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COGNITIVE MEDIATIONS IN BASKETBALL  
FOUL SHOOTING

by  
Gerard F. Fitzpatrick

An Abstract  
of a thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in the School  
of Health, Physical Education  
and Recreation at  
Ithaca College

September 1981

Thesis Advisor: Dr. A. Craig Fisher

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## ABSTRACT

The effectiveness of a multidimensional cognitive strategy program on improving basketball foul shooting proficiency was assessed. The subjects ( $N=13$ ) were members of the Ithaca College women's varsity basketball team. The pretest consisted of 50 foul shots in 5 sets of 10 shots per athlete. Following an instructional interview outlining the purpose and value of a multidimensional cognitive strategy program, all athletes submitted a written transcript of their negative self-feelings and negative self-talk following failure in foul shooting opportunities. From the content of these transcripts, a training program combining a foul shooting ritual, relaxed attention, self-directed verbalization, self-directed visualization, and thought stopping was created for three treatment groups, each differing in the quantity and quality of their submitted transcripts. Athletes listened to their cassette tape, containing the training program, for 21 days. Following the treatment, all athletes participated in a posttest consisting of 50 foul shots taken in 5 sets of 10 shots. Athletes submitted success programming evaluation sheets detailing their acceptance of the training program. A correlated  $t$  test indicated that the pretest-posttest difference was not statistically significant,  $t(12) = 1.65$ ,  $p > .05$ . The multidimensional

cognitive strategy did not significantly improve the team's foul shooting proficiency. Athletes' success programming evaluation sheets indicated that the individualization of training programs seemed to be an important factor in determining the results of individual scores.

COGNITIVE MEDIATIONS IN BASKETBALL

FOUL SHOOTING

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A Thesis Presented to the Faculty of  
the School of Health, Physical  
Education, and Recreation  
Ithaca College

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

by

Gerard F. Fitzpatrick

September 1981

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

CERTIFICATE OF APPROVAL

---

MASTER OF SCIENCE THESIS

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This is to certify that the Master of Science Thesis of  
Gerard F. Fitzpatrick

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

Thesis Advisor:

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Dean of Graduate  
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## DEDICATIONS

To my parents and my brother, for their love and support and for helping to make a dream come true.

To those Irish people who remained because of their vision of hope.



## TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS . . . . .	ii
DEDICATION . . . . .	iii
LIST OF TABLES . . . . .	vi
CHAPTER	
1. INTRODUCTION . . . . .	1
Scope of Problem . . . . .	3
Statement of Problem . . . . .	4
Hypothesis . . . . .	5
Assumptions of Study . . . . .	5
Definition of Terms . . . . .	5
Delimitations of Study . . . . .	6
Limitations of Study . . . . .	7
2. REVIEW OF RELATED LITERATURE . . . . .	8
Basketball Foul Shooting and	
Mental Practice . . . . .	8
Relaxed Attention . . . . .	12
Self-directed Verbalization . . . . .	16
Self-directed Visualization . . . . .	22
Thought Stopping . . . . .	28
Summary . . . . .	31
3. METHODS AND PROCEDURES . . . . .	33
Selection of Subjects . . . . .	33
Training Instrument and Procedures . . . . .	34

TABLE OF CONTENTS (continued)

	Page
CHAPTER	
3. Method of Data Collection . . . . .	34
Scoring of Data . . . . .	35
Treatment of Data . . . . .	35
Summary . . . . .	36
4. ANALYSIS OF DATA . . . . .	37
Analysis of Pretest-Posttest Percentages.	37
Subjective Assessment of Individual Scores . . . . .	37
5. DISCUSSION OF RESULTS. . . . .	40
Summary . . . . .	47
6. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	
FOR FURTHER STUDY . . . . .	50
Summary . . . . .	50
Conclusions . . . . .	52
Recommendations for Further Study . . . . .	52
APPENDICES	
A. INFORMED CONSENT FORM. . . . .	54
B. GROUP A-DIALOGUE: LOW NEGATIVE CONNOTATIONS. . . . .	56
C. GROUP B DIALOGUE: HIGH NEGATIVE CONNOTATIONS. . . . .	62
D. GROUP C DIALOGUE: ALTERED TECHNIQUE . . . . .	68
E. SUCCESS PROGRAMMING EVALUATION SHEET . . . . .	74
REFERENCES. . . . .	75

LIST OF TABLES

Table	Page
1. Percentages of Successful Foul Shots	
Across Different Conditions . . . . .	39

## Chapter 1

### INTRODUCTION

Most investigations centered on the use of cognitive mediations to solve practical problems or improve performances in specific situations have concentrated on assessing the effectiveness of single or double dimensional cognitive strategy programs. Generally, these programs have combined relaxation procedures with verbalization strategies (Meichenbaum, 1973), with visualization procedures (Maltz, 1960), and with thought stopping (Wisocki & Rooney, 1974). Many programs have been designed specifically for improving skill performance in sport. These sport-specific programs offer the athlete cognitive strategies in the form of a learning package, wherein the application of the program follows the same general guidelines for each individual. Some programs such as the basketball cybernetics program constructed by Kellner (1978) are specific to basketball. Other programs such as the visuo-motor behavioural rehearsal program designed by Suinn (1980) were structured to apply to almost all sports.

Many investigations have attempted to use cognitive strategies to bring about changes in negative attitudes and self-beliefs for the purpose of enhancing the individual's self-image (Bry, 1978; Maltz, 1960).

Kellner (1978) believed changing the self-image was important for producing an improved and confident basketball player. In the case of foul shooting, he suggested the use of a mental rehearsal technique and a relaxation procedure to enhance the shooter's self-perception of his/her ability to succeed.

This study attempts to assess the effectiveness of a multidimensional cognitive strategy program involving the use of a basketball foul shooting ritual, a relaxation technique, imaging procedures, inner speech dialogues, and thought stopping, on the performance of foul shooting in basketball. The study was based on the premise that cognitive mediations are useful for filling in time which intervenes in foul shooting. This time might otherwise be given over to negative thinking and a lessening of attentional control.

In the game of basketball, foul shooting has the potential to win or lose games. Foul shooting is a closed skill and the literature has suggested that cognitive mediations are more successful when used in conjunction with closed skills (Eggleston, 1936; Highlen & Bennett, 1979; Perry, 1939). It was the contention of the investigator that a multidimensional cognitive strategy program would be a useful coping strategy for dealing with stress at the foul line. Because foul

shooting can be such an important aspect of the game due to its potential to win or lose games, it also has the potential to be an anxiety-producing factor. When the arousal level is higher than is required for the particular performance in hand, then increased muscle tension will reduce the effectiveness of the performance (Oxendine, 1970). Negative thinking by the performer may further reduce the level of the skill performance.

Nideffer (1976) suggests that, for effective foul shooting, the individual should utilize a systematic pattern of behaviour prior to shooting. This should encompass a pre-arranged ball handling pattern, a breathing technique, and a focusing technique. This study attempts to expand upon this systematic pattern and test the effectiveness of cognitive mediations in conjunction with the physical ritual.

#### Scope of Problem

The purpose of this study was to determine if a multidimensional cognitive strategy program involving the use of a foul shooting ritual, relaxed attention, self-directed verbalization, self-directed visualization, and thought stopping would significantly improve the foul shooting proficiency of basketball players.

Thirteen members of the 1980-81 Ithaca College women's varsity basketball team, Ithaca, New York, acted

as subjects for the study. All athletes took part in a pretest which involved shooting 50 foul shots, in 5 sets of 10 per subject. They then underwent the educational phase of the study which involved an interview in which the value of cognitive strategies was taught to the athletes. They were then required to write a transcript of their negative self-talk prior to taking foul shots.

The training phase involved learning the multidimensional cognitive strategy program which was put together on a cassette tape. Athletes had 21 days of daily cassette training. The posttest involved each athlete taking 50 foul shots in 5 sets of 10 shots. The athletes were also required to write a posttest transcript dealing with their acceptance of the training.

The pretest-posttest difference was assessed by means of a correlated  $t$  test.

#### Statement of Problem

The effectiveness of a multidimensional cognitive strategy program involving the use of a foul shooting ritual, relaxed attention, self-directed verbalization, self-directed visualization, and thought stopping, on the performance of basketball foul shooting was investigated.

### Hypothesis

A multidimensional cognitive strategy program will significantly improve foul shooting proficiency.

### Assumptions of Study

For the purpose of this study, the following assumptions have been made:

1. The pretest will be a proper indication of the team's foul shooting proficiency.
2. Any involvement in physical practice of foul shooting during the period between the pretest and the posttest will not affect foul shooting percentages, since the pretest was taken at the final practice session of the season when consistency of percentages was expected. Following the pretest the athletes' practice time was reduced to 1 weekly small group practice for the 3-week period during the training phase.
3. The athletes will listen to the training cassette every night for 21 days.
4. The interview in the educational phase persuaded the athletes of the effectiveness of the program.
5. The negative transcript written by the athletes was a true reflection of their negative self-statements.

### Definition of Terms

The following terms are operationally defined for



the purpose of this investigation:

1. Multidimensional cognitive strategy program.

A combined program of relaxed attention, self-directed verbalization, self-directed visualization, thought stopping, and the use of a foul shooting ritual.

2. Relaxed attention. A state of mind and body accentuated by the relative balance of relaxation and tension.

3. Self-directed verbalization. Affirmation statement or inner speech directed toward the self and related to the task in hand.

4. Self-directed visualization. The contemplation of images which are symbolic of thoughts and are directed at a task.

5. Thought stopping. A technique used to intercept the flow of negative thoughts and to redirect attentional responses.

6. Foul shooting ritual. A systematic pre-arranged pattern of behaviour used prior to foul shooting.

#### Delimitations of Study

The following decisions served as delimitations for this investigation:

1. Only members of the 1980-81 Ithaca College women's varsity basketball team served as subjects for

this study.

2. Only one listening period a day for 21 days was used for training in this investigation.

3. A multidimensional cognitive strategy program and three small group practices per group for the purpose of helping to maintain skill level were the only means of training used in this investigation.

#### Limitations of Study

The limitations of this study were as follows:

1. The findings refer only to the 1980-81 Ithaca College women's varsity basketball team.

2. The findings are only relevant in relation to the multidimensional cognitive strategy program used in this study.

3. The findings relate only to the length of the training period used in this investigation.

## Chapter 2

### REVIEW OF RELATED LITERATURE

The review of literature for this investigation will focus on the following areas: (a) basketball foul shooting and mental practice, (b) relaxed attention, (c) self-directed verbalization, (d) self-directed visualization, (e) thought stopping, and (f) summary.

#### Basketball Foul Shooting and Mental Practice

Kellner (1978) claimed that mental practice improves a basketball player's foul shooting. The improvement is gained through the use of imagery while the body and mind are in a relaxed state. Kellner encouraged the use of a foul shooting ritual, a preplanned series of movements that will be consistent every time the player steps to the foul line. A natural and relaxed rhythm might be expected to enhance a sense of timing and coordination, and this ritual is rehearsed in mental practice sessions.

A comprehensive review and discussion of literature relating to mental practice was carried out by Richardson (1967a, 1967b). The review concluded that mental practice procedures are associated with improved performance in tasks. It was also concluded that the degree of familiarity with the physical performance of a task is related to the efficiency of mental practice relative

to physical practice.

Relating specifically to basketball foul shooting, Vandell, Davis, and Clugston (1943) found mental practice to be effective in improving foul shooting. Their study showed a 43% improvement in foul shooting by senior high school boys. Knapp (1963) concluded that mental practice during periods of no physical activity was beneficial but found that a certain amount of motor experience is necessary before mental practice will provide a maximal effect. This substantiated the findings of Clark (1960), who found that physical practice in one-handed basketball foul shots was twice as effective as mental practice, in the case of novice athletes. However, in the case of more experienced foul shooters, improvement due to mental practice was only 1% less than improvement made through physical practice. The study demonstrated that mental practice was more effective when the physical skill had been well practiced.

Halverson (1949) conducted a comparative study of the effectiveness of different types of practice on foul shooting. All subjects were 1st year university women and each group totaled 15 subjects. One group observed a demonstration of a foul shot and then practiced the skill. A second group practiced foul shooting physically but without a basket to aim at. Another group mentally

rehearsed foul shots while standing at the foul line with their preferred foot forward. The fourth group was a control group. All groups with the exception of the latter improved significantly. The study demonstrated that all types of practice significantly improved skill performance but without practice skill level did not improve.

Mental rehearsal has been defined by Nideffer (1976) as a systematic way of thinking about one's performance in some past and/or future athletic endeavour. Mental rehearsal techniques were used by Lane (1980) and he found that basketball players who trained in visuo-motor behaviour rehearsal (VMBR) scored 10% more foul shots during home games and 15% more during away games as compared to the previous season. Team improvement at home games was only 2%, which was not statistically significant. Lane concluded that under the extreme conditions of competition, such as away games, VMBR was more successful. VMBR is a behavioural strategy composed of a progressive relaxation technique combined with mental imagery and was designed by Suinn (1980).

Eggleston (1936) and Perry (1939) found significant gains in various closed skills following the use of mental practice. They concluded that mental practice can be successful in improving skill when the task is easily

symbolized, as in the case of closed skills. Poulton (1957) described a closed skill as one with predictable requirements and having consistent procedures. This description would seem to encompass basketball foul shooting.

The consistent procedures that are necessary for foul shooting in basketball have been outlined by Nideffer (1976). He stressed the value of mental rehearsal in improving certain performances and he claimed that, by using a pre-arranged pattern for taking foul shots which should include a breathing technique, a focusing technique, and a pattern of ball handling techniques, the athlete can be taught to make more effective use of narrowed attention.

In summary, the trend of most studies tends to indicate that mental practice procedures are associated with improved performance in closed skills in general and basketball foul shooting specifically. It also seems that some degree of experience in the particular skill is necessary as a prerequisite for mental practice.. It also seems that mental rehearsal is most efficient when it is carried out in a relaxed state, when the mind is most susceptible to suggestion. Thus, there seems to be some value in relaxation as an aid to enhancing skill performance.

### Relaxed Attention

McKim (1972) described relaxed attention as a state when the relative balance of relaxation and tension are appropriate to the task at hand. Relaxed attention occurs when the human organism adjusts dynamically and economically to the task demands, never pushing or straining unnecessarily. By relaxing irrelevant tension the individual releases full energy and attention to the subsequent performance. Kellner (1978) is in agreement with McKim, and stresses the importance of relaxation to a good performance.

Fee and Girdano (1978) found relaxation procedures to be specific rather than general in their effects. They tested the effects of biofeedback, meditation, and progressive relaxation on muscle tension, heart rate, skin temperature, respiration rate, and electrochemical response. These treatments were then compared to the placebo control treatment effects of listening to a series of cassette tapes dealing with the effects of emotions and feelings in human life situations. The results indicated that the type of relaxation procedure used affected the physiological factors on which the relaxation procedures placed greatest emphasis. Biofeedback placed greatest emphasis on reducing muscle tension and that was the only factor that it affected signifi-

cantly. Results were similar with other procedures. Progressive relaxation affected only respiration level, and meditation affected respiration level and muscle tension. All relaxation techniques were more effective than the placebo control treatment. Apparently relaxation procedures should be related to the physiological factor that most needs to be controlled if effects are to be maximized.

The general consensus among writers is that relaxed attention is important to enhancing performance. Maltz (1960) stated that physical relaxation, when practiced daily, brings about accompanying mental relaxation and a relaxed attitude which enables us to better consciously control our automatic mechanisms. Physical relaxation is a powerful influence in enabling people to break away from negative attitudes. Wenz and Strong (1980) substantiate the importance of relaxation and contend that relaxation is basic for improving psychological and physiological aspects of performance.

Kellner (1978), referring to relaxation and attention in basketball, considered relaxation to be an essential condition for successful performance. He stated that, if foul shooters are relaxed and pay attention to their breathing rhythm, then their muscles will perform naturally and optimally. Nideffer (1976)



considered the value of relaxation to be optimized when used in a conscientiously applied program. Relaxation will greatly improve the quality and consistency of athletic performance.

Such a program is the basketball cybernetics program developed by Kellner (1978). He literally adopted Maltz's (1960) concept of using the subconscious mind as the success mechanism within the individual. With regard to foul shooting, Kellner outlined four factors for improving foul shooting. These factors consisted of: (a) developing a foul shooting ritual, (b) mental practice, (c) relaxation, and (d) concentration. Relaxation and concentration are specified as states that will first reduce the anxiety level, and then allow attentional focus to be narrowed when necessary and to the level effective for the athletic performance.

Attentional processes and their relationship to sport received much attention from Nideffer (1976). In Nideffer's definition of attentional processes there are two main dimensions. The first dimension involves the athletes' ability to broaden or narrow their attentional focus in accordance with the situations they encounter. The second dimension requires athletes to be aware of and responsive to internal and external cues or stimuli. From these two dimensions Nideffer developed six attentional

subscales that are combined to produce the Test of Attentional and Interpersonal Style (TAIS) from which athletes' attentional profiles can be derived. Attentional profiles indicate the changes an athlete may need to make to have control over attentional processes. Relaxation procedures are particularly effective in preparing the athlete to gain the appropriate attentional focus (Nideffer, 1976).

In summary, it seems that maximum performance in competition may be difficult to attain unless the performing athletes learn to relax their minds and bodies (Kellner, 1978). While athletes are in a relaxed state their concentration can be focused effectively on the demands of the task. The literature also indicates that attaining the ability to relax should be relatively easy for athletes. Jacobson (1957) states that anyone with previous training in athletics can learn to relax completely in a shorter period of time than is usually required for the average individual.

Having achieved the ability to relax, athletes now need to believe in the successful potential of relaxation and in their ability to cope with stressful situations. To believe in one's ability to cope with stress, one needs a positive attitude that is affirmed constantly by positive self-statements. A cognitive strategy

necessary for the athlete is to utilize verbalization techniques in a constructive and positive manner.

#### Self-directed Verbalization

Various writers have stressed the importance of verbal mediations in the solution of practical problems (Gagné & Smith, 1962; Judson, 1956; Staats, 1957). The importance of self-verbalization in relation to behaviour and subsequent performance has been emphasized in recent literature (Girodo, 1977; Maltz, 1960; Meichenbaum, 1975; Nideffer, 1976; Ronan, 1977). This literature has suggested that the patterns of self-verbalization can, under proper conditions, be altered in order to produce a desired change in performance.

There is a general agreement that people will behave and perform in accordance with their thoughts and emotions (Girodo, 1977; Maltz, 1960; Meichenbaum, 1975; Sokolov, 1972). Sokolov (1972) defined self-verbalization as soundless mental speech arising at the instant we think about something. This inner speech determines not only people's mental states and their sentiments and emotions but the delicate actions and adjustments of their bodies (Brooks, 1922). Maltz (1960) claimed that the brain cannot distinguish between an experience that is real and one that is imagined. The brain will therefore initiate signals that will produce the physical action that is

necessary for that situation if it has already experienced that situation. This being the case, self-verbalization, aided by the imagination, can produce the same response from the brain as would a real life experience.

In order to restructure a person's thoughts and beliefs for the purpose of improving performance, what in fact one is concerned about is enhancing the way one feels about oneself. Kleinke (1978) claimed that people use their bodily messages for the purpose of interpreting their attitudes towards objects and issues as well as identifying their feelings of positive or negative affections for themselves and for others. To achieve this it is important that individuals have strong feelings of self-efficacy so that they have the conviction that they can produce the correct behaviour that will produce the correct outcome (Bandura, 1977).

Maltz (1960) and Ellis (1962) agreed that mistakes and errors cannot be willed away, rather they must be replaced with positive thoughts for the body and brain to act towards. Self-verbalization can be used as a coping strategy to help bring about these positive thoughts. Self-verbalization in the form of affirmations must be acceptable to an athlete and relate to the athlete's negative verbalization during games. Branden (1980) claimed that self-esteem can grow in an environ-

ment in which one's dignity, self-respect, and individualism are fostered. Thus, it is imperative that coping strategies be individualized.

Improving one's self-esteem is a gradual process as pointed out by Maltz (1960). He was in favour of gradualness in positive thinking as a means of achieving a success feeling. Individuals should, in the act of self-persuasion, admit to themselves that a successful performance is indeed possible. Ellis (1962) believed that if people undermined their emotions by ill-perception, then they can be taught to undermine their disturbances by logical premises as opposed to illogical premises.

Self-persuasion is an important factor in bringing about change in oneself. If individuals have some past peak performance where they felt they performed with maximized talent and effort, from which to recall, then self-persuasion can be heightened. It must also be realized that people place limits on themselves and these mental obstacles can be removed, because they are not physical impossibilities (Ronan, 1977).

Positive self-verbalization can be beneficial in enhancing self-esteem. It can reinforce self-persuasion techniques and aid the individual in concentrating on appropriate stimuli (Girodo, 1977). Concentrating on the relevant stimuli can become increasingly difficult under

stressful conditions. Barksdale (1972) noted that stress producing situations tend to cause a loss of cognitive control of situations. The loss of cognitive control due to stress has been substantiated by Schachter (1966), who claimed that fear reactions produce a stressor and heightened arousal. Heightened arousal in turn produces anxiety engendering avoidance thoughts, images, and negative self-statements.

Meichenbaum and Cameron (1973) developed a stress inoculation training program (SIT) in which subjects were provided with a prospective defense or set of skills to deal with future stressful situations. Meichenbaum (1975) offered a cognitive theory of self-control through stress inoculation training. Briefly stated, the theory postulates that a four-stage process be used to bring about behavioural change. Initially, the subject must prepare to meet the stressor. This involves examining the reality of the situation and examining one's present reaction and feelings towards the stressful stimuli. Next the subject must be made aware that it is his/her perceptions of the stimuli that are stressful. Through the use of negative self-statements and fearful reaction to stimuli, the individual's fear is reinforced. The individual must prepare to cope with the stressor.

Once individuals can recognize their feelings and

reactions as having a negative orientation, affirmation statements can be used to bring about positive self-feelings and also to act as cues to bring individuals back to reality when negative self-feelings make the individuals lose control of their feelings and emotions. Individuals can cope with the stressor by the positive content and nature of their inner dialogue and images. The fourth and final stage involves positive reinforcement as a result of having successfully coped with the stressor.

The importance of substituting positive affirmation statements in the place of negative self-statements cannot be overemphasized (Girodo & Wood, 1979). If self-affirmation statements are rehearsed in a relaxed state, then maximum effectiveness in their use will be achieved in the stress situation (Averill, 1973).

Affirmation statements can be used as a corrective device for negative feelings about past failures. Maltz (1960) asserted that, if past experiences are allowed to dictate the future, then people will never improve their abilities or enhance their behaviours. Past failures should, therefore, be used as corrective devices.

Evidence reported from a study by Averill (1973), which assessed the effects of a pain tolerance test using verbal distraction techniques versus a control technique,

indicated that the value of verbalization strategies was best attained if the self-instructions are believable, meaningful, and personalized to the subject's needs and desires. It is necessary, therefore, to make the objectives for self-verbalization clear and within reach. The more personalized goals are, the easier it is to perceive their attainment.

In summary, it has been found that inner speech based on self-beliefs can affect reactions and behaviour (Maltz, 1960; Meichenbaum, 1975). Negative feelings can be replaced by positive self-feelings through a process of logical thought which is best generated in a relaxed state (Ellis, 1962; Maltz, 1960). It must be remembered that it is not stimuli that cause stress but individuals' perception of stimuli and the attention they pay to them (Langer et al., 1975). Self-affirmations aid in the concentration of attention towards desired goals and away from anxiety and other undesirable responses. The advantage of self-affirmation statements, according to Meichenbaum (1975), is that they can be effective across all situations that are considered stressful or uncomfortable to people. As long as subjects believe in self-statements and realize that their existing statements and attention toward stimuli affect their behaviour, they will have a means of controlling their own destiny.



Enhancing the individual's self-esteem through the use of affirmation statements and other cognitive strategies such as visualization can be effective. Girodo and Wood (1979) stated that self-affirmation statements are the preferred technique during the educational phase of learning to cope with stress, but they do not operate alone. When self-affirmation statements are combined with visualization procedures, one has an extra dimension with which to attempt to improve performance.

#### Self-directed Visualization

Kaufmann (1979) claimed that mental images are primary symbols of thinking and he, therefore, regarded thought as having imagery as its base. Images exist in the mind in the absence of external objects, and thinking consists of contemplation of these images. When an athlete contemplates an image, a technical question arises. Nideffer (1976) raised the question regarding the difference between imagery and mental rehearsal. Imagery simply involves the ability to develop an image without necessarily analyzing its content. Mental rehearsal involves studying an image in the form in which one wishes to perform it, and analyzing its content for technical efficiency.

Titchener (1914) concluded that thinking in words may and does occur, but is meaningful only when the words are converted into relevant images. However, Kaufmann

(1979) and Horowitz (1970) argued that the thought process is not the imagery, the verbalization, or the action, but rather, that thought operates through different modes of representation which are geared to different information processing functions. Imagery is one such mode of representation. Neisser (1970) distinguished between imagery as experience and imagery as a process. Visual imagery as a process is thought to be related to performance on various tasks such as memory, learning, and problem solving, whereas visual imagery as experience appears to be devoid of functional significance. This is contradicted by Maltz (1960) and Kellner (1978), who stated that the mind cannot tell the difference between a real and an imaginary experience. They are supported in this by Comstock (1921), who concluded that there is no irrelevant imagery. All imagery is relevant to the mind. Despite arguments regarding the value and effectiveness of imagery and the translation of thoughts into pictures, there seems to be agreement as to its use as a mode to bring about experience. It, therefore, seems that self-visualization has the capacity to improve one's performance and seems to be important in creative thinking (Galton, 1883).

Kellner (1978) discussed two visualization procedures which can help improve a basketball player's

performance, as well as develop the athlete's confidence and poise. These procedures are called alpha and beta visualization. The human brain radiates electrical waves in different brain wave patterns. The rhythms of mental energy are measured in cycles per second. When individuals are awake and active their rhythm operates between 14 to 21 cycles per second. This state of mind is called the beta level. A deeper level of mental activity is registered whenever a relaxed state of mind is achieved, as when the cycles per second drop to 7 to 14. This is referred to as the alpha level.

The alpha level can be attained naturally while the athlete lies in bed awaiting sleep or immediately after awaking in the morning. These are the best times to visualize positive mental pictures. The subconscious, at a deeper level of slow electrical activity, is more susceptible to suggestion. The visualization procedure is more vivid when the mind is free of conscious distraction. This level of mental activity can also be attained through relaxation techniques (Bry, 1978; Maltz, 1960).

Beta programming takes place when athletes are fully aware of their surroundings (Kellner, 1978). Beta programming is not as effective as alpha because individuals are dealing indirectly with their subconscious in beta programming. Athletes are programming their

nervous systems through the conscious mind. The advantage of beta is that it can be used any time, any place, and by everybody. However, Short (1953) placed more importance on developing alpha visualization. He stated that people who lack alpha activity altogether are characterized as having extremely vivid imagination. Therefore, alpha visualization should be developed so that athletes can utilize both visualization procedures effectively.

Murphy and White (1978) suggested that athletes can sometimes tap levels of ability that go far beyond what has been expected as the normal range of human accomplishment. Hickman (1979) claimed that the application of visualization to sport is simple and results in what he called inner seeing. Pressman (1979) referred to the unconscious mind as a motivator, a repository of buried, but active, sensitivities, hopes, wishes, fears, and impulses. Pulos (1979) was supportive of these earlier statements. He offered hypnosis as a natural state of consciousness and argued that we slip into dozens of mini-trances daily, during which we turn inwards and focus our inner seeing abilities on our inner realities. Statements by these writers suggest overwhelmingly the importance of cognitive strategies and the relevance of visualization to uncovering new potentials.

Bry (1978) claimed visualization to be the means of

achieving those things that one desires but could never achieve previously because of mental obstacles and limits that one places upon oneself. She asserted that visualization, when performed in a relaxed state and when the individual concentrates on the images, can become the means by which individuals can create what they desire most in life at that moment. Bry is supported in her beliefs by Suinn (1980), who stated that the imagery used in visualization procedures is more than just visual. It is also tactile, auditory, emotional, and muscular.

Both Suinn (1980) and Lane (1980) witnessed improvements in athletic performance in skiing and basketball, following the use of the visuo-motor behavioural rehearsal program. Bry (1978) agreed that improved performance in sport is not only possible, but it has been happening for some time and may set a trend for successful use of visualization in other areas of life.

Pressman (1979), in summarizing research that was carried out on the differences in the functioning of the two sides of the brain, concluded that, in right-handed people, the left side of the brain was the dominant side and the right side was the non-dominant side. It was contended by Pressman (1979) that the dominant side is given more to logical thinking, to language, and to details. The right side is given to the perception of

whole movements and whole ideas, to pictures, and to music. Therefore, by suspending the function of the left side, the right side would be free to operate more. Pressman argued that hypnosis appeals directly to and releases the functioning of the non-dominant side. In a hypnotic state imagery is more vivid, mental rehearsal is more effective, and the cultivation of more positive attitudes is assured. This is a verification of Ornstein's (1972) work and its effectiveness is supported by Bry (1978).

Kellner (1978) stated that self-image determines performance. There is no factor more decisive in athletes' lives than the way in which they think about themselves. Maltz (1960) supported this contention of Kellner's and stressed that individuals' actions, feelings, behaviours, and abilities are always consistent with their self-image. Maltz also stressed that the self-image can be changed. Both Kellner (1978) and Maltz (1960) proposed the use of mental imagery as a means for improving self-image. The visualization process is the realization of the individual's creative mechanism that seeks to achieve as its goal mental pictures, which are created by the use of imagination.

In summary, recent studies have shown that visualization techniques are effective in increasing skill

performance (Lane, 1980; Suinn, 1980), in improving self-image (Bry, 1978; Kellner, 1978; Maltz, 1960), and as an effective coping strategy to alter negative feelings and attitudes (Kellner, 1978; Maltz, 1960; Nideffer, 1976).

In competitive sport, athletes may find anxiety increasing to the level where they begin to have negative feelings and thoughts. In order to support visualization strategies, athletes may find value in interrupting the negative thought process by using a thought stopping technique.

#### Thought Stopping

Thought stopping has been regarded as a standard part of the behaviour therapist's treatment repertoire. It is considered particularly useful for the elimination of perseverating trains of thought that are uncreative, unproductive, and anxiety arousing (Wolpe, 1969). The purpose of thought stopping is to redirect attentional responses to absorbing events which elicit competing cognitive activities (Bandura, 1969).

Most research on thought stopping has been carried out primarily for the purpose of decreasing the probability of a particular response, by techniques such as covert conditioning (Cautela, 1973) and the Premack Principle (Homme, 1965). Cautela and Wisocki (1977)

claimed that thought stopping, which is used to decrease the probability of a particular response, has not received much attention because it appears to be too simplistic a technique. Thought stopping, however, requires a careful behavioural analysis and very specific application. Incorrect use of the technique may result in the reinforcement of a maladaptive behaviour pattern, instead of its elimination (Wisocki, 1974).

Guidelines for the use of thought stopping have been established by Cautela and Wisocki (1977). First, individuals should be asked to list any disturbing thoughts which they feel are out of their control. The therapist and subject should then discuss the rationale for eliminating the disturbing thought. Finally, the therapist discusses the self-control aspects of the thought stopping procedure, indicating that once the technique has been learned, it will remain useful at any future time. The technique itself involves individuals shouting the word "stop," either overtly or covertly, the moment they recognize a negative thought beginning to form in their minds. The individual then visualizes a stop sign in red lights for a few seconds. The thought process should then be redirected towards something positive and pleasant.

For the thought stopping technique to be successful,



the subject must be aware of the type of negative phrases he or she uses and have the thought stopping technique rehearsed to the point where negative thoughts can be easily or readily interrupted. Cautela and Wisocki (1977) claimed that thought stopping can be applied directly to anticipatory responses. If a basketball player is preparing to take a foul shot and, just prior to beginning a foul shooting ritual, the player begins to have a negative thought about not succeeding with the foul shot, then thought stopping can be applied to redirect an anticipated response to the negative thought.

The application of thought stopping procedures has been recorded in a controlled study by Stern, Lipsedge, and Mark (1973). They found that it could have brief treatment effects in reducing anxiety in 11 obsessional clients. Wisocki and Rooney (1974) found thought stopping to be effective in reducing smoking in two treatment groups after a 6-week period. Lamontagne, Gagnon, Trudal, and Boisvert (1975) found thought stopping and a self-monitoring technique to be effective in reducing smoking. The results were maintained after a 6-month follow-up period. It seems, therefore, that the effectiveness of thought stopping can vary over a period of time but, regardless of whether the effects of thought stopping were brief or lasting, it has been found to be success-

ful. The effectiveness of thought stopping may also vary across groups and situations.

While the empirical data on thought stopping are meager, clinical observations are generally positive but suggest the need for further research (Cautela & Wisocki, 1977).

#### Summary

It has been found that cognitive mediations are successful in improving sports performance. Individual strategies have been proved successful and combinations of cognitive strategies have also been found to be successful. Relaxation and self-verbalization strategies were considered effective by Ellis (1962) and Maltz (1960). Inner speech was found to affect behaviour (Averill, 1973; Girodo & Wood, 1979; Meichenbaum, 1975).

Visualization strategies performed in a relaxed state were found to be successful in improving basketball foul shooting (Kellner, 1978; Lane, 1980). Bry (1978) and Maltz (1960) stated that the visualization process can help individuals attain whatever goals they wish to pursue. Murphy and White (1978) supported these beliefs and claimed that athletes can exceed the present recognized levels of human abilities. The use of visualization can help attain these new levels (Hickman, 1979).

Many studies have shown that basketball foul shooting can be improved through the use of mental practice (Clark, 1960; Halverson, 1949; Kellner, 1978; Lane, 1980). Relaxation techniques and mental rehearsal have been suggested as being a good starting point for improving skill performance in general (Nideffer, 1976). Thought stopping techniques have recently received more attention and are recommended as an effective method of coping with negative attitudes and anxiety-producing factors.

The most significant point that emerges from the literature is that coping strategies are effective in helping individuals cope with stress and negative self-belief. Ultimately, however, individuals need to improve their self-image as a means towards coping with life situations (Bry, 1978; Kellner, 1978; Maltz, 1960). Individuals' self-beliefs, if they are inadequate, must be changed and restructured by logical thought and visualization, carried out in a relaxed state (Ellis, 1962; Kellner, 1978; Maltz, 1960). An enhanced self-image would be expected to improve performance. Kukla (1972) concluded that individuals' perceptions of their ability were the most important determinants of performance outcomes.

## Chapter 3

### METHODS AND PROCEDURES

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

#### Selection of Subjects

The population which served as subjects for this investigation consisted of the members of the 1980-81 Ithaca College women's varsity basketball team. An informed consent form (Appendix A) was distributed to all members of the team. Thirteen members of the team signed the consent form and voluntarily participated in the study. All athletes attended an introductory educational meeting which attempted to persuade them of the effectiveness of a multidimensional cognitive strategy program and inform them of its rationale. All athletes were requested to submit a written transcript containing a sample of their negative self-statements when they failed in past foul shooting opportunities. From the transcripts, each athlete was placed in a treatment group based on the content of her negative self-statements.

Athletes were divided into three treatment groups: (a) a group whose negative self-statements did not have high negative connotations, (b) a group whose negative self-statements had high negative connotations, and (c) a group whose negative self-statements made them alter their foul shooting technique.

#### Training Instrument and Procedures

The training instrument consisted of a cassette tape composed of the multidimensional cognitive strategies. Each member of a group of athletes received a cassette tape, based on the group's level of negative self-statements (Appendices B, C, and D). Each athlete listened to her own tape every night before going to sleep. This procedure was followed for a period of 21 days, following which each athlete filled out a success programming evaluation sheet (Appendix E) and returned it to the investigator at the time of the posttest. All athletes participated in a small group basketball practice once a week during the training phase to maintain their skill level.

#### Method of Data Collection

Each athlete taking part in the study shot 50 foul shots in a sequence of 5 sets of 10 foul shots. The pretest scores were recorded by the investigator, assisted by the team manager. Following the 3-week training period, the posttest was administered by the

investigator, assisted by a team manager. Athletes again shot 50 foul shots in a sequence of 5 sets of 10 shots. On the same day as the posttest took place, athletes submitted their success programming evaluation sheets to the investigator (Appendix E).

A practice percentage for foul shooting during the last 3 weeks of practice was collected from the team's foul shooting practice statistics. This sample totaled 50 foul shots. The season's foul shooting percentages were also collected for the team and for individual athletes. These data were collected to assess the consistency of the pretest shooting percentages.

#### Scoring of Data

The data recorded from the pretest, posttest, practice statistics, and the season's statistics were recorded in percentages and placed on a tally sheet showing the percentages scored for individual athletes and for the team. Only the pretest and posttest percentages were submitted for treatment.

#### Treatment of Data

A correlated  $t$  test was used to determine if there was a statistically significant difference between the team's foul shooting performance in the pretest and the posttest. The results were tested for statistical significance at the .05 level. Practice and season foul

shooting percentages were subjectively assessed in relation to pretest and posttest scores. Athletes' individual percentages were subjectively assessed in relation to the athletes' success programming evaluation sheets.

#### Summary

Subjects for this study were 13 members of the 1980-81 Ithaca College women's varsity basketball team. Following a pretest of 50 foul shots, all athletes attended an informational meeting stressing the purpose and value of cognitive strategies in sport. Athletes were then requested to submit transcripts describing their negative self-statements used when they failed in past foul shooting opportunities. From the transcripts, multi-dimensional cognitive strategy programs on cassette tapes were created. The programs were structured in relation to the athletes' negative self-statements and the programs were related to the negative self-statements of the three treatment groups.

All athletes carried out the cassette training every night for 21 nights. During the 3-week training period, all athletes took part in small group basketball practices once a week for 3 weeks. Team percentages in the pretest and posttest were submitted to a correlated t test to determine if the results were statistically significant.

## Chapter 4

### ANALYSIS OF DATA

This chapter presents the results that were found when pretest and posttest foul shooting percentages were submitted to a correlated  $t$  test. In addition, this chapter subjectively assesses the percentage of successful foul shots across different conditions for the individual athletes taking part in the study.

#### Analysis of Pretest-Posttest Percentages

Pretest and posttest team percentages were subjected to a correlated  $t$  test. The  $t$  test indicated that there was no significant difference between the pretest and the posttest scores,  $t(12) = 1.65$ ,  $p > .05$ . This result indicates that the multidimensional cognitive strategy program did not significantly affect the team's foul shooting percentage. Hence, the directional hypothesis, which stated that a multidimensional cognitive strategy program will significantly improve foul shooting proficiency, was rejected.

#### Subjective Assessment of Individual Scores

The percentages of successful foul shots across different situations for individual athletes indicates that some athletes scored higher percentages in the posttest than they did in the pretest, in the 50 foul shots taken in the last 3 weeks of regular basketball practice,



or in the season's games. The athletes who showed percentage gains of 12% or higher in the posttest also indicated in the success programming evaluation sheets that they found the training program favourable. Athletes who showed gains of less than 12% or showed no improvement at all did not indicate any satisfaction with the program in the evaluation sheets. Some athletes from each treatment group showed gains of 12% or more. Only one athlete showed a large decrease, which was a 10% decrease from the pretest score. Other athletes' increases or decreases were not assessed as being large enough to be more than a chance increase or decrease. Data from individual and team scores are illustrated in Table 1.

Success programming evaluation sheets indicated that relaxation procedures were overemphasized, thus making attention difficult at times. Evaluation sheets showed that athletes' success with the program seemed to relate to their satisfaction with the program.

Table 1  
 Percentages of Successful Foul Shots  
 Across Different Conditions

Sub- ject	Practice (50) (Last 3 Weeks)	Season* (Games)	Pretest (50) (Last Practice)	Posttest (50)
JB	64	62	58	62
MS	90	80	88	78
AB	64	45	62	74
JE	72	79	68	90
DL	58	51	60	54
SD	74	77	74	88
KP	72	66	68	66
MM	78	83	74	74
NK	70	25	74	70
TS	58	00	50	62
CF	64	20	58	74
MB	78	00	72	74
AW	64	50	70	68
Team Average	69.69	56.77	67.38	71.85

\*Variable number of foul shots.

## Chapter 5

### DISCUSSION OF RESULTS

This investigation combined various cognitive strategies into a multidimensional cognitive strategy program designed to improve the foul shooting proficiency of college female basketball players. Relaxed attention, as outlined by McKim (1972) and proposed for use in basketball by Kellner (1978), was combined with verbalization strategies, as outlined by Meichenbaum (1975), visualization strategies (Kellner, 1978; Maltz, 1960), thought stopping (Cautela & Wisocki, 1977), and a basketball foul shooting ritual described by Kellner (1978) and Nideffer (1976), in order to produce the training program used in this study. The training program differed from the strategies of the writers and investigators mentioned, in that their programs utilized only single or double dimensional cognitive strategy programs.

This chapter provides an overview of the statistical results associated with this study and an assessment of how individual athlete's data affected the team's results, from the point of view of the relationship between each athlete's performance in the posttest and her evaluation of the effectiveness of the multidimensional cognitive strategy program.

The pretest-posttest foul shooting difference was

submitted to a correlated  $t$  test. The results indicated that there was no statistically significant difference between the team's pretest and posttest percentages  $t(12) = 1.65, p > .05$ . This finding led to the rejection of the directional hypothesis which stated that a multidimensional cognitive strategy program would significantly improve foul shooting proficiency.

The team's percentage in the posttest, although it was not significantly different from the pretest, was numerically (4.47%) greater than the pretest score, 2.16% greater than the practice score, and 15.08% greater than the season's percentage. The season's percentage for the team, although there was a varying number of foul shots per athlete, was 15.08% less than the posttest, 10.61% less than the pretest percentage, and 12.92% less than the practice percentage. This would seem to indicate that the pressures of the competitive setting were not present in practice, pretest, or posttest situations. This at least seems to justify the need for coping strategies in foul shooting to deal with the increased pressures of the game situation. Lane (1980) found visuo-motor behavior rehearsal to be most effective under the more extreme conditions of away games. The possibilities, therefore, seem to exist for a multidimensional cognitive strategy program to be effective in pressure situations.

The team's percentage of successful foul shots in the posttest was the result of varying scores by the individual athletes. To subjectively assess and discuss the influence of individual scores on the results of the study, individual percentages were grouped into three categories. The first category included those athletes who improved 10% or more in the posttest. In the second category were those athletes who had increases or decreases of less than 10%; and the third category included those athletes who decreased by 10% or more in the posttest.

Five athletes in this study were placed in the first category. These five athletes had increases ranging from 12% to 22%. All five athletes indicated in their success programming evaluation sheets that: (a) they found the program relaxing, (b) the coping strategies were successful in helping them to block out their negative self-statements and think positively, and (c) the thought stopping technique was useful in aiding them to disregard failure in previous foul shooting situations. These athletes evaluated the program as being successful from their point of view, and in terms of foul shooting across different situations, the athletes in this category scored higher than in their pretest, practice, or season's percentage.

The five athletes in this category were distributed among the three treatment groups. It, therefore, seems that athletes with varying degrees of negative self-statements can improve their foul shooting proficiency, if the cognitive strategy program is related to their self-feelings and meets their individual needs. Averill (1973) stated that a cognitive strategy must be personalized and meet individual needs if it is to be effective. In the case of these five athletes, the cognitive strategies were subjectively assessed as being appropriate to their negative self-statements and to their negative self-beliefs.

The athlete with the highest increase in the post-test, an increase of 22%, indicated in her success programming evaluation sheet that she had a strong belief in the value of the program before she began the training phase. Meichenbaum (1975) and Ronan (1977) both stressed the importance of persuasion and self-belief in bringing about improvements in performance and in maximizing talent and effort. This particular athlete was, therefore, fulfilling one of the major criteria for success, prior to beginning the training phase of the study. She also indicated that she found the tape appropriate to herself and it had, by the completion of the training phase, enhanced her self-confidence and self-esteem.

This fulfills other criteria for success. Branden (1980) claimed that self-esteem will grow when individualism is fostered. The athlete's evaluation is also relevant to the writings of Girodo (1977) and Maltz (1960), both of whom considered cognitive strategies to be effective in enhancing self-image.

In the second category of individual foul shooting percentages were seven athletes who took part in the study. These seven athletes showed increases of 5% or less or decreases of 6% or less. The increases or decreases were not considered large enough to be much more than chance occurrences. None of these seven athletes had more than a 6% difference in the pretest or posttest from their practice percentages. Five of the seven athletes stated that they found the cassette tape to be too long. They also found the relaxation procedures to be too strong and this resulted in the athletes having difficulty in maintaining the necessary level of attention. The other two athletes in the group indicated that they found it difficult to relate to the training program and had problems in visualizing the foul shooting situations they were required to visualize. The type of visualization required of the athletes was alpha visualization and it seems possible that these two athletes may not have had strong alpha visualization capacities. Their

lack of strong alpha visualization capacities suggests the need for individualizing the tape to take advantage of their beta capacities, which are usually strong in people with low alpha capacities (Short, 1953).

It seems apparent that the training program was not personalized enough to be satisfactory to the seven athletes in this second category. The value of individualizing training programs was discussed earlier, and the lack of this individualization could have been causal to the lack of improvement. Another factor which might be responsible for the lack of improvement is the decrease in foul shooting from the time of the pretest at the culmination of the regular basketball season until the time of the posttest 8 weeks later. Halverson (1949) concluded that without practice skill will not improve. If the mental training program in this study was inappropriate to the seven athletes in this category, then the reduction from daily physical practice to once a week practice may have prevented improvements in foul shooting proficiency.

In the case of the athletes in the first category, the cognitive strategy program seemed to have been effective in compensating for the reduction in physical practice. Because these athletes considered the program to be effective, their conclusions seemed to have substan-



tiated the findings of Clark (1960), Halverson (1949), and Vandell, Davis, and Clugston (1943), all of whom found various types of mental practice to be effective in improving foul shooting proficiency.

The third category in the posttest foul shooting percentages was composed of only one athlete who showed a decrease in her foul shooting percentage of 10% from the pretest, 12% from the practice percentages, and 2% from the season's percentage. In this subject's evaluation of the training program, she stated that, although she found the program very relaxing, after a while she became bored with it and had to force herself to listen to the tape every night. This subject's lack of satisfaction with the tape seemed to have influenced the decrease in her foul shooting percentage. Another influential factor in her decreased score was the fact that this subject had the highest pretest percentage, the highest practice percentage, and the second highest season percentage, all of which were not only difficult to maintain but extremely difficult to improve upon. Again, the reduction in practice time might have been a contributing factor in the decrease in skill performance.

The length of the multidimensional cognitive strategy program cassette tape was criticized by many of the athletes in the study. Once athletes became familiar

with the tape, they claimed that familiarity made the tape boring. This may have reduced the effectiveness of the program. However, it was deemed important that the program adequately relax the athletes and have enough time to help them visualize themselves performing their foul shooting ritual and scoring, for teaching thought stopping techniques, and for teaching positive verbalizations to replace negative self-statements. The dissatisfaction by many of the athletes over the length of the tape could be due to a lack of individualization. Over a 3-week period, athletes can become very familiar with the program even if the program is individualized and personalized. However, 3 weeks is the minimum recommended period for success programming as indicated by Kellner (1978) and Maltz (1960).

Because some athletes were not satisfied with the program, it would seem possible that their motivation might be reduced and they, therefore, might not have experienced the potential changes that other more satisfied athletes did achieve in their foul shooting proficiency.

#### Summary

The directional hypothesis, stating that a multi-dimensional cognitive strategy program will significantly improve basketball foul shooting proficiency, was

rejected. The posttest foul shooting percentage, although not statistically different from the pretest percentage, was numerically greater than any of the other foul shooting situations (Table 1).

Athletes' individual results showed improvements of 10% or more for five athletes, relatively little change for seven athletes, and a decrease of 10% or more for one athlete. The athletes' evaluations of the training program indicated that, for the athletes who showed increases of 10% or more, the training program was appropriate while the other athletes in the study indicated that they had difficulty with the length of the tape, or that the tape was not entirely appropriate to their personal perspectives.

It seems that, in the case of the seven athletes who showed relatively little change in foul shooting proficiency following the completion of the training program, these athletes might not possess the capacity for alpha visualization, on which the tape was based. Short (1953) stressed that such individuals might have good beta capacities. It, therefore, seemed that a lack of individualization may have prevented improvements from taking place. This also appeared to be the case with the athlete who had difficulty listening to the tape. The length of the tape seemed to make it boring to some

athletes and this could have influenced their performance in the posttest as they indicated that it was difficult to maintain attentional focus when the tape became too familiar.

Finally, the reduction in practice time may have been a decisive factor in the case of athletes who found the tape inappropriate. Due to the ineffectiveness of the mental practice which the tape was providing, athletes' level of practice would be drastically reduced. In the final analysis this would affect the entire team's posttest foul shooting performance.

## Chapter 6

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

#### Summary

This study assessed the effectiveness of a multidimensional cognitive strategy program involving the use of a basketball foul shooting ritual, relaxed attention, self-directed verbalization, self-directed visualization, and thought stopping on basketball foul shooting proficiency. The subjects were 13 members of the 1980-81 Ithaca College women's varsity basketball team, Ithaca, New York.

All athletes took part in a pretest which involved shooting 50 foul shots in 5 sets of 10 shots. The athletes next underwent the educational phase of the study which consisted of an interview in which the purpose and importance of cognitive strategies were described and their potential effectiveness was impressed upon the subjects. Athletes then submitted a written transcript of their negative self-statements following failure in previous foul shooting opportunities.

From the content of the written transcripts, subjects were divided into three treatment groups. A cognitive strategy program was then created on cassette tape for athletes in each group. The tape attempted to counter the negative self-statements of the athletes and

provide them with coping strategies for dealing with negative self-talk and negative self-feelings, and provide them with a positive orientation towards foul shooting. The athletes experienced 21 days of cassette training, following which they took part in the posttest. The posttest consisted of shooting 50 foul shots in 5 sets of 10 shots. Athletes submitted a success programming evaluation sheet dealing with their acceptance of the training upon completion of the posttest.

The pretest-posttest difference was submitted to a correlated t test. Results indicated that there was no significant difference. The directional hypothesis, which stated that a multidimensional cognitive strategy program will significantly improve foul shooting proficiency, was rejected.

Subjective assessment of individual scores and of athletes' evaluations of the training program indicated that, where the program was felt to be individualized, personalized, and appropriate to the athlete's needs, there were substantial improvements (> 10%). However, where the tape was considered inappropriate to an individual, or too long in content, or difficult to listen to, there was relatively little change from pretest or practice percentages, and in one case a relatively large decrease was seen.

The individualization of the training program seemed to be an important factor in improving the performance of individual athletes and in the outcome of the team's foul shooting percentage.

### Conclusions

The results of this study yielded the following conclusions:

1. The multidimensional cognitive strategy program did not significantly improve the team's foul shooting proficiency.

2. When the content of the training program is personalized to individual athletes then substantial results can be obtained.

3. The content of the training program should be individualized to each athlete.

4. The length of the training program should allow for the athletes' ability to maintain attention to the tape when they are familiar with its content.

### Recommendations for Further Study

1. Conduct a similar study wherein the training program would be individualized for every athlete taking part in the study.

2. A study should be undertaken using a control group to assess if there are variations in foul shooting proficiency occurring with the use of cognitive strategies.

3. A similar investigation could be carried out utilizing a series of pretests and a series of posttests to give more specific indications of foul shooting variance.

4. An investigation should be carried out assessing the effects of a multidimensional cognitive strategy program on an athlete's level of self-confidence, or other factors of self-esteem.



## Appendix A

### INFORMED CONSENT FORM

We are in the process of conducting research in the use of cognitive strategies in improving foul shooting in basketball. The investigation is designed to test the effectiveness of cognitive strategies in improving foul shooting performance.

We are asking you to be subjects to help us in this research. A positive reply will indicate your willingness to take part in both tests and training as outlined.

1. Pretests and posttests involving 50 foul shots per test. Approximate time 30-45 minutes.
2. Interview, involving negative guided imagery to determine verbalizations that may cause you to feel out of control at the foul line. Time involvement approximately 45-60 minutes.
3. Thought stopping training to interrupt negative thoughts. Positive verbalization and positive visualization in the form of success programming. This training involves listening to this package on cassette for a period of 20 minutes every day for a 3-week period.
4. Keeping a daily diary on cassette training (time = 1 minute).
5. Learning a ritual for foul shooting if necessary. Ritual involves systematic behaviour strategies, breathing

and focusing technique (time = 10-15 minutes).

This study will involve undergraduate college female basketball players. We wish to emphasize that data collected will be used for research purposes only. Participation is voluntary and no one need participate. Initial acceptance does not commit you to continue participation and you may discontinue at any time. Please consider the purpose of this study and the time commitment.

Please indicate your decision below. Thank you for your time thus far.

Gerard F. Fitzpatrick, Graduate Student

A. Craig Fisher, Thesis Advisor

\_\_\_\_\_ Yes, I voluntarily choose to participate in this study.

\_\_\_\_\_ No, I do not wish to participate in this study.

\_\_\_\_\_  
Signature

## Appendix B

### GROUP A DIALOGUE: LOW NEGATIVE CONNOTATIONS

Lie on your bed, or sit in a comfortable chair. Close your eyes. I want you to concentrate on your breathing, in order to become relaxed. Take a deep breath. Inhale...hold it...exhale. Repeat this. Inhale...hold it...exhale. With each breath, hold the inhalation and exhale fully. Each time you inhale, feel that you are pulling all your worries, cares, and tensions that you feel into your lungs and exhale them with each breath. Feel more and more relaxed with each breath. With each exhalation more and more of your cares and tensions disappear. Continue this breathing pattern. I will give you this time to become more and more relaxed.

[Pause 20 sec.]

Picture yourself at the foul line ready to shoot some foul shots. Notice how confident you are and also how much you seem to be in control of the situation. You even look a little cocky or arrogant. You really look like you are going to make all your shots. Shoot some shots. Go through your ritual of bouncing the ball, take the ball to shot position, sight the front rim, see the one best spot for the ball to pass over when you release it, inhale...exhale...settle, and release the ball. Don't watch the flight of the ball, only the one

best spot on the front rim. See the ball pass over your spot and SWISH through the net. Hear the SWISH--what a sound of success--SWISH.

Every time the ball is given to you be prepared to execute your ritual and make the shot. Feel that every shot is important; every shot that is practiced now has the capacity of winning some game in the future. Feel good that it is you shooting the shot rather than someone else. You know that you are in charge of the situation and you have enough self-trust to be successful.

Recall some past basketball game in which you went to the foul line in the late stages with a chance to win the game, or increase your team's chances of winning. See yourself at the foul line, receive the ball from the official, execute your ritual, take the ball to shot position, sight the front rim, inhale...exhale, release the ball. See it rip through the net, hear it SWISH.

As you listen to the music that follows, relax, and visualize some of your past opportunities to succeed at the foul line. Shift from game to game, and situation to situation. Realize that every shot is important, every point is important, and your performance is important to the overall team success. Even if you only scored 1 point, that could be the deciding point. Don't minimize the importance of the shot. Each time the shot goes in,

feel good about your success. Your success reinforces your feeling that you're glad it's you at the foul line because competition is what sport is all about. Good athletes look forward to the challenges. You certainly are one of these good athletes, you are in control of the situation, and you know you can come through. Accept the congratulations of your teammates, coach, and fans. Don't be embarrassed with your success--you deserve it because you work so hard. Let the music take you down the path of your best success experiences.

[Music 2 min. 28 sec.: The Odyssey,  
Lonely Looking Sky. Selection  
from Neil Diamond's Jonathan Livingston  
Seagull.]

Keep your eyes closed. Again concentrate on your breathing. Inhale...hold it...exhale. Exhale any tensions, worries, or negative feelings you feel. Feel more relaxed with each breath. Relaxation becomes deeper and the good, warm success feelings remain. Continue your breathing pattern. Take this time to become more and more relaxed.

[Pause 25 sec.]

There are occasions in every basketball player's career when performance is not what it could or should be. I think you understand that there are many oppor-

tunities to fail in sport, and foul shooting is no exception. However, the intelligent athlete is prepared for just such occasions, even though they might rarely come. When a shot misses, acknowledge the miss without second-guessing yourself. There is no value in saying, "How could you miss that," "I really need to make this one," "There goes a point we needed," or "Come on." Neither is there any value in urging yourself on--this is not an endurance contest where effort needs to be maximized. Statements like "you can do it," "you're better than that," "what am I doing wrong," and "no problem" only take away your important inner self-confidence, in essence your real self-confidence. Although these statements may sound positive they leave a lasting negative message. Do not dwell on the miss, and do not overanalyze it. Instead recognize the miss or any subsequent urging or negative talk and say "forgive-forget." Immediately follow this with a coping strategy. Probably the very best strategy is to relax by concentrating on your breathing. Inhale...hold it...exhale. Immediately establish your relaxed breathing pattern. Prior to your next shot take a little more time to get ready, trust yourself that the next shot will be successful, focus a little more on your pre-shot ritual, focus narrowly on the one best spot on the front rim, and release the ball

on its successful path. You have every reason to believe that your next shot will be successful because you have learned a strategy that works. Remember to shut down any negative self-talk, reduce any self-imposed pressure, this is one shot, no more, no less. Avoid making value judgments about your shot and yourself. Instead realize that you have practiced this shot a great deal and trust yourself that you will be able to make it. Resurrect your success experience; you have been successful in past situations. Trust yourself to be successful in the future. As you listen to the music stand at the foul line and continue to shoot foul shots until the music ends. You will notice that most of your shots SWISH. Can you hear the sound? If a shot misses, slow down the shooting pace, and utilize your strategy to regain control. Again, shoot every shot as if it had the capacity to win some game in the future. You will enjoy the opportunity to see and feel yourself getting more and more successful in foul shooting.

[Music 2 min. 28 sec.: The Odyssey,  
Lonely Looking Sky. Selection  
from Neil Diamond's Jonathan Livingston  
Seagull.]

Continue to keep your eyes closed. Concentrate on your breathing. Breathe out any cares that you might have.

Feel more relaxed with each breath. As each day goes by you feel more successful with the skill of foul shooting. Negative thoughts and outside distractions have no influence over me. I feel more in control of my own performance, I am confident, effective, and powerful. That makes me feel good and ready to meet the challenges. I look forward to having the opportunity to display my shooting skill in important situations. Expect greater and greater successes. When you hear the tone, open your eyes, and rewind the tape for the next night's listening.

[Tone]



## Appendix C

### GROUP B DIALOGUE: HIGH NEGATIVE CONNOTATIONS

Lie on your bed, or sit in a comfortable chair. Close your eyes. I want you to concentrate on your breathing, in order to become relaxed. Take a deep breath. Inhale...hold it...exhale. Repeat this. Inhale...hold it...exhale. With each breath, hold the inhalation and exhale fully. Each time you inhale, feel that you are pulling all your worries, cares, and tensions that you feel into your lungs and exhale them with each breath. Feel more and more relaxed with each breath. With each exhalation more and more of your cares and tensions disappear. Continue this breathing pattern. I will give you this time to become more and more relaxed.

[Pause 20 sec.]

Picture yourself at the foul line ready to shoot some foul shots. Notice how confident you are and also how much you seem to be in control of the situation. You even look a little cocky or arrogant. You really look like you are going to make all your shots. Shoot some shots. Go through your ritual of bouncing the ball, take the ball to shot position, sight the front rim, see the one best spot for the ball to pass over when you release it, inhale...exhale...settle, and release the ball. Don't watch the flight of the ball, only the one

best spot on the front rim. See the ball pass over your spot and SWISH through the net. Hear the SWISH--what a sound of success--SWISH.

Every time the ball is given to you be prepared to execute your ritual and make the shot. Feel that every shot is important; every shot that is practiced now has the capacity of winning some game in the future. Feel good that it is you shooting the shot rather than someone else. You know that you are in charge of the situation and you have enough self-trust to be successful.

Recall some past basketball game in which you went to the foul line in the late stages with a chance to win the game, or increase your team's chances of winning. See yourself at the foul line, receive the ball from the official, execute your ritual, take the ball to shot position, sight the front rim, inhale...exhale, release the ball. See it rip through the net, hear it SWISH.

As you listen to the music that follows, relax, and visualize some of your past opportunities to succeed at the foul line. Shift from game to game, and situation to situation. Realize that every shot is important, every point is important, and your performance is important to the overall team success. Even if you only scored 1 point, that could be the deciding point. Don't minimize the importance of the shot. Each time the shot goes in,

feel good about your success. Your success reinforces your feeling that you're glad it's you at the foul line because competition is what sport is all about. Good athletes look forward to the challenges. You certainly are one of these good athletes; you are in control of the situation, and you know you can come through. Accept the congratulations of your teammates, coach, and fans. Don't be embarrassed with your success--you deserve it because you work so hard. Let the music take you down the path of your best success experiences.

[Music 2 min. 28 sec.: The Odyssey,  
Lonely Looking Sky. Selection  
from Neil Diamond's Jonathan Living-  
ston Seagull.]

Keep your eyes closed. Again concentrate on your breathing. Inhale...hold it...exhale. Exhale any tensions, worries, or negative feelings you feel. Feel more relaxed with each breath. Relaxation becomes deeper and the good, warm success feelings remain. Continue your breathing pattern. Take this time to become more and more relaxed.

[Pause 25 sec.]

There are occasions in every basketball player's career when performance is not what it could be or should be. I think you understand that there are many oppor-

tunities to fail in sport, and foul shooting is no exception. However, the intelligent athlete is prepared for just such occasions, even though they might rarely come. When a shot misses, acknowledge the miss without the excess phrases like "not again," "shit," "when are you going to start shooting the way you can," "you can't handle it," "you're so stupid," "don't blow it," "don't screw it up," "do something right for a change," "you asshole," "I feel like such a jerk," "why me?" "choked again." A miss is a miss and it is unwise to allow one error to create another. You know how that goes! When the miss occurs, acknowledge the miss, and say "forgive-forget." If you hear any other favorite response, follow it with "forgive-forget." Use the miss and the cue word as signals to relax by concentrating on your breathing. Inhale...hold it...exhale. Immediately establish your relaxed breathing pattern. Prior to your next shot take a little more time to get ready, trust yourself that this shot will be successful, focus a little more on your pre-shot ritual, focus narrowly on the one best shot on the front rim, and release the ball on its successful path. You have every reason to believe that your next shot will be successful because you have developed a strategy that works. Remember, shut down your negative self-talk. Avoid making value judgments about your shot

and yourself. Instead realize that you have practiced this shot a great deal and trust yourself that you will make it. As you listen to the music stand at the foul line and continue to shoot foul shots until the music ends. You will notice that most of your shots SWISH. Can you hear the sound? If a shot misses, slow down the shooting pace, and utilize your strategy to regain control. Again, shoot every shot as if it had the capacity to win some game in the future. You will enjoy the opportunity to see and feel yourself getting more and more successful in foul shooting.

[Music 2 min. 28 sec.: The Odyssey,  
Lonely Looking Sky. Selection  
from Neil Diamond's Jonathan Living-  
ston Seagull.]

Continue to keep your eyes closed. Concentrate on your breathing. Breathe out any cares that you might have. Feel more relaxed with each breath. As each day goes by you feel more successful with the skill of foul shooting. Negative thoughts and outside distractions have no influence over me. I feel more in control of my own performance, I am confident, effective, and powerful. That makes me feel good and ready to meet the challenges. I look forward to having the opportunity to display my shooting skill in important situations. Expect greater

and greater successes. When you hear the tone, open your eyes, and rewind the tape for the next night's listening.

[Tone]

## Appendix D

### GROUP C DIALOGUE: ALTERED TECHNIQUE

Lie on your bed, or sit in a comfortable chair. Close your eyes. I want you to concentrate on your breathing, in order to become relaxed. Take a deep breath. Inhale...hold it...exhale. Repeat this. Inhale...hold it...exhale. With each breath, hold the inhalation and exhale fully. Each time you inhale, feel that you are pulling all your worries, cares, and tensions that you feel into your lungs and exhale them with each breath. Feel more and more relaxed with each breath. With each exhalation more and more of your cares and tensions disappear. Continue this breathing pattern. I will give you this time to become more and more relaxed.

[Pause 20 sec.]

Picture yourself at the foul line ready to shoot some foul shots. Notice how confident you are and also how much you seem to be in control of the situation. You even look a little cocky or arrogant. You really look like you are going to make all your shots. Shoot some shots. Go through your ritual of bouncing the ball, take the ball to shot position, sight the front rim, see the one best spot for the ball to pass over when you release it, inhale...exhale...settle, and release the ball. Don't watch the flight of the ball, only the one

best spot on the front rim. See the ball pass over your spot and SWISH through the net. Hear the SWISH--what a sound of success--SWISH.

Every time the ball is given to you be prepared to execute your ritual and make the shot. Feel that every shot is important; every shot that is practiced now has the capacity of winning some game in the future. Feel good that it is you shooting the shot rather than someone else. You know that you are in charge of the situation and you have enough self-trust to be successful.

Recall some past basketball game in which you went to the foul line in the late stages with a chance to win the game, or increase your team's chances of winning. See yourself at the foul line, receive the ball from the official, execute your ritual, take the ball to shot position, sight the front rim, inhale...exhale, release the ball. See it rip through the net, hear it SWISH.

As you listen to the music that follows, relax, and visualize some of your past opportunities to succeed at the foul line. Shift from game to game, and situation to situation. Realize that every shot is important, every point is important, and your performance is important to the overall team success. Even if you only scored 1 point, that could be the deciding point. Don't minimize the importance of the shot. Each time the shot goes in,



feel good about your success. Your success reinforces your feeling that you're glad it's you at the foul line because competition is what sport is all about. Good athletes look forward to the challenges. You certainly are one of these good athletes, you are in control of the situation, and you know you can come through. Accept the congratulations of your teammates, coach, and fans. Don't be embarrassed with your success--you deserve it because you work so hard. Let the music take you down the path of your best success experiences.

[Music 2 min. 28 sec.: The Odyssey,  
Lonely Looking Sky. Selection  
from Neil Diamond's Jonathan Living-  
ston Seagull.]

Keep your eyes closed. Again concentrate on your breathing. Inhale...hold it...exhale. Exhale any tensions, worries, or negative feelings you feel. Feel more relaxed with each breath. Relaxation becomes deeper and the good, warm success feelings remain. Continue your breathing pattern. Take this time to become more and more relaxed.

[Pause 25 sec.]

There are occasions in every basketball player's career when performance is not what it could be or should be. I think you understand that there are many oppor-

tunities to fail in sport, and foul shooting is no exception. However, the intelligent athlete is prepared for just such occasions, even though they might rarely come. When a shot misses acknowledge the miss without making any comments or value judgments about the shot--no "I can't believe I missed" or anything like this. Instead recognize the miss, say "forgive-forget" and use the miss as a cue to initiate a coping strategy. Perhaps the best strategy is to relax by concentrating on your breathing. Inhale...hold it...exhale. Immediately establish your relaxed breathing pattern. Prior to your next shot take a little more time to get ready, trust yourself that the next shot will be successful, focus a little more on your pre-shot ritual, focus narrowly on the one best spot on the front rim, and release the ball on its successful path. You have every reason to believe that your next shot will be successful because you have developed a strategy that works. Remember, shut down any negative self-talk. Avoid making value judgments about your shot and yourself. Instead realize that you have practiced this shot a great deal and trust yourself that you will be able to make it. Above all do not make any attempts to alter your shooting technique. Do not adjust your hand on the ball, nor concentrate on your follow through. Pay attention to the one best spot. Do not pay attention to

the position of your elbow. Realize that this is a well-practiced shot and should be shot from feel, not from concentration on technique--certainly not in competition. Concentration should be on the rim and on nothing else. Resurrect your success experience; you have been successful in past situations. Trust yourself to be successful in the future. As you listen to the music, stand at the foul line and continue to shoot foul shots until the music ends. You will notice that most of your shots SWISH. Can you hear the sound? If a shot misses, slow down the shooting pace, and utilize your strategy to regain control. Again, shoot every shot as if it had the capacity to win some game in the future. You will enjoy the opportunity to see and feel yourself getting more and more successful in foul shooting.

[Music 2 min. 28 sec.: The Odyssey,  
Lonely Looking Sky. Selection  
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Continue to keep your eyes closed. Concentrate on your breathing. Breathe out any cares that you might have. Feel more relaxed with each breath. As each day goes by you feel more successful with the skill of foul shooting. Negative thoughts and outside distractions have no influence over me. I feel more in control of my own

performance, I am confident, effective, and powerful.  
That makes me feel good and ready to meet the challenges.  
I look forward to having the opportunity to display my  
shooting skill in important situations. Expect greater  
and greater successes. When you hear the tone, open your  
eyes, and rewind the tape for the next night's listening.

[Tone]

Appendix E

SUCCESS PROGRAMMING EVALUATION SHEET

Now that you have been involved with success programming for approximately 3 weeks, would you please provide me with your personal assessment of the effectiveness of the program for you? Please share your honest feelings, positive and/or negative, about your involvement in the program and what it offered you. Be candid and forthright. Thank you!

Your signature is optional. However, I guarantee you that any sharing of your responses outside this immediate team environment will be anonymous, i.e., your name will never be revealed.

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Your Signature (optional)

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