

MENTAL SKILLS TRAINING AND LOCUS OF CONTROL IN
UNIVERSITY LEVEL ATHLETES

by

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ABSTRACT

The purpose of this study was to determine if a mental skills training program consisting of imagery rehearsal, relaxation, and self-talk could influence an athlete's general locus of control and sport specific locus of control towards internality. Data were collected from 48 university level athletes (25M, 23F) randomly assigned to a treatment and a control condition. The experimental design employed a pre-test and a post-test for both groups. General locus of control and sport specific locus of control were assessed by the I-E Locus of Control Scale (Rotter, 1966) and the Sport Locus of Control Scale (Stauss, 1975), respectively. Analysis of the data were conducted using a MANCOVA on the post-test scores for both scales with pre-test scores of each serving as the covariate. The multivariate effect was not significant $F(2, 43)=0.83, p=.44$. Effect sizes were also calculated. Effect sizes for the treatment group on both the Sport IE Scale and the IE Scale were greater than those of the control group. Following the analysis of total scores, the same procedure was applied, post-hoc, to the subset of personal control items (PCI) for both scales. Once again, no significant multivariate effect emerged $F(2, 43)=1.59, p=.22$. The effect size for the treatment group on the Sport IE Scale PCI was larger than that of the control group. No identifiable effect size difference was found between groups on the IE Scale PCI. A post-hoc analysis of differences between male and female athletes on their general locus of control and sport specific locus of control revealed no significant gender effect on either scale. It was concluded that the mental skills

training may have produced a slight shift towards internality in sport specific personal control beliefs. This subset of personal control items on the Sport IE Scale were considered to be most relevant to the athlete's sport specific perceptions of control. It is recommended that practitioners could better use a short form of the Sport IE Scale based on the personal control items.

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DEDICATION

To my parents,
who thought my love of sport
was a phase that would pass.

CHAPTER I

INTRODUCTION

The performance of different athletes in similar competitive situations can be expected to vary. Among the reasons for this variation are a number of potential psychological variables which have been identified. These include the athlete's personality (Morgan, 1980), attentional style (Nideffer, 1976), ability to manage stress (Gould, Horn & Spreeman, 1983), ability to process information (Abernethy & Russell, 1987; Bard & Fleury, 1976), and self-efficacy (Bandura, 1977). This has led to an increasing use of sport psychologists, who have been asked to help athletes develop the mental skills that are needed to optimize their ability to perform.

The effects of mental practice on athletic performance have been studied extensively, yielding equivocal results (Feltz & Landers, 1983). This evidence seems to suggest that a direct, linear relationship between mental practice and enhanced performance may not exist, but rather, the effects of mental practice may be moderated by other variables. For example, McKenzie (1992) studied self-efficacy as a potential moderator between mental practice and performance.

A portion of performance variance may also be accounted for by athletes' beliefs about the controllability of their performance. Some athletes believe that they are in control of how they perform and, as a result, accept responsibility for their performances. Others may feel that how they perform is influenced to a greater extent by fate, destiny, chance,

or powerful others. This psychological construct has been termed by Rotter (1954) as locus of control.

Locus of control involves an assessment of the source most responsible for success or failure in securing desired reinforcements. In an athlete's case, the desired reinforcement is successful performance. According to the social learning theory proposed by Rotter (1954), the location of the source perceived to be responsible for reinforcement lies along a continuum ranging from internal to external.

An internal locus of control is characterized by the perception that securing a reinforcement (successful performance) is contingent on one's own actions and therefore within personal control. Individuals demonstrating an internal locus of control will be more inclined to behave consistently in a variety of similar situations. An external locus of control is characterized by the perception that securing desired reinforcements is unrelated to one's actions but rather is dependent on fate, chance, luck, or others. Individuals with this belief will behave inconsistently in similar situations because, although they may desire the reinforcement, they have come to believe that no one set of behaviors on their part will secure the reinforcement.

The locus of control construct has been well researched in areas such as achievement (Bar-Tal & Bar-Zohar, 1977; Boone, deBrabander, & Gerits, 1991; Nunn & Parish, 1992), coping behavior (Cromwell, Butterfield, Brayfield, & Curry, 1977; Cloitre, Heimberg, Liebowitz, & Gitow, 1992; Linton, 1990), and psychological adjustment (Lefcourt, 1982; Mooney, Sherman, & Lo Presto, 1991; Sidrow & Lester, 1988). The findings of over a thousand studies researching locus of control have

revealed a consistent trend that internals are considered more "positive" and externals more "negative" (Aguglia & Sapienza, 1984; Hill, 1978). Evidence from the sport and exercise literature also support the beneficial nature of an internal locus of control for athletes and exercise enthusiasts (Adame, Johnson, Cole, Matthíasson, & Abbas, 1990; Carlson & Petti, 1989; Celestino, Tapp, & Brumet, 1979; Doganis, Theodorakis, & Bagiatis, 1991).

To date, the majority of research involving locus of control in sport and exercise can be classified descriptive in nature; that is, differences between individual's have been described as a function of their locus of control. Little research designed to shift an athlete's locus of control towards internality presently exists in this field (Duke, Johnson, & Nowicki, 1977; Nowicki & Barnes, 1973) even though evidence in other areas suggests that one's locus of control can be altered (Foulds, Guinan, & Warehime, 1974; Foulds & Hannigan, 1976; Perry & Penner, 1990).

Statement of the Problem

Research in sport and non-sport settings has revealed that an internal locus of control is associated with more positive behaviors. Since an internal locus of control has been shown to be desirable and beneficial, research should likely focus on the effectiveness of techniques or strategies designed to shift perceptions of control to a more internal position.

In sport, sport psychologists have advocated the practice of mental skills to assist athletes as they strive to optimize their performance. By using these techniques, it is reasoned that the athlete will benefit from a greater sense of control over their performance behaviors and, as a result,

will be able to perform better. Although this assumption has been made in the sport psychology literature, there is little empirical evidence demonstrating a relationship between mental skills training and greater perceptions of control.

Purpose of the Study

The purpose of this study was to determine whether a mental skills training program consisting of imagery rehearsal, relaxation, and self-talk would alter an athlete's sport and/or general locus of control towards internality. A secondary purpose was to compare the data from the present administration of the Sport Locus of Control Scale (Sport IE Scale) and the Internal-External Locus of Control Scale (IE Scale) with that of Stauss (1975).

Definitions for the key terms used in this thesis are provided in Appendix A.

CHAPTER II

REVIEW OF LITERATURE

The locus of control concept was developed within the theoretical framework of Rotter's (1954) social learning theory. In the ten years following the publication of a scale that reliably measured the construct (Rotter, 1966), Rotter (1975) estimated that over six hundred studies involving locus of control had been conducted in a diverse number of subject areas.

As the aim of this thesis is to investigate the effects of a combination of mental strategies on the generalized and sport specific locus of control in university level athletes, the review of literature has been divided into the following sections: a) an overview of Rotter's social learning theory and the development of the locus of control construct, b) examples of research involving locus of control in non-sport settings, c) examples of research involving locus of control in sport and exercise settings and d) examples of research involving alterations of locus of control.

Social Learning Theory

Social learning theory is one theory in which an attempt has been made to understand human behavior. Rotter (1954; 1960; 1966) developed this theory to account for the acquisition and maintenance of social behavior. Rotter's social learning theory is based on the belief that an individual's behavior is influenced by both situational variables and personal characteristics, thereby integrating two seemingly incompatible psychological theories; behavioral stimulus-response theory and cognitive

theory. Since the concept of locus of control emerged from social learning theory, it is necessary to provide an overview of social learning theory in order to understand locus of control.

Major assumptions of social learning theory

As with every theory, social learning theory contains a number of assumptions regarding how behavior will be viewed. These assumptions form the theoretical basis for understanding and explaining behavior. Six major assumptions are accepted in social learning theory. They have been succinctly summarized by Persson (1987) and Phares (1976).

First, the most basic unit of investigation for the study of human behavior is the interaction of the individual and his or her meaningful environment (Rotter, 1954). Rotter believed that behavior needed to be viewed from an interactional perspective. He felt that focussing solely on either personal traits and characteristics or the environment provided an inadequate explanation for the occurrence of behavior. To understand human social behavior, Rotter maintained that situational variables as well as the individual's interpretation of them must be taken into account.

Second, the majority of behavior is socially learned (Rotter, 1954). Determinants of unlearned, biologically based, need reduction behavior lose importance when the emphasis is on learned social behavior. This suggests that learned values and expectations are more important relative to biological determinants in the understanding of social conduct. Since most behavior is learned, its occurrence becomes a function of both antecedent and present conditions. Rotter contended that a displayed behavior could

be explained and eventually predicted if the variables or conditions related to all previous occurrences of that behavior were understood.

Third, the relationship between an individual and his or her meaningful environment is reciprocal in that they influence each other. The experiences of an individual do not exist as isolated incidents but are interrelated. New experiences are interpreted in light of meanings acquired from previous experiences, and acquired meanings can be changed by new experience. Rotter (1954) stated that personality and behavior becomes more consistent with age because of the tendency to base the selection of new experiences on an ever-increasing repertoire of previous ones.

Fourth, behavior is determined by the relative contributions of both the general disposition of the individual and specific situational determinants. Behavior cannot be explained or predicted exclusively through use of one element alone.

Fifth, all behavior is purposeful or goal directed. An individual's behavior is motivated by the desire to avoid or seek out certain aspects of their environment. The positive or negative nature of a reinforcing condition can be inferred by observing the direction of a person's behavior. A condition is given a positive value if behavior is directed towards achieving a goal. However, a condition is given a negative value if goal directed movement is frustrated or inhibited, in which case the individual will seek to avoid this condition in the future. Rotter (1954) maintained that behaviors associated with positively reinforcing conditions and progress towards a goal are maintained, while behaviors associated with goal frustration will tend to become extinct.

The sixth and final assumption concerning the study of behavior in Rotter's social learning theory involves expectancy. Rotter (1954) stated that "the occurrence of a behavior of a person is determined not only by the nature or importance of goals or reinforcements but also by the person's anticipation or expectancy that these goals will occur." (p. 102). Reinforcement alone cannot adequately explain behavior. There must be an expectancy that a certain behavior will result in the achievement of a goal. Behavior is determined to some extent by reinforcement through goal achievement, but another important behavioral determinant is the degree to which people expect that their behavior will lead to the achievement of goals (Phares, 1976). The strength of an expectancy is a function of experience with certain behaviors and outcomes. Since expectancies are learned, expectancies involving the outcomes of behavior will increase following success or decrease after failure (Persson, 1987). They can also be changed through the introduction of new experiences designed to alter previous patterns of success and failure.

Determinants of behavior potential

According to Rotter's social learning theory, displayed behavior in a given situation is based on a calculation of one's repertoire of potential behaviors in relation to a reinforcement. The behavior that has the highest probability of reinforcement will be the one that is displayed.

Rotter identified three major components that determine the behavior that has the strongest potential to occur; expectancy, reinforcement value and the psychological situation. He summarized them in the formula, $NP = f(FM \& NV)$, which states: "the potential for a

behavior to occur [NP] in any specific psychological situation is a function of the expectancy that the behavior will lead to a particular reinforcement in that situation [FM] and the value of that reinforcement [NV]"(Rotter, 1975, p. 57).

Expectancy is defined as "the probability held by the individual that a particular reinforcement will occur as a function of a specific behavior on his [or her] part in a specific situation or situations" (Rotter, 1954, p. 107). Expectancy in a given situation is a subjective probability based on a recollection of one's past history of reinforcement combined with expectancies that have been generalized from other related behavior-reinforcement sequences. According to Rotter (1975), expectancies for reinforcement can generalize from one situation to another when the individual perceives the two situations as similar. In novel situations, an individual's generalized expectancy will be more important in determining their expectancy. However, as a person gains more experience in a situation, their generalized expectancies will lose significance and their behavior will be determined primarily by the specific expectancies that they have developed for that situation.

The second major determinant of a behavior potential is reinforcement value. Reinforcement value refers to "the degree of preference for any reinforcement to occur if the possibilities of their occurring were all equal"(Rotter, 1954, p. 107). The value of a reinforcement for an individual depends on its perceived significance relative to other anticipated reinforcements. When an individual chooses a reinforcement, at that particular time, a greater value has been attached to it than to any of the other reinforcements that might have been chosen.

The psychological situation is the third determinant for the occurrence of a behavior. Rotter (1975) claimed that the situation in which a person finds themselves will affect their expectancies, reinforcement values, and subsequent behavior.

Emergence of locus of control in social learning theory

Phares (1976) observed that for some people, increases and decreases in their expectancies following reinforcement appeared to vary systematically as a function of the situation and a characteristic of the individual being reinforced. To help explain and predict how the reinforcements changed people's expectancies, the construct of locus of control was developed.

Locus of control emerged within social learning theory in relation to freedom of movement, the expectancy that a behavior will lead to reinforcement in a given situation. Freedom of movement involves an expectancy of reinforcement based on the association of a behavior and an outcome, however, locus of control as an expectancy variable includes a subjective interpretation about the source most responsible for success or failure in receiving reinforcement as well. According to social learning theory, reinforcement does not inevitably strengthen behavior. Rotter (1966) maintained that the effect of reinforcement was dependent on the individual's perception of a link between their choice of a behavior and successful reinforcement. Thus, a particular behavior in relation to a particular reinforcement was more likely to reoccur only if the individual perceived that there was a contingency between them. Rotter suggested that one's locus of control could be both a general disposition that

influenced an individuals' behavior across a wide range of situations as well as a specific belief that may apply to a specific number of situations.

Internal versus external locus of control

According to Rotter (1954), perceptions regarding the location, or locus, of the source most responsible for controlling reinforcements vary along a continuum ranging from internal to external.

An internal locus of control is characterized by the belief that reinforcements are contingent on one's own actions and thereby under personal control (Rotter, 1966). Those who possess an internal locus of control have developed the expectancy that the occurrence of a particular behavior or set of behaviors will result in the achievement of the desired reinforcement. They believe that there is a causal link between their behavior and the reinforcement, that is, they believe that reinforcements are secured as a direct result of the behavior that they demonstrate.

An external locus of control is characterized by the belief that reinforcements are unrelated to one's own behavior. People with an external locus of control believe that no single behavior in their repertoire will allow them to secure the desired reinforcement (Rotter, 1966). Externals are characterized by an expectancy that reinforcements across varying situations occur randomly due to luck, chance or others and thus, are beyond their personal control.

Joe (1971) contended that a person will have developed a rather consistent attitude toward an internal or external locus of control based on their history of reinforcement experiences. The amount of personal control that a person feels they possess in a situation is the result of their

experience, or lack thereof, of a contingency between behavior and reinforcement. Phares (1976) concluded that "reinforcement may 'stamp in' behavior only when the causal link is perceived by the individual" (p. 3). Because perceived locus of control is concerned with beliefs about how reinforcements are determined, objective reality is less important than a person's subjective interpretation of reality in the development and maintenance of their locus of control.

Locus of control in non-sport settings

Much research, in a variety of subject areas, has been conducted where locus of control was used as an independent variable. Hill (1978) reported that the findings of many of these studies demonstrate that a high degree of internality is closely correlated with personal well-being. Likewise, Aguglia and Sapienza (1984) stated that in nearly all the studies, internals were considered more positive while externals were considered more negative. The literature involving locus of control in non-sport settings has been organized in this review by the author according to three major themes: achievement behavior, coping behavior, and psychological adjustment. What follows is a review of representative studies associated with each theme.

Locus of control and achievement behavior

Bar-Tal & Bar-Zohar (1977) reviewed 36 studies investigating the relationship between academic achievement and locus of control and reported that there was "a firm trend indicating that the perception of locus of control is related to academic achievement. This trend suggests that the

more internal the individual's orientation, the higher the individual's achievement."(p. 182). 31 of the 36 studies that were reviewed revealed a positive relationship between an internal locus of control orientation and academic achievement, evidence which they claimed, indicated the strength of the association. Similarly, Stipek and Weisz (1981) reviewed 35 studies examining this relationship and reported that significance was found in 33 of them.

More specifically, Nunn and Parish (1992) examined differences in locus of control between students at risk of failing in school and same aged peers who were not considered at risk. At-risk students were found to possess a significantly more external locus of control orientation than control students. Nowicki and Walker (1974) also investigated locus of control differences in an academic setting and found that internal grade five and six children achieved significantly higher scores on the Metropolitan Achievement Test than their external counterparts.

Lessing (1969) reported that locus of control was significantly correlated with the grade point average of eighth and eleventh grade students. However, when the effects of intelligence were controlled this relationship reached significance in the eighth graders only. Ismail and Kong (1985) also studied the effects of locus of control on the academic achievement controlling for intellectual ability. After the effects of intellectual ability had been partialled out, the locus of control of elementary school students was found to be significantly associated with academic achievement. Results of a regression analysis indicated that locus of control was also a significant predictor of academic achievement.

Klein and Keller (1990) entered intellectual ability, locus of control and type of instructional strategy as independent variables into a stepwise multiple regression analysis with the academic performance of seventh grade students as the dependent variable. They found that locus of control significantly increased the amount of performance variance accounted for even after intellectual ability had been entered into the regression equation. A measure of the students' confidence after using the instructional materials was also taken prior to completing the fifteen item multiple choice post-test. Regression analysis on this variable indicated that both locus of control and intellectual ability significantly increased the amount of confidence variance accounted for, although the stronger effect belonged to intellectual ability.

Stipek and Weisz (1981) reviewed six studies examining the relationship between locus of control and academic achievement controlling for intelligence. In all but one a significant relationship emerged. Phares (1976) stated that while locus of control does not account for a majority of the variance in grade point average, it does play a role in understanding academic achievement.

In a longitudinal study of graduate students, Otten (1977) reported that after five years, only ten of forty-five graduate students had received their degree. Of these forty-five students, Otten compared the graduation rate of the fifteen most internal to the fifteen most external students and found that six of the fifteen most internal graduate students had received their degrees while none of the fifteen most external graduate students had.

Bar-Tal & Bar-Zohar (1977) concluded that the differences in academic achievement behavior between internals and externals could be

explained by observing the motivational and cognitive reactions of each. They suggested that the motivation to succeed was a function of perceived locus of control. Students who believed that their behavior was responsible for their academic successes, and failures, actively directed their efforts towards the pursuit of success in academic tasks, whereas students who felt that their successes and failures were dependent on other people or circumstances may feel little reason to exert the same kind of task-oriented effort.

Cognitive reactions also tended to be associated with perceived locus of control. Bar-Tal & Bar-Zohar (1977) stated that those students who felt that they could influence their environment would actively seek ways to control it and could be expected to more eagerly collect and utilize the information that could help them in the pursuit of their academic goals. Phares (1976) hypothesized that it would make very little sense for people to expend a great deal of effort in acquiring information considered relevant to reinforcement if they believed that their behavior was not the effective agent in achieving such rewards. Indeed, evidence in other achievement settings suggests that if presented with the same environmental situation, internals will search more actively for information than externals and will also retain, process, utilize, recall, and reproduce that information better (Stipek & Weisz, 1981).

Brannigan, Hauk and Guay (1991) investigated the cognitive activity of individuals with an internal or external locus of control. Their findings support the view that people with an internal locus of control orientation tend to be more achievement oriented. They found that individuals with an internal locus of control engaged in significantly more achievement

daydreams than those with an external locus of control, while externals engaged in significantly more fear-of-failure daydreams than internals did.

Boone, deBrabander and Gerits (1991) compared the information search strategies that internals and externals used to make decisions in an investment game and found that differences in information search strategies, though not statistically significant, emerged between two groups after the subjects had become familiar with the game. Subjects were asked to choose the one of ten projects per trial that would yield the highest payoff. They could obtain information on any of the projects and could sample up to ten bits of information per project, but at an information sampling cost. It was hypothesized that internals would engage in more extensive information searches in an effort to gain some degree of control over the environment by detecting the crucial contingencies. Conversely, it was hypothesized that externals, because of their belief in luck, fate, and uncontrollable forces, would not expect a payoff for such behavior and therefore would be less likely to act that way.

The information sampling behavior of internals and externals was similar during the first five trials. However, on the last five trials, as hypothesized, internals selected information on more projects and also selected larger samples of information per project.

Gregory, Chartier, and Wright (1979) examined differences between internals and externals in escape/avoidance behavior from an aversive tone. Their results revealed that internals outperformed externals. Compared to externals, internals demonstrated a higher percentage of successful escape/avoidance responses, fewer failures to escape or avoid the tone, and

fewer trials to meet a success criterion of three consecutive tone escape/avoidances.

Locus of control and coping behavior

Lefcourt (1982) suggested that greater perceived control over stress could improve one's ability to cope. Indeed, Cromwell, Butterfield, Brayfield, and Curry (1977) observed that cardiac patients rated as internals were identified as being more cooperative and less depressed while in an intensive care unit than externals. In addition, externals remained longer than internals in the intensive care unit and in the hospital itself.

Linton (1990) investigated men's sexual satisfaction following spinal cord injuries to determine their beliefs about their ability to control rewards from sexual experiences. He hypothesized that higher expectancies for the control of reinforcement of sexual behavior would be related to greater sexual satisfaction. The results showed a significant relationship between locus of control and sexual satisfaction. Greater internal sex-related locus of control was found to be significantly associated with greater sexual satisfaction. Linton concluded that the sexual satisfaction of men after a spinal cord injury depended on whether or not they took an active role in shaping their sexual life. This finding is consistent with Rotter's (1966; 1975) contention that people who hold greater beliefs in personal control will demonstrate more goal-directed behavior aimed at fulfilling learned needs.

St. Yves, Freeston, Godbout and Poulin (1989) found a significant correlation between perceived control and degree of burnout in dentists.

Externality in dentists was found to correlate positively with emotional exhaustion and negatively with personal accomplishment.

The relationship between locus of control and anxiety has also been investigated. In an early study, Butterfield (1964) found an individual's locus of control to be associated with the kind of response he or she made to stressful situations. Maladaptive, debilitating anxiety-reaction scores increased as locus of control became more external, while adaptive, facilitating anxiety reactions decreased as locus of control became more external. Watson (1967) also found a significant relationship between perceptions of control and reported anxiety. His results showed that external control was negatively correlated with facilitating anxiety reactions and positively correlated with debilitating anxiety reactions. He concluded that the more external people appraise their locus of control, the more anxiety they report.

Holder and Levi (1988) compared scores on Levenson's IPC locus of control scale with the anxiety and depression subscales of the SCL-90-R, a mental health inventory. The Internal, Powerful others, and Chance locus of control subscales were all significantly correlated with anxiety and depression scores. Internal scores correlated negatively with the anxiety and depression subscales, indicating that people who were more internally oriented also had lower levels of psychological distress. The Powerful others and Chance subscales were both positively associated with anxiety and depression scores and were found to be related to higher levels of psychological distress.

de Man, Hall, and Stout (1991) tested the relationship between test anxiety and locus of control, anticipating that high test anxiety would be

associated with high externality and low internality. Subjects completed Levenson's IPC locus of control scale and the Test Anxiety Inventory. The TAI provides an overall test anxiety score as well as scores for the test anxiety subcomponents of "worry" and "emotionality" which reflect concerns about the consequences of failure and reactions of the nervous system to evaluation, respectively. Results partially supported the hypotheses. Overall test anxiety was significantly negatively correlated with internality, suggesting that people who experience test anxiety are more likely to lack a sense of personal control. Significant negative relationships also emerged between the "worry" component of test anxiety and the Internal and Chance subscales of Levenson's IPC scale. de Man et al. suggested that people who doubt their personal control and do not believe that chance outcomes occur in an ordered world generally suffer from concerns about their performance. On the "emotionality" component of test anxiety, a significant relationship was found on the chance subscale only, indicating that reactions of the autonomic nervous system triggered by evaluative stress are more likely to arise in people who do not believe that positive outcomes can occur in a predictable world by chance.

Cloitre, Heimberg, Liebowitz, and Gitow (1992) compared the locus of control between individuals with panic disorder, social phobia, and normal controls. As expected, normal controls scored significantly higher on the Internal subscale of Levenson's IPC locus of control scale than either anxiety disorder group.

Locus of control and psychological adjustment

Research in the area of locus of control and psychological adjustment suggests that an external orientation is more highly associated with pathologies (Lefcourt, 1982) and with behavior labeled as negative (Nowicki & Duke, 1978). In a review of locus of control research related to psychological adjustment, Lefcourt (1982) reported that anxiety, depression, schizophrenia, and the severity of personal disorders were more frequent among externals than internals. McDonald (1973) also concluded that an external locus of control was related to dysfunctional behavior.

Sidrow and Lester (1988) studied the association of locus of control and thoughts of suicide in a clinical population and found that preoccupation with suicide was significantly associated with higher Chance scores and lower Internal scores. Lester (1989) replicated this study for a nonclinical population and reported similar results.

Benassi, Sweeney and Dufour (1988) used meta-analytic techniques to review 97 studies reporting associations between locus of control and depression. They reported an effect size of .31 which, they concluded, provided strong and reliable support for the hypothesis that higher levels of external locus of control were associated with higher levels of depression.

Benson and Deeter (1992) studied locus of control as a moderator between life event stress and depression. They hypothesized that internals may be less vulnerable to psychological disorders than externals because they believe that they can effect a difference in the outcomes they experience. A number of variables, including locus of control, were

entered into a multiple regression to see if they contributed significantly in the prediction of the depression scores of high school students. Analysis revealed that an external locus of control was a significant predictor of depression. They concluded that locus of control does moderate between event stress and depression since externally oriented students expressed the symptoms of depression to a greater extent than internals.

Kliewer and Sandler (1992) also tested the buffering role of locus of control between the experience of negative life events and the development of psychological symptoms in children and adolescents. They reasoned that an internal locus of control may reduce the effects of stressful life events by minimizing their negative impact or by affecting the choice of coping strategies. Indeed, the results indicated that locus of control did buffer the relationship between stressful life events and psychological symptoms. Kliewer and Sandler suggested that congruence between appraisals of threat and coping behaviors appeared to be needed for healthy adaptation to stressful events. Hence, internals may be able to better appraise situations in terms of the extent to which control can be exerted, and better chose the appropriate coping strategy.

Nowicki and Duke (1978) examined differences in the behavior of internals and externals in a counseling setting. A comparison of externals and internals entering counseling revealed that externals expected that it would take more sessions to solve their problems. Results of the investigation demonstrated that, indeed, externals attended significantly more counseling sessions than internals, although internals were considered to be more improved after counseling. Nowicki and Duke explained that even though the internals had attended fewer sessions, they worked more

effectively to use the counseling. They concluded that internals were more oriented towards problem-solving and consequently, used the information presented by the counselor more efficiently.

In terms of self-esteem, Fish and Karabenick (1971) correlated scores on the Janis and Field Feelings of Inadequacy Scale, a measure of self-esteem, and the Rotter IE scale. A significant relationship between self-esteem and locus of control was reported leading Fish and Karabenick to conclude that people with higher self-esteem tend to be more internally oriented. These results were supported by Payne and Manning (1991) who examined the self-talk of student teachers in relation to their locus of control and self-esteem. They recorded and categorized the self-talk statements of 69 student teachers. These statements were then correlated with measures of the student's locus of control and self-esteem. From their results, Payne and Manning showed that student teachers who expressed self-talk statements reflecting responsibility and control of their actions also perceived themselves as more internally oriented with high self-esteem. Self-talk statements indicating luck, fate, chance, or other people as responsible for events was significantly related to an external locus of control and low self-esteem.

Mooney, Sherman and Lo Presto (1991) examined the role of academic locus of control, self-esteem and distance from home in college adjustment. A significant positive relationship was found between academic locus of control and total adjustment score on the Student Adaptation to College Questionnaire (SACQ). Internals tended to have higher adjustment scores than externals. The SACQ also assesses four features of adjustment in the subscales of academic, social, personal and

emotional adjustment, and goal commitment-institutional attachment. Academic locus of control was also positively correlated with each subscale. When entered into a multiple regression using total adjustment as well as each SACQ subscale as the criterion variable, academic locus of control was found to account for a significant amount of the adjustment variance. Students possessing an internal academic locus of control reported a more effective adjustment to college than those with an external orientation.

Lester (1992) correlated scores on the Levenson's IPC locus of control scale with the eight personality dimensions of the Emotions Profile Index. A significant positive correlation was found between locus of control scores and the personality dimensions of 'trustful' and 'gregarious'. On the 'depressed' dimension, a significant negative correlation was found with the Internal subscale while a significant positive association was found on both the Powerful others and Chance subscales. Lester concluded that an internal locus of control appeared to be associated with psychological health as measured by the Emotions Profile Index.

Summary

A review of the literature involving locus of control and achievement, coping behavior, and psychological adjustment supports the conclusions of Aguglia and Sapienza (1984), Lefcourt (1982) and Nowicki and Duke (1978). An internal locus of control orientation consistently appears to be related to behaviors judged to be more positive and desirable than an external one.

Locus of control in sport & exercise settings

Horsley (1989) maintained that athletes need to be confident in their ability to control their physical and mental skills in order to perform to the best of their ability. He suggested that athletes are able to develop skills and strategies to bring performance factors such as technical skills, thoughts, expectations, concentration, arousal levels and reaction to mistakes under their control, and argued that the greater the athlete's control skills, the more consistent their performance.

In her review article, Hall (1985) stated that "a potentially rich area for future research in sport psychology includes consideration of locus of control as a mediator of various performance phenomenon"(p. 65). Because of the range of rewards and reinforcements available in sport and exercise, she hypothesized that locus of control becomes a salient individual dimension mediating one's expectations in various sport and exercise specific situations.

Locus of control has been researched in the fields of sport and exercise, although the majority of this research relates to the areas of health and fitness rather than sport. Similar to the trends that emerged from research conducted in non-sport settings, findings in sport and exercise settings demonstrate that individuals rated as internal tend to be viewed as more positive than those who are classified as external.

Locus of control, physical activity, health and fitness

Sonstroem and Walker (1973) looked at locus of control and attitudes toward physical activity (ATPA) and their relationship to level of fitness and amount of voluntary physical exercise. University freshman

were pre-tested on a 600 yard run and ranked according to performance time. To control for extreme fitness differences, subjects were randomly selected from the second and third quartiles and were given the Rotter IE Scale, an inventory assessing attitudes toward physical activity, and a questionnaire assessing participation in physical activity. Four groups were formed (2 x 2) on the basis of locus of control (internal-external) and attitude toward physical activity (positive-negative). A second 600 yard run served as the post-test.

Scores from the post-test indicated that, as hypothesized, the group rated as internal with positive attitudes towards physical activity outperformed all others. In addition, this group reported participating in more physical activity than the others. Within ATPA quartiles, Sonstroem and Walker also found that internals performed more favorably than externals. Sonstroem and Kampper (1980) stated that generally, individual's classified as internals tend to be associated with more positive attitudes toward sport and exercise, and were more physically fit than externals .

O'Connell and Price (1982) compared the health locus of control orientations of employees who participated in a corporate physical fitness program to those who either dropped out or did not participate. One-way analyses of variance were used to calculate differences among the three groups on the internality, powerful others, and chance subscales of the Multidimensional Health Locus of Control Scale. It was hypothesized that fitness program participants would demonstrate higher levels of internal control while external scorers would more likely be dropouts or non-participants. A significant difference between the groups emerged on the

Internal subscale. Post hoc analysis indicated that those who participated in the fitness program were significantly more internally oriented than those who dropped out or chose not to participate.

Carter, Lee & Greenockle (1987) studied the effects of locus of control and fitness value on the initial fitness level, expectations for success, and ratings of effort of college women prior to a fifteen week aerobics class. A 2 x 2 (locus of control x perceived value of fitness) analysis of variance was computed for each of the three dependent variables. In addition, correlations were run between each independent and dependent variable. The internal and chance subscales of the Multidimensional Health Locus of Control Scale were used to determine locus of control group membership. High and low fitness groups were differentiated by a self report measure in which subjects were asked to indicate whether fitness or other reasons were primarily responsible for their attendance in the class. The subjects were asked to set an exercise goal for the class and prior to the class, participated in a twelve minute run. Subjective ratings of subject's expectancy of success (would they reach their goal), effort (how hard would they be willing to work to reach their goal), and the twelve minute run served as the dependent variables. An analysis of variance revealed a significant difference between internal and external subjects on ratings of effort.

Compared to externals, internals rated themselves as willing to exert greater effort to reach their fitness goals. Significant correlations were also found between expectancy ratings and the Internal and Chance subscales of the Multidimensional Health Locus of Control Scale.

Expectancy ratings were correlated positively with the Internal subscale and negatively with the Chance subscale.

Carlson and Petti (1989) examined the relationship between the physical activity participation patterns of college students and their locus of control orientation toward health. Their results revealed that voluntary participation in physical activity varied in relation to the degree of perceived control of health-related reinforcements. Students demonstrating internal perceptions of control participated in more demanding physical activities, whether individual or team oriented, and were also found to benefit from greater physiological gains from their activity.

Adame, Johnson, & Cole (1989) investigated the relationship between physical fitness, body image and locus of control orientation in male and female college freshmen by correlating their scores on the Hall Physical Fitness Test Profile, Winstead and Cash Body Self-relations Questionnaire, and Adult Nowicki-Strickland Locus of Control Scale. The results revealed that in both men and women positive body image self perceptions on the physical fitness domain were significantly correlated with an internal locus of control orientation. Internals perceived themselves as being more fit than externals although internality was significantly correlated with actual physical fitness scores in men only.

A follow-up study by Adame, Johnson, Cole, Matthiasson, & Abbas (1990) supported these findings. In this study they examined the effects of locus of control, amount of exercise, body image on the physical fitness domain, and sex on actual physical fitness. Male and female college freshman enrolled in a personal health course estimated the amount of time per week they exercised and completed the Hall Physical Fitness Test

Profile, the Winstead and Cash Body Self-relations Questionnaire, and Adult Nowicki-Strickland Locus of Control Scale to obtain scores for each variable. An analysis of variance in which actual physical fitness scores served as the dependent variable revealed a significant main effect for locus of control. The results showed that internally oriented subjects were more physically fit than externally oriented subjects. No significant interaction effect between sex, locus of control and physical fitness was reported.

Doganis, Theodorakis, & Bagiatis (1991) used an exercise specific locus of control scale to examine the relationship between females' perceptions of control in an exercise setting and self-esteem. They found a positive relationship between internal perceptions of control and self-esteem, and a negative relationship between external perceptions of control and self-esteem. Women who perceived themselves as being in control of reaching their exercise objectives were seen to possess more self-esteem than those who believed that achieving their exercise objectives was beyond their control.

Brandon and Loftin (1991) investigated the association between locus of control and fitness in recreational cyclists. They found that internality, as measured by the Multidimensional Health Locus of Control Scale, correlated significantly with fitness level, evidence which they claimed supported the association between physical fitness and improved emotionality.

In her review of literature on locus of control and health attitudes and behaviors, Strickland (1978) concluded that "the bulk of the reported research on IE and precautionary health practices lends credence to the expected theoretical assumptions that individuals who hold internal as

opposed to external expectancies are more likely to assume responsibility for their health."(p. 1194).

Locus of control and athletic & motor performance

The relationship between marathon performance and locus of control was examined by Celestino, Tapp, and Brumet (1979). Their results showed that, among the runners who finished the marathon, there was a significant negative correlation between internality, as measured by the Rotter IE Scale, and finish time. That is, runners who finished the race with faster times tended to possess a more internal locus of control.

Wichman and Lizotte (1983) examined locus of control as a mediator between mental practice and performance on a dart throwing task. Upon completing the adult Nowicki-Strickland Locus of Control Scale the most internally and externally scoring subjects were randomly assigned to a mental practice or no mental practice group. A mental practice effect was found indicating that the mental practice group performed the task more accurately than the control group. An interaction effect was also found, indicating that the mental practice was more effective for subjects demonstrating an internal as opposed to an external locus of control orientation.

Lufi, Porat and Tenenbaum (1986) conducted a longitudinal study on young male gymnasts to assess the predictive power of a number of psychological attributes, including locus of control, on competitive performance. Gymnasts were assigned to a high or average potential group following a battery of physical tests. They were then administered a battery of psychological tests, including the Rotter IE Scale. Eight months

later all gymnasts participated in two national competitions. Performance scores for each competition were combined, yielding a mean national competition score which was used as the dependent variable. The authors found the locus of control score of gymnasts in the high potential group to be significantly more internal than those of gymnasts in the average potential group.

Crews, Shirreffs, Thomas, Krahenbuhl, and Helfrich (1986) assessed players on the Ladies Professional Golf Association (LPGA) tour to identify the psychological and physiological attributes of elite female golfers. Mean scores on the Rotter IE Scale indicated that the players possessed an internal locus of control. When entered into a stepwise multiple regression, internal control was found to contribute a small but significant amount of the variance in golf performance (15%), rank on the LPGA tour (16%), and money earnings (8%).

Locus of control in individual sport vs. team sport athletes

Some researchers have attempted to differentiate individual and team sport athletes on the basis of their perceived locus of control. One early study reported a difference between team and individual sport athletes. Lynn, Phelan, and Kiker (1969) tested for differences in locus of control between team sport, individual sport and non-sport participants. Junior high school males from basketball and gymnastics were selected to represent team and individual sports respectively. Non sport participants were selected from a detention study hall. All subjects were administered the Rotter (1966) Internal-External Locus of Control Scale (IE Scale) to measure their perceived locus of control. A significant difference between

the IE scores of the three groups was reported with individual sport and non sport participants demonstrating a significantly more external locus of control orientation than team sport athletes.

Di Giuseppe (1973), however, noted that these authors had analyzed their data using multiple *t* tests rather than an analysis of variance (ANOVA). McKelvie and Huband (1980) reported that when these results were subjected to a one-way ANOVA, the *F* ratio was non-significant. When the data were interpreted using the ANOVA results, the findings of Lynn et al. (1969) actually demonstrated that there was no significant difference between the perceived locus of control of team, individual and non sport participants.

Di Giuseppe (1973) expanded the sample in his study to include team sport athletes from football, basketball, soccer, and baseball, and individual sport athletes from gymnastics, archery, bowling, track, and cross country. He reported that there was no significant difference between the groups based on their scores on the Rotter IE Scale.

Non significant results were also reported by Guilliland (1974) using a combination of male and female athletes in football, basketball, water polo, field hockey, and volleyball as team sports, and judo, fencing, track, gymnastics, and tennis as individual sports. In females, Stauss (1975) found no significant difference between the IE scores of team sport and individual sport athletes on either a general or sport specific locus of control scale.

Moore (1981) administered the Levenson Internal, Powerful Others, and Chance (IPC) Scale to female intercollegiate athletes from four team sports (field hockey, volleyball, basketball, and softball) and five individual

sports (gymnastics, swimming, track & field, tennis, and golf). She reported that there were no significant differences in locus of control between women intercollegiate team and individual sport athletes. Similar results were found by Hutchinson (1972) and Campbell (1977) using intercollegiate athletes from the team sports of basketball and volleyball and the individual sports of gymnastics and swimming.

Persson (1987) administered a Levenson IPC Scale that had been modified for sports to athletes participating in team and individual sports. Using 50 team sport and 50 individual sport athletes, she found a significant difference between the groups on the Powerful Others sub scale. Team sport athletes demonstrated a greater perception for the control of reinforcement by powerful others. In her discussion, Persson argues that this result may have emerged because a sport specific rather than a general locus of control scale was used to measure locus of control.

Locus of control and gender differences

Research has also been conducted to determine whether significant differences in locus of control exist between males and females as a result of socially determined aspects of being male or female. A review of this research indicates that males and females do not differ significantly in terms of their perceived locus of control.

Guilliland (1974) found no significant effect of gender on university athlete's locus of control scores using Rotter's IE Scale. This finding was supported by Valliant, Simpson-Housley, and McKelvie (1981) who also report no significant difference between male and female athletes on their IE scores.

Lee (1978) administered the Levenson IPC Scale to men and women enrolled in beginning tennis classes. Results revealed no significant sex effect on locus of control. Persson (1987) also found no significant difference between male and female intercollegiate athletes using the Levenson IPC Scale.

Adame, Johnson, & Cole (1989), using the Adult Nowicki-Strickland Locus of Control Scale, reported no significant difference between the locus of control scores of college men and women enrolled in a personal health course.

Summary

In summary, the research on locus of control in sport and exercise settings reveals findings consistent with those found in non-sport settings. Research in both of these areas indicate that an internal locus of control orientation is generally more positive and desirable than an external locus.

The literature that has been reviewed up to this point can be classified as descriptive research, as the studies merely report and describe differences between individuals using locus of control scores from various internal-external control instruments. It is important to understand that internal characteristics are associated with desirable behavior. However, since the evidence strongly supports this association, it is time to move from classifying people according to their locus of control towards designing interventions and treatments that will facilitate a shift to a more internal locus of control. Researchers have shown that one's locus of control orientation can be altered (Lefcourt, 1982).

Changing locus of control

Although one's locus of control orientation appears enduring and stable, Lefcourt (1982) maintained that it is by no means a fixed trait. He described locus of control as a momentary expression of a sense of causality which may be relatively consistent if solicited at different points in time. Lefcourt explains that any durability of one's locus of control orientation is the result of the way in which events are consistently perceived by the individual, even though at times there is overwhelming evidence to suggest alternate interpretations. It is this sense of consistency that gives locus of control a trait-like appearance.

So far, evidence from research involving locus of control has indicated that external locus of control orientations are typically associated with lower levels of achievement, difficulties in coping, and less positive adaptations in a variety of situations. Perceptions of internal control, however, have been associated with higher levels of achievement, greater ability to cope with stress and adversity, and more positive adaptations. It was evidence like this that lead Lefcourt (1982) to conclude that "the shifting of one's locus of control from an external to a more internal position would seem to be a natural goal for professional psychologists whose aims are often to revive their patients' flagging efforts in pursuit of satisfactions they have forsaken as hopeless" (pp 149-150). This position was supported by Bruch (1974) who stated that the goal of therapy should be to assist clients in developing the perception of themselves as self-directed.

Both Lefcourt (1982) and Bruch (1974) suggested a move away from descriptive research which involved locus of control as the

independent variable and towards experiments in which locus of control was the dependent variable, where the desired result would be a shift in locus of control towards internality. This type of research has been reported in relation to academic achievement, psychological adjustment, and sport and exercise.

Academic achievement

Bradley and Gaa (1977) involved grade ten students in goal setting conferences to see if locus of control with respect to intellectual achievement would change, and if these changes would generalize to other types of situations. 36 students were randomly assigned to one of three treatment groups; a goal setting conference group, a conference group, and a control group. The goal setting group met once a week for five weeks and received feedback on their classroom performance and their progress towards the goals they had set the previous week. Material to be covered during the upcoming week was discussed and, in conjunction with a teacher, the students set goals for the week. To control for the effects of personal interaction in the goal setting conferences, a control conference group was established and met according to the same schedule as the goal setting conference group. A control group who did not participate in any conferences was also formed.

An analysis of variance indicated that goal setting students scored significantly higher than students who had not set goals on the intellectual/academic domain of the Locus of control Inventory for Three Achievement Domains. No significant differences emerged between groups on the social/interpersonal or physical domains of the scale. The

results indicated that the goal setting conference procedure was effective in promoting a more internal locus of control and implied that the locus of control beliefs for one situation can be modified without greatly affecting locus of control beliefs for other situations.

Charlton and Terrell (1987) investigated the effects of an intervention designed to shift third grade students' locus of control with respect to reading improvements towards internality. Students in an experimental group class listened to audioscripts depicting same aged students in home, school, and play failure situations. The students were required to identify and role play the behaviors which they felt precipitated failure. They were then asked to identify and role play behaviors that would likely have changed the student's failure to success. In addition, in an effort to develop a sense of perceived personal causality in the students, after the students had been reinforced in other lessons the teacher emphasized an internal locus of control by highlighting behavioral contingencies. Another class served as the control group and received no special treatment. The mean pre-test reading ages of the groups on a word accuracy test were not significantly different from one another. After fifteen weeks of the intervention, the mean reading age of the experimental group was found to be significantly higher than that of the control group. Although both groups showed gains in reading age over the fifteen weeks, the gains of the experimental group were significantly higher than those of the control group. Charlton and Terrell explained that the intervention may have encouraged students to expend more time and energy in striving for academic success, therefore improving their academic functioning.

A similar study using university students was conducted by Perry and Penner (1990). Internally and externally oriented students were assigned to experimental or control groups. The experimental groups received attributional retraining and were encouraged to attribute poor performance to a lack of effort and a good performance to their ability and proper effort. Two achievement tests, examining the retention and understanding of a lecture and a homework assignment, were used to assess academic performance. The results showed that attributional retraining had a significant effect on academic achievement. The experimental groups performed significantly better than the control groups on both the lecture and homework tests. An interaction between locus of control and attributional retraining was also found. External students that had received attributional retraining performed better on the lecture and homework tests than control group externals. No differences were found between comparisons of internals. Perry and Penner argued that attributional retraining may have facilitated cognitive restructuring in externals, resulting in a greater expenditure of effort and enhanced achievement while in internals, attributional retraining may have only reinforced their existing beliefs.

Both Charlton and Terrell (1987) and Perry and Penner (1990) reported increases in academic achievement following interventions designed to shift locus of control towards internality. However, no pre to post intervention measures of locus of control were compared to validate that a shift in locus of control had taken place. Although these studies were designed to maximize internal validity, the reader is left to assume that the

increases in locus of control were responsible for the increases in achievement.

Smith (1989) used pre and post intervention measures of locus of control in an investigation of the effects of coping skills training on the locus of control, self-efficacy, and academic performance of college students. Students in a training group received specific cognitive, affective, and behavioral coping techniques and procedures in which emphasis was placed on skill mastery. Smith predicted that the coping skills training would shift the locus of control in the training group to a more internal orientation and increase their general self-efficacy which, in turn, would be related to increases in performance on weekly psychology tests. The results showed that, in terms of academic performance, the training group performed at a significantly higher level on the weekly tests than the no training group. Following coping skills training, the self-efficacy of the training group increased significantly, however no significant differences were found between pre and post intervention measures of locus of control.

Psychological adjustment

Diamond and Shapiro (1973) suggested that a successful encounter group would likely create an environment in which an internal orientation could be learned. In their first of two studies, subjects were divided into three experimental groups and a control group. Each experimental group was facilitated by a professional encounter group leader with a different encounter group approach. After the encounter group experience, several within-group differences emerged. A repeated measures ANOVA from pre-test to post-test showed a significant change towards greater internal

control in the three experimental groups while no change emerged in the control group.

In their second study, Diamond and Shapiro (1973) replaced the expert encounter group leaders with supervised graduate students. The results of this study were similar, though not as pronounced, as those of the first. A shift in locus of control towards internality was found in the experimental groups while the control group demonstrated no change.

Foulds (1971) examined the effects of weekly participation in a growth group on locus of control. The focus of the growth groups was on increased self-awareness and authentic interaction. Students waiting to participate in a growth group experience were selected to an experimental group. A control group, matched for sex and pre-test score on the Rotter IE Scale, was selected from an undergraduate psychology class. After the eight week growth group experience, significant changes in the direction of internality were found in the experimental group while no significant changes were demonstrated by the control group.

The results of Foulds (1971) led Foulds, Guinan, & Warehime (1974) to study the effects of a marathon growth group experience on locus of control. Students screened for severe psychopathology participated in a 24 hour marathon growth group where the focus was on expanded awareness, increased authenticity, and more effective interpersonal communication. A control group was selected from students waiting to participate in such a marathon group. Subjects in the control group were matched to experimental group subjects by gender and locus of control score on the Rotter IE Scale. After the marathon session, a comparison of post-test means showed that the experimental group perceived themselves

significantly more internal than the control group. An analysis of the pre and post-test means within the experimental group also revealed that a significant shift towards internality in locus of control orientation had occurred.

Foulds and Hannigan (1976) investigated the effects of psychomotor group therapy on locus of control. The goal of psychomotor therapy was for participants to become attuned to their inner feeling sensations and more free in their movements in response to these feelings. The hypothesized result of psychomotor therapy was that individuals would take more responsibility for their behavior. Immediately after participation in the therapy, the experimental group was found to be significantly more internally oriented while no significant change was reported for the control group. After six months the experimental group was again administered the Rotter IE Scale. A comparison of pre-test and six month follow-up scores, although slightly less internal than those immediately following therapy, also revealed a significant change in the direction of internality, suggesting that the changes in locus of control were long term.

Johnston, Gilbert, Partridge & Collins (1992) investigated whether perceived control over recovery during physiotherapy rehabilitation could be increased by a preparatory letter prior to treatment. Their control group received a standard appointment letter prior to treatment while the experimental group received a standard letter which also included a section designed to increase the patient's perceptions of control during their rehabilitation. Patients in the experimental group were found to have significantly higher levels of perceived control over their recovery and tended to be more satisfied with their rehabilitation than patients in the

control group. Johnston et al. concluded that pre-treatment communication of this type may decrease the patients' recovery time.

Sport and exercise

Nowicki & Barnes (1973) observed changes in the locus of control of eight groups of deprived inner city adolescents following a summer camp designed to provide them with contingent reinforcement. Camp activities stressed cooperation in the pursuit of group goals and individuals were reinforced for their efforts. A comparison of pre to post camp levels of perceived control was significant, indicating that the youths experienced a shift toward internal perceptions of control following their week at summer camp. During the eighth week of the program, a number of individuals from the groups of the previous seven weeks were invited back for an additional week. Nowicki & Barnes found that the adolescents who returned for the eighth week of camp revealed further internally oriented shifts in locus of control. Campers in the eighth week had already experienced an internal shift in perceived control during their first stay at summer camp but demonstrated further shifts towards internality during their second week. Duke, Johnson & Nowicki (1977) found similar locus of control shifts in subjects aged six to fourteen during an eight week sports fitness summer camp.

Summary

This review of literature has provided evidence to suggest that externality is associated with maladjustment while internality has been associated with positive adjustment and other desirable behaviors. It has

also been suggested that perceived locus of control is subject to influence and can be altered. Evidence of this has emerged in a number of subject areas in psychology but, to date, there has been no research examining changes in the locus of control of athletes.

In sport, mental skill training is meant to provide athletes with psychological techniques designed to optimize and enhance their performance (Rushall, 1989). By developing such skills, sport psychology practitioners (eg. Kubistant, 1986; Martens, 1987; Nideffer, 1992; Orlick, 1986) suggested that athletes would gain greater control over the psychological processes associated with performance and, subsequently, would be able to perform better. The aim of this research project was to test whether or not the development and practice of imagery rehearsal, relaxation, and self-talk could shift the locus of control of university level athletes towards a more internal orientation.

Research Questions

Based on the current research findings, responses to the following research questions will be sought by this investigation:

1. Will a mental skills intervention package consisting of imagery rehearsal, relaxation, and self-talk shift an athlete's sport locus of control and general locus of control towards a more internal orientation?
2. Do the scores obtained by the present administration of the Sport IE Scale and the IE Scale compare to those obtained by Stauss (1975)?
3. Is there a difference between athlete's scores on the IE Scale and the Sport IE Scale? Is this finding consistent with that of Stauss (1975)?

Hypotheses

In response to the research questions, the following hypotheses will be tested:

1. Scores of the treatment group on the Sport IE Scale and the IE Scale, following mental skills training, will be significantly lower than those of the control group, indicating a modification of locus of control towards internality.
2. Pre-test scores from the present administration of the Sport IE scale will be consistent with those reported by Stauss (1975).
3. Athletes scores on the Sport IE Scale will be lower than their scores on the IE Scale, as demonstrated by Stauss (1975).

CHAPTER III

RESEARCH METHODS

Subjects

Sixty-two intercollegiate varsity athletes from seven University of Victoria teams (Women's Field Hockey, Men's Rowing, Men's Rugby, Men's & Women's Soccer, Men's & Women's Volleyball) signed informed consent forms (see Appendix B) and completed the pre-test package (see Appendix C). Fourteen subjects were unable to complete the study due to injury (n=2), sickness (n=1), release from the team (n=3), and other commitments (n=8). The final sample included twenty-three women (Field Hockey, n=11, 7 Treatment, 4 Control; Soccer, n=9, 4T, 5C; Volleyball, n=3, 2T, 1C) and twenty-five men (Rowing, n=3, 2T, 1C; Rugby, n=2, 0T, 2C; Soccer, n=8, 2T, 6C; Volleyball, n=12, 5T, 7C).

Setting

All testing and training sessions were conducted at the University of Victoria.

Variables

The dependent variables for this investigation were scores on the Rotter Internal-External Locus of Control Scale (IE Scale, Rotter, 1966) and the Sport Locus of Control Scale (Sport IE Scale, Stauss, 1975).

The independent variable was the two treatment conditions, consisting of a mental skills training condition and a control condition.

Limitations and Delimitations

The study was limited by (a) the truthfulness of the subjects in completing the measurement instruments, (b) the adherence of athletes in the treatment group to the practice of the mental skills, and (c) the nature of the subjects involved; all subjects volunteered, thus, the sample may be biased and may not be representative of all varsity athletes.

This study was delimited to (a) a sample population consisting of athletes competing for the University of Victoria at the varsity level, (b) measurement of sport and generalized locus of control by the Sport IE Scale (Stauss, 1975) and the IE Scale (Rotter, 1966), respectively, and (c) a mental skills training program consisting of imagery rehearsal, relaxation, and positive self-talk.

Instrumentation

1. Rotter Internal-External Locus of Control Scale (IE Scale).

This scale assessed the athletes' generalized expectancy for internal or external control. Developed by Rotter (1966), the scale contains 23 statement pairs, each consisting of one internally and one externally oriented statement, and six filler questions presented in a forced choice format. It is scored in the direction of externality. High scores reflect a belief that control of reinforcement is external while low scores reflect internal control beliefs. It is considered a highly reliable and valid instrument for assessing the locus of control dimension (Foulds, Guinan, & Warehime, 1974). Internal consistency estimates have ranged from .65 to .79 with most correlations in the .70's (Joe, 1971). Test-retest reliability

measures for varying samples have ranged from .49 to .90 (Rotter, 1966; Stauss, 1975).

2. Sport Locus of Control Scale (Sport IE Scale).

This scale assessed the athlete's expectancy for internal or external control in sport specific situations. Adapted to sport from the Rotter IE Scale by Stauss (1975), it contains 23 statement pairs, each consisting of one internally and one externally oriented statement, and eight filler questions. The format and scoring system are the same as the IE scale. Stauss reported the internal consistency at .40 which, although low, is significant at the .01 level. The test-retest reliability has been reported at .85 (Stauss, 1975).

3. Sensation-Seeking Scale.

This scale was included in the test booklet to disguise the intent of the locus of control scales. It was developed by Zuckerman, Eysenck & Eysenck (1978) and includes 40 statements involving arousal and/or sensation that are rated on a 5 point scale (scores range from 40-200). High scores indicate a tendency to enjoy situations involving a high degree of stimulation.

4. Vandenberg Test of Mental Rotation.

A shortened form of this test was also included in the test booklet to disguise the intent of the locus of control scales. Developed by Vandenberg and Kuse (1978), it requires subjects to correctly match a standard with two identical but rotated figures. Two distractor figures that are either

rotated mirror images or slight alterations of the standard are also presented in each item.

5. Self-monitoring Logsheets.

A prepared self-monitoring logsheet was developed by the author (see Appendix D) to provide information about adherence and perceptions of subjects in the treatment condition. Subjects were asked to rate their ability to perform each of imagery rehearsal, relaxation and self-talk on an eleven point scales (scores ranging from 0-10). Space was also provided under each mental skill for them to report their successes and areas in which they felt they could improve. Finally, they were asked to rate their overall performance in the mental training program for the previous week on an eleven point scale and were provided with an area to include any additional general comments.

Experimental Design

A randomized, two group, pre-post experimental design was used in this investigation. Stratified random sampling was used to assign athletes into a treatment or control condition. As a result of using this technique, athletes from each varsity team were approximately equally represented in each group.

All subjects in both groups were administered a pre-test package containing the Sport IE Scale, the Sensation Seeking Scale, the IE Scale, and the Vandenberg Test of Mental Rotation (see Appendix C). After a six week experimental period, all subjects completed the same test package again as the post-test.

Testing Procedures

Prior to testing, varsity coaches from the University of Victoria were contacted personally by the author requesting permission to involve their athletes in the study. The nature of the study, time commitment and requirements for both the coach and athlete was also explained at that time. Coaches indicating their support for the project were sent a confirmation package (see Appendix E) containing a more detailed description of the study, the precise testing procedures, and a form to be returned to the author which requested the practice and competition schedules of their program.

Each team was individually contacted by the author at which time the nature of the study, benefits of the program, time commitment and requirements of participating athletes was explained both verbally and in the form of an information letter (see Appendix F), and volunteers were requested. Those who volunteered were asked to schedule an appointment to complete the pre-test. Due to the varied schedules of the seven athletic teams involved, the entire sample of athletes could not meet at the same time to complete the pre-test. Therefore it was necessary to administer it over a number of sessions on the same day.

Upon completion of the pretest, the athletes assigned to the control condition were told to continue training and competing as usual. The treatment group was administered a mental skills training program. Horsley (1989) suggested that the development and practice of psychological strategies such as awareness, imagery, positive self-statements should enable athletes to enhance their feelings of control.

Therefore, a mental skills training package consisting of relaxation, imagery rehearsal, and self-talk strategies, adapted from Kendall, Hrycaiko, Martin, & Kendall (1990), was used. Administration of the mental skills training program occurred during thirty minute sessions over a four day period.

On day 1, the subjects were introduced to the content and purpose of the program. The role of sport psychology in athletic performance was discussed after which the objectives of the program were made clear. The importance of mental preparation in athletics was introduced by viewing an edited version (see Appendix G) of the video "What you see is what you get" (Botterill, 1987). Following the video, Active Progressive Relaxation (PR) as a relaxation technique was introduced (Harris, 1986; see Appendix H for details).

Day 2 consisted of a session in which Active PR was reviewed and proper breathing was introduced as an additional relaxation technique. The remainder of the session was devoted to imagery rehearsal. Discussion included an explanation of the principles and mechanisms of imagery. Subjects actively participated in exercises involving imagery vividness and controllability. Emphasis during this session was placed on developing the ability to gain control of and manipulate images (see Appendix I for details).

During the session on day 3, a variation of Active PR - Passive PR - was introduced. The proper breathing relaxation technique, introduced on day 2, was combined with Passive PR to form a single relaxation procedure. Self-talk was also introduced in this session. The influence of self-talk on performance and the uses of self-talk were discussed (see

Appendix J for details). Strategies to identify and modify self-talk were provided, including thought stopping, thought replacement and countering (Banker & Williams, 1986).

The session on day 4 included a summary of the relaxation, imagery rehearsal, and self-talk techniques that had been presented over the previous three days. Emphasis during this final session was placed on developing a systematic pre competition preparation routine which incorporated the three mental skills (see Appendix K for details).

Because of the varied schedules of the athletes in the treatment condition, it was necessary to offer each training session a number of times on each day. To ensure consistent administration of the program, the author followed a script (Appendices H-K). Each script included general information and explanations pertaining to each mental skill. Examples illustrating the underlying principles of each skill were developed based on the experiences of the author in various general and sport specific situations. The subjects were encouraged to apply these principles and illustrations to their own sporting situation by creating their own specific examples.

Following the four day acquisition phase, subjects in the treatment condition were asked to practice the mental skills for a minimum of ten minutes per day, three days a week for the remaining five week duration of the experimental period. This practice frequency was chosen because providing athletes with a practical mental skills training program was one of the primary concerns of the author. This frequency of mental practice has been considered effective (Wichman & Lizotte, 1983). Subjects were also provided with a mental skills summary booklet which highlighted the

topics covered during each session (see Appendix L). The author felt that to make the mental skills training program maximally effective, it was important for each athlete to be able to easily refer to the information that was discussed in the training sessions.

Adherence to any program can be a problem. To gain an insight into the athletes' adherence to the mental skills training program, subjects were asked to provide the author with feedback on the development of their relaxation, imagery rehearsal and self-talk skills by completing weekly self-monitoring logsheets (Appendix D). Athletes were asked to return one completed logsheet to the author by the Tuesday of each week and were informed that those who had not returned a logsheet by that time would be contacted in person or by phone on Wednesday with a reminder to do so. In addition to providing information about adherence, this procedure also provided the author with qualitative data to monitor the athlete's perceptions regarding the effectiveness of the mental skills training program.

At the end of the six week experimental period, all subjects were again asked to complete the test package as the post-test. As part of the post-test package, a post-test questionnaire was included. Athletes assigned to the treatment condition were asked to provide feedback on the mental skills program as well as estimates regarding the amount of time spent in mental practice (Appendix M). Those assigned to the control condition were asked to recall their activities during the training week in an attempt to control for practice effects. Because of the varied schedules of the seven athletic teams involved, the entire sample of athletes could not meet at the

same time to complete the post-test. Therefore it was necessary to administer it over a number of sessions on the same day.

After completion of the post-test, the author provided the athletes assigned to the control condition with the opportunity to receive the mental skills training program.

Data Analysis

To test for differences between the treatment and control groups, a multivariate analyses of covariance (MANCOVA) on the scores of both scales was computed with pretest scores serving as the covariate. Effect sizes were calculated using the formula in Howell (1985) to obtain a standardized measure with which to describe the data. For interest, the effect sizes of the groups were separated by gender to compare the relative contribution of sex towards the group results.

Mirels (1970) performed a factor analysis on the IE Scale and reported that it contained two factors made up of items loading on personal control and items loading on political / societal control. Stauss (1975) argued that since the Sport IE Scale was a sport specific adaptation of the IE Scale, it also contained these two factors. Post-hoc analyses were conducted on the scores from each scale pertaining to the items loading on personal control. This data were analyzed according to the same procedures applied to total score data.

Scores from the present administration of the Sport IE Scale and the IE Scale were also compared to those reported by Stauss (1975). The Sport IE Scale scores of each sample were compared by an independent t-test. For interest, a second comparison was made using the scores of

females only, as Stauss' sample was comprised of all females. A post-hoc comparison of personal control item data between samples was also conducted. Stauss used Kendall's rank order coefficient of correlation to determine whether scores on the Sport IE Scale and the IE Scale were significantly related. This procedure was replicated on the data from this study to see if the values were comparable.

Stauss also reported that athlete's Sport IE scores were significantly lower than their IE scores which, she claimed, reflected beliefs of greater internal control in sport specific situations. This procedure was not replicated in this study because a comparison of two samples by an independent t-test assumes that the values being compared were obtained by the same instrument. Although the Sport IE Scale and the IE Scale are similar instruments, they are not the same. Therefore, at best, it could be said that the distribution of scores on the IE scale would be similar to the distribution of scores on the Sport IE Scale, although ranges may be somewhat different causing a difference in means. As a result, in this study, a regression equation predicting Sport IE Scale scores from IE Scale scores was calculated so that incremental shifts on the IE Scale could be compared to the resultant shifts on the Sport IE Scale.

A post-hoc analysis by gender was also conducted on the scores from each scale. An independent t-test was used to test for possible differences between the means for each scale. The alpha level for all statistical analyses was set at $p < .05$.

CHAPTER IV

RESULTS

The results of this study will be reported according to the research questions stated in Chapter II. Descriptive data and statistical analyses for the first two research questions have been divided into two sections; (a) planned (a priori) analyses of the total scores from each scale, and (b) post-hoc analyses of scores from personal control items. These are followed by the results to the third research question, a post-hoc analysis by gender, and responses to the post-test questionnaire.

Descriptive Results: Total Scores

The means and standard deviations of pre-test and post-test scores for the Sport IE Scale and the IE Scale are reported on Table 1. Independent t-tests on the pre-test means between groups on both the Sport IE Scale and the IE Scale revealed no significant differences, Sport IE $t(45.77)=0.29, p>.05$, IE $t(45.72)=1.23, p>.05$.

Effect sizes were also calculated for each group on each scale. Effect size is a measure of the difference between two means using the standard deviation of the first mean as the unit of measurement. This procedure provides a standardized unit with which to compare changes over time in different groups relative to their initial distribution. For this study, effect size was used to describe the relationship between the pre-test and post-test measures of locus of control for each group. Cohen (1977) has provided guidelines regarding the magnitude of change associated with effect size values; .20 is considered to be a small effect, .50 a medium

Table 1.

Means and standard deviations for pre-test and post-test scores on the Sport IE Scale and the IE Scale.

SCALE	GROUP	<u>Pre-test</u>		<u>Post-test</u>	
		M	SD	M	SD
Sport IE Scale	Treatment ^a	7.68	2.77	6.77	2.99
	Control ^b	7.92	3.06	7.65	3.30
IE Scale	Treatment	8.96	3.24	7.59	3.42
	Control	10.27	4.16	9.50	4.20

^an=22

^bn=26

effect, and .80 a large effect. A summary of effect sizes on each locus of control scale are reported by group on Table 2. For interest, group effect sizes were also separated by gender. On both the Sport IE Scale and the IE Scale the effect size of the treatment group is greater than that of the control group, although according to the guidelines established by Cohen these effects cannot be considered large. When the group effects were separated by gender, it appeared that females were more responsible for the shift on the Sport IE Scale while males were more responsible for the shift on the IE Scale.

Treatment Differences (a priori analyses)

A multivariate analysis of covariance (MANCOVA) was applied to scores from the Sport IE Scale and the IE Scale with the pre-test scores of each scale serving as a covariate. The mean plots for each scale are shown on Figures 1 and 2. Within cells regression using the Wilk's Lambda procedure indicated a significant multivariate covariate effect, $F(4, 86) \approx 11.93, p < .001$. Univariate follow-up tests indicated that the post-test scores of the Sport IE Scale, $F(2, 44) = 18.98, p < .001$, and the IE Scale, $F(2, 44) = 21.66, p < .001$, were significantly associated with their pre-test scores, resulting in an adjustment of post-test means. Unadjusted and adjusted means for each experimental condition on each locus of control scale are shown on Table 3. Analysis revealed no significant multivariate effect, $F(2, 43) = 0.83, p = .44$, indicating that the scores of the two groups, adjusted for pre-test scores, were not significantly different from each other.

Table 2.

Summary of effect sizes on the Sport IE Scale and the IE Scale by group and group x gender.

SCALE	SOURCE	EFFECT SIZE	
		Treatment	Control
Sport IE Scale	Total Sample	-.33	-.09
	Females	-.62	.15
	Males	-.09	-.26
IE Scale	Total Sample	-.42	-.19
	Females	-.20	-.22
	Males	-.77	-.16

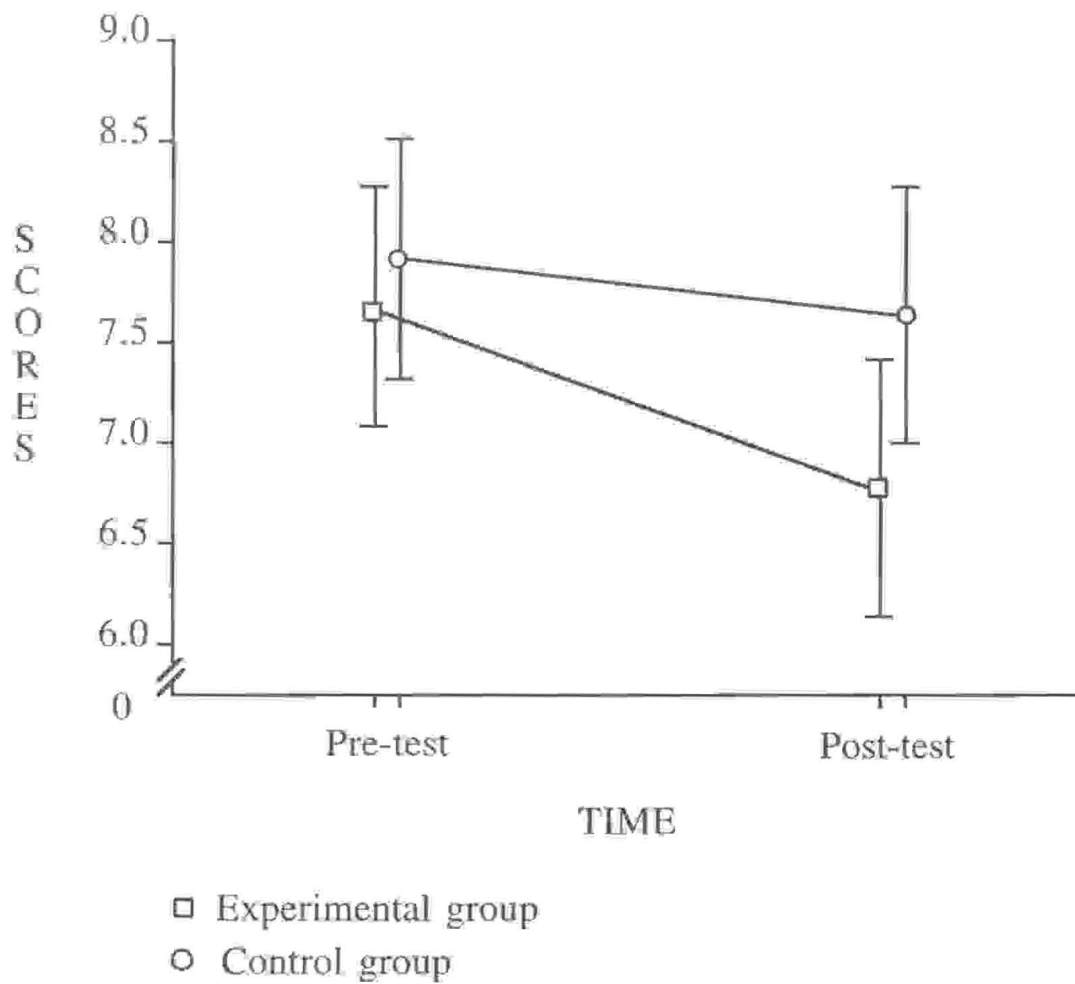


Figure 1.

Mean plot and standard error of the means on pre-test and post-test Sport IE Scale scores.

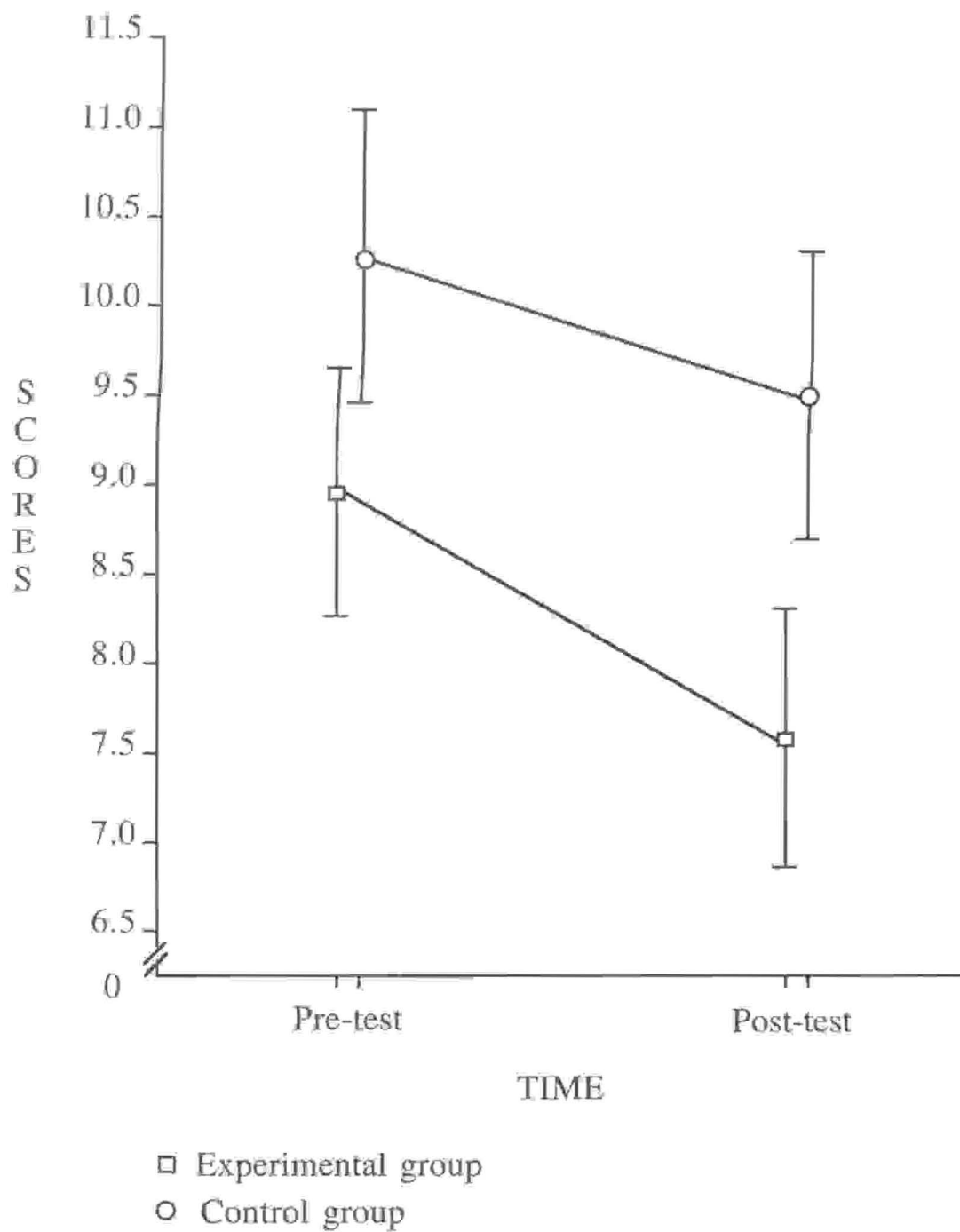


Figure 2.

Mean plot and standard error of the means on pre-test and post-test IE Scale scores.

Table 3.

Unadjusted and adjusted post-test means of the Sport IE and IE scales using pre-test scores as the covariate.

VARIABLE	GROUP	Unadjusted M	Adjusted M
Sport IE Scale	Treatment	6.77	7.06
	Control	7.65	7.37
IE Scale	Treatment	7.59	8.01
	Control	9.50	9.08

Descriptive Results: Personal Control Item Scores

The means and standard deviations of pre-test and post-test personal control item (PCI) scores are reported on Table 4. Independent t-tests between the groups on pre-test PCI means revealed no significant differences, Sport IE unequal $t(42.86)=0.84$, $p>.05$, IE unequal $t(44.37)=1.13$, $p>.05$.

Effect sizes for PCI scores were also calculated. A summary of effect sizes by group and by group x gender on each locus of control scale are given on Table 5. On Sport IE Scale PCI scores, the effect size of the treatment group is larger than that of the control group. When separated by gender, both males and females in the treatment group demonstrate effect sizes that are larger than those of the control group indicating that the intervention may have had a small effect on PCI scores. On the IE Scale PCI scores, the effect sizes of groups are similar and small in magnitude. When these effects are separated by gender, the effect sizes, with the exception of females in the control group, are minimal.

Treatment Differences on PCI Scores (post-hoc analyses)

A MANCOVA was also applied to the PCI scores of the Sport IE Scale and the IE Scale with the pre-test scores of each scale serving as the covariate. The mean plots for each scale are shown on Figures 3 and 4. The multivariate within cells regression using the Wilk's Lambda procedure indicated that the covariate was significant, $F(4, 86) 18.31$, $p<.001$. Univariate analysis revealed that the pre-test and post-test PCI scores of the Sport IE Scale, $F(2, 44)=14.76$, $p<.001$, and the IE Scale, $F(2, 44)=46.18$, $p<.001$, were significantly related, resulting in an

Table 4.

Means and standard deviations for pre-test and post-test PCI scores on the Sport IE Scale and the IE Scale.

VARIABLE	GROUP	<u>Pre-test</u>		<u>Post-test</u>	
		M	SD	M	SD
Sport IE Scale	Treatment ^a	2.64	2.06	1.82	1.76
	Control ^b	3.12	1.86	2.96	2.24
IE Scale	Treatment	2.32	2.10	2.05	1.56
	Control	3.00	2.06	2.69	2.21

^an=22

^bn=26

Table 5.

Summary of effect sizes on Sport IE Scale PCI scores and IE Scale PCI scores by group and group x gender.

SCALE	SOURCE	EFFECT SIZE	
		Treatment	Control
Sport IE Scale	Total Sample	-.40	-.09
	Females	-.54	.05
	Males	-.34	-.16
IE Scale	Total Sample	-.13	-.15
	Females	-.04	-.57
	Males	-.22	.17

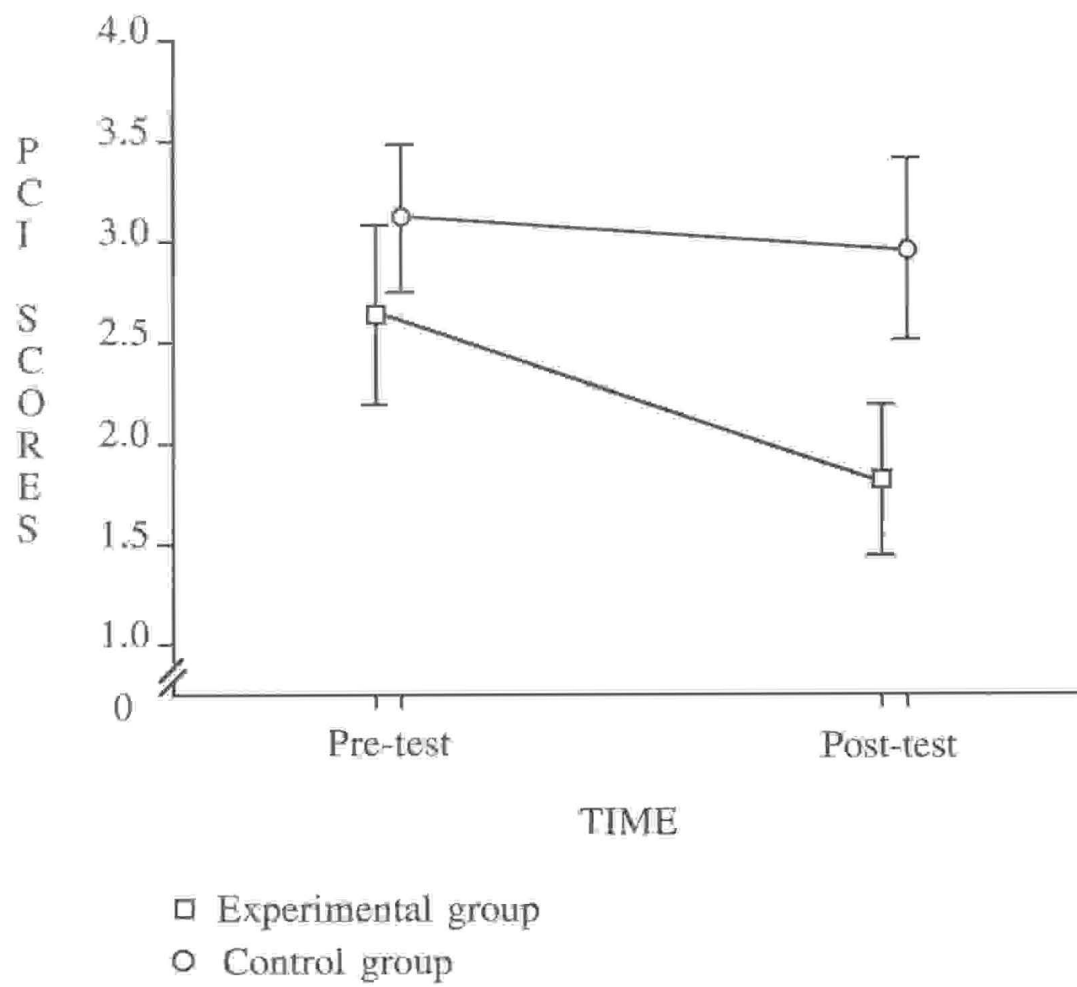


Figure 3.

Mean plot and standard error of the means on pre-test and post-test Sport IE Scale PCI scores.

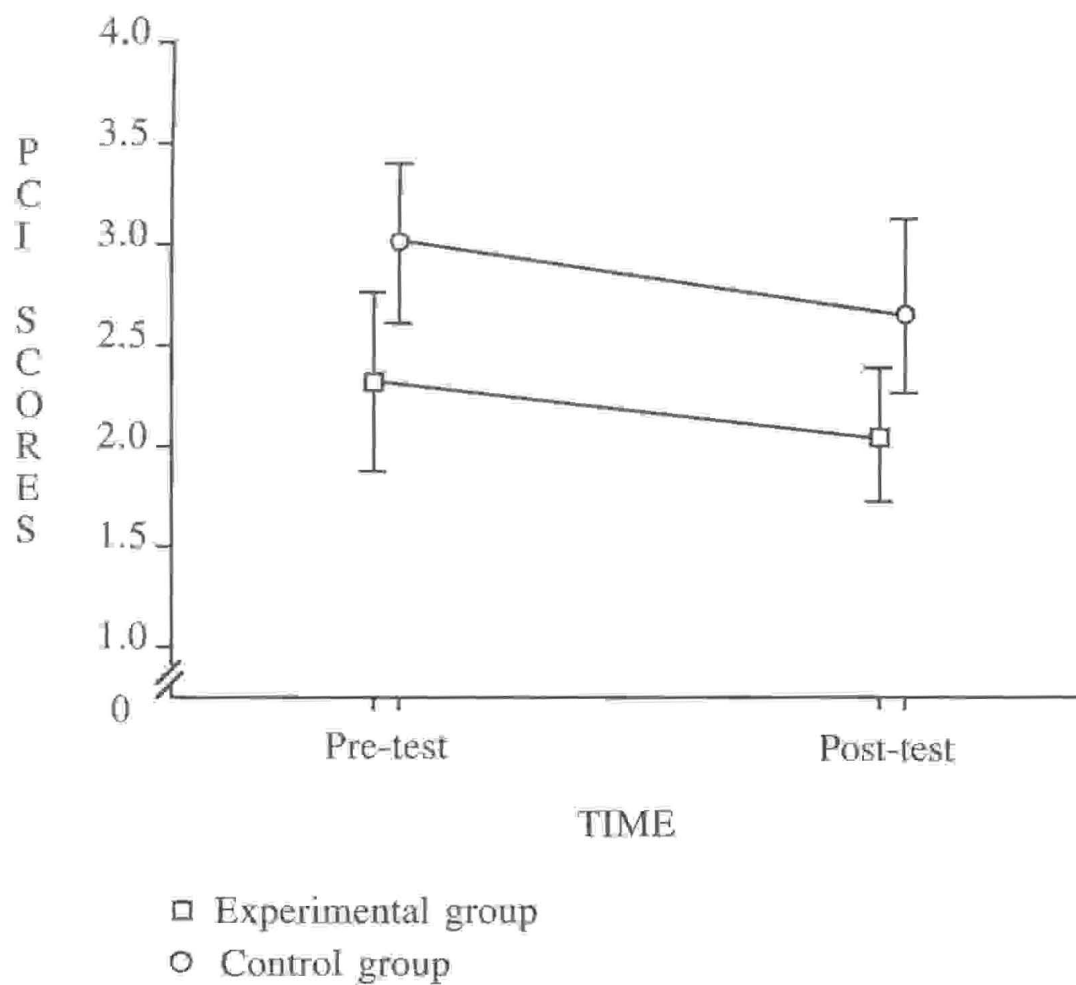


Figure 4,

Mean plot and standard error of the means on pre-test and post-test IE Scale PCI scores.

adjustment of post-test PCI means. Unadjusted and adjusted PCI means for each experimental condition on each locus of control scale are shown on Table 6. Analysis revealed no significant multivariate effect, $F(2, 43)=1.59, p=.22$. The results indicate that the PCI scores of the two groups, adjusted for pre-test scores, were not significantly different from each other.

Comparison of Sport IE Scale scores with Stauss (1975)

Independent t-tests were used to compare the total and PCI scores reported by Stauss (1975) with those obtained in the present administration prior to experimental manipulation. Since the sample population of Stauss was made up entirely of females, a second comparison was made using the scores of females only. Means and standard deviations are reported on Table 7. A comparison of the total scores between the two samples revealed a significant difference, $t=2.05, p=.04$. The athletes in Stauss' investigation were found to be significantly more internal than the athletes in the present study. The comparison of female total scores failed to reach significance, $t=1.47, p=.15$. A comparison of the PCI scores revealed no significant difference between the total sample, $t=1.12, p=.27$, or between females, $t=1.19, p=.24$, although the PCI means of athletes in the present study were lower than those reported by Stauss.

Comparison of Scales

Stauss (1975) applied Kendall's rank order coefficient of correlation to scores on the Sport IE and IE scales and reported a value of .55 which was significant at $p<.001$. This procedure was also applied to the pre-test

Table 6.

Unadjusted and adjusted PCI post-test means of the Sport IE Scale and the IE Scale using pre-test scores as the covariate.

VARIABLE	GROUP	Unadjusted M	Adjusted M
Sport IE Scale	Treatment	1.82	2.08
	Control	2.96	2.70
IE Scale	Treatment	2.05	2.25
	Control	2.69	2.49

Table 7.

Means, standard deviations and t-ratios of Sport IE Scale total and PCI scores from Stauss (1975) and Kruisselbrink (1993).

SAMPLE	SOURCE	M	SD	t	p
All	1975 ^a	6.77	2.78		
	1993 ^b	7.81	2.90	2.05	.043*
Females	1975	6.77	2.78		
	1993 ^c	7.70	2.70	1.47	.150
All PCI Scores	1975	3.27	1.69		
	1993	2.90	1.95	1.12	.267
Females PCI Scores	1975	3.27	1.69		
	1993	2.83	1.56	1.19	.241

^an=94

^bn=48

^cn=23

scores obtained in this investigation. Kendall's Tau was .47 and was significant at $p < .001$.

A multiple regression was also performed, using scores from the IE Scale to predict scores on the Sport IE Scale so that incremental increases on the IE Scale could be compared to the resultant shifts on the Sport IE Scale. The multiple R for the regression equation, $R = .63$, $R^2 = .40$, was significant, $F(1, 46) = 30.16$, $p < .0001$. The regression equation revealed a beta of .48 indicating that a one unit increase on the IE Scale would result in approximately a one half unit increase on the Sport IE Scale.

Gender differences

For interest, a post-hoc analysis by gender was conducted on the scores from the Sport IE Scale and the IE Scale to see if male and female athletes responded differently on either scale. Results are shown on Table 8. Independent t-tests on scores prior to experimental manipulation revealed no significant differences, Sport IE Scale, unequal $t(45.85) = 0.27$, $p = .79$, IE Scale, unequal $t(38.62) = 0.05$, $p = .96$.

Responses to post-test questionnaire

At the post-test, treatment group athletes were asked to rate their response to seven questions in order to provide the author with feedback on the mental skills training program. Answers were to be rated on a five point Likert scale with a value of five indicating a maximum rating. Athletes gave the highest ratings to questions involving the applicability of the mental skills to their sporting situation (4.52), their intention to continue practicing the mental skills (4.52), their willingness to recommend

Table 8.

Means, standard deviations and t-ratios comparing pre-test Sport IE Scale and IE Scale scores by gender.

VARIABLE	GENDER	M	SD	t	p
Sport IE Scale	Females ^a	7.70	2.70	0.27	.791
	Males ^b	7.92	3.12		
IE Scale	Females	9.70	4.50	0.05	.961
	Males	9.64	3.09		

^an=23

^bn=25

mental skills training to others (4.45), and their perceptions regarding the usefulness of the information (4.43). Although the athletes found the program useful, applicable, and intended to continue practicing and using the mental skills, the benefits that they perceived as a result of participating in the program was given a lower rating (4.26). Perhaps the performance benefits that they had anticipated as a result of developing mental skills either fell below their expectations or had not yet become fully noticeable. The lowest relative rating (4.17) reflected their perceptions about the presentation of the information. Apparently, the athletes would have liked the training sessions to contain less theoretical information and more practical applications.

In terms of the amount of time the athletes spent practicing the mental skills, three athletes reported practicing less than the criterion of thirty minutes per week. Self reported time-per-week spent practicing ranged from ten minutes to four hours ($M=73.3$, $SD=57.8$). Most athletes reported spending between thirty minutes and two hours and after excluding extreme outliers ($n=3 > \text{two hours/week}$), the mean amount of time spent practicing the mental skills dropped to 57.1 minutes per week.

CHAPTER V

DISCUSSION

As outlined in Chapter II, applied sport psychology consultants have emphasized the importance of developing mental skills to enhance and optimize performance (Rushall, 1989), although evidence seems to indicate that the relationship between mental practice and enhanced performance may not be direct (Feltz & Landers, 1983). This raises the question of why mental skills training enhances the performance of some athletes and not others and suggests that there may be factors that moderate the effects of mental practice on performance. One of the possible moderators identified in the literature has been locus of control, which has been described as the generalized and situation-specific beliefs about the location of the source most responsible for reinforcement (Rotter, 1966). The primary purpose of this investigation was to observe the effects of a mental skills training package consisting of imagery rehearsal, relaxation, and self-talk on the sport specific and generalized locus of control beliefs of university level athletes. Secondary considerations included a comparison of the present Sport IE Scale scores with those reported by Stauss (1975) and a comparison of scores between the sport specific and general locus of control scales. The results will be discussed in relation to the research questions outlined in Chapter II.

Changes in locus of control

In the first research question I asked whether a mental skills intervention package consisting of imagery rehearsal, relaxation, and self-

talk could shift an athlete's sport locus of control and general locus of control towards a more internal orientation. The results showed no significant change towards internality for the treatment group on either of the locus of control scales. A number of factors may have influenced the failure to accept the alternate hypothesis.

The sample from which the data was collected was not a heterogeneous sample. Because the sample consisted of university level athletes, it seems reasonable to assume that many of them may have already harbored an internal locus of control. Selection to compete at this level of play may require the athlete to believe that, to some extent, they are capable of controlling the behaviors deemed to be necessary for successful performance. Indeed, the mean locus of control score for the entire sample on the Sport IE Scale pre-test indicated that the athletes were more internally than externally oriented ($M=7.81$, $SD=2.90$. The scale is scored towards externality with possible scores ranging from zero to twenty-three). To increase the likelihood of reporting a significant mental skills training effect, it may have been beneficial to assign only those athletes with an external-greater-than-internal locus of control to the treatment group.

For treatment group athletes, the acquisition phase of the mental skills training program may not have been long enough for them to acquire a full and complete grasp of the concepts. The program was designed to maximize external validity and practicality, therefore the goal for each session was to provide the athletes with all the relevant information while minimizing the intrusion on their time. This concern for intrusion may have been accomplished at the expense of internal validity. To facilitate the

likelihood of observing a significant mental skills training effect in future experimental studies, it is recommended that the acquisition phase be lengthened in order to present the information more slowly and thoroughly. In addition, the experimental period itself may not have been sufficiently long enough for the full impact of mental skills training to take effect. Most anecdotal reports of the efficacy of mental skills training are based on performance observations over an entire athletic season (Hughes, 1990; Gauron, 1982; Meyers & Schleser, 1980). However, Straub (1989) and Weinberg, Seabourne, and Jackson (1981) have found significant mental skills training effects using six week experimental periods.

Finally, no attempt was made to control the amount of time athletes spent practicing imagery rehearsal, relaxation and self-talk. Self-reports of the amount of time spent practicing mental skills indicated a substantial diversity across individuals, with times ranging from ten minutes per week to four hours per week. To alleviate this problem in future experimental studies, it is recommended that either future researchers provide the athletes with strict guidelines regarding amount of time they are to spend practicing mental skills or that the experimental design be altered to account for individual differences in the amount of time spent practicing.

In spite of these limitations, observations of the effect size descriptions of the data indicated that the scores of treatment group athletes shifted marginally towards internality. A comparison of effect sizes between groups showed an identifiable effect for the treatment group, suggesting that the intervention may have an effect on the locus of control orientations of treatment group subjects. Considering the homogeneity of the subjects, these indications were promising.

On the Sport IE Scale, this effect appeared to be most pronounced for the subset of PCI scores. These statements reflect whether the athlete believes that their success in sport is contingent on their effort and hard work or on luck and chance. The treatment group shifted their PCI orientation towards internality nearly one half of a standard deviation from pre-test to post-test while there was almost no shift in the control group. In other words, after mental skills training, treatment group athletes tended to believe more strongly that their success in sport was contingent on their own behaviors. Because the magnitude for potential improvement decreases at more elite levels (Rushall, 1989), in practical terms, this change may be important. For example, individuals who believe that reinforcements are determined by internal factors persist longer than those who believe that reinforcements are determined by factors beyond their control (Lefcourt, 1982). For the athletes in the treatment group, the slight increase in their personal control beliefs may help them to become more persistent in their efforts to perform successfully.

In terms of the generalized locus of control measure, Foulds (1971), Foulds, Guinan, & Warehime (1974), and Foulds & Hannigan (1976) have shown that interventions designed to provide individuals with coping strategies significantly shifted their locus of control towards internality. Smith (1989), on the other hand, found no significant differences between pre-test and post-test measures of generalized locus of control following coping skills training. The results of this study support those of Smith (1989) as the mental skills training in this study appeared to have had little effect on the generalized locus of control of the athletes. This finding is not surprising. Rotter (1966) indicated that expectancies generalize from a

specific situation to situations which are perceived as related or similar. Because the shift in the sport specific situation was slight and non significant, it would not likely to generalize to situations outside of sport. Indeed, Bradley and Gaa (1977) reported that locus of control beliefs for one situation can be modified without affecting the control beliefs for other situations.

Comparison of Sport IE Scale scores with Stauss (1975)

The second research question asked whether the Sport IE Scale scores obtained in this study compared to those reported by Stauss (1975). The results showed that the present scores were significantly more external than those reported by Stauss although no significant difference was found on the scores of the PCI subset. In fact, trends in the PCI data showed that the present sample were more internal, suggesting that they possessed a slightly greater belief that success was contingent on personal effort and hard work rather than luck and chance.

The difference between the samples on total scale scores appears to have emerged from non-PCI statements. These statements deal with the amount of control athletes believe they have in their relations with others. The statements reflect perceptions that athletes are capable of influencing others, such as coaches, peers or those involved in the organizational structure of their sport. Comparing the samples on PCI and total scale scores it would appear that present day athletes perceived themselves as less able to influence other people and slightly more able to achieve success (reward) through hard work and ability.

A second possible interpretation for the higher externality was suggested by Cellini and Kantorowski (1982) who found a change in the generalized locus of control orientations of college students over time. They compared their IE Scale scores with those reported by Rotter (1966) and found that locus of control orientations had become more external. They justified their finding by explaining that the world that was continually changing and becoming more complex. This complexity may be a factor in the university athletic environment today.

Comparison of Scales

Stauss (1975) reported that the locus of control orientations of athletes were more internal in sport versus generalized situations. In the third research question I asked whether a similar finding would emerge from this investigation. Results of the regression analysis supported the finding of Stauss. The regression equation revealed that a one unit increase on the IE Scale translated into approximately a one half unit increase on the Sport IE Scale. That is, as scores on the IE Scale approached higher values, corresponding scores on the Sport IE Scale scores were lower in value. Indeed, a comparison of scale means showed that means for the Sport IE Scale were lower than means for the IE Scale.

Gender comparisons

No significant gender difference emerged from the pre-test scores on either locus of control scale. This finding supports those of Adame, Johnson, and Cole (1989), Guilliland (1974), Lee (1977), Persson (1987) and Valliant, Simpson-Housley, and McKelvie (1981) and suggests that the

perceived locus of control of male and female athletes do not differ. In contrast, both Rotter (1966) and Cellini and Kantorowski (1982) reported finding significant gender differences on the IE Scale in university students, with females scoring in the more external direction. It would appear that the nature of reinforcements in sport and the characteristics of athletes are such that these differences disappear.

The mental skills training program

An analysis of the feedback from the athlete's weekly logsheets indicated that they enjoyed participating in the training program, found that they could apply the psychological strategies to their sporting situation and realized that a great deal of practice was required to become skilled. Most athletes reported practicing imagery, relaxation, and self-talk from half an hour to two hours per week, indicating that they felt the development of these mental skills could contribute to their performance success. Indeed, all of the athletes reported that they would continue to practice imagery, relaxation, and self-talk.

The lowest rating on the post-test questionnaire was given to the item that asked if the athletes thought the information in the training sessions was presented practically enough. It appears that presenting theoretical evidence to validate the importance and usefulness of each mental skill is of less concern to athletes than presenting the information practically. This is useful information for sport psychology practitioners. When presenting mental skills to athletes, minimize theory and maximize practical applications.

Conclusions and Recommendations

The results of this study indicate that mental skills training may have contributed to a slight shift towards internality in the sport specific personal control beliefs of university level athletes although statistically, the shift was not significant. Even though the effect was small, it is recommended that coaches and sport psychology practitioners continue to encourage athletes to develop the skills of imagery, relaxation and self-talk to enhance their feelings of control although not at the exclusion of other strategies. It is also recommended that mental skills be presented as practically as possible. The athletes seemed to have had less use for theory and more use for information that they could easily apply to their sporting situation.

Awareness is considered to be one of the keys to successful performance (Ravizza, 1986; Butler, Smith, & Irwin, 1993). Knowledge of athletes' locus of control perceptions may help the coach or sport psychology practitioner develop strategies (psychological or physical) that fulfill the needs of the athletes and foster successful performance. Horsley (1989) maintained that the Sport IE Scale is useful for this purpose because it can help coaches to become aware of and monitor changes in their athlete's perceptions of sources responsible for successful performance. From this study, it appears that those statements on the Sport IE Scale pertaining to personal control are most relevant for athletes. Thus, it is recommended that coaches and practitioners use the Sport IE Scale PCI subset to help them gain a greater understanding of the expectancies that their athletes hold regarding the relationship between their behaviors and

successful performance. Administering a short form of the scale may be an efficient way to provide both the coach and athlete with sufficient information about the location of the source athletes believe to be responsible for successful performance in athletic competition. Future researchers may also wish to test whether a modified Sport IE Scale containing only personal control items can discriminate more successful athletes from less successful ones.

There is still much to learn about the nature of the mental practice-enhanced performance relationship. A final recommendation is that future researchers continue to test the effects of mental practice on other possible moderators of performance, such as anxiety, self-efficacy, self-confidence, belief, attitude, satisfaction, so that the process by which mental practice affects performance can be more clearly understood.

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APPENDIX A
Definitions of Terms

Definitions of Terms

Social learning theory: a theory of human behavior postulated by Rotter (1954) which attempts to explain how an individual selects a behavior or pattern of behaviors given the variety of potential behaviors available to them (Phares, 1976).

Reinforcement: an object, event, or situation that influences behavior in an observable way (Rotter, 1954).

Locus of control: an individual's belief about the location of the source most responsible for securing desired reinforcements (Lefcourt, 1982).

Sport performance: the ability to integrate and exhibit the physical, technical, strategical, and psychological demands of a particular sport or activity (Kubistant, 1986).

Mental practice: the symbolic rehearsal of a particular activity or action in the absence of gross physical movement (Richardson, 1967).

Imagery rehearsal: using all the senses to create or recreate an experience in the mind (Vealey, 1986).

Relaxation: the release of excess muscular tension in one's body (Harris, 1986).

Self-talk: one's thoughts and self-statements (Bunker & Williams, 1986).

APPENDIX B
Informed Consent Form

University of Victoria
P.O. Box 1700, Victoria, B.C.

INFORMED CONSENT

For participation in the research project of Leroy Kruisselbrink investigating the effects of a mental skills training program on performance confidence,

I, _____ (please print), understand that my participation as a subject in this research project is entirely voluntary. No coercion of any kind has been used to obtain my cooperation.

I understand that I may withdraw my consent and terminate my participation at any time during the study.

I understand that all results will remain completely confidential, and that all data referring to me by name will be destroyed.

Varsity Athletic Program _____

Date _____

Signature _____

Phone number where you can be reached _____

APPENDIX C
Test Booklet

LEROY'S LITTLE BOOKLET OF TESTS

The following are questionnaires and surveys designed to provide an insight into the behavior patterns, preferences and spatial abilities of different people. In tests A, B, and C please select the one statement or choice which you more strongly *believe* to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose, or the one you would like to be true. These are measures of personal belief or preference; obviously there are no right or wrong answers.

In some instances during tests A, B, and C you may discover that you prefer more than one statement or neither one. In such cases, be sure to select the one you *more strongly believe* to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

Test D is a test of 3-D spatial rotation. Each of the 10 items contain four drawings. Two drawings represent one arrangement of blocks and two drawings represent a similar but slightly different arrangement of blocks. Each drawing shows the arrangement of blocks from a different angle. You are to identify the two drawings that, when rotated, correctly represent the arrangement of blocks in the criterion drawing.

Answer each question carefully but do not spend too much time on any one question. Be sure to mark an answer on the answer sheet for *every* question.

PLEASE DO NOT WRITE IN THE TEST BOOKLET

TEST A

Select the alternative that you *personally believe to be more true*.

I more strongly believe that:

1. a. I like the self-discipline associated with training because of the type of person I am.
 b. I endure the discipline of training because it is part of the sport scene.
2. a. Many of the misfortunes and/or poor performances that occur during competition are due partly to bad luck.
 b. Misfortunes and/or poor performances that occur during competition result from mistakes that have been made.
3. a. One of the major reasons why we have disagreements in sports is because athletes and coaches do not take enough interest in officiating.
 b. There always will be disagreements in sports no matter how hard one tries to prevent them.
4. a. Each athlete gets the respect he/she deserves in the long run.
 b. Unfortunately, an athlete's worth often passes unrecognized no matter how hard he/she tries.
- 5.* a. The idea that the coaches are unfair to athletes is nonsense.
 b. Most athletes do not realize the extent to which their performance is influenced by accidental happenings.
- 6.* a. Without the right breaks one cannot be an effective leader in this sport.
 b. Capable athletes who fail to become leaders in this sport have not taken advantage of their opportunities.
7. a. No matter how hard you try, some fellow athletes just do not like you.
 b. Fellow athletes who cannot get others to like them do not understand how to get along with others.
8. a. I strive to be the best because of the things I believe in and because of me.
 b. I strive to be the best because competitive sport makes me that way.
- 9.* a. I have often found that what is going to happen in a contest will happen.
 b. Trusting to fate has never turned out as well for me in a contest as making a decision to take a definite course of action.
10. a. I am aware of and responsive to my own demands to give more when needed.
 b. Often I am not aware of how much is demanded of me by the sport situation.
- 11.* a. Becoming a successful athlete is a matter of hard work; luck has little or nothing to do with it.
 b. Becoming a successful athlete mainly depends on being in the right place at the right time.

12. a. The average athlete can have an influence on the coach's strategy during a contest.
b. There is not much the average athlete can do to influence the coach's strategy during a contest.
- 13.* a. When I make plans in my sport I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead in my sport because many things turn out to be a matter of good or bad fortune.
14. a. There are certain athletes who are just no good.
b. There are some good qualities in every athlete.
- 15.* a. In my case, getting to compete has little or nothing to do with luck.
b. Many times we might as well decide who is going to compete by flipping a coin.
- 16.* a. Who gets to be captain often depends on who was lucky enough to be in the right place first.
b. Being a good captain depends upon ability; luck has little or nothing to do with it.
17. a. As far as governance in this sport is concerned, most athletes are victims of forces they can neither control nor understand.
b. By taking an active part in all aspects of this sport, athletes can control its governance.
- 18.* a. Most people do not realize the extent to which the competitive situation is controlled by accidental happenings.
b. There is really no such thing as luck during the competitive situation.
19. a. To cope with my anxieties is hard on me.
b. Involvement in practice or play is most effective in coping with my anxieties.
20. a. It is hard to know whether or not fellow athletes really like you.
b. How many friends you have among fellow athletes depends on how nice a person you are.
21. a. In the long run, the bad things that happen to us in competitions are balanced by good ones.
b. Most misfortunes that occur in competitions are the result of lack of ability, ignorance, laziness, or all three.
22. a. With enough effort athletes can lessen corruption in sports.
b. It is difficult for athletes to lessen corruption in sports.
- 23.* a. Sometimes I cannot understand how the coach arrives at who gets to compete or play.
b. There is a direct connection between how hard I practice and whether or not I get to compete or play.

24. a. I am able to control my own nervousness in competitions.
b. Once a competition gets under way, I am too involved to even be aware of my own nervousness.
- 25.* a. Many times I feel that I have little influence over the things that happen to me during a competition.
b. It is impossible for me to believe that chance or luck plays an important role during a competition.
26. a. Some athletes are lonely because they do not try to be friendly.
b. There is not much use in trying too hard to please athletes; if they like you, they like you.
27. a. Time is a factor that is very much with me in competitions.
b. In the closing moments of a competition, time often becomes another element to be conquered.
- 28.* a. What happens to me as an athlete is my own doing.
b. Sometimes I feel that I do not have enough control over the direction I am going as an athlete.
29. a. Most of the time I cannot understand why leaders in sport make some of the decisions they do.
b. In the long run, athletes and coaches are responsible for the leadership in sports on a national as well as local level.
30. a. I tend to think of myself as being able to control all situations in which I am involved before an important competition.
b. Just before an important competition, I think of the "chance things" that might happen that I cannot control.
31. a. I do not think about losing very often.
b. The idea of losing hangs over me all the time.

*denotes Personal Control Items

TEST B

Respond to the next 40 statements using the alternatives provided by the following key:

- a) strongly agree
- b) moderately agree
- c) neither agree nor disagree
- d) moderately disagree
- e) strongly disagree

1. Designs or patterns should be bold and exciting.
2. I feel best when I am safe and secure.
3. I would like the job of a foreign correspondent for a newspaper.

4. I don't pay much attention to my surroundings.
5. I don't like the feeling of wind in my hair.
6. I prefer an unpredictable life that is full of change to a more routine one.
7. I wouldn't like to try the new group therapy techniques involving strange body sensations.
8. Sometimes I really stir up excitement.
9. I never notice textures.
10. I like surprises.
11. My ideal home would be peaceful and quiet.
12. I eat the same kind of food most of the time.
13. As a child I often imagined leaving home, just to explore the world.
14. I don't like to have lots of activity around me.
15. I am interested only in what I need to know.
16. I like meeting people who give me new ideas.
17. I would be content to live in the same town for the rest of my life.
18. I like continually changing activities.
19. I like a job that offers change, variety and travel, even if it involves some danger.
20. I avoid busy, noisy places.
21. I like to look at pictures which are puzzling in some way.
22. I wouldn't enjoy dangerous sports such as mountain climbing, airplane flying, or sky diving.
23. I like to experience novelty and change in my daily routine.
24. Shops with thousands of exotic herbs and fragrances fascinate me.
25. I much prefer familiar people and places.
26. When things get boring, I like to find some new and unfamiliar experience.
27. I like to touch and feel a sculpture.
28. I don't enjoy doing daring, foolhardy things just for fun.

29. I prefer a routine way of life to an unpredictable one full of change.
30. I like to go somewhere different nearly every day.
31. I seldom change the decor and furniture arrangement at my place.
32. People view me as a quite unpredictable person.
33. I like to run through heaps of fallen leaves.
34. I sometimes like to do things that are a little frightening.
35. I prefer friends who are reliable and predictable to those who are excitingly unpredictable.
36. I am interested in new and varied interpretations of different art forms.
37. I seldom change the pictures on my walls.
38. I am not interested in poetry.
39. It's unpleasant seeing people in strange, weird clothes.
40. I am continually seeking new ideas and experiences.

TEST C

Select the alternative that you *personally believe to be more true*.

I more strongly believe that:

1.
 - a. Children get into trouble because their parents punish them too much.
 - b. The trouble with most children nowadays is that their parents are too easy with them.
2.
 - a. Many of the unhappy things in people's lives are partly due to bad luck.
 - b. People's misfortunes result from the mistakes they make.
3.
 - a. One of the major reasons why we have wars is because people don't take enough interest in politics.
 - b. There always will be wars, no matter how hard people try to prevent them.
4.
 - a. In the long run people get the respect they deserve in this world.
 - b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he/she tries.
- 5.*
 - a. The idea that the teachers are unfair to students is nonsense.
 - b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

- 6.* a. Without the right breaks one cannot be an effective leader.
b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
b. It is one's experiences in life which determine what they're like.
- 9.* a. I have often found that what is going to happen will happen.
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
- 11.* a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
b. This world is run by the few people in power, and there is not much the little guy can do about it.
- 13.* a. When I make plans, I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. a. There are certain people who are just no good.
b. There is some good in everybody.
- 15.* a. In my case getting what I want has little or nothing to do with luck.
b. Many times we might just as well decide what to do by flipping a coin.
- 16.* a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are victims of forces we can neither understand, nor control.
b. By taking an active part in political and social affairs the people can control world events.

- 18.* a. Most people can't realize the extent to which their lives are controlled by accidental happenings.
b. There is really no such thing as "luck".
19. a. One should always be willing to admit his/her mistakes.
b. It is usually best to cover up one's mistakes.
20. a. It is hard to know whether or not a person really likes you.
b. How many friends you have depends on how nice a person you are.
21. a. In the long run the bad things that happen to us are balanced by the good ones.
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. a. With enough effort we can wipe out political corruption.
b. It is difficult for people to have much control over the things politicians do in office.
- 23.* a. Sometimes I can't understand how teachers arrive at the grades they give.
b. There is a direct connection between how hard I study and the grades I get.
24. a. A good leader expects people to decide for themselves what they should do.
b. A good leader makes it clear to everybody what their jobs are.
- 25.* a. Many times I feel that I have little influence over the things that happen to me.
b. It is impossible for me to believe that chance or luck plays an important role in my life.
26. a. People are lonely because they don't try to be friendly.
b. There's not much use in trying too hard to please people; if they like you, they like you.
27. a. There is too much emphasis on athletics in high school.
b. Team sports are an excellent way to build character.
- 28.* a. What happens to me is my own doing.
b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29. a. Most of the time I can't understand why politicians behave the way they do.
b. In the long run the people are responsible for bad government on a national as well as on a local level.

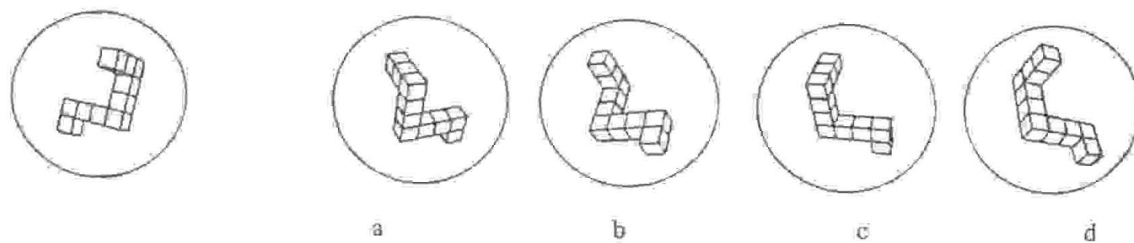
*denotes Personal Control Items

TEST D

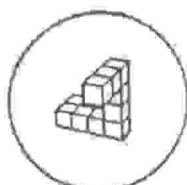
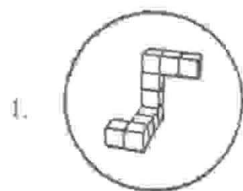
Instructions

Note that these are all pictures of the same object which is shown from different angles. Try to imagine moving the object (or yourself with respect to the object), as you look from one drawing to the next.

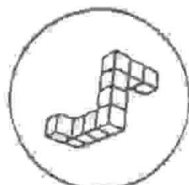
Now look at this object: Two of these four drawings show the same object.



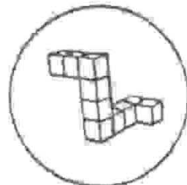
Two of the four rotated drawings *are always* of the object shown on the left. Find the two rotated drawings that correspond to the object on the left hand side of the page. Mark your answer on the answer sheet. There are 10 items so the maximum possible score is 20.



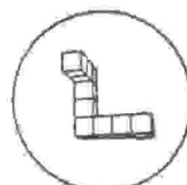
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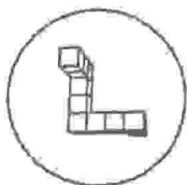
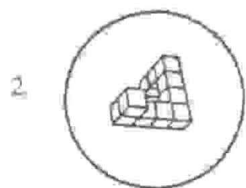
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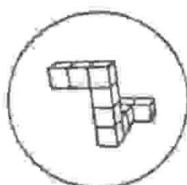
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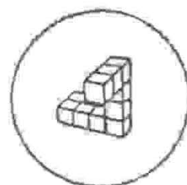
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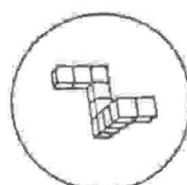
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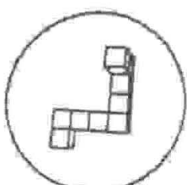
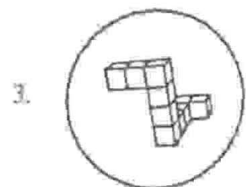
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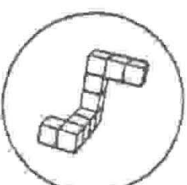
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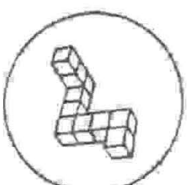
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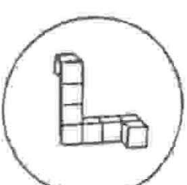
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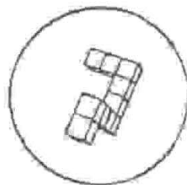
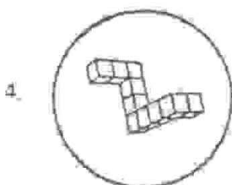
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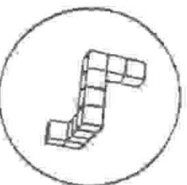
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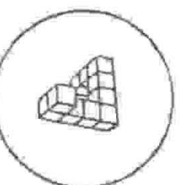
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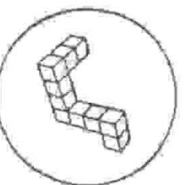
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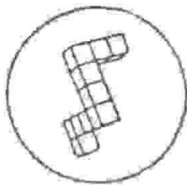
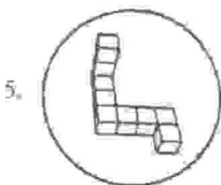
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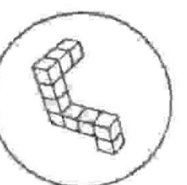
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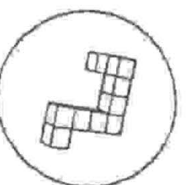
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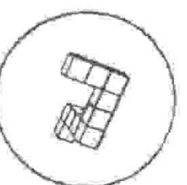
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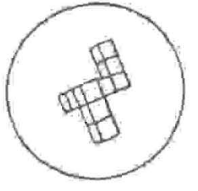
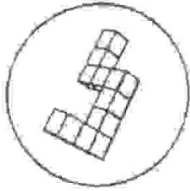
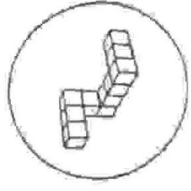
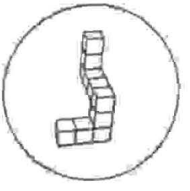
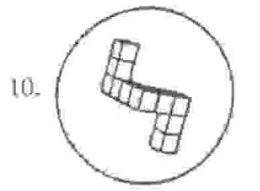
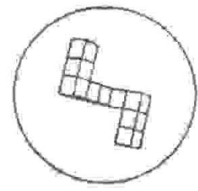
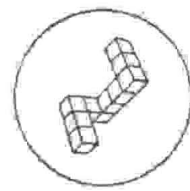
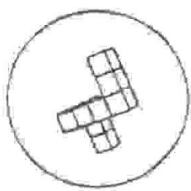
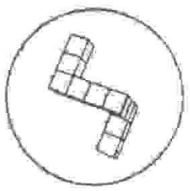
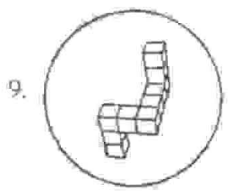
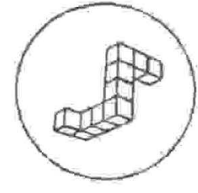
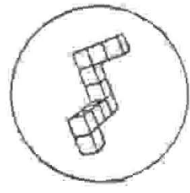
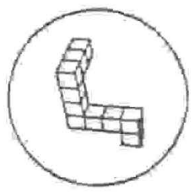
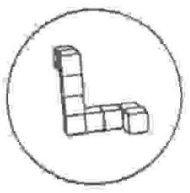
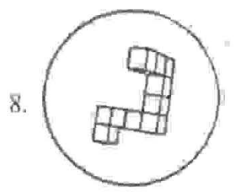
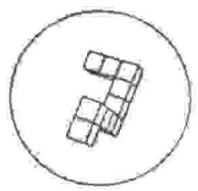
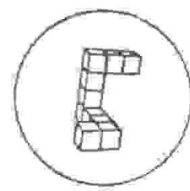
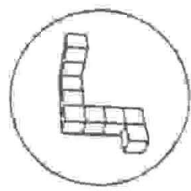
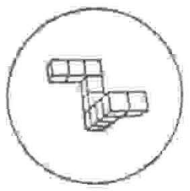
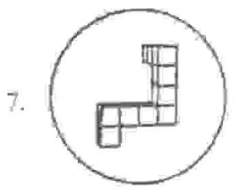
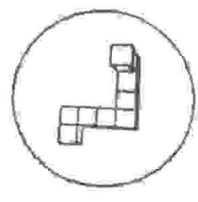
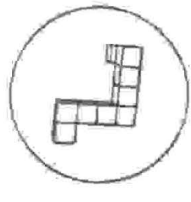
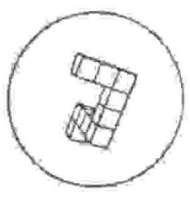
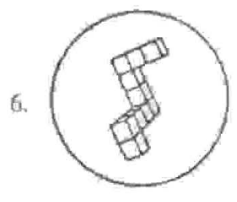
b



c



d



 First name

 Last name

 Birthdate:
 YY MM DD

To ensure confidentiality, after the tests have been scored this portion will be detached and destroyed

 Sex: Male
 Female
 (Check one)

 Age:

 ID#:

 Please leave blank
Internal use only

TEST A

1. a b
2. a b
3. a b
4. a b
5. a b
6. a b
7. a b
8. a b
9. a b
10. a b
11. a b
12. a b
13. a b
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15. a b
16. a b
17. a b
18. a b
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20. a b
21. a b
22. a b
23. a b
24. a b
25. a b
26. a b
27. a b
28. a b
29. a b
30. a b
31. a b

TEST B

1. a b c d e
2. a b c d e
3. a b c d e
4. a b c d e
5. a b c d e
6. a b c d e
7. a b c d e
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40. a b c d e

TEST C

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2. a b
3. a b
4. a b
5. a b
6. a b
7. a b
8. a b
9. a b
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23. a b
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25. a b
26. a b
27. a b
28. a b
29. a b

TEST D

1. a b c d
2. a b c d
3. a b c d
4. a b c d
5. a b c d
6. a b c d
7. a b c d
8. a b c d
9. a b c d
10. a b c d

APPENDIX D
Self-monitoring Logsheet

MENTAL SKILLS TRAINING LOGSHEET

Date _____

Name _____

Please rate your ability to perform the following mental skills and briefly (and honestly!) acknowledge your successes as well as areas in which you feel you can improve.

Imagery Rehearsal

Brutal					Average						Excellent
0	1	2	3	4	5	6	7	8	9	10	

These are the aspects of imagery that I do very well:

These are the aspects of imagery that I can improve on:

Relaxation

Brutal					Average						Excellent
0	1	2	3	4	5	6	7	8	9	10	

This is what I do very well:

This is what I can improve on to relax more effectively:

Self-Talk

Brutal					Average						Excellent
0	1	2	3	4	5	6	7	8	9	10	

In these situations I use self-talk effectively:

These are the situations in which I can make my self-talk more effective:

Provide a rating of your overall performance in the mental training program for the past week.

Brutal					Average						Excellent
0	1	2	3	4	5	6	7	8	9	10	

General Comments:

APPENDIX E
Coaches Confirmation Letter

Dear Coach,

I am currently a graduate student at UVIC preparing to conduct research to fulfill the requirements for the degree of Master of Arts in Physical Education. I am writing to formally request your assistance in this endeavor.

The purpose of my study is to improve on athlete's ability to feel in control over how they perform. The literature in this area indicates that athletes who feel they have personal control over their performances (internal control) are generally considered to be higher achievers than those who feel that their performances are the result of luck or chance (external control). Another important finding is that these perceptions of control can be positively altered. Based on this evidence, I hypothesize that a mental skills training program combining relaxation, imagery, and self-talk techniques will positively alter the perceptions of control in varsity athletes.

As part of the research process it is necessary to experimentally test this hypothesis. Based on previous research, I have chosen to do this using competitive varsity athletes from a variety of sports. For this reason, I would like the members of your program to participate in this study. Approval for this study has been granted by my thesis committee and by the University committee for the use of Human Subjects.

The part you will play in this investigation is a small but extremely important one. Your assistance in encouraging your team members to participate would assist me immeasurably. I recognize the demanding nature of your schedule and that of your student athletes so I have consciously and purposefully designed this study to minimize the intrusion on your time and energies, as well as that of the athletes who volunteer to participate.

Athletes who agree to participate in this study will be asked to attend an information session at which time the nature of the study will be briefly described. At this time they will also be asked to complete a number of paper and pencil scales. This introductory session will require 30-35 minutes to complete. Prior to the introductory session, all of the participants will be randomly assigned into two groups. Those assigned to receive no training program will be asked to return in the first week of March when they will be administered the paper and pencil tests for a second time. (Special arrangements can be made with these athletes if they

also wish to receive the training program after the data for the study has been collected.) Those selected to receive the training program will be asked to attend four, 45-50 minute training sessions the following week (January 18-21) where they will be introduced to simple and practical techniques of relaxation, imagery, and self-talk. They will be asked to practice these skills ten minutes per day, for a minimum of three days per week. They will also be asked to monitor their perceptions of the program and their progress onto prepared logsheets. I will ask that these logsheets be submitted to me at the beginning of each week - by asking for the sheets at the beginning of each week, it is my hope that they will reflect the perceived effectiveness of the program for the athlete during weekend competitions. The final meeting (early March) will be a retest session during which the athletes will be asked once again to complete the tests that they were administered during the introductory session.

I would like to meet with the athletes for the introductory session during the second week of January and will arrange a time that is convenient for you and your team's practice or meeting schedule. I have enclosed a response form to facilitate your formal written response to this request. Upon receipt of an affirmative response, I will contact you again to arrange for the distribution of letters requesting volunteer athletes and will inform you of the testing schedule. Your prompt reply would be greatly appreciated. Your response can be either left at the Physical Education main office or deposited in my mailbox (K-L) located directly behind the main office.

The completion of this research project depends in part upon your willingness to participate. I am grateful for your initial positive response to my request and would deeply appreciate your continued support and cooperation. Thanking you in advance for your willingness to consider and assist me in fulfilling my academic requirements. Happy holidays!

Sincerely,

Leroy Kruisselbrink

Enc.: response form

Coach

Response to the request of Leroy Kruisselbrink for access to volunteer athletes for participation in the research project entitled "Effects of a mental skills training program on athlete's sport locus of control."

Leroy, I have read your proposal and invite you to request volunteers for your research study from the athletes involved in (athletic team).

signature _____

Comments:

Please provide the following information:

Indicate the number of athletes involved in your program _____

To facilitate the planning of meeting and testing times for this study, please indicate your regularly scheduled weekly meeting and practice times:

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

As a final request, could you also include with your response a competition schedule.

I would like to thank you for your cooperation in this endeavor. Rest assured, it is greatly appreciated.

Leroy

APPENDIX F
Information Letter for Athletes

Dear Athlete:

Participating competitively in varsity athletics at UVIC makes you a talented athlete. You are talented because the level of excellence at which you compete requires that you successfully and consistently demonstrate high levels of skill. Because you possess this talent, I need your help.

As a graduate student at UVIC, I am conducting research in the area of how athlete's perceive their performances. In order to do this, it is necessary to administer a number of measurement instruments and, if you are randomly selected, to participate in a brief training program consisting of practical relaxation, imagery, and self-talk techniques. For this reason, I would like to ask you to be one of those UVIC athletes who will agree to participate in this study.

Being a subject in this investigation is simple. It does not require any special knowledge and no grueling physical tests! There will be two testing sessions of approximately 30-35 minutes, one in January and one in March, in which you will be asked to complete a number of paper and pencil tests. And if you are selected to participate in the training program, very little preparation time will be required of you. Knowing how busy you are, I plan to schedule meeting times that will least interfere with your schedule.

I am hopeful that you will agree to participate as a subject in this study. If you would like to participate, please complete the Informed Consent Form attached to this letter and return it to your coach. I look forward to meeting with you and thank you in advance for your cooperation.

Sincerely,

Leroy Kruisselbrink

Attached: Informed Consent Form

APPENDIX G

"What you see is what you get" (Botterill, 1987) edited version

The "What you see is what you get" (Botterill, 1987) video was edited from a running time of 24 minutes to 9 minutes, 20 seconds and included the following portions:

0:00 - 1:25* Introductory statements:

Jay Triano, Sylvie Bernier, and Trent Yawney.

10:00 - 14:46 Feature segments:

Mark Tewksbury, Swimmer; Sylvie Bernier, Diver; Jay Triano, Basketball player; Trent Yawney, Hockey player; and (5:00 - 5:35) Don MacLaren, Hockey player.

20:00 - 20:23 When the athletes practice imagery.

22:37 - 24:00 Concluding statements:

Cal Botterill, Sport Psychology Consultant; Terry Orlick, Sport Psychology Consultant; Dave King, Coach, Canadian Olympic Hockey Team; Karen Waldo, Member, National Synchronized Swimming Team; Jack Donahue, Coach, Canadian National Basketball Team; Sylvie Bernier, Diver.

*Reported digital times were taken from the tape counter on an Emerson VCR885N Video Cassette Recorder.

APPENDIX H
Day 1 Training Session Script

DAY 1 SCRIPT

I want to start off by talking a little bit about sport psychology in general and the role of sport psychologists, just to de-mystify the area and make it more real for you. A lot of athletes have heard about sport psychology, and that it's important, but when it comes down to it, they don't have a clue what sport psychology is all about or what sport psychologists do. It seems that those of us in sport psychology still have the reputation of being people who sit in little offices with leather couches waiting for athletes to come in and tell us about all their problems. What I want to do now is take a minute to deflate the myths of sport psychology so that you understand how psychology fits in with sport performance.

From all the coaches and athletes I talk to, combined with my own experience, I've come to the conclusion that performance is made up of three or four components, depending what type of sport you're involved in: physical, technical, strategical, and psychological. Let's just take a minute to look at how each of these components affect performance.

The physical component of performance includes all the physical stuff; being fit, strong, healthy. This involves the weight training, training for aerobic and anaerobic fitness...that kind of stuff; all things that have to do with our physique and physical state. Who takes care of this stuff? We call this person a physiologist. We all know that the physical component is important in performance, and when someone mentions the term "physiologist" we all have a pretty good idea of what they do.

Once you're physically capable of performing you need be capable of performing the technical skills of your sport. This includes being able to actually perform the skills which your sport requires. (Examples in

each session were given from the sport[s] in which the majority of the athletes were involved).

You've mastered these two components, so now you're physically and technically capable of performing the skills that are required by your sport. Depending on the sport you participate in, in addition to being able to do the physical and technical things, you may need a strategical component to be able to perform well. This component is needed mostly in team sports. It involves learning, understanding and mastering strategies, set plays and systems so that you perform as a team. These strategies are designed to give you the edge against your opponent. Set plays and strategies are meant to provide you with a systematic way of performing better than your opponent. As a team you have the opportunity to perform better than your opponent if your strategies are good ones and they are executed properly.

I think that every athlete realizes the importance of the technical and strategical components in performance. And what do you call the person responsible for developing these components? This person is given the title "coach". They're not called a sport technologist, or a sport strategist, they're called a coach. So the title of this person is not mysterious either, and almost everyone knows at least something of what a coach does.

So up to this point, most people recognize the importance of the physical, technical and strategical components in performance and they generally know who is responsible for developing these components. Nothing mysterious here, all sounds pretty familiar.

If we could program all three of these components into a machine it would be able to perform exactly the same every time. Are we all agreed

on that? If we programmed it properly, it would execute everything to perfection every time, it would never make a mistake. This is where the psychology fits in.

We are not machines. We are people, living, breathing human beings. Because we have a brain and we can think and feel, and we have good moods and bad moods, we don't perform exactly the same every time. Even though you practice the physical, technical and strategical components of your sport all the time, when it comes time to perform, you don't always perform exactly the same because you're not always in exactly the same psychological state. Our moods, feelings and emotions all contribute to our psychological state. Sometimes you feel good, sometimes you feel bad. The way you feel affects the way you perform because the way you feel alters your psychological state.

I think that people know a lot more about the psychological part of sport than they give themselves credit for. How many times have you heard, "the boys came out flat today", "they didn't play too bad but they had no emotion out there", "we were pumped and came out flying" or "we were doing fine until the last 5 minutes, then we fell apart and choked." These statements all describe the psychological component of performance. You can't put the blame on the physical, technical and strategical components because they haven't changed, the only thing that's changed is the psychological state of the athletes. One time they're ready, another time they're not as ready, and another time they may not be ready at all.

If you could keep your psychological state constant, you'd perform more consistently. Keep in mind that constant doesn't equal good. If you felt terrible before every competition, you'd probably perform consistently

all right, consistently bad. What sport psychology involves is consistently getting yourself into a state of mind that will allow you to be ready to perform the physical, technical and strategical components of performance to your fullest potential. Having said all that, when you think about it now, the psychological component of performance suddenly isn't that mysterious any more at all. It's just getting yourself into a state where you're ready to perform.

And what do you call the person responsible for developing this component? They get a fancy title that really tells you nothing about what they do - sport psychologist. But now at least you know what they do. The role of sport psychologists is to provide you with the skills that will allow you to consistently create a mental state prior to and during a performance in which you can execute the physical, technical, and strategical components of your sport to the best of your ability.

So now that you know what I do and have an idea about the purpose of this program, let's take a look at what we want to accomplish over the next few days. Any time you want to go somewhere you've got to have a plan of how to get there. When you go home from the university tonight you'll have a plan. "I'll take McKenzie to Quadra, turn right, keep going across the bridge..." You have a plan. So what I've done is made a list of objectives that will serve as our plan. This is what we want to accomplish during this program. (Go over the Mental Skills Training Program Objectives. See appendix K).

What I thought I'd do now is show you that Canada's best athletes recognize the importance of the psychological dimension of performance and regularly use psychological skills to help them perform. I've got a

video put out by the Coaching Association of Canada that features a number of our best athletes including swimmer Mark Tewksbury, diver Sylvie Bernier, Jay Triano the Olympic basketball player and Trent Yawney and Don MacLaren from the Olympic Hockey Team. This video is normally 25 minutes long, but I've edited it down to about 9 minutes so that you just get the important stuff. Give a listen to what these athletes have to say. (Run the video. For editing details, see Appendix F).

The first skill that I want to talk about for just a few minutes is relaxation. Of the mental skills, I think that relaxation is one of the more important ones because it's the foundation of the other mental skills. Once you're able to relax you can then shift your focus on to other things, which is why I think it's a very important skill.

What relaxation allows you to do is to be able to identify excess muscle tension and get rid of it by consciously relaxing the muscle. The enemy here is not muscle tension in general, but too much muscle tension. Relaxing the muscle also has a calming effect on the mind. The principle that this is based on is that the body and mind are connected, they operate as one system. So if you're tense somewhere in your body, your mind will be active as well. The opposite is also true, if your mind is racing, that will show up in the form of tension somewhere in your body. Any change in one results in some change in the other. For example, how can you tell if someone is worried? Their forehead is wrinkled and their eyebrows are pushed together. Their mind is over-active and this results in tension in the face. The best example that I can think of is when I go to the dentist. I'm not too bad until he takes out that drill, then I freak. I know that about myself so after I took a sport psychology class and learned about relaxation

and practiced it, I thought I'd use it on my next visit to the dentist. After he took out the drill, I did a quick check of my body only to realize that my legs were tightened right up, my stomach was in knots, and my arms were as stiff as a board. The drill had caused so much anxiety in my mind that my body became almost paralyzed! So I relaxed all the muscles and found that, indeed, I did become more calm. Of course the next time he started up the drill I had to do the whole process over again, but the fact remains that when I relaxed my body, my mind became calmer as well.

If you're like me I'm always skeptical of theories like this unless I know how it works. I'm not making this up, so how does this work? Muscle contractions occur on command. The nerves connected to a muscle transmit impulses telling it to contract. These impulses are sent either by a conscious command, like "biceps contract", or as part of an automatic motor program. When you walk the muscles in your legs are alternately contracting allowing you to walk, but this is done all automatically, you don't have to think about it at all.

When your muscles are too tense, they are in a state of contraction. This contraction involves nerves as well. This tension interferes with performance because many of the nerves needed for coordinated movement messages are already being used and even if most of the message does get through, the muscle can't respond as effectively because it's already in a state of contraction. The purpose of relaxation is to allow you to release excess muscular tension so that your muscles are in a ready state, and the nerves are freed up so the commands can get through loud and clear.

Now hearing this in principle is all fine and good but I thought it would be useful to demonstrate this principle to make it more real. What I

want you to do is to hold your arm just above the table with your palms face down. We're going to do a little finger tapping exercise. Tense up your forearm and fingers as hard as you can and alternately tap your index and middle finger as fast as you can. Keep your fingers tense and tap as fast as you can. OK, now relax, shake your arm to loosen it up. Now do the same thing with your arm and fingers relaxed. Notice the difference? When your arm and fingers are relaxed you can go a lot faster, and it takes a lot less energy. That's an exaggerated example of what too much tension does to you when you perform.

The first relaxation technique that I'm going to give you is called Active Progressive Relaxation. It's called active because this is something you do, it's called progressive because you start at your toes and gradually work your way up to your head. It's relaxation because obviously you want to be relaxed after you do it. What Active PR involves is contracting, holding and releasing different individual muscle groups.

You're probably saying to yourself, yeah nice Leroy, but what does it do? What Active PR does is allow you to systematically identify what tension feels like in your various muscles. You can't relax a muscle you don't know is tense, and most people aren't so in tune with their body that they can immediately know when one of their muscles is tense. Of course, being elite athletes, you are much more in tune with how your body reacts than the normal population, but nevertheless, you need to learn what tension feels like before you can deal with it. In Active PR, you also become familiar with what the muscle feels like relaxed. So now you will be able to identify tension, because you know what that feels like, and you'll be able to bring your muscle to a relaxed state, because you also

know what that feels like. Active PR is also good for people who have problems sleeping. Once you've actively tensed a muscle and relaxed it, the muscle ends up in a more relaxed state than it was when it started. If you do this to every muscle group from your toes to your head, by the time you reach your head all your muscles are warm, relaxed and feel like jelly and you'll probably be out like a light.

The goal of Active Progressive Relaxation then, is to become familiar with the feelings of tension and relaxation. Eventually, what we want to be able to work up to is a more passive program where you just relax your muscles, but you need to start somewhere. The best way to practice Active PR is to lie flat on your back, arms by your side, legs straight, not crossed. Start with the toes on one foot and work your way up to your head. Really focus on the feeling of your muscles being relaxed. When you're tensing a muscle group, be sure to confine the tension to only the group that is being contracted. If you're anything like my wife, you probably don't know how to tense every individual muscle group in your body, so I've gone through a couple of books and written down exercises that will allow you to tense each muscle group (see Appendix K for details). The best time to practice this is just when you get into bed. If, in the morning, you find that you went to sleep before you got through all of the exercises, you've gone too slow and you might want to speed up the process.

That's all I wanted to talk about today. Practice it before you go to sleep tonight, and we'll see you tomorrow.

APPENDIX I
Day 2 Training Session Script

DAY 2 SCRIPT

To start I thought we'd take a minute to review what we did yesterday. Recall that we talked about how psychology fits into the performance picture. We are not machines that perform the same all the time. Our performances vary based on the psychological state we're in, that is, how we feel, what's on our mind at the time.

We talked about the role of the sport psychologist; that our job is to help you learn the skills that will allow you to consistently create a psychological state in which you perform to the best of your ability.

I also introduced relaxation as the first mental skill of this program. We talked about how tension interferes with performance and how we want to eliminate excess tension in our muscles so that they are in a ready state. When a command is sent to our muscles, we want them to be ready and able to do what they're supposed to do. I presented Active Progressive Relaxation as a relaxation technique to help you identify tension and relaxation. Did everyone try the Active PR last night? How did you find it? (Take a few minutes to respond to the feedback.) Remember, this is a skill so keep practicing it.

Today I'm going to talk a little more about relaxation. Making sure your muscles are relaxed is important, but it's not everything. To be fully relaxed you also need to be breathing properly. Today you're going to learn about the proper breath and how to breathe properly. Now I can just hear some of you saying "What is this guy on? I think I know how to breathe already." To be perfectly honest, that's the same reaction I had when I was first introduced to this concept. Even though breathing occurs naturally, very few of us actually breathe properly.

When you breathe properly you'll find that you're more relaxed because your breaths are deep, full and regular. Think about how you breath just before you go to sleep. If you're like me, your breaths are full, deep and regular and you'll find that, in fact, you're quite relaxed.

Proper breathing also allows more oxygen into your blood which does two things. More available oxygen in the blood means that more energy can be produced in muscle, and also, more oxygen facilitates the removal of the waste bi-products from energy production. So basically, you can work harder and recover quicker simply by breathing properly. As athletes I'd imagine that you'd be quite interested by this.

Stress or anxiety interrupts proper breathing. What happens is your breathing becomes shallow and erratic. To demonstrate what I mean, lift your shoulders as high as you can and notice what happens to your breathing. It gets very shallow and you have to breathe faster to get the same amount of oxygen to your lungs. This example is slightly exaggerated, but you get the point.

Proper breathing occurs when you use your diaphragm. Your diaphragm is a little muscle that sits horizontally between your lungs and your abdomen. For the proper breath, when you inhale what you do is push your diaphragm down. What happens? By pushing down your diaphragm the first thing you notice is that your stomach gets pushed out. Pushing your diaphragm down also results in your lungs getting pulled down. This creates a vacuum in your lungs which sucks air in. Air is actually drawn into your lungs and they fill up from the bottom.

Imagine your lungs as being divided into three parts, a bottom, middle and top. During the proper breath, the bottom part gets filled with

air first as your diaphragm pulls down on your lungs. The middle gets filled by expanding your chest and rib cage, and the top gets filled by raising your chest and shoulders. When you do this you'll be surprised how much air you can get into your lungs. I don't suggest doing too many of these in a row because you'll get pretty dizzy! So when you breathe in, your stomach gets pushed out.

To exhale now, you just go in reverse. Just push your diaphragm back up and into your lungs. Push all the air out. When you exhale, you'll notice that your stomach gets pulled back in.

This is the pattern that you want to establish to breathe properly. Breathe in - stomach out, breathe out - stomach in. During your day you'll be amazed to find that most of the time this is not how you breathe. Most of the time when you breathe in, your stomach goes in, and when you breathe out, your stomach goes out - just the opposite of the proper breath. What happens is that your stomach muscles tense a bit and your diaphragm gets locked up. Now you're breathing with your shoulders and only use the top part of your lungs. If you don't believe me - and I don't blame you, I had to find out myself before I believed it - tonight before you go to sleep, lie flat on your back and consciously focus on your stomach. I'll bet that it's going out as you breathe in, and back down as you breathe out, just the way it's supposed to. You're breathing properly. After you try that stop yourself at any point during your day and take note of how you breathe, chances are that your diaphragm is locked up and now your stomach is going in as you breathe in, and out as you breathe out, exactly opposite of the proper breath. It takes a lot of effort and time to learn how to breathe properly.

When I was reading about all this stuff it was suggested that the most peaceful time during proper breathing occurs between your exhale and inhale. It's that time just after you exhale and just before you inhale, that time of nothing when everything is still. The suggestion is that this time is very peaceful and by focussing on it you can enhance your relaxation. You can also repeat the word "relax" in your mind as you exhale so that as the breathing relaxes your body, the word "relax" calms your mind.

Proper breathing is very simple but it does need to be practiced to become effective. A good method to practice is to associate proper breathing with certain activities that happen during your day. For example, when the phone rings, do a proper breath first before you answer it, when you're watching TV and the ads come on, instead of jumping to the fridge do a couple of proper breaths, you can do it before you eat, before class, during class if it's boring - although you never heard that from me! You get the picture. Associate proper breathing with something in your day so that you consciously think about breathing properly. That's all I want to say about relaxation for today. The rest of this session we're going to talk about imagery, which is the second mental skill of this program.

Most people associate imagery with seeing things in the mind, which is partly true but not entirely true. Actually imagery is a cognitive experience in the absence of external stimuli similar to a sensory experience. Let's break that down bit by bit. By sensory experience I mean an experience in any of the senses, touch, sight, smell, hearing, taste, and movement which is also a sense that can be imaged. In imagery you recreate that experience, but without the external stimulation there. For us

here, our external stimuli are the feel of your butt in the chair, the feel of the table on your arms, hearing me talk, seeing my hands move, etc. If you went home after this and sat down and imaged this moment, your image would need to include all that stuff and that's what I mean by a cognitive experience in the absence of external stimuli.

These images, which use all the senses, can be very real. Have all of you been to an IMAX theater? It's like being in that plane and as it banks right, everyone leans right and as it banks left, everyone leans left. There's no reason to move because there's no external stimuli, but the visual image on the screen is so powerful that the experience seems real.

Why do most people associate imagery with visual images? Because sight is our dominant sense. I bet that a blind person would have very different images than a person with sight, simply because for the blind person, sight is not their dominant sense.

Now that we know what imagery is, my next question is always, "How does it work?" There are two schools of thought about how imagery works. Remember yesterday I told you that nerves carry impulses to muscle? One school of thought says that during imagery tiny impulses are being sent to the muscles that get used to perform the skill. These impulses are similar to the impulses of the actual experience. Like Sylvie Bernier, the diver on yesterday's video, said, during imagery you're getting a workout without doing anything.

The second school of thought says that imagery programs a pattern of action, a motor pattern into your body. By imaging you strengthen this pattern so that in an actual situation, you will more likely behave according to the motor pattern that has been established. It's like a program that once

it starts, it just goes until it's finished. Either way, imagery creates a mental blueprint for yourself to behave in a certain way. You're pre-programming yourself.

There are two components to imagery: vividness and controllability. It used to be that sport psychologists said that the more vivid your images, the more effective they were, so athletes spent a ton of time trying to make their images as real as possible. What we've found here at UVIC in our imagery studies is that while vividness is desirable, it's not essential, rather it's the controllability of your images that really matters. For us, it doesn't really matter if your image is fuzzy, cartoon, black and white, whatever, as long as you can get it to do what you want it to.

What we're going to do for the rest of today is a couple of exercises to get you imaging. I presented relaxation as the first skill in the program because the suggestion in most research is that imagery is more effective if you do it when you're relaxed. So first we'll do a few proper breaths. Now get comfortable and close your eyes. We're going to put together a picture.

"Pick someone you know very well. Created a sharp image of this person's face. You're looking at them from the neck up. Visualize as many details about this person as you can: their hair color ..., hair style ..., eyes ..., nose ..., mouth ..., complexion. Get as sharp a picture as you can. In your image, take a step back so that you can see their whole body. Try keep the image sharp, notice their shirt, pants, shoes. If your image fades or disappears temporarily, don't worry about it, don't force it too much, but try to get it back. Now we're going to build your image by adding sound. Imagine this person talking to you. Hear their voice, see their

facial movements as they talk, notice any mannerisms that they might do when they're talking. Imagine a conversation with them. Can you hear yourself talking? Can you hear their response? We've got an image with sight and sound, now we're going to add smell. Take a look at your surroundings, where are you? What sounds or smells are around you? Can you smell perfume, cologne, food? Imagine that you're chewing gum as you're talking to your friend. What flavor is it? Can you taste it? Now we're going to add feeling and emotion. Can you feel your jaws moving up and down? Can you feel the gum squishing around your teeth? As you're talking, think about how you feel about this person. What emotions do you associate with them? Fun, respect, do you like being around them? End your conversation. After you've said good-bye shake their hand. Feel their hand in yours. Watch them turn around and walk away. Once they disappear out of sight, you can open your eyes."

How many of you had a crisp image that contained all of the senses at once? Ideally you'd like the experience to be as real as possible, but that takes a lot of time and practice. Most people can do alright in one, maybe two senses and then it gets foggy. Don't worry about it, and don't be too concerned if you can't get more than one sense vividly in your image, all this will come together only after a lot of practice. If you can't image senses together, and I can't, just image the same situation over and over using one sense at a time, like Mark Tewksbury did on the video. Another tip is to image in the sense that you feel most comfortable with first, and build from there. Remember not to get too stressed out about your images, vividness is useful and the more you practice imaging the easier it becomes, but vividness is not essential.

The most important component of imagery is controllability. Vivid images are powerful, sometimes they seem almost real. Just think about some of your dreams. But imagery will only benefit you if you can control it and manipulate it so that you "experience" the desired effect. You can have an image that combines all the senses and is so real it's incredible, but if in that image you perform poorly or you consistently image a miscue or unsuccessful performance, what good is it? You need to be able to image yourself doing the right things, doing them well, and doing them often to make the imagery effective. So I'll get you to close your eyes again and we're going to work on controlling what we image.

Recall the image of your friend. You want the full body shot. We're going to play with this image and manipulate it a bit. Gradually shrink your friend to the size of a pop can. Make the shift gradual. See them slowly shrinking, getting smaller and smaller until they are the same size as a pop can. Now put your hand down to the ground with your palms facing up and get them to jump into your hand. Lift them up in your hand. Lift them up, swing right, swing left. Put your hand back down on the ground and get your friend to hop off. Gradually return them back to normal size. Once they're back to normal imagine them sighing a sigh of relief! Now make them a giant. Gradually enlarge them until they tower over you. Get a good look at their shoes as they're so big that their shoes is all you can get a good look at. They're so big that it's freaking you out so you want to shrink them down to normal size. Gradually return them to normal. Once they're normal size wipe your image clean. Image a blank slate.

Now I want you to image a wooden cube. Paint the cube so that it's a *different bright color on each side*. You're now looking at a brightly painted cube. Pick it up. Feel it in your hand. Toss it up and down. Catch it and roll it around with both hands. Feel the edges of the cube in the palm of your hands. Put the cube onto a flat surface. Now divide the cube in half from top to bottom and separate the halves a bit. Notice the painted and unpainted sides. See the difference between the raw wood middle and the bright colors on the sides. Now divide these pieces in half again horizontally, from one side to the other and raise the top pieces a bit so there's space between all the cuts. Your cube should be cut into four equal pieces with the top pieces suspended in air. Count the painted and unpainted sides of the pieces you're looking at. Now we're going to put the cube back together again so drop the top two pieces down. The cut line disappears as if there had never been one. Put one hand on each side of the two remaining pieces and push them together to form your original cube. You look at your cube and marvel that it appears to have never been cut. Once your cube is in perfect shape, wipe your image clean again. Image a clean slate.

Think of a simple skill that you perform in your sport. Practice it in your mind over and over again. Try to make your image as vivid as possible. Feel your body as you practice the skill. Ensure that you image successful performance, if you don't perform successfully at first manipulate your image so that you do perform successfully. Now imagine performing this skill with or in the presence of a teammate. Once again, make sure that you execute successfully. Now we'll make it a little tougher, imagine performing against an opposition. Does your

performance change? Don't quit the image until you've performed successfully. Once you've successfully executed the skill against an opponent, you can wipe your screen clean and come back to reality.

Was there anything that you noticed about your images? (Discuss.) As you can see, being skillful in imagery will take practice, and believe me, you will improve with practice. I suggest building a time into your routine where you can practice imagery. Remember, imagery is more effective when you're relaxed which is why some people prefer to image before bed. You'll have to experiment in order to find the time that is right for you; for five minutes before a meal, in the shower in the morning, five minutes before practice...you get the picture. Make a regular time where you practice imaging and never, never quit imaging until you've successfully imaged whatever it is you're practicing.

That's everything for today, see you again tomorrow. Keep practicing the relaxation.

APPENDIX J
Day 3 Training Session Script

DAY 3 SCRIPT

I'd like to start this session off talking about relaxation. I think that relaxation is one of the most important psychological skills because it's the foundation for developing the other mental skills. Up to now I've said that effective relaxation involves awareness and breathing and we've talked about Active PR and the proper breath as strategies to achieve this. We now come to a fork in the road in terms of awareness. Active PR is a good technique to develop initial awareness but it is impractical to use in a sporting situation. When you're competing you don't have time to actively contract and release each muscle group, you need a faster process. What I'm suggesting to you now is that you go to a Passive PR technique. Active PR is still a good technique to help you get to sleep because, as you know, muscles become more relaxed after they have been contracted so use Active PR before bed if you wish and remember to concentrate on the heaviness and warmth of your muscles. But to be able to relax quicker, we're now going to shift our focus to a passive technique.

Passive PR is essentially the same as Active PR except that there are no muscle contractions taking place. Basically what you want to do is focus on areas of your body, quickly identify whether tension is present and then relax the muscle or muscles. Our goal, eventually, is to develop a quick body scan system where, in a matter of two or three seconds, we can scan, identify and release excess muscle tension in our entire body. But this will take time. For me it took about two months of regular practice to become efficient at Passive PR. Initially you want to work our way up your body the same as you did in Active PR. Start at your toes and focus on individual muscle groups, identify the muscle group and passively relax it,

meaning you don't need to contract the muscle group first before relaxing it. Just relax it right away. A word of caution - go slow. It's tempting to rush into combining muscle groups but for this technique to be most effective, you need to feel very comfortable with your ability to passively relax individual muscle groups first. Do one foot, ankle, leg, the other foot, ankle, leg and so on up your body to the top of your head.

Remember to combine this with proper breathing so that the whole time you're breathing properly as well. As you become better at passively relaxing individual muscle groups you can start to combine them. Start with all the individual muscle groups and gradually work your way up to two or three big groupings. I use three parts myself. If I'm scanning for muscle tension I go below the waist, below the neck, and then the head. I can do this in about two seconds. I use it all the time in net because I tend to tense up without realizing it. By regularly initiating a passive scan I can make sure that I'm relaxed.

When you're doing your body scans take special note of the muscles that are most often tensed or relaxed. You'll find that certain muscle groups will be relaxed most of the time while others will be tensed. If you notice that certain muscle groups are usually relaxed, you can be confident that in the future they will most likely be relaxed so you can take a short cut and skip them. The tensed spots I call your characteristic tension spots. That's where any excess arousal will be revealed first. Remember I said that the mind and body work as one system. If you get worried or uptight, tension will show up somewhere in your body. For me, my diaphragm locks up and the muscles around my eyes tighten up, so the first thing I do on a body scan is go to those two spots and relax them. According to a

number of articles I've read, athletes tense their shoulders often. So in addition to your characteristic tension spots, pay special attention to your shoulders as well. You want to develop this scanning to a point where it's very quick. Sometimes though just consciously locating a muscle and trying to relax it doesn't always work, so you might have to twitch it or something. Do whatever works for you. That's all I want to say about relaxation.

Just a quick review of the imagery. Imagery is a skill, and like all other skills, the more you practice it the better you become. Stick with it. Remember, controlling your image is the key, never quit until you've successfully performed whatever it is you're imaging. Always end on a positive note.

For the rest of this session I'd like to talk about self-talk. There is a direct correlation between self-confidence and success. Being successful builds self-confidence, and being self-confident provides an athlete the opportunity to be successful. It's kind of a spiral effect. I think we'd all agree that self-confidence is a desirable thing. So how do we develop self-confidence? I just said that success does, and I think there is no better way to develop self-confidence than by being successful. If we had full control over our environment we could manipulate it so that we're always successful and we'd probably be pretty darned self-confident. Unfortunately things don't work like that.

The other way to develop self-confidence is by being positive, that is talking positively and thinking positively. What you say to yourself is critical to how you perform or behave. Confident athletes think about themselves differently than athletes who lack confidence. How you think

about yourself and what you say to yourself reflects your self-confidence. Believe it or not we spend a lot of time talking to ourselves. When I'm in a mall I'm always commentating. "Jeez, look at that lady, could she possibly carry more shopping bags? Ooh, look at that guy, nice shoes buddy." We're always making little statements in our mind and some of them aren't real nice.

Our conscious mind, that little voice inside our head, is not always our ally however. It can be very cruel. What I want to get across today is that our little voice affects the way we feel about ourselves. When I'm playing tennis and I put an easy ground stroke into the net, my little voice has a fit! I hear stuff like "You idiot, you call yourself a tennis player? Only losers make unforced errors on a shot that easy." I used to really beat myself up after mistakes. How do you think this would make me feel? Not very confident. I start to doubt my ability to execute a ground stroke and feel apprehensive. What ends up happening on the next ground stroke is that, instead of simply relying on the automatic motor program that I've developed, my conscious mind wants to take over. It's kind of like "Alright, you screwed up the last one so I'm taking over to make sure it's done right this time." Your mind wants control and you start to change things to compensate for the last mistake. When that doesn't work, you change something else, and pretty soon you're performing very uncharacteristically and your play goes to hell in a hand basket. Not pretty. That's the down side of that spiral. My point is that your thoughts affect the way you feel, and how you feel affects the way you perform or behave. That's the sequence. Thought affect feelings and feelings affect behavior. Positive thoughts make you feel good about yourself, they build

self-confidence and this allows you to behave or perform like you are capable. When you're confident you don't need to think about what to do because you allow the motor programs that you've built up in practise to take control. You just go out there and do it. On the flip side, negative thoughts make you start to doubt yourself, they whittle away your self-confidence so you're not feeling real good about yourself and this will typically lead to poor performance.

Our goal then, is to understand how self-talk can be disciplined and controlled. What we want to do is to develop 'intentional thinking', self-talk containing the content that we want. We want to develop control over what we think and say to ourselves.

After a spectacular performance, most athletes report that they had no thoughts at all. They just did it. They were so confident in themselves and their abilities that they simply reacted, performing required no thought at all. Performances like that are quite rare. If I think back over my past performances I can only think of one or two like that. Most of us talk to ourselves before, during and after competition. The content of these thoughts, what we saying to ourselves, affect the way we feel and how we feel ultimately affects the way we perform. Thinking itself is not the problem. It's the inappropriate or misguided thinking that is. Negative thoughts and self-statements create feelings of self-doubt and lack of confidence, and prepares you to perform poorly. Positive thoughts are not a problem because they lead to feelings of confidence, preparing you to perform to your capabilities. We want to use the positive, self-enhancing statements and change the negative ones.

Self-talk is used for two basic functions. I'll just briefly describe them and then I'll talk about each one in a little more detail. Self-talk is used to either direct your attention to something (usually in the form of cues or cue words), or it's used to evaluate something, to make judgments and assessments. These judgments are always either positive or negative. Few things in life are black and white, but this is one of them. Judgments, by their very nature, are never neutral. When you make them about yourself they can either help you or hurt you. They either boost your self-confidence, or break it down by creating self-doubt. We want to keep those thoughts that help us and change the ones that don't.

Let's take a quick look at how self-talk can be used to direct attention. You can use self-talk to learn, break a habit, focus attention and create a mood or feeling. When you learn something initially it requires a lot of cognitive activity. Because it's new, you need to constantly remind yourself of what you should be doing. I took a dance course a couple of years ago and for the first few classes for every sequence I was thinking left-1-2-3, turn-1-2-3, right-1-2-3. I was talking myself through the sequence so I'd dance the correct pattern. As you practice the behavior pattern and become more skilled, the number and frequency of cues will decrease because you're automating the behavior pattern. After a lot of practice you may not need cue words at all because the motor pattern is so automatic. Because of your level of skill, you probably won't use self-talk for this purpose, but it's good to know.

You can also use cue words (self-talk) to change an already automated or well learned behavior. Basically, you're giving yourself cues to help change a habit. For example, I was getting quite frustrated with my

tennis backhand last year. My shots were going all over the place and it was quite frustrating. I used to have a great two handed backhand but somewhere along the line I'd developed a bad habit. One of my friends told me that my racket head was up and that my elbow was loose. So I used the words "locked" and "down" as my cue words. Every time a shot came to my backhand I'd quickly rehearse "locked" and "down" and execute the backhand. It didn't take long before my backhand was fine again and I didn't need the cue words because I'd automated the correct behavior pattern. The thing to remember is that you always want your cue words to focus on what you want to do, not on what you want to avoid. Why? Because you get a lot more information that way. If I'd have said don't keep your racket head up and don't have a loose elbow, I'd know what I didn't want to do but would have no idea what should be done. There simply isn't enough information there. If I'm golfing and I have to shoot over water, what should I be saying to myself? "Don't hit the water, don't hit the water, please don't hit the water" or "Just a nice shot onto the fairway". Chances are if I say "Don't hit the water" that's probably exactly what will happen. My point is: always have your cue words focus on the behavior that you want to occur.

Third, cue words can be used to focus your attention. You can use them to block out distractions and to keep your attention on performance relevant things. When I play hockey I use "ice" to keep my attention focussed on the ice. Nothing that happens in the stands makes a difference on the outcome of the game so I don't need to pay attention to it. I also imagine the glass on the boards going all the way up to the roof and forming an impenetrable barrier. I find that it keeps my attention on the

ice surface and with the cue "ice" it makes it easy for me to ignore all the yelling, cat calls and other off ice distractions. You can also use cue words to keep your attention where you want it, which is slightly different than blocking out distractions. You're just using a cue word to put your attention where you think you need it. As you know by now I'm a goalie. The ideal position for a save is in a crouch with your stick on the ice. When someone skates in and winds up for a slap shot from 20 feet, it's kind of stressful and my natural tendency is to lift up. To stay down I developed a couple of cue words. I use "crouch" to remind myself to stay low and "ice" to remind me to keep my stick on the ice. Again, remember, always focus on the behavior you want to occur.

Finally, you can use cue words to create the feeling of what you want to happen. These are known as affective cue words. I golf with a guy who uses the word "oily" before his swing. He says it gives him a feeling of smoothness and helps him get a nice swing. I need to move lightning fast so I cue up the image of a cat. Ben Johnson might think "explode" so that as soon as the starting gun goes off, he's history. A spiker in volleyball may want to use "kill" so that when they're in the air just about to hit the ball they get a burst of energy. You want to create a mood or feeling from the cue words that you choose.

The second major function of self-talk is to make judgments and assessments. Remember that these judgments are never neutral - they're either positive or negative. They either boost or enhance your self-confidence or they break it down by instilling seeds of self-doubt. The way you think about yourself and the things that you say to yourself reflects your self-confidence and ultimately affects your behavior. How you think

affects the way you feel, and how you feel affects the way you behave. Our goal in this section is to develop affirmation statements. We want to be telling ourselves positive things. When we evaluate or assess our performance, we want that little voice inside our head to be saying positive things. As a varsity athlete you already have enough things working against you, the last thing you need is for your own conscious voice to be working against you as well.

How does this all work? A consistent finding is that if you hear something often enough you'll start to believe it. A dramatic example of this can be seen in cases of emotional abuse. You've all seen on TV the husband that tells his wife that she's nothing, she's dirt, and the only value she has is because of him. Say he tells her this even two times a day, after one or two years she's going to believe it even if she used to be the most confident woman in the world. It's the same with the kid in school that everyone says is stupid. It doesn't matter whether he is or not, he'll start to believe that he's stupid and act that way. My point is, what you hear consistently you start to believe, your attitude changes and you develop a certain way of looking at things. What you say to yourself sets you up to behave in a certain way. What we want to do is to use this process to develop confidence so that you'll behave confidently. Recall earlier I said that one of the ways to develop confidence is to think positively. That's exactly what we want to do. We want to develop confidence through positive thinking.

The first step in this process is identification. To gain control over your judgmental self-talk you need to be able to identify it. You need to become aware of what you say to yourself. I suggest keeping a list of the

thoughts you become aware of. This will help you to become more aware of what you say to yourself.

Once identified, the content of this talk needs to be analyzed.

Remember, when you use judgmental self-talk it will always be either self-enhancing or self-defeating. It's kind of like eating that way. When you eat, your food will always end up in one of two places, your stomach or your lungs. Obviously it won't help you much to pump food into your lungs, and as a matter of fact it's down right dangerous. It's the same as judgmental self-talk. Negative self-talk is just as useful to you as food in your lungs so you want all your judgmental self-talk to go to your stomach, to be self-enhancing. First you need to become aware of what thoughts typically help you perform and what thoughts typically inhibit your ability to perform. Next you want to familiarize yourself with the situations that are associated with what type of self-talk. You will find patterns occurring. I suggest keeping a logbook after each practice and performance. I know this archer who did that, he actually gave me the idea. He recorded his performance and the kinds of things he was thinking about and it didn't take him long to recognize a pattern between his thoughts and his performance. He became aware of what thoughts helped him, and which ones didn't as well as the situations most often associated with one or the other. If things started to go badly he'd just look back in his logbook and look at how he worked his way through it. That's my plug for keeping a logbook. By keeping track of your self-talk, you will discover that prior to the competition your mind probably programmed you to either succeed or fail. For example how many of you have heard "I just don't play well in this location" or "I've never played well against that

opponent". You're basically programming yourself to perform poorly. The reverse is also true. If you go into a situation telling yourself positive things and building yourself up, you program yourself to perform well.

Once you've identified and analyzed your thoughts, you want to keep the positive ones and repeat them and change the negative ones. The negative thoughts need to be stopped and replaced. There are two and sometimes three strategies that you can use to accomplish this; thought stopping, replacement and countering - building a case against the negative thought. We'll talk about them one at a time.

Thought stopping is a strategy that you can use whenever you detect self-talk that may inhibit your ability to perform, for example, if your thoughts produce self-doubt, or if you feel that you're thinking too much (paralysis by analysis). When either of these happen, something has to be done. The thoughts have to be stopped. We want to break the thought-feeling-behavior pattern from spiralling to nowhere. How do you do it? First you need to be consciously aware that the thought is harmful, then you need to develop a "trigger" or "cue" to consciously interrupt the process. This trigger can be anything. You can repeat the word "stop", snap your fingers, do a big blink, slap your thigh - basically anything that will trigger you to interrupt the thoughts. I use imagery. I image an intersection with all my thoughts going through it and image the stop light turning red for my negative thought. Use anything to halt the thought. A word of caution here. This sounds incredibly simple, and the principle really is but the key to making it work is your motivation. You have to want to stop harmful self-talk and it takes lots of practice to become really

good at it - as does anything. So don't be discouraged if it doesn't work to perfection the first time. Practice and give it time.

Once the negative self-talk has been stopped you've created a void and it needs to be filled with positive self-talk so we're going to change or replace the negative thought. Once again, a very simple principle, we're changing or replacing a thought leading to self-doubt with one leading to self-encouragement. If you keep a list you should have a list of your negative thoughts, the suggestion is to make a second list of the positive thoughts that you will use as replacements. For example the negative thought may be "This officiating stinks, we'll never win." If you realize that you've said this you stop it dead in its tracks and may replace it with "There's nothing we can do about the officiating so let's just concentrate on the things that we can do." This book (Williams, 1986, p. 247) has a whole list of this kind of stuff, all you're doing is changing a negative perspective into a positive one.

Now I can just hear you all thinking that this process is just way too simple to really work. Well, yes and no. For this process to work you need to believe it. Sometimes it may work and other times the negative thought is so powerful that a simple replacement just isn't going to do the job. Your little voice may not buy it and you'll need something more convincing. That's when you bring out the big gun - countering. Basically what you do is build a case for your own abilities. Instead of giving up after you've tried to replace the negative thought and just accepting it, argue against it. Ask the negative self-talk to come up with facts and reasons for the negative thought and address it with questions, facts and reasons of your own to blow away the underlying beliefs and assumptions

that led to the negative thinking in the first case. Basically, engage in an internal dialogue. Does this sound just way to weird? Schizophrenic? Well you don't have to argue out loud! What ends up happening though is that the more evidence you can find to build yourself up, the smaller and more insignificant the self-defeating thought becomes. I'll give you an example that I've used personally. To set the stage, I grew up in Smithers, BC, a small town up north and was never good enough to crack the rep hockey team there. I went off to college and developed into a good goalie and made the rep team there. Two tournaments a year we would meet and I'd play dreadful against them. This happened for two years I guess - before I took a sport psych course at the U of A. Prior to each game against them my thoughts were "I'm hopeless against this team, I just can't play well against them." I learned the strategies that I just told you so as soon as I'd recognize a thought of this nature I'd immediately stop it, and, as I'd learned, replace it. My replacement went something like "I've played well many times. I'm a good goalie. This is an all-star team I'm playing for and I'm the number one goalie. I know that I can play well and I know that I'm as capable of playing well tonight as I am on any other night." Not bad eh? I was pretty proud of myself. But then came my little voice again. "Yeah right, you're a bum. You always have a tough time against these guys. You won't play well tonight and deep down, you know it!" Apparently this particular thought had developed a strong base over the previous two years. But hey, no problem I thought, I'll pull out the big guns so I countered. "What makes me think I'm a hopeless bum? Yada, yada, yada. Have I ever played well in the past? Certainly! When? Yada, yada, yada. What might be causing me to breakdown against this team?"

Can I do anything to change that? What skills do I have that enable me to play well? Do they just disappear against this team? What do I need to do to be successful? And so on. Well, every good story has a good ending and I did play particularly well that night. Earned second or third star. So this process definitely helped. BUT...the next game I stunk again. I thought I'd licked the problem but the belief was so deep rooted that in the absence of this process, I regressed to my old self. It was a great lesson in humility and showed me that you can never let up. I hope you all don't have to learn the way I did. In any case, once you have built a good case against the negative statement, you can blow it off with statements like "Who says I can't?" or "Bullshit!" Feels quite good too!

To summarize, this is a two to three stage process. After you've identified the thought you stop it, replace it, and if necessary, counter it. Now, another word of caution, these are all new skills. As with all new skills you need to practice them before you get good at them. Try them out in practice situations first and once you're comfortable with them, then you can use them in games. You've all heard about the learning curve where you may actually perform worse before you get better? At your level of competition I don't think your coach may understand if your game performance decreases before it takes off. You may never get the chance for it to take off so please try it in practice first. Now you've been given information about all of the skills. Tomorrow, we'll wrap things up.

APPENDIX K
Day 4 Training Session Script

Day 4 Script

The first thing I'm going to get you to do today is relax. I'd like you to get comfortable and do a passive body scan. Clear the tension from your muscles. While you're doing this remember to breathe properly. Take 3-5 proper breaths. Feel your stomach going out and in.

Now that we're all relaxed I'd just like to remind you to keep working on your Passive PR. Find your characteristic tension spots, relax them first, go to your shoulders, scan your body, breathe properly. Keep practicing and it will come easier.

I'm not going to tell you anything new today. We're just going to summarize what we've done over the last three days and try to tie it all together. I've presented you with three psychological skills; relaxation, imagery and self-talk. My emphasis in presenting these skills has been on providing you with the ability to gain conscious control over these processes. With practice you will be able to relax when you want, image what you want to happen, and determine the content of your self-talk. Remember, when making judgments, always focus on building yourself up.

Now what you need to do is incorporate these skills into your pre-competition routine. Think back to the role of sport psychology and the goal this program: people don't perform like machines, the qualities that make you human also affect the way you perform. You're not always going to perform your best simply because of the way you feel, the circumstances you're involved in, and so on. The role of sport psychology is to provide you with skills to help you develop a constant psychological state so that when you perform, you have the opportunity to fully utilize your abilities.

The way I see it, there is a ratio between your absolute ability and the psychological state you're in. Say your absolute ability is one, at any given time your psychological state is going to be less than or equal to one. If the ratio is at one, you'll perform like you can, if it's less than one, your mind is going to set a limit for you. I went to Ottawa last spring to consult with junior archers at a junior national tournament. Not knowing a whole lot about archery, I went to the local range before I went to watch and pick up a few things. For those of you who know nothing about archery, in an indoor tournament each archer shoots 15 arrows, and the center ring (bulls eye) is worth 10 points. So the maximum possible score is 150. I saw one archer who was going to the tournament who was consistently shooting over 130. This was his first tournament and he was a little nervous when he got there and ended up shooting between 110 and 120. He never cracked 120. A quick calculation will tell you that that's about a 10 to 15 % decrease in performance. He knew he was capable of performing better, I knew he was capable of performing better, his coach knew. He was in a new and stressful situation and couldn't cope with it. The psychological state that he performed in was different from the one he usually performed in and it limited his ability to perform.

I don't want that to happen to you. Remember that the goal of this program was for each of you to learn how to consistently recreate your ideal performance state. You want to give yourself the opportunity to perform your best each time out and you can give yourself that opportunity by developing those skills that can influence your psychological state. Do you remember your most spectacular performance? Do you recall the frame of mind you were in and how you got it? Probably not. Most of us

think that performances like that happen by accident. The conditions happened to be just right. What I'm telling you is that it doesn't have to be an accident. You can arrange the conditions so that the opportunity is always there to perform your best.

In order to allow yourself this opportunity, you need to develop a systematic preparation routine. You need to develop a consistent "readying pattern", kind of like a recipe or formula. If you're a chef and you want to make the same dish twice, you follow the same recipe, you use all the same ingredients and you combine them in the same order. If you do everything the same, chances are the dishes will turn out the same, or at the very least, they will be very similar. It's no different for you as athletes. If you want to perform your best, you need to follow the routine that was associated with your best performance. If you think about it like that, it doesn't make much sense to let the chips fall where they may and hope to do well. You need to follow a routine.

Everyone has a different preparation routine. What works for one person won't work for everybody. Rob Brown of the Chicago Black Hawks needs to dance around to heavy metal in the dressing room to get into the right frame of mind, Jacques Plante, on the other hand, would get dressed and sit back in his stall and doze until game time. What you need to do is find a routine or formula that works for you. While everyone's formula is different, there is common ground in most performance routines.

From everyone I talk to, it's unanimous that preparation for competition begins the night before. Being well rested is important to perform well so the night before a competition you need a good sleep. Use

Passive PR before you get into bed so that by the time you're in bed you're already relaxed. Use Active PR if you need to. This is an important point; take note of the pattern you use. If you have problems getting to sleep before big competitions and you use Active PR, use Active PR the night before little competitions as well. You want to keep your preparation routine exactly the same for every competition in order to give yourself the opportunity to perform consistently. If you change your routine from little to big competitions you're subtly telling yourself that something is different, that somehow one competition is more important than another. If you prepare differently for different competitions, basically what you're doing is preparing yourself to perform differently at different times. You want to prepare the same way for every competition to perform consistently.

The next chunk of time is from when you get up until you get to the competition site. You want to use Passive PR a lot in this zone so that you stay relaxed all day. You want to feel loose and in control throughout the day. Remember that tension wastes energy. By being relaxed not only do you feel calmer, but you're conserving energy as well. If you begin thinking about the game and feel yourself getting kind of anxious, immediately scan your body, relax the tensed spots and focus on proper breathing. By doing this you're creating a pattern, that is, when you begin to feel anxious and tense, you relax. Anxious - relax. Anxious - relax. While this may take conscious effort at the start, if you continue to develop this pattern, pretty soon it will become second nature to you so that any time you begin to tense up, your immediate reaction will be to relax. This is the ideal pattern to establish.

Make sure that your thoughts are positive and encouraging all day. Prepare yourself for success. Be totally positive, to the point of being sickeningly positive. Think positive thoughts and image positive images, be especially encouraging to yourself. Really reinforce yourself for the things that you do right and let everything else roll off like water off a duck's back. If you feel your thoughts starting to get negative, you now know how to stop them and change them. If you have unsuccessful images, you've practiced developing control over them, so keep manipulating the image until you're successful. In everything you do during the day, build yourself up. Always look for the bright side.

Just as an aside, if you're spending this much time and effort building yourself up, it's not a big jump in logic to also do the same for your teammates. Consciously remember to say things to them that will build them up rather than creating seeds of self-doubt. This can also be a general rule to live by. People like being around people who build their self-confidence and self-esteem. Always try to look for the positive, and if you can't find one, don't say anything at all. Try to be encouraging all the time. This is not easy by the way. Our natural tendency is to criticize, putting others down to build ourselves up. Being positive and encouraging, ironically, takes effort at first. But you'll find that once you do it, other people will react by encouraging you and building your confidence. It's quite a nice spiral to be caught up in.

During your day, situations will undoubtedly arise over which you have no control. In these instances focus on controlling your reactions to the situation rather than the situation itself. Something will only be stressful for you if you let it. So the point here is not to let things get to

you. For example, I'm a fairly intense driver and I used to get really ticked when I got cut off. The cursing, swearing, gripping the steering wheel, the whole nine yards. I also used to leave late, which only added to the tension. Well if someone cut me off on my way to the rink, it would really bug me and I wouldn't be real pleasant about it and I certainly wouldn't be relaxed when I got to the rink. I can't say that it would positively benefit my psychological state. After I learned and practiced this stuff the first thing I did was leave a bit earlier so that I wasn't driving with the same sense of urgency but I also learned to control my reaction to other drivers. Now if I get cut off on my way to the rink, I just slow down a bit and focus on keeping myself relaxed, no stress. I can't control what the other driver is going to do, but I can control how I react to it. By keeping calm and relaxed I maintain the frame of mind that I've been developing throughout the day. So during the day you want to be positive, loose and feeling in control.

The next time zone is from when you get to the competition site until the just before the competition begins. This is when you are thinking about the upcoming competition. Here you need to increase the frequency of your passive scanning and proper breathing. Make sure your thoughts and images are positive and self-enhancing, concentrate on building up your teammates. A word of caution here, practice the skills before you use them in a competitive setting and never forget why you're there. You're there to play (enter sport). The last thing I want to happen is for you to be trying this stuff out for the first time at a big event. Say you're preparing to compete and your thoughts and images aren't as positive as you'd like them to be. No problem, you think, Leroy said to stop the thoughts,

replace them and manipulate my images. So you use thought stopping and replacement, maybe countering if you need it, and you try to manipulate your images to get them positive. Maybe that doesn't work and you get a bit worried and try again. Pretty soon you're really concerned because nothing is working, you're going to go out there in a less than optimal frame of mind, and you get all stressed out because you know that things aren't the way they're supposed to be. What happens? You go out there and perform badly. And what do you think after the performance? This mental skills stuff is for the birds, they don't work at all like Leroy said they would.

These are skills, and like any skill you're not going to be able to magically get the most out of them unless you practice them. To get to this level of competition you didn't go out for an hour try a couple of things and make the team. You've practiced a lot to get to where you are. The same principle applies to these mental skills. They are don't magically appear out of nowhere, they require practice to develop properly. So if just prior to a competition, things aren't going exactly as you'd like, try to correct them with the techniques that you've learned but don't force it. Remember that you are there to perform, if you can't quite get it, don't get all bent out of shape, just park it all, go out there and play and try to work on things after the competition.

The last time zone is when you get out there just before the competition starts. Here you want to focus on being relaxed and loose. Tune out the distractions - anything that won't make a difference in the outcome of the competition. At this time you also want to turn down your thoughts and images so that when it comes time to perform, you won't be

thinking you'll just be reacting. At this point, you've spent a lot of time preparing so you've got to trust yourself and your abilities and just do it.

During the competition you want to maintain the same level of control that you've worked on all day. Mistakes will happen, even your most spectacular performance wasn't mistake free. Your reaction will be the key. Stay positive, focus on what went right, reinforce yourself - and your teammates - for the things you do right. Also stay in the present. What happened can't change anymore so there is no use dwelling on it while you're competing. After the competition is over you can wallow all you like, but while you're still competing, let bygones be bygones. If things aren't going marvelously remember to think positive, start with the things you've done right and build on them. Use thought stopping to get yourself back on track. Always try to set yourself up for success.

That's the general sequence I go through. Some of this stuff is specific to me, but I thought it would be useful to give you an idea of the general time frames involved in preparation for competition. Everyone is different and so you must develop your own routine. What works for me may not work for you. Develop your own performance formula or recipe. How? Try remember what has worked before. Analyze what you did before some of your previous successful performances. How did you feel? How did that feeling come about? What were you saying to yourself, anything? Here's the most important point - WRITE IT DOWN. We tend to forget very easily so please, promise me that you'll record your performance formula somewhere.

After successful performances, review your formula to see if you need to add anything. I've got about 15 or 16 ingredients in my formula

right now and it will probably change as time goes by. By developing a performance formula you will find that you will remove almost all of the mystery involved in preparing yourself to play well. Pretty soon you'll know exactly what you need to do in order to perform to your capabilities.

We've now reached the end of phase 1 of the program, the acquisition phase. We now head into phase 2, the development phase. You've got the skills, now you need to practice them. What I'm asking is that you practice these three skills for a minimum of ten minutes a day, three days a week. That's half an hour a week which I don't think is unreasonable to ask. Build practice time into your schedule. If you're like me you're probably always busy and never seem to have time to do anything. A lot of times the only reason I do something is because it's scheduled. If you would practice only when you had time, I'll bet that you'd attend a lot fewer practices than you do now. But your practices are scheduled on a regular basis so it's just become part of your daily routine. Make practicing these mental skills part of your routine. Set aside ten minutes before bed on Monday, Wednesday, Friday for example, or five minutes before meals or practices. Build time into your schedule or you'll likely never get around to it.

I've also got logsheets that I'd like you to fill out each week. I'd like you to take about five minutes a week, preferably after your weekend competitions to reflect on your mental skills development. This gives me some feedback on how you're doing and by filling it out it will give you feedback as well. All you have to do is rate how you think you've done on each skill and brag about what you do well, as well as mention where you think you can improve. If you have any random thoughts about related

issues, feel free to include them in the general comments section. I've taped an envelope on my office door so each Monday or Tuesday I'd like you to put one completed logsheet in the envelope. If I haven't received one from you by Tuesday night, I will be giving you a call on Wednesday with a reminder, so in order not to become a pain in the butt to you, please remember to hand one in on time. I'd like the first sheet after the weekend. I know it likely won't reflect much, but see what you can do. Just before you go I'd like to thank you very much for your attendance over the last few days. I know that you're busy people and I really appreciate your taking the time out of your hectic schedules to participate in this program. To help you remember what we've talked about during these sessions, I've put together a little summary booklet so that you'll have something to refer to in the future. I'll get those out to you as soon as they get back from the printers.

APPENDIX L
Mental Skills Training Summary Booklet

MENTAL SKILLS TRAINING PROGRAM

This program was designed for the varsity athletes at the University of Victoria who participated in the research project of Leroy Kruisselbrink.

OBJECTIVES

It is my goal that by the end of this training program,

In the area of **RELAXATION** you will:

- understand the role of muscular relaxation in successful performance,
- know how and when to use relaxation techniques,
- develop the skills to identify any excess muscular tension in your body and be able to quickly relax.

In the area of **IMAGERY** (mental rehearsal) you will:

- be aware of the important components of effective imagery,
- know how and when to incorporate imagery into your pre competition routine and into competitive situations.

In the area of **SELF-TALK** you will:

- understand how self-talk affects feelings and behavior / performance,
- develop strategies to bring your self-talk (thoughts) under your conscious control so that they will benefit your performance rather than allowing them disrupt and interfere with your performance

Generally, it is my goal that by the end of the training program you:

- develop an appreciation for the value of psychological skills in a successful performance,
- develop some perspective about where psychological skills fit into the performance picture.

My primary and number 1 objective is to be of some assistance to you in your efforts to develop and improve as an athlete.

MENTAL SKILLS PROGRAM SUMMARY

ROLE OF SPORT PSYCHOLOGY

Performance is made up of four components

1. *physical*: fitness, strength, power, etc.
2. *technical*: performing the skills required by the sport
3. *strategical*: plays, systems, strategies
4. *psychological*: the mental state needed to perform the physical, technical and strategical aspects of your game to their fullest capacity.

A machine could perform the physical, technical and strategical components of your sport to the max. every time if it was programmed correctly. Although as an athlete you practice these components of performance regularly, you are not machine.

The thoughts, feelings and moods that make you a unique human being affect the way you perform.

The role of sport psychologists and consultants is to provide you as an athlete with skills that will enable you to consistently create a mental state prior to and during a performance in which you can execute the physical, technical, and strategical components of your sport to the best of your ability.

RELAXATION

Purpose: allow you to consciously release *excess* muscular tension so that

- a) you become calm,
- b) your muscles are ready to act when they are given the command.

Excess tension interferes with coordinated movement.

The nerves connected to your muscles transmit impulses that command your muscles to contract. These impulses are sent either consciously or as part of an automatic motor program.

When your muscles are too tense, they are in a state of contraction. This contraction involves nerves as well.

Your muscles won't respond effectively if they are tense because:

- a) many of the nerves needed to send the message to contract are already being used,
- b) the required muscles may be contracted already making coordinated movement difficult.

To be able to regulate your muscular tension, first try Active Progressive Relaxation (PR) to identify the feeling of tension and relaxation in various muscle groups. (Active PR Guide in back). Active PR is also a useful technique if you're having trouble getting to sleep.

Once you feel comfortable with your ability to identify the feeling of tension in your muscles and in your ability to relax them, switch to Passive PR and just focus on relaxing your muscles. (Passive PR Guide also in back). **START SLOW!** Start with individual muscle groups.

Take note of your "characteristic tension spots." Gradually combine muscle groups together. Develop a Quick Body Scan system for yourself.

Excess tension interferes with proper breathing.

Breathing from the diaphragm is relaxing because the breaths are deep, full and regular. Proper breathing also allows more oxygen into the blood which a) allows for more energy to be produced in muscle, and b) facilitates in the removal of the waste bi-products that result from energy production.

Anxiety or stress interrupts proper breathing, usually by locking up the diaphragm.

THE PROPER BREATH. Use your diaphragm!

To inhale: push your diaphragm down (push your stomach out). This sucks air into your lungs from the bottom.

To exhale: push your diaphragm up into your lungs to force the air out (pull your stomach in).

IMAGERY

Purpose: to create a mental blueprint for yourself in an effort to "pre-program" yourself to behave in a certain way, to develop a sense of déjà vu.

Imagery is *not* only visual. It is a cognitive experience in the absence of external stimuli similar to a sensory experience. Your imagery should make use of all your senses. (It doesn't matter whether you image your senses individually or in combination.)

How it works.

1. During imagery, tiny impulses are sent to the muscles used to perform the skill. These tiny impulses are similar to the impulses of the actual experience.
2. Imagery programs a motor pattern into your body. In an actual situation you will more likely behave according to the motor pattern that has been established.

The most important component of imagery is *controllability*. Images can be very powerful in terms of creating expectations of what can be accomplished. Imagery will only benefit your performance if you can control it and manipulate it so that you successfully "experience" whatever it is you are trying to achieve.

ALWAYS end imaging on a positive note. Remember, the purpose of mental skills is to create a mental state for yourself in which you can execute the physical, technical, and strategical components of your sport to the best of your abilities.

NEVER terminate an imagery experience until you have successfully accomplished your goal.

If you perform successfully in your images, chances are your actual experience will be similar because you will expect to perform as you did in your image.

To increase the feeling of reality in your images, it may be beneficial to assume a position during imagery similar to the one you are trying to image.

Practice. Practice. Practice. Effective imagery is a skill. As with any other skill, you will improve over time. Stick with it.

SELF-TALK

Purpose: to consciously direct your thoughts and self-statements so that they are always building your self-confidence. Feeling confident allows you to enter into a competitive situation with desire, expecting to succeed.

People spend a lot of time making statements to and about themselves in their mind. As an athlete, the things that you say to yourself are critical to your performance.

Your *thoughts* affect the way you *feel* about yourself, and this ultimately affects the way you *behave*. This pattern is known as a self-fulfilling prophecy.

Positive thoughts make you feel *confident* and prepare you to *perform well*.

Negative thoughts make you *doubt* yourself and prepare you to *perform poorly*.

Your self-talk falls into one of two categories. It is used to either

- a) direct your attention,
- b) make judgments or assessments.

Self-talk used to direct attention

This type of self-talk involves “cue words” which are little one or two word reminders of what you want to do. They can be used in a number of situations.

1. Learning. In the initial stages of learning a motor skill you can use cue words to remind you of the pattern of behavior that should occur.

e.g. learning to dance - “left - 1 - 2 - 3 - turn - 1 - 2 . . .”

As you practice and become more skilled, you use cue words less frequently because you’re automating the behavior pattern.

2. Changing an automated behavior pattern. You can also use cue words to de-automate a well learned (automated) pattern of behavior.

ALWAYS focus your cue words on the behavior that you *want* to occur.

NEVER focus your cue words on the behavior that you want to avoid.

e.g. the tennis backhand

correct - racket “down”, elbow “locked”

incorrect - don’t keep the racket up, don’t keep your elbow loose

3. Focus attention.

A) Cue words can be used to block out distractions.

e.g. the irritating fan - use words like “game”, “court”, “field” to keep your attention out of the stands and in the game.

B) Cue words can be used to keep your attention focused where you want it.

e.g. the close range slap shot - as a hockey goalie I want to stay down (cue word “crouch”) and keep my stick on the ice (cue word “ice”).

ALWAYS focus your cue words on the behavior that you want to occur.

4. Use cue words to create the *feeling* of what you want to happen. These are also known as affective cue words.

e.g. the runner - “explode” out of the blocks (“juice” for Ben!)

the golfer - “smooth” or “oily” for the good swing

the spiker - “kill” for the good put away.

Self-talk used to make judgments or assessments

Judgmental self-talk is *never* neutral. It is *always* positive or negative.

Positive self-talk can help you perform.

Negative self-talk can hurt your performance.

To provide yourself with the opportunity to succeed and perform well, you always want your judgmental self-talk to enhance and build your self-confidence.

Developing thought control

Identification. To gain control over your judgmental self-talk you need to be able to identify it first. Become aware of what you say to yourself before, during and after competitions. (Make a list).

Analysis. Once identified, the content of this talk needs to be analyzed.

a) What thoughts or self-talk typically helps you perform?

b) What thoughts or self-talk typically harms your ability to perform?

c) What situations are typically associated with positive or negative self-talk?

You want to focus on your positive self-talk and keep repeating it.

Negative self-talk needs to be stopped and replaced.

Thought Stopping

When to use. Whenever you detect self-talk that may inhibit your ability to perform. For example

- a) if your self-talk produces self-doubt
- b) if you feel you're thinking too much (paralysis by analysis)

How to use. Develop a "trigger" or "cue" to consciously interrupt the negative self-talk.

- e.g. repeat the word "stop"
snap your fingers, consciously blink, etc.

Develop a trigger that works for you.

The key to making this work is your motivation. You have to want to stop harmful self-talk. It takes lots of practice to become efficient.

Changing or replacing stopped thoughts.

Once negative self-talk has been stopped, it must be changed or replaced.

How to use. Replace the self-talk leading to self-doubt with statements that will build self-confidence.

e.g.

Statement: This officiating stinks, we'll never win.

Replacement: There's nothing we can do about the officiating so let's just concentrate on what we want to do.

(Suggestion. Make a list of your self-defeating, negative thoughts and the self-enhancing, positive thoughts that you will use to replace them.)

Countering.

When to use. Sometimes simply replacing negative self-talk is too easy and even though in your mind you are telling yourself positive, encouraging things, you don't really believe them. Negative self-talk will keep recurring if it has a strong base which you don't identify and refute.

Countering is an internal dialogue where you build a case against the negative self-talk.

How to use. Address the negative self-talk that is interfering with your performance (by producing self-doubt) with questions, facts and reasons to refute the underlying beliefs and assumptions that led to negative thinking. Rather than mindlessly accepting what your negative voice is saying, argue against it.

Actually describe the evidence necessary to change the negative attitude or belief. The more evidence and logic you find to refute the belief structure of the negative statement, the more effective the counter becomes and the more you will believe the counter rather than the negative statement.

e.g.

Statement: "I'm hopeless against that team, I just can't play well against them."

Replace: I've played well many times. I'm a good goalie. I'm capable of playing well and I know that I can play well. I know I'm capable of playing as well tonight as I can any night.

Voice: You're a bum, you always have a tough time against these guys. You won't play well tonight and deep down, you know it! Ah ha ha ha.

Counter: What makes me think I'm hopeless bum?
 Have I ever played well in the past? Certainly!
 What might be causing my breakdown against this particular team?
 Can I do anything to change it?
 What skills do I have that help me play well?
 Do they just disappear against this team?
 What do I need to do to be successful?
 (Bring in the mountains of evidence.)

Once you have built a good case against the negative statement, you can dismiss it with phrases like "Who says I can't?" or "Bulls--t!"

****KEY**** *Look for the positives no matter how small, and build on them.*

APPLICATION

Incorporate these skills into your pre-competition routine.

e.g.

The night before a competition:

Use Passive PR before bed so you go to bed relaxed.

Use Active PR if you need extra help getting to sleep.

(NOTE: develop *one* routine for all your competitions. If you use Active PR before major competitions, also use it before minor competitions. Keep your preparations for every competition *exactly* the same.)

The day of a competition:

Use Passive PR frequently to stay loose and relaxed.

If you find yourself thinking about the competition and getting slightly anxious, immediately do a Passive PR scan (Quick Body Scan), focus on breathing properly and relax.

Be totally positive all day. Positive thoughts, positive images.

In uncontrollable situations, focus on your reaction, not on the situation. Make sure you're breathing properly and your body is relaxed.

At the competition site:

Increase the frequency of Passive PR to ensure that all excess muscular tension has been released. Be upbeat, focus on the positives. Build self-confidence in yourself as well as your teammates.

Just before the competition:

Focus on feeling loose and relaxed.

Use thought stopping to tune out any unwanted distractions.

Turn down your thoughts and images and **JUST DO IT!**

Build your own pre competition routine or formula. Write down all the things you need to do in preparation for a successful performance. After successful performances, revise your performance formula if necessary.

Preparing to perform successfully is not a mystery. By keeping track of how you prepare for competitions (developing a performance formula) you will discover what you need to do in order to provide yourself with the opportunity to perform your best.

ACTIVE PR GUIDE - CONTRACTION EXERCISES

Key points to remember during Active PR

- contract only the muscles being exercised, keep all other muscles still,
- hold each contraction for 3-5 seconds, then relax,
- focus on the relaxed feeling in the muscle, notice the difference between the feelings of tension and relaxation.

1. TOES.
 - a) Curl back: moving only your toes, not your ankles, curl your toes back to the tops of your feet.
 - b) Curl under: curl your toes under your feet.
2. ANKLES.
 - a) Pull your feet (no toes) back to your shins as much as you can.
 - b) Point your feet as much as you can.
3. LEGS.

Pull your feet (with ankles and toes) back to your shins as much as you can.
4. HIPS / LOWER BACK.

Squeeze your buttocks together and tense your hips as tightly as you can.

***CHECK POINT.** Check that all the muscles below your waist are relaxed.

5. STOMACH / ABDOMEN.

Push your stomach muscles into your abdomen as hard as you can as if preparing to be punched.
6. BACK.

Contract all the muscles in your back towards your spine. Pull your shoulder blades together.
7. CHEST.

Take a huge breath so your chest tenses like a body builder. When you relax, let your shoulders slide back to the most relaxed position.
8. SHOULDERS.

Draw your shoulders up into your neck as tightly as you can.
9. HANDS / FOREARMS.

Clench your fists as tightly as you can.
10. UPPER ARM.
 - a) Biceps. Bend your arms at the elbow and try to touch your shoulders with your wrist. Tense biceps.
 - b) Triceps. Straighten your arms as hard as you can.

***CHECK POINT.** Check that all the muscles below your neck are relaxed.

11. HEAD & NECK.
 - a) Neck. Press your head into your pillow as hard as you can so that you have a neck of stone.
 - b) Jaw. Clench your teeth as hard as you can.
 - c) Eyes. Close your eyes as tightly as you can. Pull your cheeks up and your eyebrows down.
 - d) Forehead. Lift your eyebrows as high as you can.

***FINAL CHECK.** Go over all the muscle groups in your body to ensure they are relaxed.

PASSIVE PR GUIDE

Key points to remember during Passive PR

- focus on the tension levels in each of the 16 muscle groups to start,
- consciously relax any muscles that possess unnecessary tension,
- take note of muscles that are "characteristically tense,"
- gradually combine muscle groups and develop a Quick Body Scan method.

16 muscle groups	7 muscle groups	4 muscle groups
Upper face and forehead	Face	Face and neck
Central face		
Lower face and jaw		
Neck	Neck	
Chest / shoulders / upper back	Torso	Torso
Abdomen		
Right hand / forearm	Right arm	Arms and hands
Right upper arm		
Left hand / forearm	Left arm	
Left upper arm		
Right upper leg and thigh	Right leg	Legs and feet
Right lower leg and calf		
Right foot		
Left upper leg and thigh	Left leg	
Left lower leg and calf		
Left foot		

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APPENDIX M
Post-test Questionnaire

Questionnaire

Section 1.

To be completed by those *who were not* involved in the Mental Training Program.

Think back to when your teammates went to the training sessions for the Mental Training Program and try to classify, to the best of your recollection, what type of activity you did. (mark the appropriate activity)

1. social,
2. school related,
3. physical activity (specific to your sport),
4. physical activity (recreational).

If you marked #3, circle one:

- a. Would you consider this activity as part of your regular weekly routine?
- b. Would you consider it activity in excess of your normal rate of activity?

Section 2.

To be completed by those *who participated* in the Mental Training Program.

Program Feedback.

Please provide a rating of your perceptions of the Mental Training Program:
(1=Not at all; 3=Somewhat; 5=Absolutely)

- | N | S | A | |
|-----------|---|---|---|
| 1 2 3 4 5 | | | Do you think that I provided you with some useful information in this program? |
| 1 2 3 4 5 | | | Do you think that the three skills presented in the program were applicable to your sporting situation? |
| 1 2 3 4 5 | | | Was the material presented practically enough for you? |
| 1 2 3 4 5 | | | Do you think that you've benefitted from participating in this program? |
| 1 2 3 4 5 | | | Would you recommend a program like this to a teammate? |
| 1 2 3 4 5 | | | Will you continue to spend time practicing and using the skills you learned in this program? |

General Information.

Were there any issues or topics that you would have liked information on that I did not address? YES or NO.

If YES _____

Have you had any experience this semester that you feel has significantly affected your athletic performance? YES or NO.

If YES, could you elaborate? _____

On average, how much time per week would you estimate you spent practicing and using relaxation, imagery, and self-talk techniques? _____

VITA

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**MENTAL SKILLS TRAINING AND LOCUS OF CONTROL IN
UNIVERSITY LEVEL ATHLETES**

Author:



(Signature)

LEROY KRUISSELBRINK
(Name in block letters)

SEPTEMBER 29, 1993
(Date)