assessment.

E. Analyses of the Data

In this study the data analysis involved descriptive statistics and repeated measures analysis of variance. In the repeated-measures design variability can be partitioned into those effects that involve comparisons between different subjects and those effects that require comparisons within the same subject. The scores obtained by repeated measurements on the same subjects are correlated. The removal of the effects of this correlation from the error term leaves the error components independent from cell to cell. The repeated-measures ANOVA leads to a more powerful test on the null hypothesis than between group ANOVA (Howell, 1987).

The use of the F test to evaluate the significance of treatment effects was predicated on a number of statistical assumptions. In addition to the assumptions of normality, homogeneity of variance, and independence, the within-subjects terms operate under the assumption that the overall matrix Σ, where Σ is the pooled average of the individual variance-covariance matrices (Σ_{Ai}), exhibits compound symmetry. This assumption demands that all the variances on the main diagonal are equal, and the

covariances off the diagnol are equal. If Σ exhibits compound symmetry the requirement of sphericity is assumed to be automatically met. Sphericity assumes that the standard errors of the differences between pairs of interval means are constant (Howell, 1987).

If these statistical assumptions are not met by the experimental data, a more conservative method of evaluating the significance of the obtained F value may be required. In this analysis the Greenhouse - Geisser Epsilon correction (Greenhouse and Geisser, 1959) was used to give an appropriate critical value of F, by reducing the numerator and denominator degrees of freedom, for worst-case situations where the underlying assumptions may be maximally violated.

The post-hoc multiple comparison test utilized was the Scheffé method. The Scheffé method is the most versatile and also the most conservative post-hoc multiple comparison procedure (Hinkle, Wiersma and Jurs, 1988). This test is much less sensitive than the Tukey HSD (Honestly Significant Difference) test for pairwise comparisons. However, an advantage of the Scheffé test is that it is designed to handle complex comparisons between conditions with an unequal number of scores (Collyer and Enns, 1987).

CHAPTER IV

Results and Discussion

This chapter contains the results and interpretation of the findings pertaining to the hypotheses of this study. It is subdivided into three sections, namely: A. Descriptive Statistics, B. Inferential Statistics, and C. Limitations of the Study.

A. Descriptive Statistics

The player questionnaire (Appendix A) was analyzed by simple descriptive statistics. The questions were directed at gaining the players' responses concerning their years involved in competitive soccer, perceived ability relative to teammates, previous representative teams, perceived performance in important games, perceived performance interference caused by stress-related factors, five typical soccer-specific situations that elicit stress, and familiar means of dealing with stressful encounters. This descriptive information was used to create appropriate soccer-specific imagery scenarios in the SMT program, and to compile data pertaining to the personal and situational factors involved in the stress transaction. No attempt was made to test for reliability or validity of this measure. Thus, caution should be exercised when interpreting these findings.

All the female soccer players (n = 18: x age = 19.9 years) had been involved in competitive soccer for over six years. All the players, with one exception, had been provincial team representatives. Two players in each group (SMT and control) had gained national team representation. The subjects were asked to rank their soccer ability compared to their team-mates. The SMT group had a slightly higher opinion of their soccer ability than the control group. Three players ranked themselves in the top 10%, and three in the top 30% but not in the top 10%. It was interesting to note that a

highly-skilled athlete who was a consistent starter and a national team representative perceived her soccer ability to be in the middle 40%.

Fourteen players rated their performance as "above normal" in very important games, compared to their normal playing ability. Four subjects, two from each group, rated their performance as "normal".

The average degree of interference for the SMT group was approximately 10% higher than the control group. Three players in the SMT group reported scores over 40%, while only one player scored over 40% in the control group. The lack of precision in defining the concept of stress may have resulted in different interpretations of its meaning among different players.

The players were asked to rank five typical situations that caused them to feel under pressure and stressed. The data was collapsed together for both groups. The players' responses were diverse so the situations were categorized in terms of the frequency of response (Appendix F). Furthermore, the subjects were asked to describe how they dealt with such stressful situations. The findings revealed that both emotion focused and problem-focused coping strategies were used. The predominant coping tendencies used to handle stress were for the problem-focused skills, self-talk, rational thinking, focusing and visualization, and for the emotion-focused skills it was relaxation.

Martens, Vealey and Burton (1990) provided normative information for each of the three subscales of the CSAI-2 for female college and elite athletes. The reported scores for cognitive A-state (Appendix G) were slightly lower than the norm samples. The somatic A-state and self-confidence scores of all the soccer players were similar to the summary test statistics.

Means and standard deviations for the SAS total and subscale scores (Appendix

G) showed some differences compared to values obtained for male and female high school athletes and male college football players by Smith et al. (1990). The total scores and the Somatic Anxiety scores for the SMT and control groups were lower than the scores reported by Smith et al. (1990). The Worry and Concentration Disruption subscales were higher in the SMT group, while the other players displayed quite similar scores to those of male college football players. There was no comparative data available for college or elite female athletes since the SAS is a relatively new instrument.

Means and standard deviations for situational COPE Scales were compared to values obtained by Carver, Scheier and Weintraub (1989). The patterns of situational reports suggested that the female soccer players used less acceptance (SMT group), less turning to religion, less focus on venting of emotions, less seeking of social support-emotional and less behaviour disengagement in dealing with specific stressors than the university undergraduates in Carver et al's. (1989) study. Furthermore, the mean scores suggested that the soccer players used more suppression of competing activities, more seeking of social support-instrumental, more positive reinterpretation and growth and more restraint coping than the undergraduate students. Caution must be exercised in comparison and interpretation of all these results across subjects, situations and studies.

B. Inferential Statistics

Sport Competitive Anxiety

Trait anxiety. It was hypothesized that the players who participated in the intervention program would have lower competitive trait anxiety than the control group. The analyses of the SAS subscale scores (Table 1) yielded no significant differences on the Somatic Anxiety ($F=0.88$, $p>.418$) or Worry ($F=0.07$, $p>.886$) scales between the

Table 1

Summary of Repeated Measures ANOVA for Competitive Trait Anxiety of Female Soccer Players at Pretreatment, Posttreatment and Follow-up

DEPENDENT MEASURE	SS	df	MS	F ratio	Sign of F	P
Group	113.67	28	4.06			
SAS_{soma}	7.17	2	3.58	.88	.42	ns
Group x SAS_{soma}	3.17	2	1.58	.39	.66	ns
Group	63.35	32	1.98			
SAS_{cdis}	20.39	2	10.20	5.15	.02	$p<.05$
Group x SAS_{cdis}	3.50	2	1.75	.88	.39	ns
Group	65.62	32	2.05			
SAS_{worr}	.27	2	.14	.07	.88	ns
Group x SAS_{worr}	.72	2	.36	.17	.77	ns

SAS_{soma} = somatic anxiety SAS_{cdis} = concentration disruption SAS_{worr} = worry

SMT and control group. However, the SAS_{cdis} analysis proved to be significant ($F=5.15$, $p<.05$). Post-hoc analysis using the Scheffé method, indicated that there was a significant reduction ($F=6.46$, $p<.05$) in the SMT group's tendency to experience disruption of concentration pretreatment to posttreatment. Despite the lack of significance posttreatment to follow-up, the concentration disruption of the SMT group continued to decrease. The concentration disruption of the control group fluctuated, but did not significantly change over time.

Frequently, soccer coaches use statements like 'keep your eyes on the ball', 'concentrate', or 'pay attention'. The implications are that perception, particularly attention and concentration, are important concepts in athletic performance. Nideffer (1976) stated that,

> .....it is difficult to imagine a variable more central to performance than the ability to direct and control one's attention (p. 395).

This ability to selectively attend to important stimuli, or to disregard extraneous and irrelevant information is part of our personal make-up (Zaichkowsky, 1984). Indeed, Mahoney (1979) postulated many champions possess essential psychological attributes including attention, seemingly as traits. While, Meyers et al. (1979) found champion athletes coped more easily with competitive mistakes and were able to control and utilize sport competitive anxiety effectively. The task demands of a dynamic sports environment, such as soccer, would require attentional focus to enable rapid information processing and decision-making. Thus, a loss of concentration due to intrusive thoughts or irrational self-talk would likely cause performance interference. Smith et al. (1990) postulated that,

> ....the influence of the various components of sport anxiety are a function of the nature of the momentary task

> demands and the extent to which the anxiety components are operative (p. 277).

Jones (1990) suggested that stress effects are situation-specific, more specifically, they are dependent upon the nature of the stressor. Therefore, sport competitive anxiety may have different effects upon different elements of athletic performance. He also argued that stress effects are task-specific. Hence, the different cognitive, information-processing demands of the task can be affected in different ways by the same stressor. While Humphreys and Revelle (1984) proposed that the psychological characteristics of the sports performer will elicit varying responses to an interaction between the stressor and particular task demands.

In the literature, it is hypothesized that cognitive and somatic anxiety are conceptually different. However, Morris, Davis and Hutchings (1981) warned that these concepts are likely to covary in stressful circumstances where situational variables are related to the arousal of both responses systems. Borkovec (1976) agreed that each component of anxiety may serve a conditional or discriminative function for the other component. For example, negative thoughts of pre-competitive stimuli may trigger specific patterns of conditioned somatic responses, such as clammy hands or muscular tension. Alternatively, powerful somatic behaviours may be interpreted by athletes as reason to worry (Morris, Davis and Hutchings, 1981). This cognitive-somatic distinction has been used to assess both competitive sport trait and state anxiety (Martens et al. 1990).

If individual differences exist in athletes' tendencies to experience either or both anxiety components, the intervention strategies employed must be designed to control the most strongly activated response system (Smith et al. 1990). The implications of the present findings suggested that the cognitive anxiety scale of concentration disruption

may have responded to the cognitive strategies in the SMT program, such as self-instructional training, cognitive restructuring, mental imagery and meditation in the form of Benson's (1975) Relaxation Response. It could be speculated that the psychological skills training may have occupied cognitive processes with productive activities, thus making worry less likely (e.g. Carter, Johnson and Borkovec, 1986). Unfortunately, no research has been conducted to evaluate the efficacy of attention control training in sport. Perhaps, the lack of empirical evidence can best be explained by the fact that clinical studies within sport psychology are recent, few in number, and hampered by problems inherent in applied sports settings (Zaichkowsky, 1984).

State anxiety. The hypothesis that the SMT group would have lower competitive state anxiety than the control group was not supported. A repeated measures ANOVA was computed for each of the three CSAI-2 subscales (Table 2). The $CSAI_{som}$ analysis indicated a significant disordinal interaction ($F=4.93$, $p<.05$), but neither $CSAI_{cog}$ ($F=1.76$, $p>.199$), nor $CSAI_{sc}$ ($F=0.07$, $p>.899$) reached significance. The post-hoc Scheffé analysis revealed that there was a significant increase in somatic A-state ($F=7.12$, $p<.05$) for the SMT group pretreatment to posttreatment. Somatic A-state decreased in the SMT group after posttreatment, however, this change was not significant. The somatic A-state scores for the control group did not significantly change, and thus could be interpreted as essentially the same over the time periods they were measured (Martens, Vealey and Burton, 1990). State self-confidence followed a similar unchanging pattern for all the players. Thus, the hypothesis that the self-confidence of the SMT group would increase over time was not supported.

Bandura (1977) operationalized self-confidence in terms of belief in one's abilities in relation to specific tasks. Bandura warned researchers not to think of athletes as

Table 2

Summary of Repeated Measures ANOVA for Competitive State Anxiety of Female Soccer Players at Pretreatment, Posttreatment and Follow-up

DEPENDENT MEASURE	SS	df	MS	F ratio	Sign of F	P
Group	176.28	32	5.51			
$CSAI_{soma}$	1.01	2	.51	.09	.91	ns
Group x $CSAI_{som}$	54.35	2	27.17	4.93	.02	$p<.05$
Group	335.15	30	11.17			
$CSAI_{sc}$	1.67	2	.84	.07	.89	ns
Group x $CSAI_{sc}$	60.02	2	30.01	2.69	.08	ns
Group	269.40	32	8.42			
$CSAI_{cog}$	29.60	2	14.80	1.76	.19	ns
Group x $CSAI_{cog}$	37.01	2	18.50	2.20	.14	ns

$CSAI_{som}$ = somatic anxiety $CSAI_{sc}$ - self-confidence $CSAI_{cog}$ = cognitive anxiety

'having' or 'not having' self-confidence, rather they should examine individuals' beliefs about particular aspects of their athletic performance. Several studies (Mahoney, 1977; Nelson and Furst, 1972) implied that expectations of success may produce successful outcomes. The implications are that such expectations could control attention and anxiety factors and indirectly improve performance (Kirchenbaum and Bale, 1984). Perhaps the self-confidence of athletes could be enhanced by incorporating specific self-statements associated with past successes e.g., 'I can tackle this forward easily, I've done it many times before.' into the intervention program.

High levels of somatic A-state were reported in the SMT group at posttreatment without accompanying increments in cognitive A-state. The implication is that the SMT group elicited high arousal without negative evaluation. This finding provides additional support for the conceptual independence of cognitive and somatic A-state. Moreover, research evidence has confirmed that cognitive and somatic state anxiety follow different temporal patterns. Martens et al. (1990) and Morris, Davis and Hutchings (1981) have argued that somatic anxiety is a conditioned response to the pre-competitive environment, which tends to dissipate once performance commences. While, cognitive A-state only changes prior to or during evaluation when expectations of success are manipulated. The generalizability of these findings may be limited due to the lack of ecological validity, because the only evidence used to support these contentions is based on test anxiety research (Morris, Davis and Hutchings, 1981) and weak retrospective self-reports in a sports context (Martens et al. 1990). Also, much of the research has employed male subjects, so these findings may not generalize to the female population (Jones and Cale, 1989). In contrast, Idzikowski and Baddleley (1987) suggested that somatic anxiety continues to fluctuate during athletic performance.

Some studies (Heide and Borkovec, 1983; Budzinski, Stoyva and Peffer, 1980) have shown that relaxation procedures can induce rather than reduce anxiety, pointing again, perhaps, to ubiquitous individual differences. The emotion-focused, somatic techniques of diaphragmatic breathing and progressive muscle relaxation (Jacobsen, 1938) may have failed to significantly alter the SMT players' initial appraisal of the soccer situation. The novelty and complexity of many stressful encounters may have created demands that exceeded the individual's resources. Environmental constraints may have exerted on overwhelming influence on the players' appraisal processes, and thwarted the effective use of the relaxation strategies (Lazarus and Folkman, 1984) In these circumstances, the players would revert to well-established, conditioned somatic responses that have been effective on previous occasions.

Gould et al. (1987) conducted research on the effects of cognitive anxiety, somatic anxiety and self-confidence upon pistol shooting performance. The results confirmed the independence of these three subscales, and indicated a significant inverted-U shaped quadratic trend for performance and somatic anxiety, but no significant trend for cognitive anxiety. Gould et al.'s (1987) results contradicted the general consensus of earlier test anxiety research (Morris, Brown and Halbert, 1977) that worry and cognitive anxiety were the most important elements of the anxiety experience when considering effects on performance. Parfitt, Jones and Hardy (1990) suggested that the lack of somatic anxiety effects in previous literature may have been due to the type of linear analysis, task demands or the performance measures employed. For example, pistol shooting requires very fine neuromuscular control, so it would be susceptible to changes in physiological arousal (Gould et al. 1987).

Parfitt et al. (1990) warned that anxiety measured by the CSAI-2 represents only

the intensity of specific anxiety symptoms or cognitive intrusions. They argued that two other factors, frequency and direction of cognitive intrusions, demand careful consideration in order to provide the complete picture. Consequently, in this study, even if cognitive state anxiety scores were the same at pretreatment, posttreatment, and follow-up, the frequency of cognitive intrusions (the proportion of time that cognitions regarding the game occupy the player's thoughts) may have varied across time. Furthermore, the nature of the soccer-specific cognitions needs to be measured to determine whether players' cognitive intrusions are positively orientated (e.g. anticipatory excitement) or negatively orientated (e.g. fear of failure). The implications are that competitive state anxiety is much more complex than indicated in the sport psychology literature. The potential for greater understanding and knowledge of this concept involves consideration of these anxiety dimensions within a much more detailed and complex theoretical and research framework (Parfitt et al. 1990).

In summary, Burton (1990) speculated that multimodal stress management programs, like SMT, are probably more effective with high trait anxious athletes, than individuals with less anxious predispositions. He questioned the desirability of arousal reduction for performance enhancement. Hardy and Fahey's (1987) and Martens (1987) suggested that relatively high arousal levels could be appraised as facilitative rather than threatening if the accompanying cognitions were positive. Kerr (1989) suggested that anxious athletes should be encouraged to reinterpret a stressful situation so that arousal is perceived as excitement, rather than decrease arousal levels to achieve relaxation. This change in interpretation would enable athletes to feel better, and also maintain high arousal levels necessary for optimal performance. Hardy and Fazey (1987) suggested that perceived physiological arousal is only damaging if athletes are cognitively anxious

depicting negative appraisal of success in that situation. If proven, this would imply that the interpretation of somatic symptoms is more important than somatic anxiety 'per se' (Schacter, 1966; Bandura, 1977). The theoretical and empirical research on activation by Thayer (1985) and Neiss (1988) concurred with these views regarding the importance of cognitive appraisal. Neiss (1988) reiterated that high arousal levels will only inhibit performance if activation is appraised as debilitative rather than facilitative. These theoretical viewpoints have achieved limited empirical verification, but certainly warrant future investigation to assess their validity (Burton, 1990).

There is a consensus of opinion that the different components of competitive sport anxiety may affect performance differently via motivational, attentional and physiological arousal processes (Hardy and Jones, 1990). The findings in this study suggest that the SMT program appeared to exert influence over the soccer players' sport competitive anxiety, but the precise mechanisms by which it exerted this influence needs to be better understood. Some researchers (Burton, 1990; Mace, 1990) expressed an urgent need to develop valid, reliable and objective measures of metacognitive skills, e.g. concentration, self-talk, attention control, cognitive restructuring, in order to evaluate the effectiveness of cognitive behavioural intervention programs. This evaluation may prove difficult, if not elusive, since most athletes acquire metacognitive skills in very specific situational sports contexts.

Situational Coping Tendencies

Repeated measures ANOVA techniques were used on each of the situational COPE subscales to assess changes in the coping tendencies of the players. It was hypothesized that the SMT program would cause the players to employ significantly

more problem-focused than emotion-focused coping strategies than the control group. The analyses (Table 3) demonstrated that there were no significant changes in the situational coping patterns for any of the players, with the exception of the active coping ($F = 10.84$, $p < .001$) and humour ($F = 5.15$, $p < .05$) scales. Post-hoc comparisons indicated that both the SMT group and the control group ($F = 9.06$, $p < .01$) engaged in significantly more active coping pretreatment to posttreatment. It also decreased noticeably ($p < .05$) after posttreatment for both groups. Consequently, there was not sufficient evidence to support the hypothesis.

Repeated measures ANOVA indicated that stressful situations were not humorous to the SMT group. Post-hoc analysis revealed that the treatment group's humour decreased significantly ($F = 5.7$, $p < .05$) from pretreatment to posttreatment, then remained low and unchanged to follow-up assessment. The SMT program could have potentially contributed to the athletes acquiring a situational coping response, whereby, joking about stressors was no longer perceived as a viable means of dealing with the situation. Caution must be exercised during interpretation of these results because the Humour scale is regarded as an exploratory dimension of the COPE questionnaire (Carver et al. 1990).

Recent research on coping has attempted to identify and assess specific coping processes that individuals use to deal with stressful events (Endler and Parker, 1990). Lazarus and Folkman (1984) made a distinction between two general categories of coping: emotion-focused coping (EFC) and problem-focused coping (PFC). Preliminary research (Folkman and Lazarus, 1980, 1985) suggested that middle-aged adults and college students use both EFC and PFC strategies to deal with internal and/or external demands posed by real-life stressful situations, and the types of coping strategies

Table 3

Means and Standard Deviations for Situational Coping Ten·

	SMT						CONTROL					
	PRE		POST		F.U.		PRE		POST		F.U.	
SCALES	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
SSSIR	10.9	1.66	11.2	3.22	10.5	2.63	10.7	2.25	11.5	3.02	11.5	2.5
SCA	10.1	2.28	10.0	2.21	9.2	1.23	9.1	1.25	10.5	1.28	9.5	1.95
PRG	11.1	2.02	12.1	2.47	11.9	1.91	12.4	2.07	12.4	2.56	12.2	2.19
AC*	10.4	1.26	12.0	2.83	10.5	1.84	10.7	1.98	12.6	2.72	11.0	2.33
PLN	10.2	1.99	11.6	2.46	10.9	1.91	11.6	2.20	11.5	2.14	11.4	2.07
SSSER	10.4	2.91	10.0	2.83	9.9	3.11	10.5	2.51	9.9	2.75	10.9	2.95
REG	7.2	2.17	6.1	2.09	7.1	2.76	5.2	2.37	5.9	1.35	5.7	1.67
TANCE	9.6	1.84	9.9	1.79	9.4	2.01	11.6	1.85	11.5	2.0	10.2	3.01
MD	9.4	3.13	8.1	1.76	7.9	2.26	8.2	1.03	8.5	1.07	8.6	1.51
FVE	10.2	1.55	9.8	2.82	9.2	2.25	9.2	1.75	9.0	0.53	9.7	1.58
BD	5.7	1.34	5.7	2.79	6.1	1.52	5.1	0.83	6.0	1.85	5.5	1.19
DEN	4.8	0.79	5.4	1.78	5.6	1.26	5.2	1.28	5.12	1.25	4.9	0.99
RES	10.3	2.6	10.7	2.64	9.3	1.41	8.6	0.74	9.5	2.14	9.1	1.64
ADU	4.8	1.69	4.0	0.00	4.3	0.95	5.4	1.99	5.9	2.29	5.6	2.07
HUM*	7.6	2.67	6.3	1.64	6.2	1.93	8.7	1.38	8.9	1.9	8.6	1.9

* P<.05

employed vary depending on the situational constraints (Burton, 1990). For example, Folkman and Lazarus (1985) indicated that PFC strategies were more prominent during the pre-examination study period, whereas EFC strategies were used to regulate emotion while waiting for grades to be posted. In this study, active coping was the predominant coping strategy used in the players' attempts to deal with the stressful events they brought to mind pretreatment to posttreatment. Active coping is a dimension of problem-focused coping, that involves taking active steps to try to remove stressors or to ameliorate their distressful effects. It includes skills for initiating direct action, increasing one's efforts, and attempting to execute the coping process in stepwise fashion. Active coping occurs during the coping phase when the individual is executing a response to perceived threats (Carver et al. 1990).

These findings must be viewed as preliminary approximations due to certain data characteristics. First, no control could be exercised over the nature of the situations to which the players responded. The results of the player questionnaire (Table F) indicated that the players perceived many different situations as threatening. Differences in soccer-specific situational threats may have added an extraneous source of variation to subjects' responses. Second, it could not be ensured that players' were reporting on comparable stages of their events. Coping strategies vary over the course of a stressful transaction and between situations with differing demands. The dynamics and change that characterize coping as a process are a function of continuous appraisals and reappraisals of the person-environment relationship (Lazarus and Folkman, 1984).

The compatibility between the coping strategy and situationally-specific types of threats may have determined whether cognitive or somatic components of the SMT program were EFC or PFC strategies. For example, if a soccer player perceived physical

tension in the hamstring muscle as a major threat, a compatible stress management strategy such as progressive muscle relaxation would probably be a PFC strategy because it could directly reduce the threat. However, progressive muscle relaxation would be highly incompatible if the player was worried about an upcoming game against a vastly superior opponent. The cognitive anxiety would limit the relaxation procedure to an EFC strategy that might help the player feel better even though the potential for success is unchanged. In this context, it would be appropriate for the player to employ cognitive restructuring, to reappraise the counterproductive interpretation of the significance of the game.

The ubiquity of problem-focused and emotion-focused functions is clearly demonstrated in pilot research conducted by Burton and Williams-Rice (1989). They found that female collegiate basketball players employed both EFC and PFC strategies to deal with a wide variety of appraised threats, such as losing, playing poorly, coach/team-mate conflict, and receiving fouls. They also reported a significant negative relationship between players' scores on PFC and cognitive anxiety. Weak relationships were evident between EFC and both cognitive and somatic anxiety.

Intervention programs target specific coping responses and treatment outcome is usually judged by lower anxiety levels, not acquisition of coping responses. Averill (1979) warned that simply providing several kinds of information, such as information about the potential harm in an encounter, is likely to be of little value. Successful treatment may require the development of cognitions in which desired attitudes and behaviour become integrated into the individual's self-space and object world. Lazarus and Folkman (1984) agreed that a program must constitute the acquisition of new ways of functioning that 'go beyond mere sensitization', and can be sustained over time. The limited research on

coping strategies in sport makes it difficult to determine to what extent a treatment program's effectiveness is attributable to changes in coping rather than to other factors, e.g. habituation to an eliciting stimulus. Early research evidence suggests that multiple types of coping strategies are used to control and eliminate maladaptive behaviours and patterns and appropriate application of both PFC and EFC strategies could be an important prerequisite of effective coping (Burton, 1990).

Imagery Use

Cognitive psychologists have argued that the everyday notion of an image as a 'mental picture' is a simplistic and misleading misconception that fails to convey the complex and multifaceted nature of the imagery experience. On the contrary, images mimic any sensory-perceptual experience and may represent novel or dream-like events. Research in cognitive psychology supports the contention that imagery is the basis of fundamental modes of thought that elicit diverse cognitive functions. Imagery is regarded as a potent medium of intervention in a wide range of therapeutic methods. There is a consensus of opinion that intervention program effectiveness is dependent upon some minimal level of imagery ability. Thus, the assessment of imagery ability prior to the onset of an imagery training program would be advantageous (Heil, 1984).

Interestingly, the pervasive role of imagery as a 'metaphor for action' is evident within other components of the SMT program, in the progressive muscle relaxation (Jacobsen, 1938) and Benson's (1975) meditation technique. It is noteworthy that considerable practical, theoretical and empirical evidence suggests that the cultivation of relaxation simultaneously enhances the visual imagery experience and vice versa (Bakan, 1980; Singer, 1974). Both these components are key elements necessary for the reliable

development of low arousal in meditational procedures (Heil, 1984). Few studies have investigated the effectiveness of total treatment program in relation to its component parts. Burton (1990) argued that empirical verification of each component's contribution to overall program effectiveness is needed. Consequently, the use of imagery by players was assessed using IUQ-soccer to determine the role of the level of imagery ability in SMT program effectiveness.

A repeated measures ANOVA was conducted, for each of the 36 items having a 7-point Likert response format, to compare the responses of the players over time. Five items displayed significant differences in the way the groups responded. The SMT group reported using significantly more external perspectives ($F=6.42$, $p<.05$) during visual imagery than the control group. When players adopt a third-person, external perspective they see pictures and movies of themselves as outside observers. An internal perspective is when athletes view themselves through their own eyes. Porter and Foster (1990) stated that either way of imagining was acceptable. However, it is preferable for athletes in highly technical sports such as gymnastics, diving and field events to use external observational techniques (Porter and Foster, 1990). Hall et al. (1990) concluded that imagery perspective may not be a reliable differentiating variable across sports.

When asked how often they see the atmosphere of the competition day the control group reported doing so more often than the other players ($F=5.65$, $p<.05$) at each time period. The players who participated in the intervention program indicated that their imagery sessions were more regular than the control group ($F=6.08$, $p<.05$). When asked to what extent they used mental imagery after a soccer practice, the SMT group reported using significantly more imagery pretreatment to posttreatment ($F=5.49$, $p<.05$). The extent of this imagery use was maintained posttreatment to follow-up

assessment. The Scheffé test also revealed that there was a significant difference between the groups at the follow-up phase ($F=4.82$, $p<.05$). The changes over time in the control group's use of imagery after practice were not significant. Finally, the SMT players reported that they used visual imagery more than the control athletes during other unrelated activities.

The present findings suggested that the SMT group may have considered imagery to be more important as a form of mental practice than for performance enhancement. In contrast, Hall et al. (1990) found athletes used imagery more in conjunction with competition than practice. Perhaps, the use of imagery in association with practice and unrelated activities indicated that it facilitated skill acquisition, within the context of the SMT program. This interpretation is very speculative since little research has been done on imagery function within treatment packages.

Two items on the questionnaire required a "yes" or "no" response. The first item asked players if the amount of mental imagery they used varied during the year. Most athletes (83%) responded in the affirmative. They reported that their mental imagery use decreased during the off-season and increased prior to important games. The second item asked if the imagery sessions always took the same amount of time. The players (91%) stated that their sessions varied considerably, quoting ranges of time from one to twenty minutes per session. Hall et al. (1990) found a similar pattern of results for item one (68%) and item two (94%), when they assessed the use of imagery by male and female participants from six sports. No formal evaluations of the IUQ's psychometric properties have been undertaken, so caution needs to be exercised during interpretation of these findings.

Unfortunately, the mental practice literature has been plagued by inconsistent

findings due to methodological, task and individual differences, so the effectiveness and crucial parameters of mental practice remain equivocal (Hall, Pongrac and Buckolz, 1985; Mahoney, 1984). The present results are hardly definitive, there is clearly a need for more extensive scrutiny of the role of imagery within the SMT program. Of particular interest in future may be the influence of moderator variables such as vividness, control and intellective spatial ability and the differential cost-benefits of a coping versus a mastery orientation to imagery rehearsal. The coping model would help players anticipate potential errors and simultaneously prepare them to recover from competitive failures. Mastery training would encourage perfectionistic expectations but leave athletes less able to deal with failure (Heyman, 1984; Mahoney, 1984). Future empirical research assessing the effectiveness of multimodal stress management strategies must consider the precise measurement of the various dimensions of imagery ability to gain a greater understanding of the crucial parameters of programs such as SMT (Burton, 1988; Heil, 1984).

What, then, could otherwise account for the treatment effects of the SMT program in this study? The answer is not clear. The effects may have been indirect. One possibility is that the players in the SMT group may have learned to monitor the [illegible] of stress-related symptoms, which Andrasik and Holroyd (1980) suggested may be [illegible] crucial to learning to directly modify dysfunctional behaviour. Andrasik and Holroyd's (1980) viewpoint closely paralleled that of Lazarus (1975) who argued that the important elements of the therapeutic process are how the individual construes what is occurring and coping. However, Weiner (1980) suggested that therapeutic procedures must be capable of redirecting the person's mind so that transaction between the individual and the environment results in 'better attunement'. Thus, monitoring per se is

not important, rather it is the schematization of threat cues that is central to the control of stress (Morgan and Pollock, 1977). Lazarus and Folkman (1984) stated unequivocally that therapeutic changes are resultant of changes produced in cognitive appraisal and coping. Furthermore, they suggested that flexible treatment packages, like SMT, involving more than one modality i.e. cognition, feeling, and/or behaviour, have a greater potential of setting corrective processes in motion. In contrast, the SMT program is not tailored to meet the specific vulnerabilities and coping deficiencies of the individual. Although the SMT group was encouraged to adopt self-statements and cue words that could be applied to their individual problems in soccer, the effectiveness of this program could have been restricted by problems that stemmed from underlying difficulties that remained untouched. A number of researchers (Burton, 1990; Crocker, 1988; Folkman and Lazarus, 1980) have suggested that the unitary 'integrated coping response' used in the SMT program may have limited application. Burton (1990) is convinced that coping skills that cause low arousal levels may have a detrimental impact on performance. In an effort to alleviate this problem he suggested that athletes should be taught the component stress management skills of the SMT and then be allowed to personally design a stress management program around their own needs in a specific context. The philosophical emphasis of stress management would shift from the present negative, problem-focused connotation to the development of an 'optimal performance state' approach (Orlick, 1986; Unestahl, 1982). The optimal performance state approach conceptualizes stress management as a tool for athletes to develop and maintain a flow state. Consequently, the players could develop the capacity to manipulate muscular tension, arousal level, self-talk, and competitive images in accordance with situational demands. In this more flexible framework the players could raise as well as lower

arousal and/or employ pessimistic as well as optimistic self-talk to facilitate optimal performance (Burton, 1990).

C. Limitations of the Study

The following section will examine the limitations of this study that evolved from the problems inherent in an applied evaluation of the SMT program's effectiveness. The criteria and principles of research design involve the concepts of internal and external validity. Davids (1988) stated that applied sport psychology research paradigms must give due consideration to both scientific merit and applied relevance, and reflect proper, balanced awareness of internal validity and external realism.

Internal validity. Internal validity asks the question: Did the SMT program, the experimental manipulation, really make a difference in ameliorating or preventing stress-related problems? It is important to determine if the present research design controlled the independent variables so that extraneous variables had minimal opportunity to operate (Kerlinger, 1973). These extraneous threats to the research design include: maturation, history, differential selection, experimental mortality and resentful demoralization (Rubinson and Neutens, 1987).

The problems of maturation and history were attenuated by inclusion of a control group. Maturational effects could have influenced players' performance in general events because of elapsed time pretreatment to follow-up assessment. The problem is that individual change or growth occurs regardless of experimental interference. History is defined as specific events that occur at the same time as the study. The investigator was careful to ensure that all methods, test instruments, and evaluative situations were the same for every player in the study. Thus, it could be included that the SMT program

caused the significant treatment effects.

Differential selection, a bias that occurs when individuals are selected for a particular group, (Rubinson and Neutens, 1987) was avoided in this study by: (1) randomly assigning subjects to a group; (2) randomly assigning the SMT program to a group (Kerlinger, 1973). A limitation of the study was that it was not possible to randomly select subjects due to time restrictions, geographical location and practical feasibility. Data from the descriptive questionnaire and the pretest measures indicated that some qualitative differences existed between groups on some dependent measures. However, there was not sufficient evidence to conclude that selection threatened the significant SMT treatment effects.

Experimental mortality is the loss of individuals in a study (Rubinson and Neutens, 1987). In this experiment, one player was lost from the treatment group when she dropped out of the Panda soccer team. Also, one player left the control group due to a serious knee injury. It is plausible that mortality could have threatened the internal validity of this study. Alternatively, it happened equally between the groups so it's influence could have been minimal.

Cook and Campbell (1979) suggested that the control group may experience resentful demoralization and respond with anger, depression, and loss of motivation. These unwanted variables could produce differences at posttreatment and follow-up that are not due to the SMT program. In order to reduce the possibility of demoralization, the players in the treatment group were instructed not to discuss the details of the SMT program with the players in the control group. It was difficult to ascertain if the control group was demoralized, since these players expressed no interest in the SMT program during or after the study.

In sport psychology, construct validity and predictive validity are the most frequently used validation methods. A major concern in behavioural research is to describe, analyze and control the behaviour of an individual or group of individuals in specific sports settings. Kerlinger (1973) stated that whenever hypotheses are tested construct validation is involved. Construct validity links psychometric notions and practices to theoretical notions establishing the 'meaning' of the test. Essentially, construct validation could identify what constructs are responsible for performance, derive hypotheses from theory involving the construct and test these hypotheses. Criterion-related validity concerns the predictive validity of the instrumentation. When measurement is reliable, it is dependable. It provides an accurate and precise estimate of the characteristic being measured. It is regarded as internally consistent. It is the proportion of 'true' variance and error variance (subtracted from 1.00) to the total variance yielded by a measuring instrument (Kerlinger, 1973). The higher the correlation coefficient, the more stable and consistent the experiment and the more predictive the results. In research it is important to establish reliability of instrumentation before testing. A test may be reliable and not valid. But a test that is not reliable cannot be valid (Rothstein, 1985). A systematic progression of research studies have provided evidence supporting the construct validity, predictive validity, and reliability of the SAS, CSAI-2 and COPE measures used in the present study (Carver et al. 1989; Martens et al. 1990; Smith et al. 1990). The construct validity of the IUQ soccer measure was questionable due to lack of psychometric scrutiny, and may have invalidated the conclusive SMT treatment effects. The construct validity of the SMT program was maintained by using a training manual based on the work of Smith and his colleagues (Smith, 1980; Smith and Ascough, 1985; Smith and Smoll, 1982; Smith and

Rohsenow, 1987). In summary, there is little evidence to suggest that the present study was threatened by lack of internal validity. Thus, it is highly probable that the SMT program was responsible for the significant treatment effects.

External validity. External validity is concerned with the generalizability or representativeness of the findings. It is necessary to ask questions about the sample, variable and ecological representativeness of the study. Sample generalizability refers to the extent to which the findings from the SMT group can be generalized to other high performance female soccer players, female soccer players of varying skill and experiential levels and to athletes in other sports. The development of training manuals, the refinement of the SMT program and the concise description of sample characteristics increases representativeness (Crocker, 1988; Kerlinger, 1973) to similar soccer samples. Variable generalizability is more subtle, since it refers to the extent personalogical variables interact with treatment effects. Gender is assumed to be a 'constant' variable. But, the representativeness of anxiety, for example, is more difficult to ascertain. Recent advances in research on anxiety have involved increasingly finer delineations of this construct and instruments used to measure it (Smith, 1989). However, expectations of obtaining identical findings in a highly similar group would be inappropriate (Crocker, 1988; Rubinson and Neutens, 1987).

Davids (1988) stated that attempts to verify the exact relationship between perception and action require appropriate ecologically valid techniques of analysis. Ecological validity refers to the extent the results of this study can be generalized from a specific environmental context to other environmental conditions. If the SMT program is only effective in a very limited set of sporting contexts, it would possess low ecological validity. The present study provided additional empirical evidence to support the

generalization of SMT to other sport performers involved in potentially stressful, high achievement situations at university/provincial level. It would be inappropriate to make wider generalizations regarding the effectiveness of the SMT program. Further controlled studies are required to facilitate the generalization of the SMT program across different types of athletes, ages, ability levels and sports situations.

CHAPTER V

Summary, Future Directions and Conclusion

A. Summary of the Study

The purpose of this study was to investigate the effectiveness of the SMT program in reducing pre-game stress in high performance female soccer players. A comprehensive review of literature concerned with stress, coping, and adaptation discussed the implications of this research for investigation into the efficacy of Smith's (1980) Cognitive-affective Stress Management Training Program, in reducing competitive stress in soccer. The SMT program is based on a conceptual framework derived from the theoretical tenets of the cognitive theories of emotion which are transactional and process-oriented (Lazarus and Folkman, 1984). This coping model emphasizes that emotion and behaviour are determined by individuals' interpretation of the situation, rather than the situation itself (Burton, 1990).

On the basis of the literature review, three hypotheses were derived to examine the response of the female soccer players to the SMT program from pretreatment to follow-up under controlled conditions. The dependent variables were sport competitive trait anxiety, sport competitive state anxiety, soccer situation-specific coping tendencies, and imagery use. The self-reported measures were the Sport Anxiety Scale (Smith, et al. 1990), the Competitive State Anxiety Inventory II (Martens et al. 1990), COPE (Carver et al. 1989) and Imagery Use Questionnaire (Hall et al. 1989)respectively. The independent variables were type of treatment, SMT or control, and time assessment (pretreatment, posttreatment and follow-up). In the pretreatment phase athletes also completed a descriptive questionnaire.

The first hypothesis proposed that the SMT group would experience lower levels

of somatic trait anxiety, worry and concentration disruption prior to stressful competitive situations than the control group. No significant differences were found for somatic anxiety or worry scores between the SMT and control group. However, the significant reduction in the SMT group's tendency to experience disruption of concentration pretreatment to posttreatment partially supported the hypothesis. The concentration disruption of the control group fluctuated, but did not significantly change over time. These findings supported the cognitive-somatic distinction of the anxiety response (Davidson and Schwartz, 1976) and the value of distinguishing between cognitive and somatic anxiety.

The second hypothesis proposed that the SMT group would experience less cognitive and somatic state anxiety and greater self-confidence than the control group (Martens et al. 1980; Wine, 1980). There were no significant effects for cognitive A-state or self-confidence. High levels of somatic A-state were reported in the SMT group at posttreatment without increments in cognitive A-state. The implication is that these players elicited high arousal without negative evaluation. This evidence provided additional support for the conceptual independence of cognitive and somatic A-state.

The final hypothesis predicted that the SMT group would employ more problem-focused than emotion-focused coping strategies in an attempt to deal with stressful soccer situations (Carver et al. 1989). There were no significant changes in the situational coping patterns of any of the players, with the exception of the active coping and humour scales. The SMT and control group engaged in significantly more active coping pretreatment to posttreatment, which then decreased noticeably to follow-up for both groups. The humour scores decreased significantly from pretreatment to posttreatment for the SMT group. This result implied that the SMT program may have

contributed to the athletes adopting a situational coping response, whereby, humour was no longer perceived as an appropriate way of coping with stressful situations.

The imagery use findings indicated that the SMT group used more external imagery perspectives and more imagery after soccer practice and during unrelated activities than the control group. Porter and Foster (1990) indicated that either internal or external imaging was acceptable. While Hall et al. (1990) warned that imagery perspective may not be a reliable differentiating variable across sports. A speculative interpretation of the imagery with practice and unrelated activities is that it facilitated skill acquisition within the context of the SMT program.

B. Future Directions in SMT Research

The present study provided evidence that the relative effectiveness of the SMT program appears promising and warrants additional research. Future research assessing SMT program effectiveness should consider the influence of important personality and situational moderator variables. The personality variables that theoretically should moderate treatment effects include: trait anxiety, trait self-confidence, self-talk styles, and coping strategies. The situational variables likely to moderate stress management effects should include type of sport, athlete's skill level, level of competition, emphasis on success and social support systems (Burton, 1990).

The quality of future evaluative research must be improved to determine precisely the true impact of multimodal stress management programs. There is an urgent need to develop valid, reliable and objective measures of the constructs involved in stress transactions. Recently, the greater specificity of sport anxiety measures has created potential for advancement of our understanding of anxiety and sport-related variables.

The realization that their subscales are substantially intercorrelated raises some challenging methodological issues (Smith, 1989). An obvious future research direction is the continued investigation of the separate and interactive functions of the cognitive and somatic components of the anxiety response (Martens, Vealey and Burton, 1990). If suggestions regarding the importance of measuring the frequency, intensity and direction of cognitive intrusions are empirically substantiated (Parfitt et al., 1990) it may be necessary to radically rethink the measurement of state and trait anxiety. Furthermore, advances in psychophysiological evaluation may provide a means of measuring levels of anxiety during competition, rather than prior to it (Boutcher, 1990).

Another major question concerns the matching hypothesis (Borkovec, 1976; Davidson and Schwartz, 1976) which suggests that the treatment of anxiety may be more efficacious if the method of control is directed at the type of anxiety being experienced. Several authors (Burton, 1990; Mace, 1990) have encouraged the objective assessment of metacognitive skills to determine the contribution of such key components of the SMT program to its overall effectiveness. Unfortunately, the construction of such objective tests has so far proved elusive (Hardy and Jones, 1990).

There is a general consensus that individual differences exist in both perceptions of, and responses to, high levels of sport. It is recognized, at the clinical and educational level, that stress management programs should consider both individual and situational differences (Hardy and Jones, 1990). The effectiveness of the SMT program, in contrast to one-on-one therapies, is limited for athletes whose problems originate from individual conflicts or personal agendas not addressed by the SMT. Also, in view of the specificity of stress effects and the need for sport-specific intervention programs, it could be argued that future researchers should consider the use of single-case experimental designs.

Lazarus and Folkman (1984) stated that ipsative-normative research was most appropriate for their transactional, process-orientated approach. Ipsative refers to intraindividual observation and comparison, while normative involves interindividual comparison. Such intraindividual analysis would provide greater measurement sensitivity (Mace, 1990), and allow the investigation of issues such as individual and situational antecedents of appraisal and coping, variability and stability of coping strategies and coping effectiveness and ineffectiveness (Lazarus and Folkman, 1984). However, despite an increasing awareness of the weaknesses and limitations of traditionally controlled studies, many researchers are reluctant to utilize single-case experimental designs due to the problem of generalizability of findings. As methodological and statistical procedures become more sophisticated, it is likely that the number of questions examined by this idiographic approach will increase. Currently, there are still many questions in applied sport psychology research that may best be answered by well-designed group comparisons. For example, problems pertaining to optimum length of intervention training time and the type of treatment (individualized vs standardized training). Further attempts should be made to improve and refine methodological procedures to ensure internal validity. Investigators must be confident that the SMT program (independent variable) was responsible for any observed effects. Additionally, every effort must be made to maximise external validity in order to generalize findings across different athletes and sport settings (Mace, 1990).

Kendall and Hollen (1979) stated that cognitive behavioural theories and interventions have reached 'youthful maturity', but emphasized that much work is still required. The goal of assessment remains to expand the width and power of explanatory concepts and interventions without sacrificing methodological rigour. The sport

psychology literature is encouraging in that more and better quality research is investigating the effectiveness, and the conditions of effectiveness of intervention programs such as the SMT program.

C. Conclusion

The findings of this study provided partial support for the effectiveness of the SMT program in reducing pre-game sport competitive stress in female soccer players. Sport psychologists interested in the intervention process should recognize the intimate relationship between stress, appraisal and coping. Further research needs to be extremely vigorous in order to clarify the details of these interactions. Hopefully, this goal can be achieved in ecologically valid settings with athletes of different ages, abilities, and across varying sports. There is also a demand for empirical verification of the contribution of the components of SMT to overall program effectiveness. Researchers should determine precisely how stress interacts with individual difference variables to influence affective states. This evidence would predict which metacognitive skills are required to maximize beneficial effects (Burton, 1990; Hardy and Jones, 1990). Sport competitive anxiety research remains a fertile area for discovery and the task of coping effectively with dysfunctional cognitions and affects is one of the primary incentives for continuing stress management research (Lazarus and Folkman, 1984; Silva and Hardy, 1984).

BIBLIOGRAPHY

Acton, R. G., and Fischer, D. G. (1988). Factor analysis of self-statements. Perceptual Motor Skills, 66, 267-273.

Andrasik, F., and Holroyd, K. A. (1980). A test of specific and nonspecific effects in the biofeedback treatment of tension headache. Journal of Consulting and Clinical Psychology, 48, 575-586.

Appley, M. H., and Turnbull, R. (1967). Psychological Stress. New York: Appleton-Century-Crofts.

Arnold, M. B. (1945). Physiological differences of emotional states. Psychological Review, 52, 35-48.

Arnold, M. B. (1960). Emotion and personality. New York: Columbia University Press.

Arnold, M. B. (1967). Stress and emotion. In M. H. Appley and R. Turnbull (Eds.), Psychological stress. New York: Appleton-Century-Crofts.

Arnold, M. B. (1968). Nature of emotion. Baltimore: Penguin.

Arnold, M. B. (1970). Perennial problems in the field of emotion. In M. A. Arnold (Ed.), Feelings and emotion: The Loyola Symposium. New York: Academic Press.

Astor-Dubin, L., and Hammen, C. (1984). Cognitive versus behavioural coping responses of men and women: A brief report. Cognitive Therapy and Research, 8, 85-90.

Averill, J. R. (1979). A selective review of cognitive and behavioural factors involved in the regulation of stress. In R.A. Depue (Ed.), The psychobiology of the depressive disorders: Implications for the effects of stress. New York: Academic Press.

Averill, J. A. (1982). Anger and aggression. New York: Springer-Verlag.

Averill, J. A. (1983). Studies on anger and aggression. American Psychologist, 38, 1145-1160.

Averill, J. A., Opton, E. M., Jr., and Lazarus, R. S. (1969). Cross-cultural studies of psychological responses during stress and emotion. International Journal of Psychology, 4, 83-102.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behaviour change. Psychological Review, 84, 191-215.

Baum, M. (1970). Extinction of avoidance responding through response prevention (flooding). Psychological Bulletin, 74, 276-284.

Beck, A. T. (1970). Cognitive therapy: Nature and relation to behaviour therapy. Behaviour Therapy, 1, 184-200.

Beck, A. T. (1974). Cognitive modification in depressed suicidal patients. Paper presented to the Society of Psychotherapy Research, Denver, Colorado.

Beck, A. T. (1976). Cognitive therapy and emotional disorders. New York: International Universities Press.

Benson, H. (1975). The relaxation response. New York: William Morrow and Company.

Berger, B., and Owen, D. R. (1987). Anxiety reduction with swimming: relationships between exercise and state, trait, and somatic anxiety. International Journal of Sport Psychology, 18, 286-302.

Bootzin, R., and Max, D. (1980). Learning and Behavioural Theories. In I. L. Kutash and L. B. Schlesinger (Eds.), Handbook on stress and anxiety. London: Jossey-Bass.

Borkovec, T. D. (1976). Physiological and cognitive processes in the regulation of anxiety. In G.E. Schwartz and D. Shapiro (Eds.), Consciousness and self-regulation: Advances in research I. New York: Plenum Press.

Broadbent, D. E. (1958). Perception and communication. London:Pergamon Press.

Brown, J., and Weiner, B. (1984). Affective consequences of ability vs effort ascriptions: Controversies, resolutions, and quandaries. Journal of Educational Psychology, 76, 146-158.

Buck, R. (1976). Human motivation and emotion. New York: Wiley.

Buck, R. (1985). Prime theory: An integrated view of motivation and emotion. Psychological Review, 92, 389-413.

Budzinski, T. H., Stoyva, J. M. and Peffer, K. E. (1980). Biofeedback techniques in psychosomatic disorders. In A. Goldstein and E. Foa (Eds.), Handbook of behavioural interventions: A clinical guide.

Burchfield, S. R. (1979). The stress response: A new perspective. Psychosomatic Medicine, 41, 661-672.

Burchfield, S. R. (Ed.). (1985). Stress: Psychological and physiological interactions. New York: Hemisphere.

Butler, P. E. (1981). Talking to yourself: Learning the language of self-support. San Francisco: Harper and Row, Publishers.

Burton, D. (1989). Winning isn't everything: examining the impact of performance goals on collegiate swimmers' cognitions and performance. The Sport Psychologist. 3, 105-132.

Burton, D. (1990). Multimodal stress management in sport: current status and future directions. In J.G. Jones and L. Hardy (Eds.), Stress and performance in sport. New York: Wiley.

Burton, D. and Williams-Rice, B. T. (1989). Coping with stress: competitive coping strategies and their impact on precompetitive anxiety and basketball performance. Paper presented at meeting of Northwest District of the American Alliance for Health, Physical Education, Recreation, and Dance, Boise, ID.

Bush, L. E. (1973). Individual differences multidimensional scaling of adjectives denoting feelings. Journal of Personality and Social Psychology, 25, 50-57.

Carter, W.R., Johnson, M.C. and Borkovec, T.D. (1986). Worry: an electrocortical analysis. Advances in Behavioural Research and Therapy, 8, 193-204.

Carver, C. S., and Scheier, M. F. (1985). Self-consciousness, expectancies, and the coping process. In T. Field, P. M. McCabe, and N. Schneiderman (Eds.), Stress and coping (pp. 305-330). Hillsdale, NJ: Erlbaum.

Carver, C. S., Scheier, M. F., and Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. Journal of Personality and Social Psychology, 56, 2, 267-283.

Cattell, R. B. (1957). The IPAT Scale. Champaign, Ill.: Institute for Personality and Ability Testing.

Collyer, C. E., and Enns, J. T. (1987). Analysis of variance: the basic designs. Chicago: Nelson-Hall.

Cooke, T. D., and Campbell, D. T. (1979). Quasi-experimentation: Design and analysis issues for field settings. Chicago: Rand McNally.

Cox, T. (1978). Stress. London: MacMillan.

Crocker, P. R. E. (1988). Cognitive-affective stress management with high performance youth volleyball players. Unpublished doctoral dissertation. University of Alberta.

Crocker P. R. E. (1989). A follow-up of cognitive-affective stress management training. Journal of Sport and Exercise Psychology, 11, 236-242.

Crocker, P. R. E., Alderman, R. B., and Smith, F. M. R. (1988). Cognitive-affective stress management training with high performance youth volleyball players: Effects on affect, cognition, and performance. Journal of Sport and Exercise Psychology, 10, 448-460.

Cryan, P.D., and Alles, W. F. (1980). The relationship between stress and college football injuries. The Journal of Sports Medicine and Fitness, 3, 52-58.

Davey, C.P. (1987). Psychological assistance for footballers. In T. Reilly, A. Lees, K. Davids, and W. J. Murphy (Eds.)., Proceedings of the First World Congress of Science and Football. Liverpool 13-17th April 1987. London: E. and F. N. Spon.

Davids, K. (1988). Ecological Validity in Understanding Sport Performance: Some Problems of Destination. Quest, 40, 126-136.

Davids, K. and Murphy, W. J. (Eds.), Proceedings of the First World Congress of Science and Football, Liverpool 13-14th April 1987. London: E. & F. N. Spon.

Davidson, R. J., and Schwartz, G. E. (1976). The psychobiology of relaxation and related states: A multi-process theory. In D. Mostofsky (Ed.), Behavioural control and modification of physiological activity. Englewood Cliffs, N. J.: Prentice-Hall.

Deikis, J. G. (1983). Stress inoculation training: Effects on anxiety, self-efficacy, and performance in divers. Unpublished Doctoral Dissertation, Temple University.

Deutsch, J. A., and Deutsch, D. (1963). Attention: Some theoretical considerations. Psychological Review, 70, 80-90.

Easterbrook, J. A. (1959). The effects of emotion on cue-utilization and the organization of behaviour. Psychological Review, 66, 183-201.

Ekman, R., Friesen, W. V., Ellsworth, P. (1982). What emotion categories or dimensions can observers judge from facial behaviour? In P. Ekman (Ed.), Emotion in the human face (pp. 39-55). New York: Cambridge University Press.

Ellis, A. (1962). Reason and emotion in psychotherapy. New York: Lyle Stuart.

Ellis, A. (1977). Anger, how to live with it and without. New York:Citadel Press.

Endler, N. S., and Parker, J. D. A. (1990). Multidimensional assessment of coping: A critical evaluation. Journal of Personality and Social Psychology, 58, 5, 844-854.

Epstein, S. (1983). A research paradigm for the study of personality and emotions. In M. M. Page (Ed.), Personality: Current theory and research. Nebraska Symposium on Motivation, 1982. Lincoln: University of Nebraska Press.

Epstein, S. (1983). Natural healing processes of the mind: Graded stress inoculation as an inherent coping mechanism. In D. Meichenbaum and M. E. Jaremo (Eds.). Stress reduction and prevention. New York: Plenum.

Eschenroeder, C. (1982). How rational is rational-emotive therapy? A critical appraisal of its theoretical foundations and therapeutic methods. Cognitive Therapy and Research, 6, 4, 381-392.

Everly, G., and Rosenfeld, R. (1981). The nature and the treatment of the stress response. New York: Plenum Press.

Eysenck, M. W. (1982). Attention and arousal: Cognition and performance. New York: Springer-Verlag.

Eysenck, M. W. (1984). A handbook if cognitive psychology. London: Lawerence Erlbaum.

Feather, N. T. (1968). Change in confidence following success or failure as a predictor of subsequent performance. Journal of Personality and Social Psychology, 9, 38-46.

Feltz, D. L., and Landers, D. M. (1980). Stress management techniques for sport and physical recreation. Journal of Physical Education and Recreation, February

Feindler, E., and Fremouw, W. (1983). Stress inoculation training for adolescent anger problems. In D. Meichenbaum and M. Jaremko (Eds.), Stress reduction and prevention. New York: Plenum.

Fiske, S. T. (1981). Social cognition and affect. In J. Harvey (Ed.), Cognition, social behaviour and the environment (pp. 227-268). Hillsdale, NJ: Erlbaum.

Fiske, S. T. and Taylor, S. E. (1984). Social Cognition. Reading: Addison-Wesley.

Folkman, S. (1984). Personal control and stress and coping processes: A theoretical analysis. Journal of Personality and Social Psychology, 4, 839-852.

Folkman, S., Gortmaker, S. L., Eckenrode, J., and Goe, S. (1982). Stress and the utilization of health services: A time series and cross-sectional analysis. Journal of Health and Social Behaviour, 23, 25-38.

Folkman, S., and Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behaviour, 21, 219-239.

Folkman, S., and Lazarus, R. S. (1985). If it changes it must be process: Study of emotion and coping during the three stages of a college exam. Journal of Personality and Social Psychology, 48, 150-170.

Folkman, S., and Lazarus, R. S. (1988). Coping as a mediator of emotion. Journal of Personality and Social Psychology, 54, 466-475.

Folkman, S., Lazarus, R. S., Dunkel-Schatter, C., Delonngis, A and Gruen, R. (1986). Dynamics of a stressful encounter. Cognitive appraisal, coping, and encounter outcomes. Journal of Personality and Social Psychology, 50, 992-1003.

Folkman, S., Schaefer, C., and Lazarus, R. S. (1979). Cognitive processes as mediators of stress and coping. In V. Hamiliton and D. M. Warburton (Eds.), Human stress and cognition: An information processing approach. London: Wiley.

Fridja, N. H. (1986). The emotions. Cambridge: Cambridge University Press.

Fridja, N. H. (1969). Recognition of emotion. In L. Berkowitz (Ed.), Advances in experimental social psychology: Vol. 4. New York: Academic Press.

Gallwey, W. T. (1976). The inner game of tennis. New York: Random House, Inc..

Garfield, C. A. (1984). Peak performance: Mental training techniques of the world's greatest athletes. Los Angeles: Jeremy P. Tarcher, Inc..

Gerson, R., and Deshaies, P. (1978). Competitive trait anxiety and performance as predictors of pre-competitive state anxiety. International Journal of Sport Psychology, 9, 1.

Goldfried, M. R. (1971). Systematic desensitization as training in self-control. Journal of Consulting and Clinical Psychology, 37, 2, 228-234.

Goldfried, M. R. (1980). Psychotherapy as coping skill training. In M. J. Mahoney (Ed.), Psychotherapy process. New York: Plenum.

Gordon, S. (1986). Sport psychology and the injured athlete: A cognitive-behavioural approach to injury response and injury rehabilitation. Science Periodical on Research and Training. Ottawa: Coaching Association of Canada.

Gortmaker, S. L., Eckervode, J., and Gore, S. (1982). Stress and the utilization of health services: A time series and cross-sectional analysis. Journal of Health and Social Behaviour, 23, 25-38.

Gould, D. (1983). Future directions in youth sports participation research. In L. Wankel and R. Wilberg (Eds.), Psychology of sport and motor behaviour: Research and practice. Edmonton: University of Alberta, Faculty of Physical Education and Recreation.

Gould, D., Feltz, D. L., Horn, T., and Weiss, M. (1982). Reasons for attribution in competitive youth swimming. Journal of Sport Behaviour, 5, 155-165.

Gould, D., Petlichkoff, L., Simons. J., and Vevera, M. (1987). Relationship between competitive state anxiety inventory-2 subscales scores and pistol shooting performance. Journal of Sport Psychology, 9, 33-42.

Greenhouse, S. W., and Geisser, S. (1959). On methods in the analysis of profile data. Psychometrika, 24, 95-112.

Greenspan, M. J., and Feltz, D. L. (1989). Psychological interventions with athletes in competitive situations: A review. The Sport Psychologist, 3, 219-236.

Hall, C., Pangrac, J., and Buckolz, E. (1985). The measurement of imagery ability. Human Movement Science, 4, 107-118.

Hall, C. R., Rodgers, W. M., and Barr, K. A. (1989). The use of imagery by athletes in selected sports. University of Western Ontario, London, Ontario.

Hall, C. R., and Rodgers, W. M. and Barr, K. A. (1990). The use of imagery by athletes in selected sports. The Sport Psychologist, 4, 1-10.

Hamberger, L. K., and Lohr, J. M. (1984). Stress and stress management: Research and applications. New York: Springer.

Hardy, L. (1989). Sport psychology. In A.M. Colman and J. G. Beaumont (Eds.). Psychology Survey: Vol. 7. London: British Psychological Society and Routledge.

Hardy, L. and Fazey, J. A. (1987). The inverted - U hypothesis - a catastrophe for sport psychology and a statement of a new hypothesis. Paper presented at the Annual Conference of the North American Society for the Psychology of Sport and Physical Activity, Vancouver, Canada, June.

Hardy, L. and Nelson, D. (1988). Self-regulation training in sport and work. Ergonomics, 31, 1573-1583.

Heide, F. J. and Borkovec, T. D. (1983). Relaxation and induced anxiety-paradoxical anxiety enhancement due to relaxation training. Journal of Consulting and Clinical Psychology, 51, 171-182.

Heil, J. (1984). Imagery for Sport: Theory, Research and Practice. In W. F. Straub and J. M. Williams (Eds.), Cognitive sport psychology (pp. 244-251). New York: Sport Science Associates.

Heyman, S. R. (1984). Cognitive Interventions: Theories, applications, and cautions. In W. F. Straub and J. M. Williams (Eds.), Cognitive sport psychology (pp. 288-303). New York: Sport Science Associates.

Hinkle, D. E., Wiersman, W., and Jurs, S. G. (1988). Applied statistics for the behavioural sciences. Boston: Houghton Mifflin Company.

Hockey, G. R. J. and Hamilton, P. (1983). The cognitive patterning of stress states. In G. R. J. Hockey (Ed.), Stress and fatigue in human performance, Chichester: Wiley.

Holtzworth-Munroe, A., Munroe, M. S., and Smith, R. E. (1985). Effects of a stress management training program on first- and second-year medical students. Journal of Medical Education, 60, 417-419.

Howell, D. C. (1987). Statistical methods for psychology. Boston: Duxbury Press.

Humphreys, M. S. and Revelle, W. (1984). Personality, motivation, and performance: A theory of the relationship between individual differences and information processing. Psychological Review, 91, 153-184.

Idzikowski, C. and Baddeley, A. (1987). Fear and performance in novice parachutists. Ergonomics, 30, 1463-1474.

Ince, L. P. (1976). Behaviour modification in rehabilitation medicine. Springfield, Illinois: Charles C. Thomas.

Ingram, A. G. (1975). Occupational subcultures in the world of work. In D. W. Ball and J. W. Loy (Eds.), Sport and social order: Contributions to the sociology of sport. Menio Park, California: Addison-Wesley.

Jacobson, E. (1938). Progressive relaxation. Chicago: University of Chicago Press.

Jones, J. G. and Cale, A. (1989). Precompetition temporal patterning of anxiety and self-confidence in males and females. Journal of Sport Behaviour, 12, 183-195.

Jones, J. G. and Hardy, L. (Eds.) (1990). Stress and Performance in Sport. New York: John Wiley and Sons.

Kahneman, D. (1973). Attention and effort. New York: Prentice-Hall.

Kazdin, A., and Wilson, G. T. (1978). Evaluation of behaviour therapy: Issues, evidence, and research strategies. Cambridge, Mass.: Ballinger.

Kendall, P. C., and Hollan, S. D. (1979). Cognitive-behavioural interventions. New York: Academic Press.

Kendall, G., Hrycaiko, D., Martin, G. L., and Kendall, T. (1990). The Effects of an Imagery Rehearsal, Relaxation, and Self-Talk Package on Basketball Game Performance. Journal of Sport and Exercise Psychology, 12, 157-166.

Kerlinger, F.N. (1973). Foundations of Behavioural Research. Holt, Rinehart and Winston, Inc., New York.

Kerr, J. H. (1989). Anxiety, arousal and sports performance: An application of reversal theory. In D. Hackfort and C. D. Spielberger (Eds.). Anxiety in sports. New York: Hamisphere.

Kleinke, C. L., Staneski, R. A., and Mason, J. K. (1982). Sex differences in coping with depression. Sex Roles, 8, 877-889.

Lazarus, R. S. (1966). Psychological stress and coping. New York: McGraw Hill.

Lazarus, R. S. (1968). Emotions and adaption: Conceptual and empirical relations. In W. J. Arnold (Ed.), Nebraska Symposium on Motivation. Lincoln: University of Nebraska Press.

Lazarus, R. S. (1975). The self-regulation of emotion. In L. Levi (Ed.), Emotions: Their parameters and measurement. New York: Raven.

Lazarus, R. S. (1977). Cognitive and coping processes in emotion. In A. Monat and R. S. Lazarus (Eds.), Stress and coping: an anthology. New York: Columbia University Press.

Lazarus, R. S. (1982). Thoughts on the relations between emotion and cognition. American Psychologist, 37, 1019-1024.

Lazarus, R. S. (1984). On the primacy of cognition. American Psychologist, 39, 124-129.

Lazarus, R. S., and Averill, J. R. (1972). Emotion and cognition: With special reference to anxiety. In C. D. Spielberger (Ed.), Anxiety: Current trends in theory and research (Vol 2). New York: Academic Press.

Lazarus, R. S., Averill, J. R., and Opton, E. M. (1970). Towards a cognitive theory of emotion. In M. B. Arnold (Ed.), Feelings and emotions: The Loyola Symposium. New York: Academic Press.

Lazarus, R. S., and Cohen, J. B. (1977). Environmental stress. In I. Altman and J. F. Wohlwill (Eds.), Human behaviour and the environment: Current theory and research. New York: Plenum.

Lazarus, R. S. and Folkman, S. (1984). Stress, appraisal and coping. New York: Springer.

Lazarus, R. S. and Launier, R. (1978). Stress related transactions between person and environment. In L.A. Pervin and Lewis (Eds.), Perspectives in interactional psychology. New York: Plenum Press.

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

London, H., and Nisbett, R. E. (1974). (Eds.), Cognitive alterations of feeling states. Chicago: Aldine.

Long, B. C. (1980). Stress management for the athlete: A cognitive behavioural model. In C. Nadeau, W. Halliwell, K. Newell, and G. Roberts (Eds.), Psychology of motor behaviour and sport-1979. Champaign, Ill.: Human Kinetics.

Mace, R. (1990). Cognitive behavioural interventions in sport. In J. G. Jones and L. Hardy (Eds.), Stress and performance in sport. New York: Wiley.

Mace, R. D., and Carroll, D. (1985). The control of anxiety in sport: Stress inoculation training prior to abseiling. International Journal of Sport Psychology, 16, 165-175.

Mace, R. D., and Carroll, D. (1989). The effect of stress inoculation training on self-reported stress, observer's rating of stress, heart-rate and gymnastics performance. Journal of Sport Sciences, 7, 257-266.

Mace, R., Carroll, D., and Eastman, C. (1986). Effects of stress inoculation training on self-report, behavioural and psychophysiological reactions to abseiling. Journal of Sport Sciences, 4, 229-236.

Mace, R., Eastman, C., and Carroll, D. (1986). Stress inoculation training: A case study in gymnastics. British Journal of Sports Medicine, 20, 3, 139-141.

Mahoney, M. J. (1975). Cognitive behaviour modification. Bullinger: Lippencott.

Mahoney, M. J. (1977). Reflections on the cognitive learning trend in psychotherapy. American Psychologist, 32, 5-13.

Mahoney, J. J. (1979). Cognitive skills and athletic performance. In P. C. Kendall and S. D. Hollon (Eds.), Cognitive behavioural intervention: Theory, research and practice, (pp. 423-443). New York: Academic Press.

Mahoney, M. J. (1984). Cognitive Skills and Athletic Performance. In W. F. Straub and J. M. Williams (Eds.), Cognitive sport psychology (pp. 11-27). New York: Sport Science Associates.

Mahoney, M., Gabriel, T., and Perkins, A. (1987). Psychological skills and exceptinal athletic performance. The Sport Psycholigist, 1, 181-199.

Mandler, G. (1985). Mind and Body, New York: Norton.

Martens, R. (1974). Arousal and motor performance. In J. Wilmore (Ed.), Exercise and Sport Science Review (Vol. 2.). New York: Academic Press.

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

Martens, R. (1987). Coaches' Guide to Sport Psychology. Champaign, Illinois: Human Kinetics.

Martens, R. (1988). Competitive anxiety in children's sports. In R. M. Malina (Ed.), Young athletes: Biological, psychological, and educational perspectives. Champaign, Ill.: Human Kinetics.

Martens, R , Burton, D., Rivkin, F., and Simon, J. (1980). Reliability and validity of the competitive state anxiety (CSAI). In C. H. Nadeau, W. R. Halliwell, K. M. Newell, and G. G. Roberts (Eds.), Psychology of motor behaviour and sport-1979, Champaign, Ill.: Human Kinetics.

Martens, R., Burton, D., Vealy, R. S., Bump, L. A., and Smith, D. E. (1983). Competitive State Anxiety Inventory II. Journal of Applied Behavioural Analysis, 10, 657-664.

Martens, R., Vealey, R. S., and Burton, D. (1990). Competitive Anxiety in Sport. Champaign, Illinois: Human Kinetics Books.

McGlynn, S. M. (1990). Behavioural approaches to neuropsychological rehabilitation. Psychological Bulletin, 108, 3, 420-441.

Meichenbaum, D. (1975). A self-instructional approach to stress management: A proposal for stress inoculation training. In C. D. Speilberger and I. G. Sarason (Eds.), Stress and anxiety (Vol. 2). New York: Wiley.

Meichenbaum, D. (1976). Toward a cognitive theory of self-control. In G. E. Schwartz and D. Shapiro (Eds.), Consciousness and self-regulation, advances in research. Vol. 1. New York: Plenum Press.

Meichenbaum, D. (1977). Cognitive behaviour modification. New York: Plenum.

Meichenbaum, D. (1985). Stress inoculation training. New York: Paramon.

Meichenbaum, D., and Butler, L. (1980). Towards a conceptual model for the treatment of test anxiety: Implications for research and treatment. In I. G. Sarason (Ed.), Test anxiety: Theory, research, applications. New York: Erlbaum.

Meichenbaum, D., and Cameron, R. (1983). Stress inoculation training: toward a general paradigm for training coping skills. In D. Meichenbaum and M. Jaremko (Eds.), Stress reduction and prevention. New York: Plenum Press.

Meister, D. (1981). The problem of stress definition. In G. Salvendy and M. J. Smith (Eds.). Machine pacing and occupational stress. London: Taylor and Francis.

Meyers, A. W., Cooke, C. J., Cullen, J., and Liles, C. (1979). Psychological aspects of athletic competitors: A replication across sports. Cognitive Therapy and Research, 3, 361-366.

Mineka, S. (1979). The role of fear in theories of avoidance learning, flooding and extinction. Psychological Bulletin, 86, 985-1010.

Morgan, W. P. and Pollock, M. L. (1977). Psychological characterization of the elite distance runner. Annals of the New York Academy of Science, 301, 382-403.

Morris, L. W., Brown, N. R., and Halbert, B. L. (1977). Effects of symbolic modelling on the arousal of cognitive and affective components of anxiety in preschool children. In C. D. Spielberger and I. G. Sarason (Eds.), Stress and Anxiety, (Vol.4.). London: Halsted.

Morris, L. W., Brown, N. R., and Halbert, B. L. (1977). Effects of symbolic modelling on the arousal of cognitive and affective components of anxiety in preschool children. In C. D. Spielberger and I. G. Sarason (Eds.), Stress and Anxiety, (Vol.4.). Washington, D.C.: Hamisphere.

Morris, L. W., Davis, M. A. and Hutchings, C. H. (1981). Cognitive and emotional components of anxiety: Literature review and a revised worry-emotionality scale. Journal of Educational Psychology, 73, 541-555.

Morris, L. W., and Liebert, R. M. (1970). Relationship of cognitive and emotional components of test anxiety to physiological arousal and academic performance. Journal of Consulting and Clinical Psychology, 35, 332-337.

Navaco, R. (1975). Anger control: The development and evaluation of an experimental treatment. Lexington, Mass.: Health.

Navaco, R. (1977). A stress inoculation approach to anger management in the training of law enforcement officers. American Journal of Community Psychology, 5, 327-346.

Navon, D., and Gopher, D. (1979). On economy of the human-processing system. Psychological Review, 86, 214-255.

Neiss, R. (1988). Reconceptualizing arousal: Psychological states in motor performance. Psychological Bulletin, 103, 345-555.

Nelson, L. R., and Furst, M.L. (1972). An objective study of the effects of expectation on competitive performance. Journal of Psychology, 81, 69-72.

Nicholls, J. G. (1975). Causal attributions and other achievement-related cognitions: Effects of task outcome, attainment value and sex. Journal of personality and Social Psychology, 31, 379-389.

Nideffer, R. M. (1976). The inner athlete: Mind plus muscle for winning. New York: Crawell.

Nye, S. (1979). Self-instructional stress management training: A comparison of the effects of induced affect and covert modelling in a cognitive restructuring treatment program for test anxiety. Unpublished doctoral dissertation, University of Washington, Seattle.

Nygard, R. (1981). Toward an interactional psychology: Models from achievement motivation research. Journal of Personality, 49, 363-387.

Nygard, R. (1982). Achievement motives and individual differences in situational specificity. Journal of Personality and Social Psychology, 43, 319-327.

Orlick, T. (1986). Evolution in children sport. In M. R. Weiss and D. Gould (Eds.), Sport for children and youths. Champaign, Ill.: Human Kinetics.

Orlick, T., and Botterill, C. (1975). Every kid can win. Chicago: Nelson-Hall.

Passer, M. W. (1983). Fear of failure, fear of evaluation, perceived competence, and self-esteem in competitive-trait-anxious children. Journal of Sport Psychology, 5, 172-188.

Parfitt, C. G., Jones, J. G., and Hardy, L. (1990). Multidimensional anxiety and performance. In J. G. Jones and L. Hardy (Eds.), Stress and performance in sport. New York: Wiley.

Porter, K., and Foster, J. (1990). Visual athletics: Visualizations for peak sports performance. Dubuque: Wm. C. Brown.

Rimm, D. C., and Masters, J. C. (1979). Behaviour therapy: Techniques and empirical findings. New York: Academic Press.

Rohsenow, D., and Smith, R. E. (1982). Irrational beliefs as predictors of negative affective states. Motivation and Emotion, 6, 299-314.

Rohsenow, D. J., Smith, R. E., and Johnson, S. (1985). Stress management training as a prevention program for heavy social drinkers: Cognition, affect, drinking, and individual differences. Addictive Behaviours, 10, 45-54.

Roskies, E., and Lazarus, R. S. (1980). Coping theory and the teaching of cognitive skills. In P. O. Davidson and S. M. Davidson (Eds.), Behavioural Medicine: Changing health lifestyles. New York: Brunner/Mazel.

Ross, S. M., Gottfredson, D. K., Christensen, P., and Weaver, R. (1986). Cognitive self-statements in depression: Findings across clinical populations. Cognitive Therapy Research, 10, 2, 159-166.

Rothstein, A. L. (1985). Research design and statistics for physical education. New York: Prentice-Hall.

Rubinson, L. and Neutens, J. J. (1987). Research Techniques for the Health Sciences. MacMillan Publishing Company: New York.

Santomier, J. (1983). The sport-stress connection. Theory into Practice, 22, 1, 57-63.

Sarason, I. G. (1960). Empirical findings and theoretical problems in the use of anxiety scales. Psychological Bulletin, 57, 403-415.

Sarason, I. G. (1961). The effects of anxiety and threat on the solution of a difficult task. Journal of Abnormal and Social Psychology, 62, 165-168.

Sarason, S. B., Davidson, K. S., Lighthall, F. F., Wite, R. R., and Ruebush, B. K. (1960). Anxiety in elementary school children. New York: Wiley.

Schacter, S. (1966). The interaction of cognitive and physiological determinants of emotion. In C. D. Spielberger (Ed.), Anxiety and Behaviour. New York: Academic Press.

Scanlan, T. K. (1984). Competitive stress and child athlete. In J. M. Silva and R. S. Weinberg (Eds.), Psychological foundations of sport. Champaign, Ill.: Human Kinetics.

Scanlan, T. K., and Lewthwaite, R. (1984). Social psychological aspects of competition for male youth sport participants: I. Predictors of competitive stress. Journal of Sport Psychology, 6, 208-226.

Scanlan, T. K., and Passer, M. W. (1978). Factors related to competitive stress among male youth sport participants. Medicine and Science in Sports, 10, 103-108.

Schmidt, R. (1988). Motor control and learning: A behavioural emphasis. Champaign, Ill.: Human Kinetics.

Schomer, H. H. (1986). Mental strategies and perception of effort of marathon runners. International Journal of Sport Psychology, 17, 41-59.

Selye, H. (1976). The stress of life. New York: McGraw Hill.

Showers, C. (1988). The effects of how and why thinking on perceptions of future negative events. Cognitive Therapy and Research, 12, 3, 225-240.

Silva, J. M. and Hardy, C. J. (1984). Precompetitive affect and athletic performance. In W. F. Straub and J. M. Williams (Eds.). Cognitive Sport Psychology (pp. 79-87). New York: Sport Science Associates.

Silva, J., and Parkhouse, B. (1982). On answering questions worth asking: Alternative designs for sport and exercise. Quest, 34, 43-52.

Silva, J. M., Shultz, B. B., Haslam, R. W., Martin, T. P., and Murray, D. F. (1981). Discriminating contestants at the United States Olympic Marathon Trials as a function of precompetitive affective state. Unpublished manuscript.

Silva, J. M., Shultz, B. B., Haslam, R. W., and Murray, D. F., (1983). A psychophysiological assessment of elite wrestlers. Research Quarterly for Exercise and Sport, 52, 348-358.

Sipprelle, C. (1967). Psychotherapy: Theory, research, and practice, 4, 36-40.

Smith, C. A., and Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. Journal of Personality and Social Psychology, 48, 813-838.

Smith, C. A., and Ellsworth, P. C. (1987). Patterns of appraisal and emotion related to taking an exam. Journal of Personality and Social Psychology, 52, 475-488.

Smith, R. E. (1980a). A cognitive-affective approach to stress management training for athletes. In C. Nadeau, W. Halliwell, K. Newell and G. Roberts (Ed.), Psychology of motor behaviour and sport. Champaign, Ill.: Human Kinetics.

Smith, R. E. (1980b). Development of an integrated coping response through Cognitive-affective stress management training. In I. G. Sarason and C. D. Speilberger (Eds,). Stress and Anxiety (Vol. 7). New York: Hemisphere.

Smith, R. E. (1984). Theoretical and treatment approaches to anxiety reduction. In J. M. Silva and R. S. Weinberg (Eds.), Psychological foundations of sport. Champaign, Ill.: Human Kinetics.

Smith, R. E. (1986). A component analysis of athletic stress. In M. R. Weiss and D. Gould (Eds.), Sport for children and youths. Champaign, Ill.: Human Kinetics.

Smith, R. E. (1989). Conceptual and Statistical Issues in Research Involving Multidimensional Anxiety Scales. Journal of Sport and Exercise Psychology. 11, 452-457.

Smith, R. E., and Ascough, J. C. (1985). Induced affect in stress-management training. In S. R. Burchfield (Ed.), Stress: Psychological and physiological interactions. New York: Hemisphere.

Smith, R. E., and Nye, S. L. (1989). Comparison of induced affect and covert rehearsal in the acquisition of stress management coping skills. Journal of Counselling Psychology, 36, 17-23.

Smith, R. E., and Roshenaw, D. J. (1986). Cognitive-affective stress management training: A training manual. Delphi, IN: Center for Induced Affect.

Smith, R. E., and Rohsenow, D. J. (1987). Cognitive-affective stress management training: A treatment and resource manual. Social and Behavioural Sciences Document, 17, 2. San Rafael, CA: Select Press.

Smith, R. E. and Smoll, F. L. (1978). Psychological intervention and sport medicine: Stress management and coach effectiveness. University of Washington Medicine, 5, 20-24.

Smith, R. E. and Smoll, F. L. (1982). Psychological stress: A conceptual model and some intervention strategies in youth sports. In R. A. Magill, M. J. Ash, and F. L. Smoll (Eds.), Children in Sport. Champaign, Ill.: Human Kinetics.

Smith, R. E., Smoll, F. L., and Schutz, R. W. (1990). Measurement and correlates of sport-specific cognitive trait anxiety: The Sport Anxiety Scale. Anxiety Research, 2, 263-280.

Smoll, F. L. (1986). Stress reduction strategies in youth sport. In M. R. Weiss and D. Gould (Eds.), Sport for children and youths. Champaign, Ill.: Human Kinetics.

Sonstroem, R. J. (1984). An overview of anxiety in sport. In J. M. Silva and R. S. Weinberg (Ed.), Psychological foundations of sport. Champaign, Ill.: Human Kinetics.

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

Spielberger, C. D. (1972). Anxiety as an emotional state. In C. D. Spielberger (Ed.), Anxiety: Current trends in theory and research. London: Academic Press.

Spielberger, C. D., Gorsuch, R., and Lushene, R. (1970). The State Trait Anxiety Inventory (STAI) test manual.

Spence, J. T., and Spence, K. W. (1966). The motivational components of manifest anxiety: Drive and drive stimuli. In C. D. Speilberger (Ed.), Anxiety and behaviour. London: Academic Press.

Stampfl, T. G., and Levis, D. J. (1967). Essentials of implosive therapy: A learning-based psychodynamic behavioural therapy. Journal of Abnormal Psychology, 72, 496-503.

Strongman, K. T. (1978). The psychology of emotion. New York: Wiley.

Suinn, R., and Richardson, F. (1971). Anxiety management training. A non-specific behaviour therapy program for anxiety control. Behaviour Therapy, 2, 498-510.

Taylor, J. (1953). A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 48, 285-290.

Thayer, R. E. (1985). Activation (arousal): The shift from a single to a multidimensional perspective. In J. Strelau, F. H. Farley and A. Gale (Eds.), The biological bases of personality and behaviour Vol. 1: Theories, measurement techniques and development. Washington, D.C.: Hemisphere.

Unestahl, L. E. (1982). Inner mental training for sport. In T. Orlick and J. T. Partington (Eds.), Mental training for coaches and athletes. Ottawa: Coaching Association of Canada.

Vallerand, R. J. (1983). On emotion and sport: Theoretical and social psychological perspective. Journal of Sport Psychology, 5, 197-215.

Vallerand, R. J. (1984). Emotion in sport: Definitional, historical, and social psychological perspectives. In W. F. Straub and J. M. Williams (Eds.)., Cognitive sport psychology (pp. 65-77). New York: Sport Science Associates.

Vallerand, R. J. (1987). Antecedents of self-related affects in sport: Preliminary evidence on the intuitive-reflective appraisal model. Journal of Sport Psychology, 9, 161-182.

Watson, D., and Friend, R. (1969). Measurement of social evaluative anxiety. Journal of Consulting and Clinical Psychology, 33, 448-457.

Weary, G., Stanley, M. A., and Harvey, J. H. (1989). Attribution. New York; Springer-Verlag.

Weinberg, R. S. (1979). Anxiety and motor performance: Drive theory vs cognitive theory. International Journal of Sport Psychology, 10, 2, 112-121.

Weiner, B. (1971). Theories of emotion: From mechanisms to cognitions. London: Markham.

Weiner, B. (1979). A theory of motivation for some classroom experiences. Journal of Educational Psychology, 79, 1213-1220.

Weiner, B. (1980). The role of affect in sport psychology. In G. C. Roberts and D. M. Landers (Eds.), Psychology of motor behaviour and sport. Champaign: Human Kinetics.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. Psychological Review, 92, 548-573.

Weiner, B. (1986). An attributional theory of motivation and emotion. New York: Springer-Verlag.

Weiner, B., Frieze, I. H., Kukla, A., Reed, L., Rest, S., and Rosenbaum, R. M. (1971). Perceiving the causes of success and failure. Morristown, NJ: General Learning Press.

Weiner, B., Graham, S., and Chandler, C. (1982). Pity, anger, guilt: An attributional analysis. Personality and Social Psychological Bulletin, 8, 226-232.

Weiner, B., Russell, D., and Lerman, D. (1979). The cognitive-emotion process in achievement-related contexts. Journal of Personality and Social Psychology, 37, 1211-1220.

Welford, A. T. (1952). The psychological refractory period and timing of high speed performance - A review and a theory. British Journal of Psychology, 43, 2-19.

Wickens, C. D. (1980). The structure of attentional resources. In R. Nickerson (Eds.), Attention and Performance VIII. Hillsdale, N. J.: Erlbaum.

Wine, J. D. (1980). Cognitive-attentional theory of test anxiety. In I. G. Sarason (Ed.), Test anxiety: theory, research, applications. Hillsdale, NJ: Erlbaum.

Wolpe, J. (1958). Psychotherapy by reciprocal inhibition. Stanford, Calif.: Stanford University Press.

Wolpe, J. (1982). The practice of behaviour therapy. New York: Pergamon Press.

Yerkes, R. M., and Dobson, J. D. (1908). The relation of strength of stimulus to rapidity of habit formation. Journal of Comparative Neurological Psychology, 18, 459-482.

Young, P. T. (1973). Emotion in man and animal. New York: Krieger.

Zaichkowsky, L. D. (1984). Attentional styles. In W. F. Straub and J. M. Williams (Eds.), Cognitive sport psychology (pp. 140-150). New York: Sport Science Associates.

Zajanc, R. B. (1980). Felling and Thinking: Preferences need no inferences. American Psychologist, 35, 151-175.

Ziegler, S. G., Klinzing, J., and Williamson, K. (1982). The effects of two stress management training programs on cardiorespiratory efficiency. Journal of Sport Psychology, 4, 280- 289.

Appendix A

PLAYER QUESTIONNAIRE

Descriptive Information

NAME: _____

Indicate with a check mark ( ) which of the following apply to you.

1. GENDER _____ MALE ( )
   FEMALE ( )

2. AGE _____ YEARS ( ) MONTHS ( )

3. Total number of years involved in competitive soccer.

   0-2 ( ) 3-5 ( ) 6-8 ( ) 9-11 ( ) 12+ ( )

4. Identify the soccer team(s) that you have played on.

   Junior high school representative _____ ( )
   High school representative _____ ( )
   District/regional representative _____ ( )
   Provincial representative _____ ( )
   National representative _____ ( )
   Club (please specify) _____ ( )

5. Give your regular playing position with your current team
   (eg. goal-keeper, midfielder, forward, etc.)

   _____

   _____

6. Outline the major role you perceive yourself as playing for the team in the playing position indicated in question 5.

_____

_____

7. How would you rank your soccer ability compared to your teammates?

1. Top 10% _____ ( )
2. Top 30% but not Top 10% _____ ( )
3. Middle 40% _____ ( )
4. Bottom 30% but not bottom 10% _____ ( )
5. Bottom 10% _____ ( )

8. How would you rate your performance in very important games, compared to your normal playing ability?

1. Far above normal _____ ( )
2. Above normal _____ ( )
3. Normal _____ ( )
4. Below normal _____ ( )
5. Far below normal _____ ( )

9. In important games, how much do you think that stress interferes with your performance? Circle one choice.

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

10. When you are under pressure and feel stressed, what do you do to manage the stress? Please explain in detail.

_____

_____

_____

Identify and describe up to five (5) typical situations in soccer, where you feel under pressure and stressed. Please rank the situations from #1 (producing the most anxiety) to #5 (producing the least anxiety). Please explain in detail what you perceive as the reason for experiencing anxiety in that particular situation.

1. Rank ( ) Situation: _____
_____

Reason for Anxiety: _____
_____

2. Rank ( ) Situation: _____
_____

Reason for Anxiety: _____
_____

3. Rank ( ) Situation: _____
_____

Reason for Anxiety: _____
_____

4. Rank ( ) Situation: _____

_____

Reason for Anxiety: _____

_____

5. Rank ( ) Situation: _____

_____

Reason for Anxiety: _____

_____

Appendix B

ILLINOIS SELF-EVALUATION QUESTIONNAIRE

Name: _____ **Sex: M F** **Date:** _____

Directions: A number of statements that 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	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

	Not At All	Somewhat	Moderately So	Very Much So
19. I'm concerned 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				
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 C

THE SPORT ANXIETY SCALE

Instructions

A number of statements that athletes have used to describe their thoughts and feelings before or during competition are listed below. Read each statement and then circle the appropriate number to indicate how you feel prior to or during competition. Some athletes feel they should not admit to feelings of nervousness or worry, but such reactions are actually quite common, even among professional athletes. To help me better understand your reactions to competition, I ask you to share your true reactions with me. There are, therefore, no right or wrong answers. Do not spend too much time on any one statement, but choose the answer which describes how you commonly react.

	not at all	somewhat	moderately so	very much so
1.	I feel nervous.			
	1	2	3	4
2.	During competition, I find myself thinking about unrelated things.			
	1	2	3	4
3.	I have self-doubts.			
	1	2	3	4
4.	My body feels tense.			
	1	2	3	4
5.	I am concerned that I may not do as well in competition as I could.			
	1	2	3	4
6.	My mind wanders during competition.			
	1	2	3	4
7.	While performing, I often do not pay attention to what's going on.			
	1	2	3	4

	not at all	somewhat	moderately so	very much so

8. I feel tense in my stomach.

1 2 3 4

9. Thoughts of doing poorly interfere with my concentration during competition.

1 2 3 4

10. I am concerned about choking under pressure.

1 2 3 4

11. My heart races.

1 2 3 4

12. I feel my stomach sinking.

1 2 3 4

13. I'm concerned about performing poorly.

1 2 3 4

14. I have lapses of concentration during competition because of nervousness.

1 2 3 4

15. I sometimes find myself trembling before or during a competitive event.

1 2 3 4

16. I'm worried about reaching my goal.

1 2 3 4

17. My body feels tight.

1 2 3 4

18. I'm concerned that others will be disappointed in my performance.

1 2 3 4

19. My stomach gets upset before or during a competitive event.

1 2 3 4

20. I'm concerned I won't be able to concentrate.

1 2 3 4

21. My heart pounds before competition.

1 2 3 4

Thank you for your cooperation.

Appendix D

COPE

Instructions

I am interested in how you respond when you are confronted by difficult or stressful events in SOCCER. There are lots of ways to deal with stress. This questionnaire asks you to indicate what YOU do and feel, when YOU experience stressful events in soccer-related situations. Obviously, different events bring out different responses, but think about what you do when you are under a lot of stress in soccer. CIRCLE one of the following items. Please try to respond to each item *separately in your mind from each other item*. Choose your answer thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item.

1 = I didn't do this at all
2 = I did this a little bit
3 = I did this a medium amount
4 = I did this a lot

1.	I try to grow as a person as a result of the experience.	1	2	3	4
2.	I turn to work or other substitute activities to take my mind off things.	1	2	3	4
3.	I get upset and let my emotions out.	1	2	3	4
4.	I try to get advice from someone about what to do.	1	2	3	4
5.	I concentrate my efforts on doing something about it.	1	2	3	4
6.	I say to myself "this isn't real".	1	2	3	4
7.	I put my trust in God.	1	2	3	4
8.	I laugh about the situation.	1	2	3	4
9.	I admit to myself that I can't deal with it, and quit trying.	1	2	3	4
10.	I restrain myself from doing anything too quickly.	1	2	3	4
11.	I discuss my feelings with someone.	1	2	3	4
12.	I use alcohol or drugs to make myself feel better.	1	2	3	4
13.	I get used to the idea that it happened.	1	2	3	4
14.	I talk to someone to find out more about the situation.	1	2	3	4
15.	I keep myself from getting distracted by other thoughts or activities.	1	2	3	4
16.	I daydream about things other than this.	1	2	3	4
17.	I get upset, and am really aware of it.	1	2	3	4
18.	I seek God's help.	1	2	3	4
19.	I make a plan of action.	1	2	3	4
20.	I make jokes about it.	1	2	3	4
21.	I accept that this has happened and that it can't be changed.	1	2	3	4
22.	I hold off doing anything about it until the situation permits.	1	2	3	4
23.	I try to get emotional support from friends or relatives.	1	2	3	4
24.	I just give up trying to reach my goal.	1	2	3	4
25.	I take additional action to try to get rid of the problem.	1	2	3	4
26.	I try to lose myself for a while by drinking alcohol or taking drugs.	1	2	3	4
27.	I refuse to believe that it has happened.	1	2	3	4
28.	I let my feelings out.	1	2	3	4

Continue to answer each item with these response choices:

1 = I didn't do this at all
2 = I did this a little bit
3 = I did this a medium amount
4 = I did this a lot

29.	I try to see it in a different light, to make it seem more positive.	1	2	3	4
30.	I talk to someone who could do something concrete about the problem.	1	2	3	4
31.	I sleep more than usual.	1	2	3	4
32.	I try to come up with a strategy about what to do.	1	2	3	4
33.	I focus on dealing with this problem, and if necessary let other things slide a little.	1	2	3	4
34.	I get sympathy and understanding from someone.	1	2	3	4
35.	I drink alcohol or take drugs, in order to think about it less.	1	2	3	4
36.	I kid around about it.	1	2	3	4
37.	I give up the attempt to get what I want.	1	2	3	4
38.	I look for something good in what is happening.	1	2	3	4
39.	I think about how I might best handle the problem.	1	2	3	4
40.	I pretend that it hasn't really happened.	1	2	3	4
41.	I make sure not to make matters worse by acting too soon.	1	2	3	4
42.	I try hard to prevent other things from interfering with my efforts at dealing with this.	1	2	3	4
43.	I go to movies or watch TV, to think about it less.	1	2	3	4
44.	I accept the reality of the fact that it happened.	1	2	3	4
45.	I ask people who have had similar experiences what they did.	1	2	3	4
46.	I feel a lot of emotional distress and I find myself expressing those feelings a lot.	1	2	3	4
47.	I take direct action to get around the problem.	1	2	3	4
48.	I try to find comfort in my religion.	1	2	3	4
49.	I force myself to wait for the right time to do something.	1	2	3	4
50.	I make fun of the situation.	1	2	3	4
51.	I reduce the amount of effort I'm putting into solving the problem.	1	2	3	4
52.	I talk to someone about how I feel.	1	2	3	4
53.	I use alcohol or drugs to help me get through it.	1	2	3	4
54.	I learn to live with it.	1	2	3	4
55.	I put aside other activities in order to concentrate on this.	1	2	3	4
56.	I think hard about what steps to take.	1	2	3	4
57.	I act as though it hasn't even happened.	1	2	3	4
58.	I do what has to be done, one step at a time.	1	2	3	4
59.	I learn something from the experience.	1	2	3	4
60.	I pray more than usual.	1	2	3	4

Appendix E

IMAGERY USE QUESTIONNAIRE FOR SOCCER

NAME _____

Please complete the following before answering the imagery use questionnaire. This information will provide background information on your experiences with some types of mental training techniques. Indicate the mental training techniques to which you have been exposed. This might have been readings, courses, or discussions with fellow athletes, coaches and professionals.

A. TECHNIQUE: Focusing; Definition: an attention control technique to bring your concentration on your task.

Have you been exposed to technique? YES ___NO ___

If yes, how? _____

Have you had any formal instruction? YES ___NO ___

If yes, # of sessions in which it was taught: _____

Average length of each session: _____

Do you personally use this technique? _____

_____

_____

B. TECHNIQUE: Relaxation; Definition: a passive, calming technique to relieve tension and/or reduce anxiety; might include deep breathing and/or alternating muscle tensing and relaxing.

Have you been exposed to technique? YES ___NO ___

If yes, how? _____

Have you had any formal instruction? YES ___NO ___

If yes, # of sessions in which it was taught: _____

Average length of each session: _____

Do you personally use this technique? YES ___NO ___

If yes, why do you use this technique? _____

_____

C. Other _____ Definition: _____

_____

How were you exposed to this technique? _____

_____

Have you had formal instruction? YES ___ NO ___

If yes, # of sessions in which it was taught: _____

Average length of each session: _____

Do you personally use this technique? YES ___ NO ___

If yes, why do you use this technique? _____

_____

_____

Many athletes go through their event or stages of it in their minds before actually competing. Mental imagery is a method of seeing yourself in action or seeing the action as you would perform but in your "mind's eye" (VISUALIZATION). It can also include the sensations and feelings associated with an action or the atmosphere and environment surrounding an event.

This is a questionnaire designed to assess the USE of mental imagery by soccer players. There are no right and wrong answers, but please try to answer as accurately as possible. If you need more space than is available, use the back page.

In the following questions where a scale is given, please CIRCLE the appropriate number corresponding to your degree of imagery use.

1. To what extent do you use mental imagery in your training?

1	2	3	4	5	6	7
NEVER						ALWAYS

2. To what extent do you use mental imagery in competition?

1	2	3	4	5	6	7
NEVER						ALWAYS

3. Do you use mental imagery:

	NEVER						ALWAYS
a) before a practice	1	2	3	4	5	6	7
b) during a practice	1	2	3	4	5	6	7
c) after a practice	1	2	3	4	5	6	7
d) before a game	1	2	3	4	5	6	7
e) during a game	1	2	3	4	5	6	7
f) after a game	1	2	3	4	5	6	7
g) during another unrelated activity	1	2	3	4	5	6	7
h) during breaks in the day	1	2	3	4	5	6	7
i) before/in bed	1	2	3	4	5	6	7

4. When you use mental imagery, do you see yourself from outside of your body as if you are watching yourself on video?

1 2 3 4 5 6 7
NEVER ALWAYS

If you do, how vivid is this image?

1 2 3 4 5 6 7
NOT VIVID VERY DETAILED

How easy can you change that image?

1 2 3 4 5 6 7
VERY DIFFICULT VERY EASY

5. When you use mental imagery, do you see what you would see as if you were actually playing soccer?

1 2 3 4 5 6 7
NEVER ALWAYS

If you do, how vivid is this image?

1 2 3 4 5 6 7
NOT VIVID VERY DETAILED

How easy can you change that image?

1 2 3 4 5 6 7
VERY DIFFICULT VERY EASY

6. When you are imaging, how often do you see:

	NEVER						ALWAYS
a) isolated parts of soccer skills	1	2	3	4	5	6	7
b) entire soccer skills	1	2	3	4	5	6	7
c) part of soccer game	1	2	3	4	5	6	7
d) the entire soccer game	1	2	3	4	5	6	7
e) someone else playing soccer	1	2	3	4	5	6	7
f) yourself playing incorrectly	1	2	3	4	5	6	7
g) your team losing a game	1	2	3	4	5	6	7
h) yourself executing a pre-game routine (e.g. warm-up)	1	2	3	4	5	6	7
i) the atmosphere of the game day	1	2	3	4	5	6	7
j) your team winning a game	1	2	3	4	5	6	7
k) yourself receiving a gold medal	1	2	3	4	5	6	7

7. When you are using mental imagery to what extent do you actually feel yourself playing soccer?

1 2 3 4 5 6 7
NEVER ALWAYS

To what extent do you feel:

	NEVER						ALWAYS
a) the sensation of striking the ball	1	2	3	4	5	6	7
b) specific muscles	1	2	3	4	5	6	7
c) personal body movements (e.g. leg swing to kick ball)	1	2	3	4	5	6	7
d) movement relative to other players	1	2	3	4	5	6	7

8. Does the amount that you use mental imagery very during the year?

   If yes, how and why? _____

   _____

   _____

9. Are your imagery sessions structured (i.e. you know in advance what you will image and for how long)?

   1 2 3 4 5 6 7
   NEVER ALWAYS

10. Are your imagery sessions regular (i.e. at a specific time each day)?

    1 2 3 4 5 6 7
    (spontaneous) (very regular)
    NEVER ALWAYS

11. Do your imagery sessions always take the same amount of time?

    If yes, how long? _____
    If no, what range of time? _____

12. In preparation for your all-time best performance how much mental imagery did you do?

1	2	3	4	5	6	7
LESS THAN USUAL					MORE THAN USUAL	

13. Are there some ways you use mental imagery that are not covered in this questionnaire?

_____

_____

_____

14. Are there any further comments you would like to make regarding your mental preparation for soccer?

_____

_____

_____

Appendix F

Table F

Player Questionnaire: Frequency of Typical Soccer-Related Situations Experienced by Female Soccer Players That Make Them Feel Under Pressure or Stressed.

TYPICAL SITUATION	FREQUENCY
1. Failing to control or pass ball	10
2. Penalty/shoot-out situation	8
3. Losing an important game	8
4. Close game where score is equal	7
5. Not playing up to one's potential	7
6. Man-to-man marking, 1-1	6
7. Breakaway situation	6
8. Missing a shot	4
9. Team attitude	4
10. Poor officiating "12 against 11"	2
11. Strong opposition	1
12. Injury as a result of fouls/tackling	1

Appendix G

Table G-1

Means and Standard Deviations for Sport Competitive State Anxiety

			CSAI-cog		CSAI-som		CSAI-sc	
GROUP	TIME	N	M	SD	M	SD	M	SD
SMT	PRE	10	19.30	4.83	16.50	2.32	24.30	4.74
	POST	10	19.80	4.29	19.30	3.56	22.20	4.21
	F.U.	10	19.00	4.76	17.70	2.45	22.50	5.21
CONTROL	PRE	8	19.50	5.21	17.62	3.50	23.00	6.03
	POST	8	16.00	2.56	15.50	1.85	26.00	4.47
	F.U.	8	16.50	3.58	16.75	2.25	25.30	5.06

Table G-2

Means and Standard Deviations for Sport Competitive Trait Anxiety

			SAS-worr		SAS-cdis		SAS-soma		
GROUP	TIME	N	M	SD	M	SD	M	SD	TOTAL
SMT	PRE	10	17.30	4.05	9.80	2.53	17.12	3.52	44.22
	POST	10	17.50	5.02	8.20	1.99	15.87	4.85	41.57
	F.U.	10	17.10	4.53	7.80	1.39	15.75	2.12	40.65
CONTROL	PRE	8	14.37	2.72	7.25	1.75	17.12	4.67	38.74
	POST	8	14.12	2.95	6.37	0.92	16.62	4.98	37.11
	F.U.	8	14.25	2.91	6.50	1.19	17.00	4.21	37.75

Table G-3

Means and Standard Deviations of Individual Items for IUQ - Soccer

INVENTORY ITEMS	SMT						CONTROL					
	PRE		POST		F.U.		PRE		POST		F.U.	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
To what extent do you use mental imagery in your training?	4.3	1.25	4.6	1.07	4.2	1.62	3.9	1.36	4.0	1.30	4.0	0.93
To what extent do you use mental imagery in competition?	4.9	1.19	5.0	1.15	4.8	1.55	5.0	1.30	4.7	1.30	5.1	0.99
Do you use mental imagery before a practice?	2.9	1.52	3.4	1.65	3.1	1.79	3.2	1.67	3.1	1.40	3.0	1.42
Do you use mental imagery during a practice?	3.4	1.89	3.2	1.69	3.4	1.35	3.2	1.16	3.2	1.16	3.1	1.13
Do you use mental imagery after a practice?	3.1	2.50	4.1	1.66	4.3	1.32	3.0	1.51	2.4	1.06	2.0	0.93
Do you use mental imagery before a game?	5.4	1.07	5.6	1.43	5.3	1.57	5.1	1.25	4.8	1.55	5.3	1.28
Do you use mental imagery during a game?	3.6	1.65	3.8	1.39	4.0	1.83	3.1	1.96	3.7	1.67	3.7	1.67
Do you use mental imagery after a game?	3.9	2.23	4.7	1.64	5.1	1.6	3.5	1.07	3.4	1.06	3.6	1.06
Do you use mental imagery during another unrelated activity (e.g. running)?	2.7	1.16	3.3	1.06	3.7	1.06	2.5	1.41	2.5	1.31	3.0	1.31
Do you use mental imagery during breaks in the day?	3.1	1.45	3.7	1.16	3.5	1.18	2.6	1.06	3.5	1.07	3.1	1.13
Do you use mental imagery before/in bed?	4.7	1.25	4.8	1.82	4.6	1.43	4.1	1.25	4.4	0.92	4.9	1.13
When you use mental imagery, do you see yourself from outside of your body as if you are watching yourself on a video?	5.1	1.60	5.1	1.80	5.0	1.76	3.1	1.64	3.2	1.58	3.4	1.41
How vivid is this image?	5.1	1.05	5.1	0.78	5.0	1.0	4.3	1.37	4.5	1.87	4.0	1.26
How easily can you change that image?	3.8	1.09	4.2	0.97	3.9	0.93	4.7	1.21	4.8	1.83	4.7	1.37

Means and Standard Deviations of Individual Items for IUQ - Soccer (cont'd)

INVENTORY ITEMS	SMT						CONTROL					
	PRE		POST		F.U.		PRE		POST		F.U.	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
When you use mental imagery, do you see what you would see as if you were actually playing or performing?	4.8	1.69	4.9	1.45	4.6	1.43	5.0	1.07	5.0	0.93	5.0	0.93
How vivid is this image?	5.6	1.26	5.0	0.94	4.9	0.88	5.0	1.31	4.9	1.36	5.0	1.31
How easily can you change that image?	4.8	1.69	4.1	1.19	4.2	1.23	4.1	1.46	4.5	1.85	4.6	1.60
How easily can you see isolated parts of a skill?	4.7	1.77	4.8	1.32	4.5	1.43	5.0	1.78	4.7	1.67	4.9	1.73
How easily can you see the entire skill?	4.8	1.23	4.9	0.99	5.0	0.67	5.2	1.39	5.2	1.16	5.0	1.19
How easily can you see part of a game?	5.5	1.18	4.7	1.25	4.9	1.29	5.2	1.30	5.2	0.89	5.2	1.03
How easily can you see the entire game?	2.1	1.29	3.3	1.57	2.3	1.25	2.4	1.40	2.4	1.40	2.4	1.41
How often do you see someone else performing?	3.8	1.69	3.6	1.43	3.2	1.48	3.9	2.42	2.6	1.89	3.0	1.31
How often do you see yourself performing incorrectly?	3.9	1.73	4.1	1.97	3.6	1.65	2.41	1.30	2.4	1.30	2.4	1.30
How often do you see your team losing a game?	2.3	0.95	2.5	1.18	2.2	1.28	2.12	1.25	2.4	1.17	2.2	1.16
How often do you see yourself doing a pre-game routine (e.g., warm-up)?	2.2	1.03	2.5	1.27	2.5	1.35	2.7	0.71	2.2	0.71	3.5	1.60
How often do you see the atmosphere of the game day?	3.3	1.57	3.6	1.43	3.3	1.16	4.6	1.30	4.9	1.36	4.9	1.64
How often do you see yourself winning a game?	5.3	1.42	4.8	1.32	4.7	1.06	5.5	1.07	5.5	1.31	5.4	1.06
How often do you see yourself receiving a first-place award?	4.4	1.95	4.0	1.89	3.8	1.69	3.5	2.00	3.5	1.93	3.5	1.93
When using mental imagery, to what extent do you actually feel yourself performing?	5.3	1.06	4.8	0.92	4.6	0.84	4.6	1.77	4.6	1.51	4.9	1.73
How easily do you feel contact with the ball?	4.9	0.88	4.9	0.57	4.5	0.85	4.1	1.78	4.2	1.67	4.2	1.67

Means and Standard Deviations of Individual Items for IUQ - Soccer (cont'd)

INVENTORY ITEMS	SMT						CONTROL					
	PRE		POST		F.U.		PRE		POST		F.U.	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
How easily do you feel specific muscles?	2.3	0.95	3.0	0.94	3.0	1.55	3.4	1.51	3.1	1.46	3.2	1.39
How easily do you feel body control?	4.7	0.67	4.6	0.69	4.5	0.97	4.0	1.93	4.1	1.55	4.1	1.64
To what extent do you feel movement relative to other players?	2.8	1.13	2.5	0.85	2.2	1.03	2.9	0.99	2.7	0.71	2.5	1.07
Are your imagery sessions structured (i.e., you know in advance what you will imagine and for how long)?	3.5	2.02	3.2	1.87	3.1	1.59	2.0	1.07	1.7	1.16	1.9	0.83
Are your imagery sessions regular (i.e., at a specific time each day)?	2.1	1.29	3.0	1.49	2.3	1.25	1.4	0.52	1.4	0.52	1.7	1.03
In preparation for your all-time best performance, how much imagery did you do?	5.6	1.9	5.4	1.84	5.6	1.65	5.2	1.98	5.37	1.68	5.7	2.05