THE EFFECTS OF RELAXATION RESPONSE AND VISUAL IMAGERY ON PERFORMANCE OF A NOVEL SKILLS TEST

By

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Bachelor of Science

Phillips University

Enid, Oklahoma

1982

Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
MASTER OF SCIENCE
May, 1989

For their loving support, I dedicate this work to:
my parents, Peggy and Paul Davis,
and Granny.

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OF A NOVEL SKILLS TASK

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ACKNOWLEDGEMENTS

I would like to express my sincerest gratitude to those people who are largely responsible for the final completion of this work. To Dr. Steven Edwards, for taking on the awesome task of steering my committee and my wondering thoughts; to Dr. John Rooney for serving on my committee; and most certainly to Dr. Sandra Gangstead for providing my motivation and emotional support, as well as, serving on my committee.

To my family without whom there would have never been enough time, money or emotional strength to have completed this monumental achievement. I thank you all for loving me and encouraging me to be the very best I can be.

And, finally, to my friend and roommate, Jinny, a special thanks for putting up with the paper messes, late nights of constantly pounding typewriter noises, and the occasional bouts of irritability...I thank you.

To all of you my deepest appreciation for your personal sacrifices, patience, and support during this project.

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CHAPTER I

INTRODUCTION

Cognitive strategies and mental preparations in sport are proving to be of equal importance to physical conditioning in maximizing athletic performance. Upon realizing certain of their physical limitations in a given sport, athletes have diverted more attention to developing psychological skills (Fisher, 1976). In his discussion of the necessity of utilizing both mental and physical conditioning, Nideffer (1976) states, "functioning is integrated within a particular competitive situation when both mental and physical processes are working together to accomplish a particular goal" (p. 394).

Within the last decade a variety of cognitive techniques such as transcendental meditation, biofeedback, autogenic training, progressive relaxation, and self-hypnosis, have been employed to cope with the pressures of competitive athletic events. Although the techniques differ, they are all attempts to bring about the same relaxation response. Even though few controlled studies have been conducted concerning the effects of the relaxation response on task performance, the reports seem to indicate that the prerequisites for optimum performance include alterness, attention and reaction time. All show improvement; however, the degree to which performance of the task has been enhanced, has yet to be concluded.

Another cognitive strategy currently used to improve athletic

performance is mental imagery; it is also known as visualization. Imagery can be most easily understood when viewed from its two perspectives, internal and external. From the external point of view, imagery is seeing one's performance from an audiences' perspective. External imagery is like watching a movie or video tape of one's own performance in a competitive situation. The internal form of imagery can be best described as visualizing performance from one's own perspective. This type of imagery is far more popular than the external perspective and has been deemed more valuable to athletic performance (Mahoney, 1979).

Internal visualization, or imagery, consists of developing a very clear picture of the performance situation and imagining or recreating how it feels to perform optimally. This visualization process comes naturally to many amateur and professional athletes. Fran Tarkenton, one of the National Football League's all-time leading passers, used visualization for most aspects of upcoming games. Another top athlete, Bruce Jenner, while training for his 1976 Olympic decathlon victory, used visual imagery to rehearse every event. These and many other cases seem to indicate that imagery may be a valuable tool in achieving top performance in athletics. Controlled investigations by Mahoney (1979) corroborate this point of view. However, due to methodological short-comings such as unsuccessful use of internal imagery and lack of vividness and controllability of the image, further study employing manipulation checks is needed with regard to these factors.

A unique combination of a relaxation technique plus imagery, coined by its creator Dr. Richard Suinn as visuomotor behavior

rehearsal, (VMBR), has received national and international acclaim as an effective method of achieving optimum athletic performance (Suinn, 1976b). This cognitive method of improving attention and increased levels of performance utilizes a two-phase technique. The initial phase of VMBR is designed to produce the relaxation response. The second phase involves mental rehearsal using the internal mental imagery of the impending athletic situation. Limited case studies have indicated that VMBR training can be used effectively in athletic performance. For example, Suinn taught VMBR to skiers at Colorado State University to manage their competition tensions (Suinn, 1976b). The group improved their performance by mentally practicing racing techniques, course concentration, and memorization of the race course. Further case studies also indicate that an athlete could use the VMBR to prepare for a new and difficult maneuver. A gymnast or ice skater, for example, could use the VMBR training to mentally acclimate himself/herself to a new move before he/she would attempt it physically (Suinn, 1976b). Given the demanding schedules of training and competition among many sports, there is a definite lack of controlled studies dealing with the effects of VMBR or any other combination of relaxation and visualization techniques on athletic performance.

In summary, researchers have noted that relaxation training, imagery training, and a combination of the two, such as VMBR, have significantly improved their concentration and performance of sport skills (Bennett & Stothart, 1979; Mahoney 1979; Suinn, 1976b). The fact that this kind of training is becoming an integral part of the athlete's preparation reinforces the idea that it is not a frill or gimmick. Implicit in this approach is the understanding that the

athletes are expected to take more responsibility for their mental preparation. "In addition, they must increase their sensitivity to subconscious motivations and attitudes," (Pulos, 1979, p. 141).

Although the techniques mentioned above have been found helpful to athletes in isolated instances, there have been few controlled studies to empirically validate their effectiveness. Questions to be answered include the empirical validation of relaxation training, visualization training, and a combination of the two. Due to lack of control in field studies on athletes, experimenters are forced to conduct investigations on non-athletes to determine the effectiveness of these techniques. This use of non-athletes in a non-competitive test of skills on a novel task is hope for future athletes.

It is, therefore, the principal value of this investigation to provide additional information concerning the relationship of the aforementioned cognitive strategies to the performance of a novel task by non-athletes.

Statement of the Problem

The problem addressed in this investigation was to determine the effects of relaxation, visualization, and a combination of these two techniques, on the performance of a novel task.

Delimitations

This study was delimited to:

1. Volunteer students from Oklahoma State University enrolled in the 1987 fall school session.

2. Novel task performance as measured by the Cratty-Pigott

throw-for-accuracy test.

3. An eight-session program of relaxation, visualization, or combined relaxation and visualization training program.

Limitations

This study was limited by:

1. The actual number of treatment sessions administered.

2. That the subjects were volunteers and not randomly selected from the actual number of students enrolled at Oklahoma State University.

3. That the manipulation checks to be used were of a self-reporting nature and are, therefore, subjective.

Assumptions

The following assumptions were made:

1. The subjects who volunteer for this study will be fully cooperative.

2. The subjects who volunteer for this study will maintain their integrity during the treatment phase of this study.

Hypothesis

There will be no significant difference in performance among the experimental subjects and control subjects on performance of a novel task.

Definitions

In order to understand the terms used in this study, the following definitions are provided. The following terms are classified as conceptual or functional. Conceptual definitions are those terms defined by authorities. Functional definitions are those terms which hold special meaning to this study.

Conceptual Definitions

The following terms are categorized as conceptual definitions:

Novel Task. A contrived athletic task selected for this study on the basis of a low degree of difficulty, which can be easily administered with a minimal amount of interference and bias, while allowing for marked improvement in performance through repeated testing (Singer, 1980).

Imagery. A systematic thinking of one's performance in some past or future endeavor (Mahoney, 1979).

Relaxation Response. The relaxation response is characterized by a decrease in the circulatory and metabolic function, decreased muscular tension, and several other physiological adaptations (Benson, 1979).

Visuomotor Behavior Rehearsal (VNBR). A combination of a relaxation responses technique plus imagery, designed to improve task performance (Suinn, 1976b).

Functional Definitions

The following term is categorized as functional:

Non-Athlete. This term will be applied to all subjects if they

are not, nor have ever been considered to be an intercollegiate athlete, either at the NCAA level or NAIA levels of competition.

Research Design

A quasi-experimental research design was utilized to determine the effects of relaxation training, visualization training or a combination of both techniques on performance of a novel task. Three experimental groups and one control group was administered a pre-test and post-test throw-for-accuracy test of skills.

Statistical Analyses

The data gathered in this study were analyzed utilizing a one-way analysis of variance (Jacard, 1983) to examine the differences between the means of the four pre-test group scores and then the four post-test scores. This was selected for use based on its applicability to the independent variables of three or more groups and the emphasis placed on the last factor of post-test scores. The alpha level for statistical analysis will be set at the .05 level. The Newan-Keuls test was administered post hoc to determine the nature of the relationship by testing the null hypothesis for all possible pairs of group means.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The review of literature in this chapter consists of four sections. The sections are categorized as follows: (a) Introduction; (b) Relaxation Response and Athletic Performance; (c) Visual Imagery and Athletic Performance; (d) Relaxation and Visualization and Athletic Performance; and (e) Summary.

Over the years, society has become obsessed with the importance of winning in competitive athletics. Kroll (1979) notes that as a result of those pressures for performance excellence, competitive athletics can produce a great deal of anxiety on the individual athlete. To cope with this anxiety each athlete has developed his/her own particular method of mentally preparing for an upcoming opponent or event. Depending on the given situation, however, different psychological strategies appear necessary in order to maximize athletic performance (Weinberg, Gould, and Jackson, 1979). Furthermore, Meichenbaum and Cameron (1974) suggest that an individual's perception, anticipation, and evaluation of an event actually mediate the effects of that event. Therefore, the manner in which an athlete perceives, imagines, and copes with the anxiety in his/her event in competitive sport situations will likely affect the outcome of that

situation.

The anxiety associated with athletic competition is significant to not only sport psychologists who endeavor to study it, but to the athlete who must survive the troublesome and sometimes debilitating symptoms of nervous panic (Kroll, 1979). For example, after interviewing 125 Japanese athletes returning from the Rom Olympics in 1960, Kroll reports nearly all of them reported being troubled by anxiety to the extent that it affected their competitive performance. The cumulative stress of athletic competition is also suggested in the findings that about half of the American nationally ranked swimmers of 1968 had quit swimming by 1978. The reason cited for leaving competition was the external pressure on the athletes created by the high expectations of coaches and parents (Kroll, 1979).

Although too much anxiety may cause a detriment in motor performance, there appears to be a certain level of anxiety or arousal necessary for the athlete to perform optimally. The Inverted-U-Hypothesis (Yerkes and Dobson, 1980) addresses the notion that there should be an optimal level of arousal where maximum performance would be produced. The Inverted-U-Hypothesis simply states that "increases in arousal are associated with concomitant increases in the quality of performance up to a certain point, after which additional increases in arousal result in increasingly inferior performance. The level of arousal which stimulates optimal performance lies somewhere in the middle ranges of the arousal continuum" (Martens, R. and Landers, D, 1979, p. 29).

However little empirical research has been conducted to determine the optimum arousal level for various sports skills. Oxendine

(1976) has constructed a table of selected sport skills and matched each of them with a numerical optimum arousal level. Skills were placed on a five point scale at a point reflecting the needed ingredients for excellent performance. Those activities high on speed, strength, endurance, but low on complexity and fine muscle control require a high degree of arousal. While those activities requiring most fine muscle control, percision and coordinated movements require a lower level of arousal for maximum performance. Arousal requirements may be seen in Table 1.

TABLE 1

OPTIMUM AROUSAL LEVEL FOR TYPICAL SPORTS SKILLS

Level of Arousal	
#5 (Extremely Excited)	Football Blocking Weight Lifting
#4	Running Long Jump Swimming Races
#3	Basketball Skills Most Gymnastic Skills
#2	Tennis Football Quarterback
#1 (Slight Arousal)	Golf Putting and Short Irons Archery and Bowling
#0 (Normal State)	

Oxendine has demonstrated that athletes must become aware of techniques by which they can effectively manage their level of arousal/anxiety. No one needs to be told that anxiety exists prior to competition; not because of the amount of research attesting to its presence, but simply because it is self evident to even the most casual observer (Kroll, 1979). Especially when dealing with the inter-collegiate and professional athlete, there is sometimes more at stake than just the mere enjoyment of the game. For example, inter-collegiate and professional athletes feel pressure from coaches, fans, media and teammates in addition to their own internal standards of excellence. Additionally, since an athlete's performance is directly related to his/her scholarship or salary, a great deal of pressure is placed on individual achievement. Thus, the anxiety created by the impending competitive situation often results in the athlete entering the athletic arena with a higher level of anxiety than is necessary. In most situations the athlete needs to learn to lower anxiety rather than increase it. Consequently, many different cognitive strategies are currently being employed for controlling anxiety including Zen and Yoga (Ornstein, 1972), progressive relaxation (Jacobsen, 1938), auto-genic training (Schultz and Luthe, 1959), biofeedback (Bennett and Stothart, 1979), and transcendental meditation (Benson, 1975). According to Benson, all fo these techniques, if used properly, bring about the relaxation response. This response is characterized by decreasing circulatory and respiratory response, decreased muscular tension and several other physiological adaptions as seen in Table 2.

TABLE 2

DIFFERENT TECHNIQUES ELICITING THE PHYSIOLOGIC CHANGES OF THE RELAXATION RESPONSE

Physiologic Measurement	Oxygen Consumption	Respiratory Rate	Heart Rate	Alpha Waves	Blood Pressure	Muscle Tension
Technique						
Transcendental Meditation	Decreases	Decreases	Decreases	Increases	Decreases*	Not Measured
Zen and Yoga	Decreases	Decreases	Decreases	Increases	Decreases*	Not Measured
Autogenic Training	Not Measured	Decreases	Decreases	Increases	Inconclusive Results	Decreases
Progressive Relaxation	Not Measured	Not Measured	Not Measured	Not Measured	Inconclusive Results	Decreases
Hypnosis With Suggested Deep Relaxation	Decreases	Decreases	Decreases	Not Measured	Inconclusive Results	Not Measured
Sentic Cycles	Decreases	Decreases	Decreases	Not Measured	Not Measured	Not Measured

Relaxation Response and Athletic Performance

Many methods of relaxation are currently being used to aid in the reduction of anxiety (Benson, 1975). Since its beginnings as a religious practice in many eastern cultures to its eventual use as a psycotherapeutic aid by many mid-nineteenth century doctors, relaxation response has been proven to be an easily taught and highly productive treatment for various diseases.

In describing his method of relaxation response exercises, Dr. Eugene Walker (1975) calls attention to the vague term of anxiety and lends some substantial insight into its meaning with regard to stress. "While there is no completely adequate definition to anxiety, we might refer to it as the reaction we have to a situation where we believe our well-being is endangered or threatened in some way" (Walker, 1975, p. 3).

Benson calls the reaction of threat to our well being as the "flight or fight" response and is triggered by an inborn response of our physiologic makeup (Benson, 1975). Further Benson states, "When we are faced with situations that require adjustment of our blood pressure, heart rate, rate of breathing, blood flow to the muscles, and metabolism, preparing us for conflict or escape" (Benson, 1975, p. 17). Situations that demand that we adjust our behavior elicit this response. "It is observed, for example, among athletes prior to a competitive event" (Benson, 1975, 18). But this response, if not used as it was intended; that is, in preparation for running or fighting with an enemy, but instead it is used inappropriately in this repeated manner "may ultimately lead to the dire diseases of heart attack and stroke" (Benson, 1975, 18). These physiological changes are a result

of the secretion of specific hormones: adrenalin or epinephrine and noradrenalin or norepinephrine (Benson, 1975). This involuntary nervous system, or sympathetic nervous system was the subject of a study by Dr. Neil E. Miller, who borrowed from B. F. Skinner's work with the overt skeletal muscular behavioral effects (Benson, 1975). His study eventually led to work known as biofeedback, which shows dramatically the control one can have over one's own metabolism.

In a controlled study by Bennett and Stothart (1979) involving the effects of biofeedback training on archery performance, results indicated that muscle tension levels could be significantly reduced with biofeedback training. However, there failed to be any significant performance differences among the biofeedback training groups. The general conclusion was that reduction in electromyographic tension levels was not accompanied by increases in archery performance.

Knowing what produces anxiety and knowledge of controlling the negative side effects of too much anxiety, is not always enough. We must also learn how to harness this energetic boost of hormones to the advantage of a successful motor performance. "It is when anxiety becomes excessive that it is a problem. Those who have studied human activation have noted that this is a common feature of many motivating forces. When they are moderate, increasing the amaount leads to increased and better performance" (Walker, 1975, 5).

Eventually, a peak is reached and any additional amount results in deterioration of the performance. This is certainly the case with anxiety. It is then that problems, tensions, and worry develop into a closed loop system that maintains itself rather than being dissipated. The net result is a spiral effect with anxiety increasing at a steady

pace until it is almost unbearable. To stop this process, it is necessary to interrupt the feedback, thus breaking the spiral (Nideffer, 1981).

It then becomes necessary, to introduce the relaxation response exercise as the interruption mechanism to stop the anxiety that is causing the downward spiral or negative feedback loop. Instead of allowing the anxiety to produce the negative physical side effects discussed earlier, the athlete must simply return periodically to a calm resting state and start over (Walker, 1975).

Once the need for a relaxation response has been established, the task then becomes one of selecting the technique or exercise with "the best fit". Many of the techniques now popular among highly-skilled and notable athletes are really combinations of many winning formulas of relaxation response exercises.

In her paper, "Anxiety Management Strategies", Dr. Susan Ziegler focuses on progressive relaxation and traces its roots to biofeedback, autogenic training, cognitive coping strategies, systematic desensitization and hypnosis as potential techniques to be incorporated for the control of anxiety in sport (Straub, Ed., 1980). These four common elements seemed to be a reoccuring theme throughout the literature. Four elements to be success of the relaxation response include: (1) a suitable environment, one that is conducive to the mental atmosphere trying to be achieved; (2) an object to dwell on, be it a mantra word stated over and over, the inhalation and exhalation of one's breath or the systematic release of tension from muscle groups; (3) a passive attitude, to concentrate solely on the feelings and awareness of one's mind set during the exercise to the exclusion

of all distracting thoughts and noises; and (4) a comfortable position that can be maintained for at the minimum twenty minutes (Benson, 1975; Ziegler, 1980; Jacobsen, 1938; Kleinsorge & Klumbies, 1964; Winter, 1981; Walker, 1975; and Nideffer, 1981).

"Athletes who do use these procedures are firm in their belief that they feel better, learn faster, are more relaxed, and have more energy then ever before" (Nideffer, 1976, 177). In conclusion, it would seem that the relaxation response accounts for a general physiological decrease in the practitioner's level of anxiety. However, there is little empirical evidence to support or reject the hypothesis that the relaxation response improves athletic performance.

Visual Imagery and Athletic Performance

Another cognitive strategy which has been used to enhance physical proficiency is mental practice. This includes a variety of techniques such as informally thinking about the task, observing others perform, reading material, or viewing films (Oxendine, 1968; Singer, 1975). Corbin (1972) states that there seems to be little doubt that mental practice can positively effect skilled motor performance, especially when practice conditions are optimal. It is equally clear, however, that mental practice is most effective under certain conditions. For example, research has indicated that mental practice is most effective in the later states of learning (Clark, 1960; Oxendine, 1968; Singer, 1975).

A type of mental practice which has received increased attention in both the psychological and sport psychological literature concerns the effects of imagery on performance (Corbin, 1972; Mahoney, 1979;

Mahoney & Avener, 1977; Morgan, 1973a; Richardson, 19167; Suinn, 1972a). The procedure for practicing imagery is theoretically simple but is often difficult to assess. In this technique, the athlete is asked to close his/her eyes and mentally rehearse a correct movement. The practice of image rehearsal can be divided into two main categories. First is external imagery which is a film-like picture in which the athlete sees him/herself performing the correct act. For example, a tennise player may see his/her whole body, the ball, and his/her opponent as if watching the match from a spectator's point of view. The second category is internal imagery which is being in the situation in which the athlete sees and feels him/herself going through the correct performance. An example of internal imagery is Karen Schuckman's statement, "I see what I would see if I was doing it", during the 1976 Olympic gymnastic trials (Mahoney, 1979).

Internal imagery has been deemed more valuable to athletic performance than external imagery (Mahoney, 1979). As Sage suggests, when the performers are using internal imagery, they are simultaneously transmitting neural impulses to the brain. He further states that "although imagery is not physical in its outward appearance, it inwardly characterizes a physical appearance in that the nervous system is sending out electrical currents through the body cells" (Sage, 1977, 156). Simonton, et al. (1978) indicates that visual imagery would have a training effect upon the musculature and would improve coordination of the muscles so that antagonist muscles would learn to release at a more opportune moment.

Though the physiological effects of imagery upon the musculature are important, the vividness and controllability of the image may be

significant variables. "Vividness" concerns the clarity of the mental picture. For example, the athlete may create a fuzzy, distorted image of his/her performance, thus providing a non-realistic model. In this case, if the visual model is unrealistic or unclear, the beneficial proprioceptive feedback to the musculature may be eliminated. Therefore, if the mental image is distorted, it becomes difficult for the brain to facilitate the transfer of impulses through the proper neuromuscular pathways (Simonton, et al, 1978). "Controllability" in this sense refers to whether the image changes according to the athlete's intentions (Mahoney, 1979). For example, in some case studies, it was shown that athletes could not control the image which they intended to create. In one study with basketball players, several athletes reported that their images seemed almost noncooperative. Then, in dribbling before a free throw, one player imagined that his imaginary basketball simply would not bounce (Corbin, 1972). Another example of faulty imagery is when Dick Fosbury, a high-jumper, spent several minutes using mental visualization on a high jump runway. He reported that he was "jumping in his head and sometimes missed". This delay of time tried the patience of both the crowd and the officials (Corbin, 1972).

However, there are numerous anecdotes which report successful training in imagined rehearsal (Suinn, 1972a). Suinn tells the story of a successful procedure of imagery rehearsal employed by Robert Foster, a former national rifle champion, who was called to Vietnam in a non-combat capacity and mentally rehearsed rifle shooting ten minutes a day for the year that he was away. Upon his return to the U.S. with little practice he entered a national meet and broke his own

world record. In addition, Jack Nicklaus (1974) states that his good shots are ten percent swing, forty percent setup and stance and fifty percent mental picture. He describes his visualization process, "I never hit a shot, not even in practice, without having a very sharp, in-focus picture of it in my head. It's like a color movie" (Nicklaus, 1974, 79).

There have alse been some experimental studies which have sought to identify the effects of imagery upon physical performance. Clark (1960) examined the effects of imagery practice on basketball foul shooting for varsity, junior varsity and novice students. Using imagery techniques for the foul shot, the students were urged to recognize the specific motions involved; then see or view themselves performing the successive motions; and then close their eyes and try to feel the sensations of performing the task. Results indicated a positive effect of mental and physical practice on skill acquisition, an increase in subjects' abilities to adapt to imagery techniques, and a greater degree of effectiveness in mental practice at the higher skill level (Clark, 1960).

Oxendine (1969) studied the relationship of imagery practice on physical performance using three different motor skills including the pursuit rotor, soccer kick for accuracy, and a modified basketball jump shot. Results indicated that the combination of mental practice and physical practice time can be as effective in learning a motor task as that of physical practice alone.

Corbin (1972) notes that there have been some conflicting results in regard to the effects of mental imagery practice on performance. For example, Trussell (1958), concluded that imagery practice produced

no increase in physical performance. The imagery practice groups which performed a ball juggling task did not improve significantly and imagery practice was not effective until combined with physical practice (Trussell, 1958).

Another study concerning the effects of imagery on muscular involvement was conducted by Singer (1975). College women were selected to perform a variety of volleyball skills. It was reported that imagery was not effective on the wall volley. The subjects did learn, however, to visualize and feel the movements associated with the skill. In addition, Singer and Witker (1970) using a pursuit rotor skill suggested that no performance gains were made from mentally visualizing the task.

Thus, there have been both positive and negative findings with regard to the use of imagery in order to enhance motor task development. However, these inconsistent results may have been due to methodological shortcomings such as unsuccessful use of internal imagery caused by an unclear and distorted image. As previously mentioned, successful use of imagery usually involves the practitioners rehearsing internal imagery with a vivid and controllable image.

Relaxation and Visualization and Athletic Performance

Some researchers contend that relaxation based techniques or imagery visualization practice alone is not as effective as a combination of relaxation and visualization (Suinn, 1972b). He argues that his visuomotor behavior rehearsal (VMBR) technique seems particularly

useful for anxiety control in sports. The technique involves an initial relaxation response phase, using his own form or exercise. In this phase, the individual relaxes him/herself both physically and mentally. The second phase involves visualizing performance using mental imagery during a specific stressful situation. For example, a gymnast may see herself performing up to her potential on a balance beam in front of hundreds of spectators.

VMBR has also been used to enhance transfer of the motor skill from practice to competition conditions. A principle from learning theory is that transfer is a function of the degree of similarity between the practice situation and the testing condition. VMBR experiences are so realistic that they enable the athlete to practice performing under conditions nearly comparable to the competition (Suinn, 1976a). Not only do the experiences seem realistic, but through the use of electromyography equipment, recordings were obtained from the leg muscles of a skier during a VMBR session. The recordings showed several spurts of muscle activity suggesting that the nervous system is sending out electrical currents through body cells (Sage, 1977), which may facilitate the coordination of neural-muscular activity (Simonton et al, 1978).

Another use of VMBR is to practice for the unexpected. In a study by Mahoney and Avener (1977) the difference between the successful Olympic tryout competitors and those who did not win a position on the team was in their response to errors. The successful ones used the error as a cue for what needed to be done next, rather than as a source of distraction from the routine. VMBR has been used to train for adaptation, such as, "in a moment, something unexpected

will happen," in order to have the athlete practice quickly adjusting to the circumstances.

Finally, VMBR has been applied as a diagnostic method. Occasionally, neither a coach nor an athlete can determine what went wrong during the event. When a disqualification occurs, VMBR can be used to repeat that part of the event, with instructions to pay attention to what went wrong. Then it is possible to identify the flaw and correct it with another VMBR session.

Suinn has conducted a number of field studies testing his VMBR approach. In one study, U.S. Olympic skiers served as subjects in which the experimental group received VMBR and the control group did not. "The VMBR technique was so effective that the research study lost the use of its control group when the coach of the team chose to race only the more successful experimental group, rather than the matched control group. Therefore, a difference in performance scores could not be adequately assessed" (Suinn, 1976b, 285).

VMBR has also been used to enhance transfer of the motor skill from practice to competition conditions. A swimmer revealed that in a VMBR experience, "she suddenly felt the cold slap of water as she dove into the pool in her imagery. Another skier re-experienced the emotions she had felt during a race when she repeated the scene in her mind" (Suinn, 1976b, 292). In a recent survey of professional alpine ski racers (Suinn and Andrews, 1978), it was discovered that both successful and unsuccessful racers used mental rehearsal, but the successful skiers had more vivid imagery. "Thus, it would seem that VMBR can replicate competition conditions and hence could be used to enhance transfer of practice" (Suinn, 1976b, 288).

There has been only one controlled, unpublished research study using VMBR. Kolonay (1977) used audio tape recordings for VMBR training on eight basketball teams. Her data showed a significant increase in the foul-shooting percentage for the VMBR-trained athletes, but no such changes for the relaxation-only subjects, or the imagery without relaxation subjects.

Due to the lack of controlled studies on the effects of VMBR, it is difficult to ascertain the true value of the technique. Controlled studies are necessary to determine if VMBR is effective in enhancing athletic performance. In addition, if VMBR is effective, are the effects due to the relaxation phase, imagery phase, or a combination of the two phases.

Summary

After reviewing the literature the following trends were predominant: (a) anxiety and stress causes a decrement in the performance and learning of complex skills, (b) the relaxation response has been moderately successful in reduction of anxiety and stress and improving motor performance, (c) visual imagery has helped many athletes to improve their performance in athletic competition through the correct use of vividness and controllability; (d) and a combination of these two techniques has been somewhat successful in the limited testing of VMBR with regard to competitive situations.

CHAPTER III

PROCEDURES

The procedures to be utilized in this investigation are described in this section. The Preliminary Procedures are presented in the following categories: (a) Selection of the Subjects, and (b) Selection of the Instruments. The Operational Procedures are described in the sections entitled: (a) Collection of Data, (b) Treatment Methods, and (c) Manipulation Checks.

Preliminary Procedures

Selection of Subjects

Subjects for this study were selected from the students of Oklahoma State University currently enrolled in the fall semester 1987. Their participation in this investigation was strictly voluntary with no upper age limit imposed. All subjects were given a preparatory session and pre-test of the novel skill. In addition a consent form and personal data sheet were completed. Information about the investigation, investigator, and conditions for participation were also be explained.

Volunteers for this investigation met the following requirements. 1) The first being their status as students enrolled in the fall 1987 session of Oklahoma State University. 2) An additional condi-

tion was their status as voluntary participants, and that they could have withdrawn from the investigation at any point if they felt in any way threatened by the treatment. 3) They must have been considered as a non-athlete with respect to their participation in intercollegiate varsity sports. 4) A final requirement was the subject's ability to successfully participate in all eight method sessions, introductory session, and post-test session.

After the number of subjects had been established, they were randomly assigned into one of four groups for the duration of the investigation. Following the assignments, the three treatment groups made arrangements to conduct eight sessions, one a week for eight weeks, and a meeting for a post-test session. The fourth or control group did not meet again until the post-test session.

Selection of Instruments

The selection of the novel task used in this investigation was dependent upon the following: (a) purpose of this study, (b) the phenomenon to be investigated, (c) inferences to be made, and (d) task reliability, validity, and novelty. Other factors included ease of administration, availability, degree of difficulty to learn and compatability with the subject's maturational level (Singer, 1980). Such a task was located in the book by Cratty and Pigott (1984), Student Projects in Sport Psychology. The question of reliability and validity of the task of novel skill was not determined prior to its use in this investigation. Cratty and Pigott originally developed the task for use in a classroom demonstration of student projects in investigation.

In brief, the task involves placing the subject in a chair with his/her back to a target. The subject is then given a beanbag and instructed to use his/her non-dominant arm and toss it over the opposite shoulder at the target.

Operational Procedures

Collection of Data

All subjects were required to attend the introductory session, after which all volunteers were given a pre-test using the Cratty-Pigott throw-for-accuracy test. The subjects were also asked to fill out a basic information sheet designed to identify each for data collection purposes. Additionally, each subject was asked to read and sign a consent form (see Appendix A). Actual testing procedures were as follows:

The subject is required to sit in a chair with his/her back to the target. It is a plastic container approximately 3 feet high and 2 1/2 feet in diameter and it is approximately 15 feet away from the back of the chair. The objective is to throw the beanbag into the container with the non-dominant arm, over the opposite shoulder. As the subject is seated in the chair, the objective was explained individually. The subject was allowed to view the outcome of each attempt before the beanbag was returned. Each subject was allowed five preliminary throws to the target, checking to see that he/she fully understood the task procedure. Next the subject was given his/her twenty trial attempts with the beanbag and target, with a 10 second time limit between the time he/she is given the beanbag and the actual trial attempt is made.

The investigation was divided into five phases. The first phase was the random division of the subjects into four smaller groups, three treatment groups and a control group. During the second phase, the subjects were given a pre-test of the throw-for-accuracy skills test. The third phase involved the eight sessions of treatment in which the three groups met, at different times, for approximately one hour. Groups received a treatment method respective to their assignment to one of the groups. Following the eight sessions, the fourth phase of the investigation was the self-reporting or manipulation checks completed by each subject from the three treatment groups. Finally, the fifth phase was the post-test in which the subjects from all four groups were given the same Cratty-Pigot throw-for-accuracy skills test following the same procedures utilized in the pre-test. The only alteration to this test was the time limit allowed between each trial. For those subjects who were given a treatment, an additional amount of five seconds was allowed between trials, according to the instructions of the treatment technique, bringing the total time between trial attempts to 15 seconds.

Treatment Methods

Each subject who participated in this investigation was required to attend an introductory session with the researcher. During this time, the researcher explained the study to each subject and the conditions for participation in this study.

All treatments consisted of eight sessions during an eight-week period and one pre-test session and one post-test session based on recommendations by Singer (1975). The relaxation response treatment

in this study consisted of an initial session of approximately one hour during which time the subject was assured by the researcher about the use of relaxation response and the researcher answered any questions concerning it. The subject was then guided through the session by the researcher using a script (see Appendix F). Sessions two through eight were approximately 40 minutes in duration, one week apart. The subject was again guided through the session using the script for relaxation response written by Dr. Eric W. Krenz (1982). This script for relaxation response had been used previously in a study with male athletes at the University of Utah as a means to aid them in obtaining the proper level of non-tightness (Krenz, 1982).

The imagery visualization group followed the same time schedule as group one for the sessions. Likewise, a script was read to them (see Appendix G) and the duration of the first session was one hour while the remaining sessions lasted approximately 40 minutes. The script was developed by Dr. Krenz (1982) and is similar to the relaxation response script but included suggestions for vivid imagery about the novel skill.

The VMBR, or combination group, received the same schedule of sessions, with the same duration times. Their script was a combination of the relaxation response and visual imagery techniques of Dr. Krenz (1982), and included suggestions for vivid imagery about the novel skill.

The control group was not required to attend sessions and was not administered treatment of any kind. Subjects were required to take the pre-test and post-test of the Cratty-Pigot throw-for-accuracy skills test, but did not meet on a regular basis.

During the final week of this study, the subjects were asked to

return to the testing area for a post-test assessment. They were again administered the Cratty-Pigot throw-for-accuracy skills test. Each subject was given five practice trials and then each of the next twenty trials were recorded. Those subjects given treatment were allowed an additional five seconds between throws to apply their treatment, those subjects from the control group were allowed 10 seconds between each attempt. After each attempt, the subject was allowed to view the outcome of his/her attempt.

At the conclusion of the post-test assessment, each subject was given the opportunity to ask questions about the results of the post-test or investigation results. Those who failed to attend all the sessions were disqualified from the investigation.

All subjects were then debriefed at the conclusion of this study. At this time the researcher explained the role of the groups and their relationship to the investigation.

Manipulation Checks

For those subjects involved in one of the three treatments; visualization, relaxation, or VMBR; there was a short questionnaire to fill out immediately following each session. This form of self-reporting enabled the investigator to monitor the progress of subjects with respect to his/her group session. The questions involved in the manipulation checks were based on instructions given during the session and answers were to be provided on a Liekert-type scale ranging from one to 10; with a one representing ability to correctly follow instructions involving the technique, and 10 representing inability to follow the instructions. Copies of these manipulation checks can be found in Appendix C, D, E.

CHAPTER IV

ANALYSIS OF DATA

The purpose of this chapter is to discuss the statistical data which is pertinent to the previously proposed hypothesis. This chapter will present the data in the following sections: (a) Assignment to Groups, (b) Analysis of Hypothesis Data, and (c) Discussion of Results.

Assignment to Groups

The subjects were randomly assigned to one of the four treatment groups following the initial pre-test of the novel skills task. Because of the drop-out of two of the subjects and a change of work schedule of one of the other subjects, the results produced an uneven distribution of numbers in each treatment group. However, the consequence of the imbalance did not affect the equivalency of the random distribution as seen in the pre-test results. Group one was the control group and received no treatment. Group two received the imagery treatment, group three received the VMBR treatment, and group four received the relaxation treatment. Membership numbers were as follows: 1--eight members, 2--eight members, 3--ten members, and 4--seven members.

Analysis of Hypothesis Data

It was hypothesized that there would be no significant difference in performance among the experimental subjects and the control subjects on performance of a novel skills task. Group means and standard deviations of pre-test scores are reported in Table 3. An examination of the one-way analysis of variance (ANOVA) on the pre-test scores revealed no significant difference between the experimental or treatment groups and the control group, thus indicating that the random assignment to groups was equal, $F_{(3,29)} = 2.195$, $(p > .05)$. Table 4 illustrates the ANOVA summary.

TABLE 3

GROUP MEANS AND STANDARD DEVIATIONS OF PRE-TEST SCORES

Group	N	$\bar{X}$	S.D.
Control	8	5.25	2.38
Imagery	8	4.00	2.93
VMBR	10	6.80	2.86
Relaxation	7	4.14	2.04

TABLE 4

ANALYSIS OF VARIANCE
ON PRE-TEST SCORES

Source	SS	df	MS	F
Between Groups	44.9519	3	14.9840	2.1951*
Within Groups	197.9571	29	6.8261	
TOTAL	242.9091	32		

*p = .1100

Table 5 provides the group means and standard deviations of post-test scores. As noted in Table 6, the ANOVA revealed a significant difference between the control group scores and the scores of the group receiving VMBR. When this calculated F ratio was judged to be significant, a post hoc analysis was conducted utilizing the Newman-Kuel's multiple comparison test to determine where significant differences existed among the means. At the .05 level, the pair of groups identified as control and VMBR differed by 2.1233. A summary Table 7 provides a comprehensive look at the findings.

TABLE 5

GROUPS MEANS AND STANDARD
DEVIATIONS OF POST-TEST SCORES

Group	N	$\bar{X}$	S.D.
Control	8	4.88	2.53
Imagery	8	6.00	4.07
VMBR	10	8.90	2.23
Relaxation	7	5.43	3.05

TABLE 6

ANALYSIS OF VARIANCE
ON POST-TEST SCORES

Source	SS	df	MS	F
Between Groups	88.7531	3	29.5844	3.2810*
Within Groups	261.4893	29	9.0169	
TOTAL	350.2424	32		

*p = .0349

TABLE 7

MEAN PERFORMANCE SCORES AND STANDARD DEVIATION
FOR THE NOVEL SKILLS TASK

NOVEL SKILLS TASK (20)[C]	(Group) [A]							
	Control (8)[B]		Imagery (8)		VMBR (10)		Relaxation (7)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
$\bar{X}$	5.25	4.88	4.00	6.00	6.80	8.90	4.14	5.43
S.D.	2.38	2.53	2.93	4.07	2.86	2.23	2.04	3.05

A = Total N

B = Number in Each Group

C = Maximum Possible Score

Discussion

In the present investigation, 25 college students were exposed to three cognitive strategies in order to improve their performance on a novel task. Eight were taught relaxation, seven were taught imagery, and ten were taught VMBR. Eight subjects were placed in the control group and received no treatment bringing the total count to thirty-three. The original count was 35, but two people were forced to drop out after the start of the treatment sessions. These groups were administered pre- and post-tests of performance on the novel task of skill. This discussion will examine the effects of the above mentioned treatments on their performance.

Results indicate some individual gains in performance ranging from one to fourteen correct hits in the trial tests from pre- to post-test scores. These increases in total correct hits can be attributed to many variables including the sheer repetition of the skill, familiarity with the test itself, unauthorized practice of the skill, and the assimulation of the cognitive strategies.

Pre-test scores revealed two male subjects scored extremely high. Both men were active members of the LaCrosse team at OSU and even though this is considered a club sport and not an NCAA varsity sport, both men had long histories of participation. They explained that the "Novel" task is, in fact, part of the necessary skill of passing in the game of LaCrosse. They both expressed their agreement on their advantage on the novel test.

Concerning different types of activities, Oxendine (1968; 1976) proposed that different levels of arousal would be required for optimal performance depending on the nature of the task. For example,

this novel task involves coordination and fine muscle control, a low level of arousal would appear to be necessary for optimal performance. The results of the present investigation support this notion since the relaxation subjects demonstrated slight, but not significant, gains of performance in pre- to post-test scores. The VMBR subjects also showed gains in performance levels from the pre-test to post-test scores, over those scores of the control group.

Previous research (Williams & Vickerman, 1976) using hand-eye coordination tasks also found that the relaxation response did not improve performance. It may be concluded, therefore, that despite the physiological evidence indicating that the practice of the relaxation response increases altertness and the maintenance of attention and develops less anxiety and greater stability, these effects are not manifested in terms of improved performance on a novel task. It seems likely that the reason for this may be related to the specific manner in which these changes are accomplished. If, for example, the focus of attention is directed exclusively inward, then it is possible that tasks requiring close attention to external stimuli and relationships would not be beneficially affected (Williams and Vickerman, 1976). Therefore, in the present investigation, relaxation alone was not beneficial to novel task performance.

Just as relaxation alone was not beneficial to novel task performance, imagery alone also provided no significant performance improvement in the present study. According to Suinn (1976b), the imagery of VMBR apparently is more powerful than sheer imagery practice alone. Relaxation plus imagery provides a well-controlled copy of experience. It is different from imagery alone in that it is

a sort of body thinking similar to the powerful illusion of certain dreams at night. Thus, it seems that imagery and relaxation together in a combination treatment are more beneficial to performance than imagery or relaxation alone.

Additionally, only two other controlled studies have been conducted investigating the effects of VMBR on performance. Noel (1980) used VMBR training with 14 male tennis players. Half of the subjects were trained in VMBR on a daily basis, ten days prior to a county tournament. The VMBR training consisted of Jacobsen's relaxation technique followed by imagery of the tennis serve. The other seven subjects also competed in the tournament but did not receive VMBR training. Results showed that the higher skilled players who used VMBR had a significant improvement in their percentage of good first serves whereas VMBR was actually deterimental to performance of lesser skilled players.

The other controlled study dealing with VMBR compared the effects of relaxation, imagery and VMBR. Kolonay (1977) demonstrated that VMBR was more effective than imagery or relaxation alone in improving basketball free throw shooting. Subjects in the VMBR group listened to a ten-minute tape combining relaxation instructions and free throw imagery instructions. The other subjects listened to the relaxation tape alone, the free throw imagery tape alone, or engaged in irrelevant activity. Results showed that the VMBR group increased their free throw percentage from pre-test to post-test while the other groups did not. A methodological problem in Kolonay's study was that she failed to determine whether the groups differed from each other initially. Therefore, it is difficult to draw any conclusions

concerning the differences between relaxation, imagery and VMBR. Nevertheless, the results of the present investigation support Kolonay's findings in terms of performance. It appeared that a combination of relaxation and imagery (VMBR) showed significant improvement for performance on a novel task of skill. But there seemed to be no apparent differences between the various cognitive strategies of imagery and relaxation on performance, as compared to the performance of the control group. Therefore, in the present investigation, we accept the null hypothesis for the effects of the cognitive strategies of visualization and imagery, and reject the null hypothesis for VMBR treatment and its effect on the novel skills task.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Purpose and Procedures

The purpose of the study was to determine which cognitive strategy was most effective in improving performance on a novel skills task.

The subjects were 33 college students enrolled for the fall 1987 semester at Oklahoma State University. Each subject was randomly assigned to either a relaxation, imagery, VMBR or control group. The subjects were informed that the purpose of the study was to improve their psychological and physical capabilities on a novel task of skill. The dependent variable was performance. Data was analyzed by use of a one-way analysis of variance to determine if significant differences existed between the four groups. Alpha was set at the .05 level and the Newman-Kuel's test was to be utilized post hoc to determine if significant differences existed between the scores of different cognitive strategies and the scores of the control group.

Summary, Findings, and Conclusions

Findings indicated that no significant relationship was revealed between the post-test scores for the treatment groups receiving

visualization or relaxation as comparison to the control group. The null hypothesis is therefore accepted concerning these two independent variables. A significant difference did occur between the control group results and those scores on the post-test from the group receiving VMBR treatment. This led to the rejection of the null hypothesis for the treatment known as VMBR in comparison to the scores of the control group post-test.

In summary, it appears that the group receiving VMBR treatment scored significantly higher than the control group in post-test performance of the novel skills task. It also appears that the combined treatment utilizing both the visualization and relaxation techniques produced this significant difference, whereas, the treatments independently did not produce significant differences when compared to post-test scores of the control group.

Recommendations

The following recommendations are offered:

1. A larger sample size should be used in order to facilitate further generalization into a larger population.

2. Further investigations of a similar nature should be conducted in which sports skills are examined.

3. The subjects may require a longer time period in order to become more proficient in the practice of their cognitive strategies.

4. Pulse rates should also be measured at the pre- and post-test levels as well as during each treatment session, to insure proper physical response to the relaxation technique.

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APPENDIXES

APPENDIX A

INFORMED CONSENT FOR EXPERIMENTAL SUBJECTS

The following is an explanation of the research procedures to be used in this investigation. Please read this description carefully. Any questions you may have are welcomed and will be answered by the investigator.

1. Explanation of Relaxation Response

The relaxation response is characterized by a decrease in the circulatory and metabolic function, decreased muscular tension, and several other physiological adaptations.

2. Explanation of Visual Imagery

A systematic thinking of one's performance in some past or future endeavor.

3. Duration of the Research

The research will be conducted over a period of approximately eight weeks. During which time subjects who volunteer to participate will be asked to spend fourty minutes of their time in a research setting, one evening of each of the eight weeks.

4. Description of the Research Procedures

Research to be conducted includes a test of novel skills in which the volunteer will be asked to attempt to throw a bean bag into a plastic container while seated with his/her back to the target. Following this initial test of novel skills, the volunteers will be divided through random assignment, into four groups of equal number. These groups will then be given experimental treatments. One group will be taught the technique of Relaxation Response, the second group will be taught the technique of Visual Imagery. The third treatment group will be given a combination of these two previously mentioned techniques while the fourth group will receive no treatment. Explanations of these techniques are aforementioned. It is hoped that through this research, distinct differences can be inferred as a result of testing.

5. Description of the Risks and Benefits

Careful planning and research have been employed by this investigator to reduce and/or eliminate any foreseeable risks or discomforts to the volunteer subjects. It is hoped that the participants will gain insightful methods of reducing stress and anxiety and to learn a systematic method of thinking through one's endeavors.

6. Confidentiality

The information obtained during the investigation will be kept in strict confidence. At no time will any participant's identity be revealed. Test results will be identified by a numerical code only, and the final analysis of data will focus on participants as members of a larger group.

7. Explanation of Liability

If for any reason you feel psychological counseling is necessary, Oklahoma State University will provide you counseling without charge. Suzanne Alexander, M.S., of the Mental Health Clinic of OSU, has agreed to act as aide in this research project. Her office is located in the basement of the OSU Health Center, and her phone number is 624-7007. The physical activity involved in this research is of a minimal level, it is therefore hoped that no participant will require medical assistance. In the event you feel it is necessary, arrangements will be the responsibility of the participant as no medical assistance will be provided by the investigator. The investigator does not provide insurance for volunteer subjects. Furthermore, to the best of your knowledge, your physical and mental condition is adequate for your participation in this investigation.

8. Freedom of Consent

Permission for you to participate in any of these techniques or skills test, is voluntary. You are free to deny consent if you so desire. Should you decide to participate, you are free to withdraw consent and to discontinue participation in the study at any time, without prejudice.

9. Inquiries

Any questions about the procedures used in the techniques of relaxation response or visual imagery are welcome. If you have any questions, please feel free to ask Tracee Davis, the investigator, for further explanation. Any additional questions or concerns may be directed to Dr. Steven Edwards, Research Advisor, located in the Colvin Center, or by phoning him at his HPELS office during the day at 624-5500. Any research-related injuries should be made known to the investigator immediately.

I have read this form and have had the procedures explained to me. I understand all of the test procedures that I will perform and I consent to participate in this study.

Signature of Participant	Signature of Investigator Tracee Davis Masters Candidate HPELS Department
Witness	Oklahoma State University
	Dr. Steven Edwards Research Advisor
Date	HPELS Department, OSU

APPENDIX B

DATA SHEET

NAME _____ GENDER _____

AGE _____

CLASSIFICATION _____ MAJOR _____

LOCAL ADDRESS AND PHONE NUMBER _____

_____

_____

PLEASE LIST ANY SPORTS YOU HAVE PARTICIPATED IN AT A HIGH SCHOOL OR INTRAMURAL LEVEL.

_____

_____

PLEASE LIST DAYS AND TIMES THAT ARE BEST FOR YOU TO MEET.

_____

(OFFICE USE ONLY)

Dominant Arm_____ Code Number_____

1 2 3 4 5 6 7 8 9 10 11 12 13

14 15 16 17 18 19 20

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1 2 3 4 5 6 7 8 9 10 11 12 13

14 15 16 17 18 19 20

APPENDIX C

MANIPULATION CHECK: RELAXATION

During your twenty minute relaxation period, how deeply relaxed were you?

1	2	3	4	5	6	7	8	9	10
never relaxed				somewhat relaxed					extremely relaxed

During the twenty minute time period, did your thoughts ever wander?

1	2	3	4	5	6	7	8	9	10
never wandered				sometimes wandered					always wandered

Describe your body's internal activity level.

1	2	3	4	5	6	7	8	9	10
slow/low				medium					fast/high

How well did you follow the instructions of the investigator in becoming relaxed?

1	2	3	4	5	6	7	8	9	10
never followed				sometimes followed					always followed

Comments:

APPENDIX D

MANIPULATION CHECK: IMAGERY

How much difficulty did you have in getting the image to do what you wanted it to?

1	2	3	4	5	6	7	8	9	10
not difficult at all				somewhat difficult					extremely difficult

How vivid were the images you saw?

1	2	3	4	5	6	7	8	9	10
not vivid at all				somewhat vivid					extremely vivid

When you practiced something mentally, do you "see" yourself practicing, as in a video, or do you "see" yourself as if you were looking from your own eyes, with your own senses experiencing the scene?

1	2	3	4	5	6	7	8	9	10

Comments:

APPENDIX E

MANIPULATION CHECK: VMBR

How deeply were you relaxed?

1	2	3	4	5	6	7	8	9	10
never relaxed				somewhat relaxed					extremely relaxed

Did your thoughts ever wander?

1	2	3	4	5	6	7	8	9	10
never wandered				sometimes wandered					always wandered

How well did you follow the instructions of the investigator in becoming relaxed?

1	2	3	4	5	6	7	8	9	10
never followed				sometimes followed					always followed

When you practiced something mentally, did you view yourself internally, or externally?

1	2	3	4	5	6	7	8	9	10

When you practiced something mentally, how vivid was the image?

1	2	3	4	5	6	7	8	9	10
not vivid at all				somewhat vivid					extremely vivid

When you were practicing something mentally, was your image easily controlled?

1	2	3	4	5	6	7	8	9	10
not controllable				somewhat controllable					extremely controllable

Comments:

APPENDIX F

RELAXATION RESPONSE SCRIPT

Please make yourself comfortable, the way you usually like to sit with both feet flat on the floor. That's fine. Thank you. Now close your eyes and make a fist with both hands, while keeping your eyes closed throughout the treatment. Tighter...Tighter...TIGHTER...AS TIGHT AS YOU CAN AND HOLD THEM...Good...Continue holding it and take a deep breath...Deeper... DEEPER...DEEPER...DEEP AS YOU CAN AND HOLD IT. And when you can no longer hold either one, allow yourself to relax both...(Pause)...Good. Feel the relaxation throughout your whole body...And now moving down to your toes, relax your toes...allow your toes to become very comfortable, very relaxed...And now allow the relaxation to flow into the heels of each...relaxing the heels...allowing them to feel very comfortable, very relaxed...Now allow the relaxation to flow up into the ankles...relaxing the ankles...relaxed and comfortable...Now allow the relaxation to flow up into the calves...relaxing the calves...allowing them to feel comfortable and relaxed...Now allow the relaxation to flow up into the knees...relaxing the knees...allowing them to feel very comfortable ...very relaxed...comfortable and safe...Now, allow the relaxation to flow up into your thigh...Relaxing your thighs...relaxing them and allowing them to feel very comfortable...Now allow the relaxation to flow up into your hips...relaxing your hips...relaxing your hips...allow them to feel comfortable and relaxed...Now allow the

relaxation to flow up into your abdomen...Relaxing your abdomen... relaxing it...allow it to feel comfortable and relaxed...Now, allow the relaxation to flow into the small of the back...relaxing the small of the back...Allowing it to feel very comfortable, very relaxed...Now allow the relaxation to flow up along the spine and into the shoulders ...Relaxing the shoulders...allowing them to feel very comfortable and relaxed...Now allow the relaxation to flow down into your arms and into your hands and into your fingers...Relaxing your arms and hands and fingers...Allowing them to feel very comfortable and very relaxed ...Now allow the relaxation to flow up into the neck...Relaxing your neck...Allowing it to feel very comfortable, very relaxed...Now allow the relaxation to flow up into your scalp...Relaxing the scalp... Allowing it to feel comfortable and relaxed...Now allow the relaxation to flow down into your forehead, relaxing your forehead...allowing it to feel comfortable and relaxed...Now allow the relaxation down into your eyelids...Relaxing your eyelids...Allowing thèm to feel very comfortable and relaxed...Very relaxed...Now go ahead and take a deep breath...as deep as you can and as you exhale, do so through parted lips...Allow your whole body to relax as you exhale...That's good ...Relaxed...Now allow yourself a few moments to explore this new place of relaxation...(Pause).

And now allow yourself to be at the top of a flight of stairs...Allow yourself to start moving down the stairs at your own pace...A comfortable and safe pace...Down...Deeper...More comfortable ...More relaxed...Deeper...Down..Comfortable...More relaxed...And now, coming to the final ten steps, as I count backwards from ten to one allow yourself to move down those final ten steps...Ten...Deeper...

Nine...Deeper...More relaxed...Eight...Deeper...Seven...More relaxed ...Six...Very comfortable...Five...Deeper yet...Four...Very comfortable...Three...Relaxed...Two...Deeper yet...and One. Feeling very comfortable, very relaxed. Just allow yourself to explore this new place...Feeling very comfortable and relaxed in this new place and I'll return in a moment (Pause).

Allow yourself to listen to my voice again and notice that as you listen to my voice you will feel more relaxed, perhaps more comfortable than you have ever felt before...even as the sound of my voice brings you deeper into this feeling of relaxation, any other noises, voices, or sounds will not distract you, they only serve to bring you deeper...to this place of comfortable relaxation...Enjoy this warm, relaxed feeling you have created...Let it carry you deeper, and deeper to complete relaxation...And remember that any time you need to, you can return to this complete feeling of warm relaxation...Simply allow yourself to tighten your fist, breath deeply and as you release both, this warm comfortable feeling will return...Carrying you deep to your place of calm, warmth...deeper and deeper to your complete relaxation. ...and it's interesting that this relaxation is a part of you and in a few moments I'm going to ask you to take a deep breath, stretch, and to open your eyes. And at that time you will return to your normal, awake state, feeling very refreshed, very awake, and very clear.

Now, please stretch, take a deep breath, and open your eyes to a new, alert, and revitalized state. And remember to thank yourself for such a good and relaxed session (END).

APPENDIX G

VISUAL IMAGERY SCRIPT

Please make yourself comfortable, the way you like to sit with both feet flat on the floor. That's fine. Thank you. Now close your eyes and allow yourself to relax. (Pause) Good. Now, just allow yourself to listen to my voice, and you'll find that all other sounds, noises, or voices will not distract you...you will only allow yourself to concentrate on my voice. Picture in your mind a room...any room...one from your past or one you have never seen before...this is your room...a work room...a relaxation room...a get-away room. Take a moment and see your room clearly in your mind...if it's a room from your past, then vividly recall each detail of your room. If it's a new room, take time to decorate your room to suite your tastes...That is it, see the walls, their color, their texture, the floor coverings, the lighting...picture everything about your room as clearly and distinctly as possible. Good, now take another moment to enjoy...your...room. (Pause) Now, just allow yourself to listen to my voice again, and as you do, remember that your room is a part of you to keep and think of often. Anytime you need or want to, just return to your room...Now imagine please that your room has a chalkboard, of any size, color, or shape...your chalkboard...perhaps you can hold it in your hand, or stand in front of it...but no matter how you see it...it is <u>your</u> chalkboard (motion picture screen may be sub-

situated for chalkboard). [It is noted that during latter sessions, the chalkboard is replaced by the motion picture and the "words" are replaced by the suggestion of practicing the novel task of skill. First from the external viewpoint and then the viewpoint of internally.] Now think carefully, and see your hand with a piece of chalk, writing the word concentration, upon your chalkboard...Each letter clearly spelled out as you place it on your board...Concentration (other words include: calm, control, confidence, and correct). Even as you see the word concentration on your chalkboard, this and any other word(s) will be clearly and vividly seen, now or any time you choose to look at your chalkboard...Boldly written by your hand...in your handwriting...CONCENTRATION. And this is right and good... (Pause. Just as you've written the word concentration on your chalkboard, you may write other words, or phrases or numbers, or names... and each time you write on your chalkboard you can see the word clearly, correctly written, today and for always...your word(s) on your chalkboard...Just put away your chalkboard now, but remember that it is always there for you to use, in your room, any time you need it...Please allow yourself to use it on any occasion to place any important items on, and know that the words will be there for you to recall always.

APPENDIX H

RELAXATION AND VISUALIZATION SCRIPT

Please make yourself comfortable, the way you usually like to sit with both feet flat on the floor. That's fine. Thank you. Now close your eyes and make a fist with both hands, while keeping your eyes closed throughout the treatment. Tighter...Tighter...TIGHTER...AS TIGHT AS YOU CAN AND HOLD THEM...Good...Continue holding it and take a deep breath...Deeper... DEEPER...DEEPER...DEEP AS YOU CAN AND HOLD IT. And when you can no longer hold either one, allow yourself to relax both...(Pause)...Good. Feel the relaxation throughout your whole body...And now moving down to your toes, relax your toes...allow your toes to become very comfortable, very relaxed...And now allow the relaxation to flow into the heels of each...relaxing the heels...allowing them to feel very comfortable, very relaxed...Now allow the relaxation to flow up into the ankles...relaxing the ankles...relaxed and comfortable...Now allow the relaxation to flow up into the calves...relaxing the calves...allowing them to feel comfortable and relaxed...Now allow the relaxation to flow up into the knees...relaxing the knees...allowing them to feel very comfortable ...very relaxed...comfortable and safe...Now, allow the relaxation to flow up into your thigh...Relaxing your thighs...relaxing them and allowing them to feel very comfortable...Now allow the relaxation to flow up into your hips...relaxing your hips...relaxing your hips...allow them to feel comfortable and relaxed...Now allow the

relaxation to flow up into your abdomen...Relaxing your abdomen... relaxing it...allow it to feel comfortable and relaxed...Now, allow the relaxation to flow into the small of the back...relaxing the small of the back...Allowing it to feel very comfortable, very relaxed...Now allow the relaxation to flow up along the spine and into the shoulders ...Relaxing the shoulders...allowing them to feel very comfortable and relaxed...Now allow the relaxation to flow down into your arms and into your hands and into your fingers...Relaxing your arms and hands and fingers...Allowing them to feel very comfortable and very relaxed ...Now allow the relaxation to flow up into the neck...Relaxing your neck...Allowing it to feel very comfortable, very relaxed...Now allow the relaxation to flow up into your scalp...Relaxing the scalp... Allowing it to feel comfortable and relaxed...Now allow the relaxation to flow down into your forehead, relaxing your forehead...allowing it to feel comfortable and relaxed...Now allow the relaxation down into your eyelids...Relaxing your eyelids...Allowing them to feel very comfortable and relaxed...Very relaxed...Now go ahead and take a deep breath...as deep as you can and as you exhale, do so through parted lips...Allow your whole body to relax as you exhale...That's good ...Relaxed...Now allow yourself a few moments to explore this new place of relaxation...(Pause).

And now allow yourself to be at the top of a flight of stairs...Allow yourself to start moving down the stairs at your own pace...A comfortable and safe pace...Down...Deeper...More comfortable ...More relaxed...Deeper..Down...Comfortable...More relaxed...And now, coming to the final ten steps, as I count backwards from ten to one allow yourself to move down those final ten steps...Ten...Deeper...

Nine...Deeper...More relaxed...Eight...Deeper...Seven...More relaxed ...Six...Very comfortable...Five...Deeper yet...Four...Very comfortable...Three...Relaxed...Two...Deeper yet...and One. Feeling very comfortable, very relaxed. Just allow yourself to explore this new place...Feeling very comfortable and relaxed in this new place and I'll return in a moment (Pause).

Allow yourself to listen to my voice again and its interesting that now as in the future, you will be able to move to the proper level of relaxation at any time, by simply making a fist with either hand and as tight as you can, taking a deep breath, holding it with your eyes open, holding both as long as you can and then releasing them and you will automatically move to the proper level of relaxation at whatever time and for whatever task that is ahead of you and you can do this in the middle of any task, and you can always move to the proper level of relaxation with greater concentration. And you can do this at anytime. Also, at any time you need, you can move to the proper level by making the fist, taking a deep breath, holding both and when you release them you will automatically move to the proper level of relaxation with greater concentration and you can do this at any time, for any task, and this is good and right...You will feel confident in your ability to do whatever task is ahead of you and you can move to this place of relaxation at any time by simply making a fist with both hands, taking a deep breath, holding both with your eyes closed, and when you release them allow yourself to move down the stairs and to your place of relaxation where you can work on anything you need...And you can do this whenever you need.

Your use of this relaxation period is totally up to you...in your

mind's eye you can do or say, or become all that you want to be... This feeling of confidence, and calm can be yours any time...simply make a fist, take a breath, and when you can no longer hold either, allow yourself to return to this proper level of relaxation, and feel confident that any task that lies before you will be accomplished more easily and with greater levels of concentration, and retention than ever before...(pause)...Now just allow yourself to listen to my voice again, and congratulate yourself for creating such a warm, relaxed and comfortable feeling...Just allow yourself to imagine a room...any room...one from your past or one you have never seen before...this is your work room...and any time you need to you can come to your room and enjoy these feelings of relaxation and comfort...Just take a few minutes to look at your room...if it's a new room, then spend these minutes decorating your room to suite you...if it's a room from your past, take time to familiarize yourself with every detail...(pause). Now just allow yourself to listen to my voice again, and as you hear my voice allow yourself to sink deeper, and deeper into those soft, comfortable feelings of relaxation...And remember your room is always there for you any time you need it...Good, now allow yourself to picture a chalkboard...any size, shape, any color, <u>your</u> chalkboard (<u>motion picture screen may be substituted for the chalkboard</u>) [It is noted that during the latter sessions, the chalkboard is replaced by the motion picture screen and the "words" are replaced by the suggestion of practicing the novel task of skill. First from the external point of view, and then from the external point of view.]... And as you focus on the chalkboard just raise your hand and then lower it...take your time, see it clearly...good, now picture your own hand

with a piece of chalk and write the following word on the chalkboard...CONCENTRATION...spell it out...see each letter clearly defined as you spell it on your board...Study your word, and as you see it clearly on your board it will become a part of you...and remember that this is right and good [additional words include: confidence, calm, control, correct.] As soon as you've finished with your word, put the chalkboard away, but remember that it is always a part of you...as is your room, and any time you need to return to your room you need only to relax, and it will always be a part of you, also the chalkboard and the word(s) written on it...Now clear your mind again...listen only to my voice...and as you sink deep into your feelings of relaxed, comfort, remember to thank yourself for such a good session...

And now in a few moments I'm going to ask you to take a deep breath, stretch, and to open your eyes. And at that time you will return to your normal awake state, feeling very refreshed, very awake, and very clear, remembering what you've just learned, knowing that you can move to the proper level of relaxation for whatever task is ahead of you, whether you need to move up or whether you need to move down to the proper level of relaxation. And you can do this by simply making a fist, taking a deep breath, holding both, and then releasing them. And you will automatically move to the proper level of relaxation for what ever task lies ahead of you.

And now take a deep breath, stretch, and open your eyes.

VITA[2]

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