

EFFECT OF COGNITIVE STRATEGIES
ON ENHANCING SELF-EFFICACY,
LEARNING AND PERFORMANCE
IN A SPORT PERFORMANCE TASK

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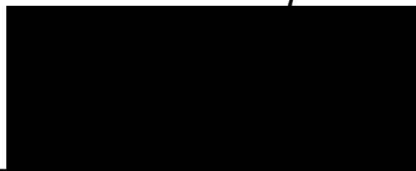
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Abstract

The purpose of this study was to investigate the effect of relaxation, self-talk, imagery, and physical practice on enhancing self-efficacy and the learning and performance of goal kicking in rugby. Data were collected from nine, grade 9, male rugby players. The study utilized a single-case ABAB maintenance design. Five behaviors were targeted: goal kicking accuracy, goal kicking height, total goal kicking performance, level of self-efficacy, and strength of self-efficacy. The data were analyzed by visual inspection, stability of baseline, changes in mean and level between baseline and intervention conditions, and changes in trend across experimental phases (Kazdin, 1982). The results indicated that the physical practice intervention (PP) and physical practice / imagery intervention (PI) produced consistent and systematic improvements in goal kicking performance. The PI intervention also produced the most efficient improvements in both level and strength of self-efficacy measures. The PI intervention produced equally strong goal kicking learning effects as the physical practice / relaxation / self-talk / imagery intervention (COM). The PP intervention produced the most consistent self-efficacy maintenance effects. It appeared that cognitive strategies can be useful in mediating self-

efficacy, and learning and performance. However, the individuality of the results needs to be stressed.

Examiners:



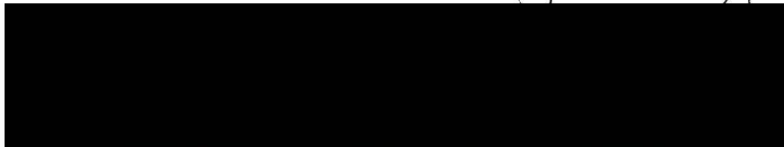
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DEDICATION

To my family,
especially Dad,
for your support and inspiration.

* *
* Mum *
* *

CHAPTER I

Introduction

The role of cognitive techniques in athletic performance has become a central focus for sport psychology (Weinberg, 1982). Of these techniques, imagery, positive self-talk, relaxation, and self-confidence have all been claimed to influence an individual's sport performance (Feltz, 1984; Weinberg, 1982). However, results of empirical research remain unconvincing.

Specifically, within the field of imagery, several studies have shown evidence that imagery enhances motor-skill performance (Epstein, 1980; McFadden, 1982; Mendoza & Wichman, 1978; White, Ashton & Lewis, 1979; Ziegler, 1987a), whereas other studies have failed to demonstrate that imagery contributes to motor performance (Andre & Means, 1986; Eby, 1986). In addition, McIntyre (1987) concluded that while imagery did not appear to facilitate motor-skill learning, it could act as a performance benefit to non-elite athletes.

In their summary of research of imagery and sport, Feltz, Landers & Becker (1988) concluded that imagery was superior to no practice at all but was more effective when combined with physical practice. However, physical practice alone was still identified as the most effective technique for improving performance.

Research investigating the effect of positive self-talk on athletic performance has also produced mixed results. For example, Weinberg, Smith, Jackson & Gould (1984), Wilkes & Summers (1984), Rushall, Hall, Roux, Sasseville & Rushall (1988), & Ziegler (1987b) found that positive self-talk could enhance athletic performance. In contrast, Weinberg (1986) and Weinberg, Gould, Jackson & Barnes (1980), failed to show any performance facilitating effect of positive self-talk.

There has been a considerable body of anecdotal, case study, and research evidence supporting the notion of athletic performance improvement following relaxation training (Suinn, 1976; Weinberg, Seabourne & Jackson, 1982; Wrisberg & Anshel, 1989). The combination of relaxation and imagery has been shown to be particularly successful (Greenspan & Feltz, 1989; Wrisberg & Anshel, 1989). Feltz (1984) suggested that the combination of positive self-talk with arousal reduction techniques such as relaxation training could be more effective in enhancing performance than by using each technique alone.

Self-confidence is often cited as a cognitive factor thought to affect sport performance (Feltz, 1988). McKenzie (1989) suggested that the concept of self-efficacy as developed by Bandura (1977) could provide the basis of future studies. Studies investigating the influence of cognitive strategies on self-efficacy in sport have been

inconclusive (Feltz, 1988).

The question remains as to whether mental strategies enhance motor-skill learning and performance and/or produce feelings of self-efficacy. Anecdotal evidence from the training of an American college football kicker (Titley, 1976) and communications with leading Canadian rugby goal kickers (G.Rees, R.Ross, M.Wyatt, personal communications, 1989) suggest that imagery, positive self-talk, and relaxation, play important roles in facilitating performance and feelings of self-efficacy. Empirical research evidence is required to test for these effects. For this reason the present study was developed to examine the effect of cognitive interventions on the skill of goal kicking.

Purpose of the Study

The primary purpose of this study was to investigate the effects of physical practice, relaxation training, positive self-talk, and imagery, on the learning and performance of goal kicking in rugby.

A secondary purpose was to determine the effects of each cognitive strategy intervention on the enhancement of subject's goal kicking self-efficacy.

Research Questions

The research questions addressed by this study were:

1. Will each subject's goal kicking performance improve

as a result of each of the different training conditions?

2. Which training condition will produce greater shifts in magnitude and rate of change with each subject's goal kicking performance?

3. Will each subject's goal kicking self-efficacy increase as a result of each of the different training conditions?

4. Which training condition will produce greater shifts in magnitude and rate of change with each subject's goal kicking self-efficacy?

5. Will goal kicking and self-efficacy be maintained as a result of the different conditions?

6. Which training condition will produce greater goal kicking and self-efficacy maintenance?

CHAPTER II

Review of Literature

This chapter presents a current review of literature on the theories and research on the effects of cognitive strategies on learning and performance. The topics to be reviewed are learning and performance, imagery, relaxation, positive self-talk, and self-efficacy. A review of literature on cognitive strategy research design is also included.

Learning and Performance

One of the issues in research has revolved around the contradictions involving the variables of learning and performance and the paradigms that are required to test for these effects. Research has generally been concerned with the enhancement of motor skill performance. Little evidence has been provided to indicate mental preparation effects on enhancing the learning of motor skill. One problem has been that many researchers have neglected to differentiate between a learning variable and a performance variable in motor skills.

Lawther (1968) defined performance as the skill level as it functions at any one time with no expectation of long term or permanent effect on behaviour. Kerr (1982) referred to performance as temporary occurrence that is transitory.

Schmidt (1988) defined a performance variable as having an immediate effect on performance while it is present, but the effect is altered when transferred to another task or situation and is not 'relatively permanent'.

Learning, on the other hand, refers to a change in behaviour or behaviour potential as a result of practice which cannot be attributed to innate tendencies, maturation, or temporary changes in the learner's state (Bower and Hilgard, 1981). Learning is a relatively permanent change in performance resulting from practice or past experience (Kerr, 1982). Schmidt (1988) classified a learning variable as one that not only affects performance when it is present, but also when the variable has been removed.

In order to assess the effects on learning, a transfer or retention paradigm must be employed. Transfer is defined as "the gain (or loss) in the capability for responding in one task as a result of practice or experience on some other task" (Schmidt, 1988, p.371).

Retention refers "to the persistence or lack of persistence" (Schmidt, 1988, p. 494). Retention tests are given after a retention interval or special time of no practice. Both transfer and retention can be used to infer that learning has occurred (Magill, 1985).

Imagery

Mental imagery has traditionally been considered to be

part of a larger mental rehearsal field, known as mental practice. There are several definitions of the process but it is generally considered to be a multi-sensory experience. This study has adapted the definition proposed by McIntyre (1987, p.14) to refer to imagery as "the mental rehearsal of motor performance in conditions where the auditory, visual or kinesthetic qualities of movement may be experienced".

A number of theories of imagery have been devised to suggest why imagery assists the improvement of motor behaviour. Four of the most recognised theories are the Gross Framework Theory (Lawther, 1968), the Psychoneuromuscular Theory (Jacobson, 1932), the Attention-Arousal Set Explanation (Schmidt, 1982; Weinberg, 1982), and the Symbolic Perceptual Theory (Feltz and Landers, 1983). However, none have gained general acceptance. Paivio (1985) has claimed that the lack of a theoretical explanation of the imagery construct has been responsible for much of the disagreement over the methods of imagery used in psychologically preparing athletes.

Paivio (1985) has suggested a general analytic framework to determine the effectiveness of imagery techniques under different situations. He believed the framework is a 2 X 2 classification, "which indicates that imaging plays both a motivational and cognitive role in mediating behavior, each one operating at either a general or specific level" (Paivio, 1985, p.238). The motivational

level refers to the degree of general physiological arousal and the specific affect or emotion that may accompany it. The cognitive level of the model refers to imagery affecting general behavioral strategies or specific responses involved in motor skills.

Most imagery studies have focused on the cognitive functions of using imagery as either a general strategy or rehearsal of specific skills with the intention of either strengthening correct responses or eliminating incorrect ones, or both (Paivio, 1985).

Of these studies, there have been several reviews of the effects of mental practice and imagery on motor skill performance (Corbin, 1972; Feltz and Landers, 1983; Feltz, Landers and Becker, 1988; Richardson, 1967). Although the results have been equivocal, the tendency of research findings is that mental practice techniques are associated with improved performance.

Of these reviews, Richardson (1967) concluded that in the majority of studies, mental practice procedures were associated with improved performance. Corbin (1972) similarly reported that mental practice can positively affect skilled motor performance, when practice conditions are optimal. Feltz and Landers (1983) analysis of mental practice studies revealed that mentally practising a motor skill influences performance somewhat better than no practice at all. Finally, a comprehensive review analysis by

Feltz, Landers and Becker (1988) concluded that mental practice does facilitate athletic performance but not as much as physical practice alone or in combination with physical practice.

Recent imagery studies have produced equivocal results. Andre and Means (1986), Eby (1986), Kelly (1989), McKenzie (1989) all found little evidence to indicate improved performance due to imagery training. However, McFadden (1982) and Ziegler (1987a) found positive performance increments as a result of imagery training.

In spite of equivocal research, many authors suggest that for maximum effectiveness in performance improvement, imagery should be combined and alternated with physical practice (McKenzie, 1989; Weinberg, 1982; White, Ashton and Lewis, 1979). Feltz, Landers and Becker (1988) concluded that this notion may be valid, but only if the ratio of the physical to mental practice trials is at least 75:25.

In regard to imagery and learning, major reviews (Corbin, 1972; Feltz and Landers, 1983; Richardson, 1967) have supported the conclusion that imagery is an effective technique in improving motor skills learning. However, few studies have used an appropriate paradigm that allows for measurement of learning.

A study by Ryan and Simons (1981) intended to investigate the effect of imagery on learning two novel perceptual motor tasks. However, a retention test was not

included to check for permanency of learning.

An earlier study which did use an appropriate paradigm for measuring learning was conducted by Oxendine (1969). He investigated the effect of imagery on the learning and retention of three motor tasks. A retention period of three weeks duration was used in each experiment which enabled the researcher to test for relatively permanent changes in performance. It was concluded that up to 50% of the practice time (or trials) in imagery could be as effective in the learning of a motor task, as 100% of the time in physical practice.

Another study which used a retention paradigm was conducted by Ziegler (1987a) on imagery effects on basketball foul shooting. A three week retention interval was used. No significant retention differences emerged among the groups. However, greater prior basketball experience was related to task retention.

McIntyre (1987) examined the effect of imagery on the learning of basketball shooting with both transfer and retention tests. The transfer test was conducted one day following the practice session and the retention test after a one week interval. The study concluded that imagery did not serve to facilitate learning but there was a benefit to performance in non-elite players.

It appears that imagery can have a facilitating effect on performance provided imagery is combined with physical

practice. Similarly, there have been indications that imagery effectively improves motor-skill learning. Clarification of imagery's role in mediating learning and performance is needed.

Relaxation Training

A number of synonymous terms have been used to describe relaxation. These include arousal regulation, emotional control, and arousal adjustment. All these terms embrace the notion of individuals attaining the ability to regulate emotional arousal to maintain optimal level of performance (Harris, 1986).

This attainment of emotional control has been proposed as an important skill for athletes by many researchers (Harris, 1986; Mahoney, 1979; Suinn, 1987; Weinberg, 1982). Many types of relaxation techniques have been used. Four of the most popular are outlined in this section.

Jacobson's (1938) concept of progressive muscular relaxation proposed muscular tension and anxiety as incompatible physiological states. He proposed an individual must learn to distinguish between tension and relaxation. His technique emphasises progressively tensing and relaxing muscle groups, thereby sensitizing them to proprioceptive feedback from these muscles.

Benson (1975) proposed that four components are necessary for the "relaxation response": (a) a quiet

environment, (b) a passive attitude, (c) a mental device involving the repetition of a one-syllable word or "mantra", and (d) a comfortable position.

One relatively simple form of relaxation training is deep breathing which has been suggested by several authors to help athletes (Harris, 1986; Mahoney, 1979; Suinn, 1977).

Suinn's (1972; 1984) visuo-motor behavior rehearsal (VMBR) has been shown to be effective for relaxation. While not strictly a relaxation technique, VMBR involves (a) an initial relaxation phase, (b) visualizing performance during a specific stressful situation, and (c) performing the skill during a simulated stressful situation.

Research is relatively limited in the field. The earliest supporting evidence was anecdotal or case study descriptions (Suinn, 1976; Titley, 1976; Noel, 1980). Later, Weinberg, Seabourne and Jackson (1981; 1982), and Hall and Erffmeyer (1983) provided empirical research evidence for the effectiveness of VMBR in enhancing performance.

Some studies have, however, reported no performance improvement as a result of forms of relaxation training. In the study by Weinberg et al. (1981), the relaxation alone group using a procedure similar to Benson (1975), showed no change in performance. More recently, Wrisberg and Anshel (1989) also reported no performance improvement following Benson's (1975) relaxation procedure. However, a combination of relaxation and imagery, similar to VMBR, did produce

performance enhancement.

In summary, it seems that relaxation training can enhance performance but there is a need for further investigation to determine the mediating relationship between relaxation and performance.

Positive Self-Talk

Within the cognitive strategies literature, positive self-talk has been used synonymously with terms such as self-statements, self-efficacy statements, and positive self-statements. In essence, these terms all involve individuals talking to themselves in an attempt to build up their confidence and convince themselves that they can succeed (Weinberg, 1982).

Positive self-talk has been identified as a performance enhancing technique for athletes (Mahoney and Avener, 1977; Weinberg, Gould and Jackson, 1979). Studies which have investigated the effect of positive self-talk on motor performance have, however, produced conflicting results.

Weinberg et al. (1984) and Wilkes and Summers (1984) have shown performance enhancing effects of positive self-talk on endurance and strength tasks. In a study of cross-country skiing Rushall et al. (1988) also found use of positive self-talk significantly improved performance. Ziegler (1987b) demonstrated the positive effect of self-talk for improving tennis forehand and backhand returns. In

contrast, a study by Weinberg, et al. (1980), however, failed to show any effect of positive self-talk in facilitating the tennis service. Similarly, Weinberg (1986) did not produce any enhancing effect of positive self-talk on a muscular endurance task.

Clearly, there is a need for further research examining the effects of positive self-talk especially in sports settings.

Cognitive Strategies in Combination

Feltz (1984) has stated that positive self-talk and arousal reduction techniques may be more beneficial if used in combination. Wrisberg and Anshel (1989) found a combined use of imagery and arousal adjustment was useful in enhancing basketball free-throw shooting for young athletes. Hamilton and Fremouw (1985) assessed the effectiveness of a cognitive-behavioral training program including relaxation, self-talk, and imagery on coping skills and free-throw basketball shooting. They reported improvements in game free-throw percentage and positive coping strategies. More recently, Kendall, Hrycaiko, Martin and Kendall (1990) investigated the effects of multiple techniques used in combination on basketball game performance. They examined the effectiveness of an imagery, relaxation, and self-talk mental training package on the performance of a specific defensive skill during competition. The overall results

indicated that the combined techniques were effective in enhancing performance across individual subjects. Subjects also developed a very positive attitude toward continued use of the procedures. The authors strongly encouraged further study in this area.

Self-Efficacy

As suggested in Chapter I, independent of performance and learning, imagery may be effective in enhancing the individual's feelings of confidence at executing a motor task. This factor was identified and popularized by Bandura (1977) as self-efficacy. Self-efficacy can be considered as situationally specific self-confidence.

Bandura's (1977) theory posed self-efficacy as a cognitive mechanism for influencing people's motivation and behavior. Expectations of personal efficacy are based on four principal sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states. These four categories of efficacy information are not mutually exclusive in the information they provide, though some are more effective than others.

Performance accomplishments provide the most dependable source of information for developing self-efficacy because they are based in one's own mastery experiences. If these experiences have been repeatedly perceived as successes, they will raise efficacy expectations. If they have been

perceived as failures, they will lower expectations. The influence performance experiences have on perceived efficacy also depends on the perceived difficulty of the task, the effort expended, the amount of physical guidance received, and the temporal patterns of success and failure (Bandura, 1982).

Efficacy information can also be obtained through vicarious experiences of observing or imagining others engaging in a task observers themselves have never performed. Although vicarious sources of efficacy information are generally weaker than performance accomplishments, the power on self-efficacy can be enhanced by a number of factors. The less experience individuals have had with a task, the more they will count on others to judge their talent.

Imagining a performance has been considered as a source of vicarious experience efficacy information that could alter an athlete's belief's about performance (Feltz, 1984; Wurtele, 1986). Perhaps, just mentally seeing themselves performing the task successfully would be enough to convince an athlete of the ability to successfully complete the task (Feltz, 1984).

Persuasive techniques include verbal persuasion and/or performance deception. Efficacy expectations based on this type of information are also likely to be weaker than those based on one's own accomplishments. Furthermore, persuasive

techniques are effective only if heightened appraisal is within realistic limits.

The level and quality of physiological states also provide an indication of self-efficacy. Bandura (1977) asserted that arousal affects behavior through the cognitive appraisal (efficacy expectations) of the information conveyed by arousal. For example, some individuals may construe increases in their physiological arousal as a fear they cannot perform successfully, whereas others may interpret this state as being ready for performance.

Feltz (1984) stated that if arousal can be lessened, through relaxation techniques, anxiety will decrease because efficacy will increase. She assumed relaxation techniques may be more influential in increasing an athlete's self-efficacy, if verbal persuasion were also employed.

In order to test the premises about the origin and function of perceived self-efficacy, Bandura (1977) recommended a microanalytic approach. This requires a detailed measure of magnitude, strength, and generality of perceived self-efficacy. Magnitude or level of self-efficacy refers to the individual's expected performance success. Strength refers to the strength of belief one can succeed at different levels of performance. Generality indicates the number of domains of functioning in which one judges themselves to be confident.

The standard means of measuring self-efficacy have been

to present a list of tasks ranging in difficulty.

Individuals are asked to indicate which tasks they are capable of performing (efficacy level). Also, they rate the strength of their perceived efficacy on a 100-point probability scale, ranging from great uncertainty to complete certainty.

Ryckman, Robbins, Thornton and Cantrell (1982) developed the Physical Self-Efficacy Scale to provide a global measure of perceived physical self-efficacy. The scale has two factors: a perceived physical ability factor and a physical self-presentation factor that reflects confidence in the display of physical skills. Significant correlations between the factors and performance in marathon running, a reaction-time task, and a motor coordination task, have been found (Gayton, Matthews and Burchstead, 1986; Ryckman et al. 1982). However, McAuley and Gill (1983) found a task-specific measure of self-efficacy to be a better predictor of gymnastics performance. This supported Bandura's (1986) assertion that particularized measures of self-efficacy have greater explanatory and predictive power than global measures.

Much of the self-efficacy research in motor skills performance has focused on examining (a) the effects of various methods used to create athletic proficiency in self-efficacy and performance, and (b) the relationship between self-efficacy and performance.

The influence of performance-based treatment techniques on sport and exercise research has shown them to be effective in enhancing both self-efficacy and performance (see Feltz, 1988).

Efficacy information gained through vicarious experiences has been shown to increase perceived efficacy (Gould and Weiss, 1981; McAuley, 1985; Weinberg, Gould and Jackson, 1979). In a more recent study, Feltz and Riessinger (1990) used imagery to enhance self-efficacy beliefs and performance on a competitive muscular endurance task.

Research involving persuasive techniques as a source of efficacy information is limited. Wilkes and Summers (1984) found that positive self-talk could influence strength performance but not efficacy-related cognitions. Weinberg (1986) found no mediating effect of positive self-talk on self-efficacy or performance.

Few studies have investigated the influence of physiological or emotional arousal states on self-efficacy. Feltz and Mugno (1983) found in their work on diving, that although actual physiological arousal did not predict self-efficacy expectancies, perceived autonomic arousal was a significant self-efficacy predictor. Kavanagh and Hausfeld (1986), however, found induced moods did not change strength task efficacy expectations.

Several studies have examined the relationship between self-efficacy and athletic and exercise performance (Feltz,

1988) The results of these studies show a significant relationship between self-efficacy and performance across many sport and athletic activities. However, the studies' results do not prove a causal relationship between self-efficacy and performance.

A few studies have been conducted to investigate the causal relationship in Bandura's (1977) theory (Feltz and Mugno, 1983; McAuley, 1985). These studies found that although self-efficacy was a major element of performance, direct effects of treatment on performance and direct effects of past performance on future performance were also present. These results question Bandura's theory that performance-based treatments affect behavior primarily through self-efficacy, as other mechanisms are also involved.

The present study focused on further examining the effects of cognitive strategies, singularly and in combination, on athlete's task-specific self-efficacy.

Concerns in Research

When testing for the effect of cognitive strategies on learning and performance, a number of variables need to be controlled. Such variables include skill level, task characteristics, and subject characteristics. Each of these will be addressed.

Skill Level

The skill level of the performer appears to be a variable of concern when testing the effect of cognitive strategies. Fitts and Posner (1967) described three stages of motor skill learning. The first is the cognitive phase, where primary concern is to understand requirements necessary to successfully execute the skill. Learning is based on cognitive or verbal processes. The second phase is associative, where emphasis is on identifying the correct motor pattern, by adjusting movements to produce consistent performance. The third phase is autonomous, where the learner has greatly reduced the attention demands of the task, allowing for skilled performance.

Schmidt (1988) indicated that imagery effects should have greater impression during the cognitive or early stage of learning. There is evidence to support this position (Minas, 1978, 1980; Wrisberg and Ragsdale, 1978; Ziegler, 1987a). McIntyre (1987) concluded that although imagery did not facilitate motor learning, it might act as a benefit to performance in non-elite athletes. Most studies, however, report the effectiveness of imagery will be enhanced if the performer has prior experience in executing the task (Corbin, 1972; Feltz and Landers, 1983; Harris and Robinson, 1986; Weinberg, 1982). Mumford and Hall (1985) suggested that experienced performers utilize imagery effectively because they can internalize a more precise model.

The optimal level of arousal may be dependent upon factors unique to the individual. Hall and Erffmeyer (1983), Suinn (1976), and Titley (1976) reported evidence supporting relaxation training in improving performance for individuals with high levels of skill. Noel (1980) reported performance improvement in high ability tennis players following relaxation training, whereas the low ability players performance decreased.

Within positive self-talk literature, few studies have addressed the effect of skill level. Weinberg et al. (1980) concluded no facilitating effects of self-talk for tennis serves of advanced or beginning players. Ziegler (1987b), however, found self-talk effective for improving acquisition of tennis groundstrokes for beginning performers. Rushall et al. (1988) reported performance improvement with elite cross-country skiers following self-talk.

Task Characteristics

Poulton (1957) classified movement skills into open and closed skills depending on the environmental predictability during performance. Open skills are those for which the environment is constantly changing, so the performer cannot effectively plan ahead. Examples of open skills include football, wrestling and fencing. Closed skills are those for which the environment is predictable and stable. Archery, basketball foul-shooting and goal kicking would be examples.

Most imagery research has centred upon closed skills.

Feltz and Landers (1983) found that although studies of both open and closed skills demonstrated an overall positive effect of imagery, the trend was toward being more effective with closed skills.

The majority of relaxation research has been with closed skills. Titley (1976) using a field goal-kicker, Noel (1980) using tennis service, and Hall and Erffmeyer (1983), and Wrisberg and Anshel (1989) using basketball free-throws all demonstrated relaxation training potential in enhancing closed motor skill performance. Relaxation training has also been shown to enhance performance on open motor skills of skiing (Suinn, 1976), and karate sparring (Weinberg et al. 1981).

Positive self-talk research in relation to task characteristics has been limited. Weinberg et al. (1980) using a closed motor skill of tennis service, found no positive improvement as a result of self-talk. However, Ziegler (1987b) using an open skill of forehand and backhand tennis returns, found self-talk effective for skill acquisition. Rushall et al. (1988) using cross-country skiing, predominantly a closed motor skill, found self-talk as a factor in improved performance. Self-talk studies of pure endurance and strength nature, Weinberg (1986) found no endurance performance enhancing effects, whereas, Weinberg et al. (1984) and Wilkes and Summers (1984) showed that self-talk could produce greater endurance and strength

performance.

Subject Characteristics

Two subject characteristics that may affect performance are the ability of individuals to use cognitive strategies, and age of the subjects.

A number of studies have investigated imagery ability and performance. Mumford and Hall (1985) and McKenzie (1989), amongst others, provide support for imagery ability as a variable influencing performance. However, other studies have not produced this (McIntyre, 1987; Eby, 1986). A possible reason for this inconsistent relationship may be that tests employed to measure imagery ability have not been concerned with movement.

Within positive self-talk and relaxation training literature, studies have not exclusively examined individual differences in one's ability to use these cognitive strategies. Weinberg et al. (1980) stated that simply asking individuals to use cognitive strategies may not be effective in improving performance because practice is needed before individuals can fully develop ability to use cognitive strategies.

Wollman (1986) and Greenspan and Feltz (1988) have recommended that thorough monitoring of subjects' experiences are needed due to the subjective nature of how individuals experience cognitive strategies. Detailed manipulation checks may be helpful, in identifying the

quantity and quality of cognitive strategy factors, thereby testing the experimental manipulation. In addition, subjects' thoughts, attitudes, and feelings can be monitored, that may interact with or result from cognitive strategy use, and mediate or modify performance success.

Subject age also appears to be an important variable affecting effectiveness of cognitive strategies. Hellsteadt (1987) indicated that younger athletes are receptive to learning and applied cognitive strategies as long as they felt the strategies would enhance their performance.

Cognitive strategy literature involving young performers is mostly found in imagery research. Feltz and Landers (1983) reported no differences among age groups in their ability to use imagery. McFadden (1982) recommended that the ideal time to introduce imagery, and presumably other strategies, is around 15 years of age, as this is when the athlete tends to be open-minded and receptive to new ideas. Wrisberg and Anshel (1989) offered support for the notion that young athletes are able to learn and use cognitive strategies to enhance performance. Greenspan and Feltz (1989) concluded that more research is needed to address the effect of cognitive strategies with young athletes.

Cognitive Strategy Research Design

Traditionally, the basic paradigm of cognitive strategy

research has emphasised between-group designs, in which the effects of an intervention are evaluated by comparing the performance of different groups. Wollman (1986) advocated the use of single-subject methodology to complement traditional group design research. Bryan (1987) and Greenspan and Feltz (1989) recommended the use of appropriate single-subject designs as they provide an effective way to assess treatment-produced effects, to detect small but meaningful changes in performance over time, and to establish that the observed changes in performance are due to the interventions provided. Additionally, Kendall et al. (1990) argued that single-subject evaluations of mental training interventions are important to extend the literature in this area, and to closely monitor changes in performance of individual subjects.

The underlying rationale of single-subject experimental design is similar to between-groups experimentation. In single-case research, inferences are made about the effects of the intervention by comparing different conditions presented to the same subject over time (Kazdin, 1982, p.104). The primary focus of assessment in single-case design is on behavior to be changed, the target behavior, within each individual.

The features of single-case research can be conveyed by discussing ABAB designs. ABAB designs consist of procedures

where observations of performance are made over time for each individual. Over the course of the experiment, changes are made in the experimental condition to which the individual is exposed (Kazdin, 1982).

The ABAB design examines the effects of an intervention by alternating the baseline condition (A phase) when no intervention is in effect, with the intervention condition (B phase). The A and B phases are then repeated again. If behavior changes show performance improvement during the first intervention phase, approach back to original baseline levels of performance when treatment is withdrawn, and improvement upon reinstatement of treatment in the second intervention phase, then the pattern of results indicate the intervention was responsible for the changes (Kazdin, 1982, p. 113).

A maintenance phase is carried out, following a retention interval, to assess consistency across time. If behavior in the maintenance phase shows little variability from the final B phase, it can be inferred there has been relative permanency of learning.

CHAPTER III

Research Methods

This chapter reports the research methodology and procedures that were used in this study.

Selection of Subjects

Nine, Grade 9, male rugby players from an independent school, volunteered to participate in this study. The school offered rugby as the major winter sports option. The subjects were all novice rugby goal kickers.

All subjects received an informed consent form (see Appendix B), an informational letter (see Appendix C), and an information questionnaire (see Appendix D). In addition, parental consent was obtained (see Appendix C). These were completed and returned to the researcher.

Setting

All training and performance sessions were held outdoors on the school rugby fields. Training occurred immediately following the end of the school day, and during weekends.

Dependent Variables

The dependent variables in the study were:

- a) the goal kicking performances of each subject
- and b) the self-efficacy measures of each subject under study.

Independent Variables

The independent variables in this study were the various treatment conditions:

- a) Physical Practice (PP) - one subject
- b) Physical Practice plus Imagery Training (PI) - two subjects
- c) Physical Practice plus Relaxation Training and Positive Self-Talk Training (PRT) - two subjects
- d) Physical Practice plus Relaxation Training, Positive Self-Talk, and Imagery Training (COM) - two subjects and
- e) No-Treatment Control (C) - two subjects.

These treatment conditions are detailed in the instrumentation section.

Limitations and Delimitations

i) The study was susceptible to possible maturational processes within subjects over the course of the study.

ii) The study was restricted to novice, grade 9, male rugby players, and therefore caution should be exercised in generalizing the findings to more experienced subjects, other age groups, females, or other sports.

iii) The study was limited by factors of weather and field conditions throughout the course of the study.

Definition of Terms

Imagery - The mental rehearsal of a motor performance

in conditions where the auditory, visual or kinesthetic qualities of movement may be experienced (McIntyre, 1987).

Positive Self-Talk - Positive statements to themselves prior to performance to build confidence and convince themselves that they can succeed (Weinberg, 1982).

Relaxation Training - The use of techniques to assist in regulating emotional arousal level for optimal performance (Harris, 1986).

Self-Efficacy - The measure of conviction to execute successfully the behavior required to produce a certain outcome (Bandura, 1977).

Goal Kick - A goal kick is made by kicking the ball from a tee placed on the ground, in an attempt, to score a goal by kicking the ball over the cross-bar and between the goal posts (International Rugby Football Board, 1990-91).

Goal Kicking Performance - Goal kicking performance was determined by the scores produced by subjects on the goal kicking performance test, according to accuracy, height, and a combination of these factors.

Novice Goal Kicker - An individual who has not goal kicked within a rugby game prior to the study.

Instrumentation and Collection of Data

Information Questionnaire

This questionnaire provided marker variable information regarding each subject's grade level, age, height, weight,

playing experience, and goal kicking experience (see Appendix D).

Treatment Condition Protocols

Standardized instructions for all five protocols were formulated prior to administering treatments. Detailed descriptions of these protocols are included in Appendix E.

A. Physical Practice Condition (PP) - This condition involved the subjects attempting twelve goal kicks, from six different field positions. Two kicks were taken from each of the six positions.

In addition, subjects received instruction in the basic technical components of addressing the ball, steps back, head position, approach, placement of the non-kicking foot, striking the ball, and the follow through (Australian Rugby Union, 1986).

B. Physical Practice / Imagery Training Condition (PI) - This condition involved treatment as per the instructions for the physical practice condition. In addition, subjects were instructed before each kick to take a few seconds to get a clear image, emphasising the feel of the goal kicking movement from the moment of addressing the ball, the number of steps back, head position, run up, the non-kicking foot, hitting the ball, follow through, and

successful completion of the kick through the goal.

Subjects were encouraged to practice imaging outside of scheduled practice times. Subjects were asked to attend to as much detail as possible in the image. Subjects were asked to include as many senses as possible, for example, the sounds of the goal kicking action, what the goal kicking action looks like, and the feel of the action. Subjects were asked to imagine themselves performing perfect and successful goal kicks (McKenzie, 1989; Wrisberg and Anshel, 1989).

C. Physical Practice / Relaxation Training / Positive Self-Talk Condition (PRT) - This condition involved treatment as per the instructions for the physical practice condition. In addition, cognitive strategies of relaxation training and positive self-talk were used just prior to each kick.

The relaxation training strategy involved the subjects before each kick, taking several deep breaths to relax in an attempt to induce optimal arousal. The positive self-talk strategy involved the subjects before each kick, telling themselves they would kick a successful goal.

Subjects were encouraged to practice the breathing exercise and positive self-talk strategies outside of scheduled practice times. Subjects were asked to attend to detail in their breathing by taking deep, slow, and complete

breaths and to use positive self-talk to increase confidence that kicks would be successful (Harris, 1986; Rushall et al. 1988; Weinberg, 1986; Wilkes and Summers, 1984; Wrisberg and Anshel, 1989).

D. Physical Practice / Relaxation Training / Positive Self-Talk / Imagery Training Condition (COM) - This condition involved cognitive strategy treatment combining all instructions, physical practice, relaxation training, positive self-talk, and imagery as described above, just prior to each kick. Subjects were encouraged to use these techniques outside of scheduled practice times.

E. No-Treatment Control Condition (C) - This condition was a no-treatment control whereby subjects did not receive any instruction in either technical components or cognitive strategies.

Goal Kicking Performance Test

Continuous assessment was carried out for all subjects performing twelve goal kicks at each of the twenty sessions. These kicks were taken from six different field locations, with two kicks at each of the six locations (see Appendix F).

Kicks were taken at distances of 15m and 25m from the midpoint of the goal; also 15m from each touchline at a

distance of 20m from the goal-line; and also 5m from each touchline at a distance of 25m from the goal-line.

The goal dimensions were 3m from the ground to the top edge of the crossbar and 5.6m inside to inside of the goal posts. The minimum height of the goal posts were 3.4m (International Rugby Football Board, 1990-91). In addition, 3m high targets were placed 2.8m from each goal post (see Appendix F).

The test was scored in three ways: accuracy, height, and a combination of the factors (see Appendix F). Accuracy points were given by awarding 5 points for kicking above the crossbar and between the uprights; 3 points if under the crossbar but between the uprights; and 1 point elsewhere between the targets. No points were awarded for kicks outside the targets or kicks that did not reach the goal-line on the full.

Points for height were given by awarding 5 points for above the crossbar and between the uprights; 3 points if above the height of the crossbar and between the targets; and 1 point elsewhere between the targets. No points were awarded for kicks outside the targets or kicks that did not reach the goal-line on the full.

Combination height and accuracy points were given by awarding 15 points for above the crossbar and between the uprights; 7 points if above the height of the crossbar and between the targets; 5 points if below the crossbar but

between the uprights; and 3 points if below the height of the crossbar and within the targets. No points were awarded for kicks outside the targets or those that did not reach the goal-line on the full. A Goal Kicking Analysis Sheet was used to record the data for each subject at each session (see Appendix K).

Self-Efficacy Questionnaire

A measure of goal kicking self-efficacy was designed by the researcher according to the recommendations of Bandura (1977, 1986). Self-efficacy was measured in two ways: level and strength of individual performance, following the suggestions of Bandura (1977) and Bandura, Adams and Beyer (1977).

The level of self-efficacy was assessed by asking subjects to rate, just prior to each kick, on a yes-or-no scale, the likelihood the kick would be successful. The number of "yes" responses indicated the overall level of goal kicking self-efficacy.

In order to assess the strength of self-efficacy, subjects were asked to rate, just prior to each kick, how confident they were of making a successful kick. This rating was made on an 11-point Likert scale, ranging from zero (0% great uncertainty) to ten (100% complete certainty). An overall strength of self-efficacy rating was derived by summing confidence ratings and dividing by the total number

of kicks to create a strength of self-efficacy score. For example, confidence ratings of 10, 10, 8, 8, 6, 6, 3, 3, 6, 6, 3, 3, for the 12 goal kicks would, by summing, produce a total confidence score of 72. This would result in an average score of 6 or 60% for strength of self-efficacy.

This procedure for measuring strength of self-efficacy differs slightly from the method used by Bandura (1977, 1982), in which subjects checked whether they could perform a task and only judged their confidence for the items they had marked positively. The present method is similar to the technique used by Kavanagh and Hausfeld (1986) and retains the intention of the original scales but does not assume subjects who indicate a goal cannot be kicked is equivalent to zero confidence. A Self-Efficacy Questionnaire was used to record the data for each subject at each session (see Appendix G).

Training Logs

All subjects kept training logs regarding the treatments in the study (see Appendix H). Subjects completed their training logs following each session. Particular emphasis was placed on the subject's thoughts and feelings regarding the treatment, the goal kicking practice, and self-confidence and self-efficacy levels.

The researcher also kept a training log for each subject to note any changes that may have occurred in the

subject's behavior.

Follow-Up Questionnaire

A questionnaire was developed by the researcher to provide information describing subject's thoughts and feelings about each of the cognitive strategy interventions (see Appendix I). This questionnaire also yielded information about how each subject's strategy use progressed over the training periods. The questionnaire was completed at the end of the study.

Cognitive Strategy Questionnaire

A questionnaire was developed by the researcher in which a 9-point Likert scale was used to reveal the subjects' assessment of the amount of each cognitive strategy they used, how much they thought each strategy helped them with their goal kicking performance, and the quality of the strategy factors (see Appendix J). The questionnaire was completed at the end of the study.

Training Procedures

One month prior to the beginning of data collection, a meeting was held with all grade 9 rugby players at the school. The purpose of this meeting was to explain the general intent of the study and have players complete an information questionnaire to select those grade 9 players

with limited rugby goal kicking experience. An informed consent form was presented to the novice goal kickers. Parental consent forms outlining the nature of the study were sent to parents/guardians. From those individuals who gained parental/guardian consent, nine were selected as subjects based on the matching of marker variables.

Two days before the first treatment session, the subjects met to review the intent of the study and to be informed of the schedule involved in participating. Each subject was told he would be tested twenty times over the course of the study. All subjects were instructed of the need for confidentiality regarding their treatment sessions.

A single-case ABAB design with a maintenance phase was employed to assess the effectiveness of each training condition (Kazdin, 1982). The nine subjects were randomly assigned to each of the five training conditions. Two subjects were placed in each of the training conditions, except the physical practice condition where there was one subject. A maintenance phase was carried out following the final treatment session (see Figure 1). Data were collected four times in two weeks, for four successive two-week periods, in an ABAB design where A = No Intervention and B = Intervention. After the second and final training phase, there was a four week retention interval before another two-week test without training.

S U B J E C T S	1	A	PP	A	PP	RETENTION INTERVAL	MP
	2 & 3		PI		PI		
	4 & 5		PRT		PRT		
	6 & 7		COM		COM		
	8 & 9	CONTROL					
TREATMENT							

A = Baseline (No Intervention)

PP = Physical Practice

PI = Physical practice / Imagery

PRT = Physical Practice / Relaxation / Self-Talk

COM = Combined Physical Practice / Realxation / Self-Talk /
Imagery Interevntion

MP = Maintenance Phase

Figure1.

Experimental Design.

Data Analysis

Data were analyzed using visual inspection of graphical data, and descriptive statistics to evaluate learning and performance of goal kicking and self-efficacy measures of each subject.

The criteria used in the visual inspection included stability of baselines, changes in mean and level between baseline and intervention conditions, and changes in trend across experimental phases, of learning and performance of goal kicking. These criteria were also used to evaluate self-efficacy measures (Kazdin, 1982).

Stability of baseline, absence of trend and little variability in the baseline data, are important because evaluation of intervention effects is greatly facilitated by consistent performance during baseline (Kazdin, 1982).

Changes in mean scores across conditions refers to shifts in average rate of performance. Changes in level refers to shift of performance from the end of one phase to the beginning of the next phase. These magnitude changes are important in deciding whether the data pattern showed consistent changes and whether the intervention produced reliable effects (Kazdin, 1982).

Changes in trend relate to the tendency for data to show systematic changes over time. Changes in the trend rate are important in assessing whether the data showed the appropriate direction of behavior and how rapidly the effect

occurred (Kazdin, 1982).

Descriptive statistics included means and range to determine where change in learning and performance of goal kicking occurred. They were also used to determine changes in self-efficacy measures.

Descriptive analysis was also included on each subject's Training Logs, the Follow-Up Questionnaire, and the Cognitive Strategy Questionnaire to provide qualitative insights into each subject's thoughts and feelings during the study.

CHAPTER IV

Results and Discussion

This chapter includes a discussion of the results related to existing research, implications of the study, and recommendations for future research. There were five target behaviors analyzed for each of the nine subjects: goal kicking accuracy, goal kicking height, total goal kicking performance (height and accuracy in combination), level of self-efficacy, and strength of self-efficacy. The results were analyzed by visual inspection as recommended by Kazdin (1982). Detailed descriptions of the data results can be seen in Appendix L.

Subject 1.

Physical Practice (PP)

The baseline phases of Subject 1 displayed stable scores for each of the five target behaviors (see Figures 2 to 6). Kazdin (1982) reported stability of baselines as a basic concern when analyzing data by visual inspection. When the baseline is stable or the baseline trend is in the opposite direction to the anticipated treatment, there is a basis for attributing change to treatment effects (Kazdin, 1982, p. 263).

The PP intervention produced a slight increase in mean total goal kicking performance (Table 1, Figure 4) at the first intervention phase. Performance reversed to baseline,

Table 1

Subject one's mean scores for each target behavior across experimental phases

Behavior	Baseline (A)	Intervention (B)	A	B	Retention
Goal Kicking Accuracy	1.0	1.5	0	3.5	5.5
Goal Kicking Height	0.5	0.5	0	2.0	3.75
Total Goal Kicking Performance	2.0	2.5	0	7.5	13.0
Level of Self-Efficacy	0	3.25	1.5	2	2.5
Strength of Self-Efficacy	21.2	35.8	32.7	31.5	33.3

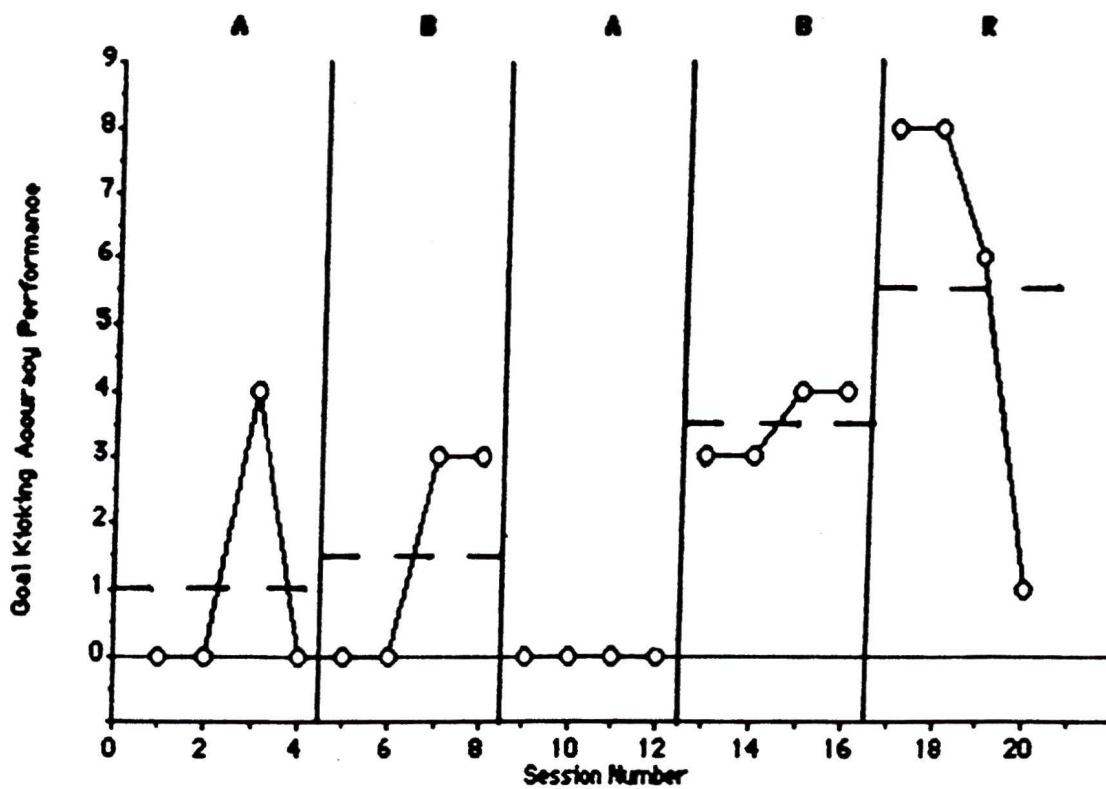


Figure 2.

Subject one's goal kicking accuracy performance across experimental phases.

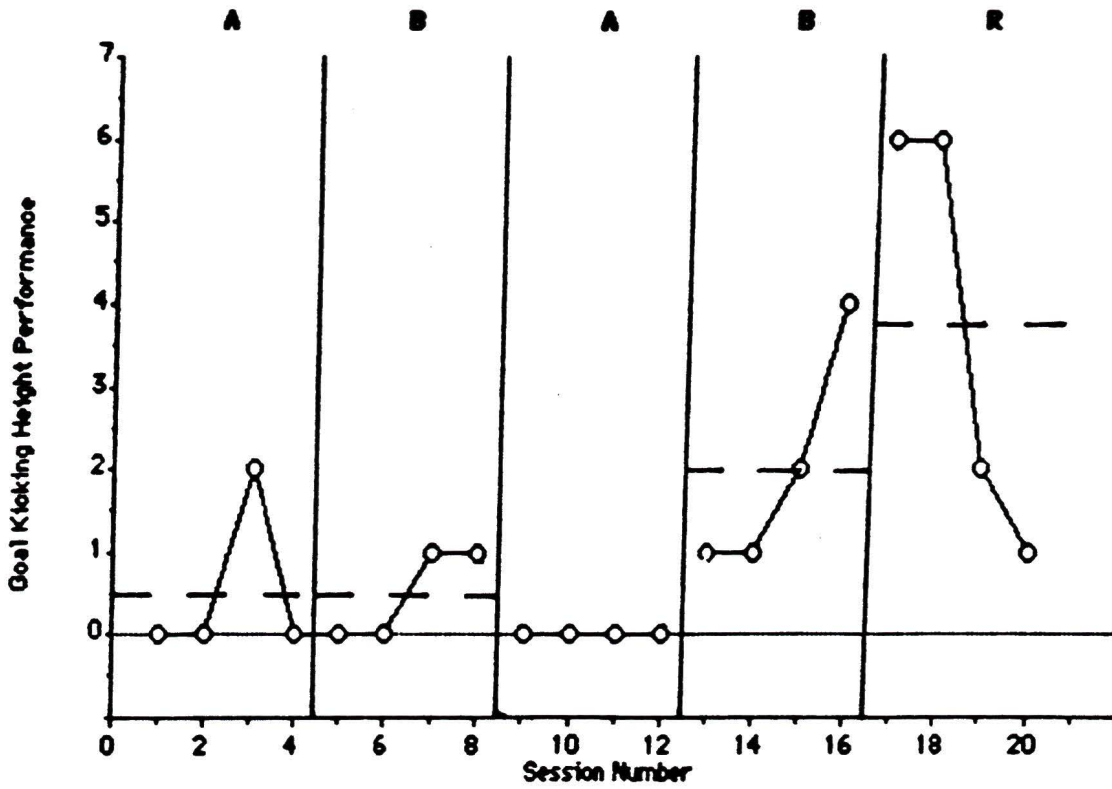


Figure 3.

Subject one's goal kicking height performance across experimental phases.

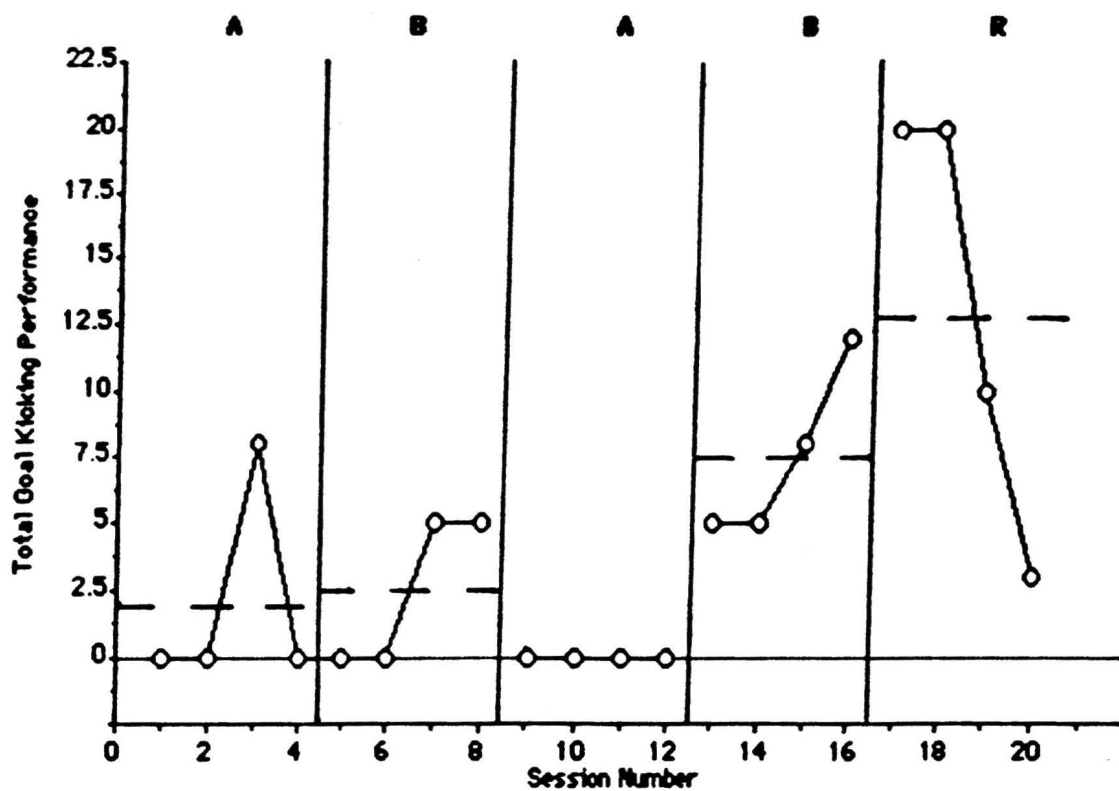


Figure 4.

Subject one's total goal kicking performance across experimental phases.

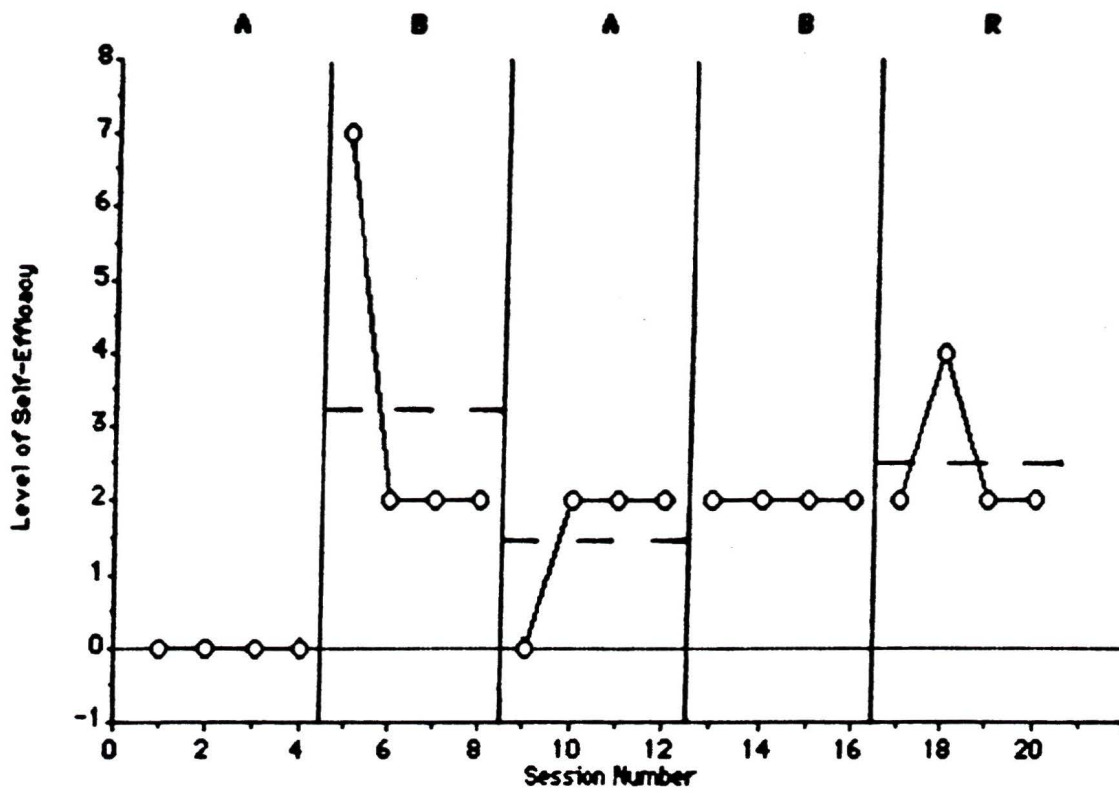


Figure 5.

Subject one's level of self-efficacy scores
across experimental phases.

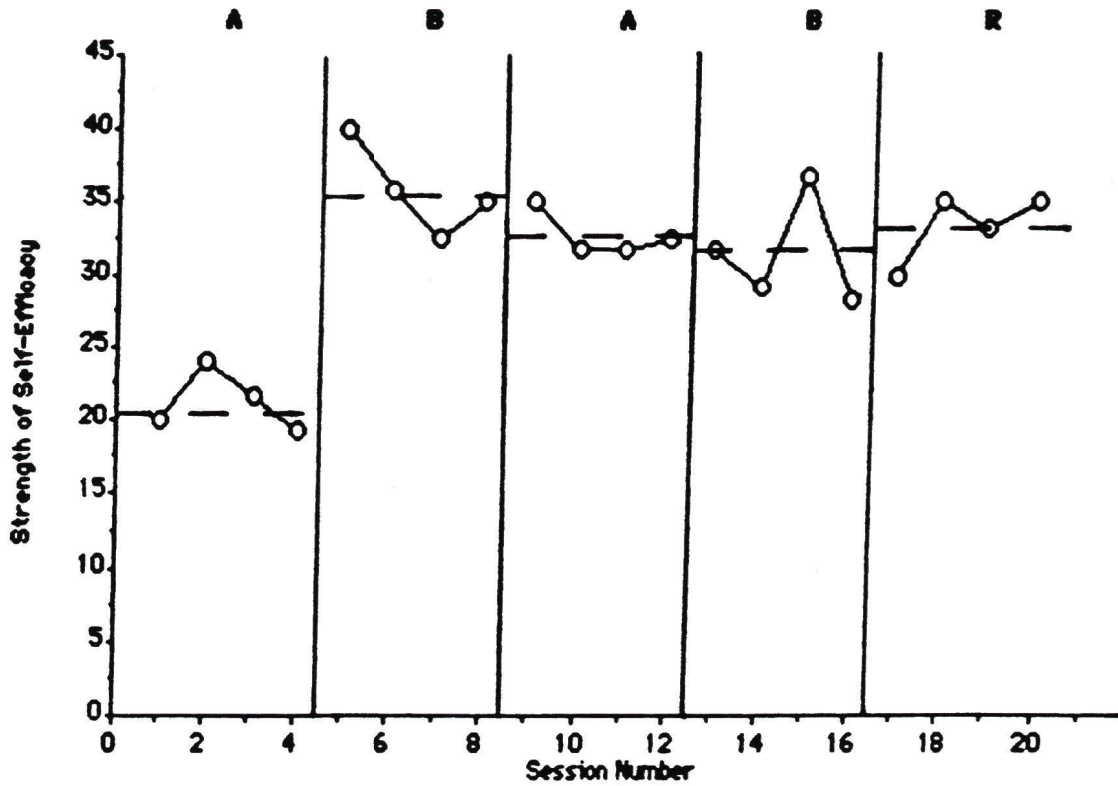


Figure 6.

Subject one's strength of self-efficacy scores
across experimental phases.

and there was a greater mean increase during the second intervention and retention phases. Kazdin (1982) noted that when behavior changes as the intervention is introduced, reverts either to or near baseline levels after withdrawal of the intervention, and again improves when intervention is reinstated, the pattern of results suggest that the intervention was responsible for change.

The lack of a level shift from baseline to the first intervention phase questioned the immediate effect of the intervention. However, the drop in level at the non-intervention phase and shift upward with the second intervention phase and retention phase indicated that the intervention did produce recognizable if not rapid effects. This delayed effect suggested prior experience of the task may be a variable influencing effectiveness of the intervention.

Changes in the trend can be seen in Figure 4, where both non-intervention phases showed stable scores and both intervention phases showed small increasing trends. The direction of behavior changes should show an accelerating trend when the intervention is introduced (Kazdin, 1982). The decreasing trend evident in the retention phase suggested that the PP intervention was not effective in maintaining total goal kicking performance. A possible explanation for this was that Subject 1 needed more learning time in the intervention phases and was still operating at

the cognitive stage of the task before producing consistent performance at the associative level (Fitts and Posner, 1967).

A similar series of results occurred for the goal accuracy performance (Figure 2) and goal kicking height performance (Figure 3). Stable baselines were evident and mean scores followed the pattern suggesting that the intervention was responsible for behavior change. Level shifts indicated that the intervention produced delayed yet reliable effects. This delayed effect suggested that prior experience could have been a factor involved in the effectiveness of the intervention. The accelerated trend upon intervention introduction suggested that the intervention led to behavior change. However, the PP intervention was not adequate for maintaining performance.

A perfectly stable baseline was shown for level of self-efficacy scores (Figure 5). The mean and level shift showed immediate improvement with introduction of the intervention. The pattern of appropriate changes in mean response across phases was evident. A legitimate level shift occurred between the end of the first intervention phase and start of the non-intervention phase. No other changes in level took place after this. Changes in trend within phases were not observed. It appeared that the PP intervention had a direct influence on level of self-efficacy but did not continue to increase the subject's expected performance

attainments. However, the intervention was adequate in retaining level of self-efficacy scores.

Strength of self-efficacy showed a relatively stable baseline (Figure 6). The mean showed a large increase with the presence of the intervention. Small changes in the mean occurred after this and these changes did not illustrate the expected pattern. A large upward level shift took place with implementation of the intervention but only minute changes occurred thereafter and these were not consistent with the anticipated pattern. A decreasing trend and variable scores in the intervention phases suggested that the rate of change was inappropriate. These results indicated that the PP intervention had an immediate effect on strength of self-efficacy but did not continue to strengthen the subject's belief that he could reach different grades of performance. The intervention did appear adequate in maintaining strength of self-efficacy scores. The maintenance effects for both level and strength of self-efficacy indicated the PP intervention as a source of information upon which he based self-efficacy judgements. The influence of information gained through performance accomplishments supported Bandura's (1977) theory.

Wollman (1986) and Greenspan and Feltz (1988) recommended a thorough monitoring of subjects' experiences through detailed manipulation checks and self-reports. Subject 1's training log described mixed feelings of

confidence with more positive yet not assuring comments on days of better performance, for example "confidence felt great ... I think". The Follow-Up Questionnaire indicated that Subject 1 felt that PP improved his kicking, making him kick "better and further". Subject 1 believed he became more confident with kicking, "even if the "yes and no's didn't show it". The researcher's log of Subject 1 noted a lack of power in kicking and poor initial technique. During the second intervention phase, it was noted Subject 1 improved technically but reverted to a lack of power and poor technique in the retention phase.

Subject 2.

Physical Practice / Imagery (PI)

Subject 2 showed an increasing baseline tendency for all goal kicking behaviors (Figures 7, 8, and 9). The total goal kicking performance mean increased from baseline to the first intervention phase, decreased with the non-intervention phase and increased again at the second intervention phase (Table 2, Figure 9). This pattern was indicative of intervention producing consistent changes in performance. The increasingly positive trends at each intervention phase and stable scores at the non-intervention phase suggest the intervention produced systematic changes in performance. As Kazdin (1982) reported, even when behavior is improving during baseline, it may not be

Table 2

Subject two's mean scores for each target behavior across experimental phases

Behavior	Baseline (A)	Intervention (B)	A	B	Retention
Goal Kicking Accuracy	3.5	6.5	5.5	12.25	10.25
Goal Kicking Height	4.0	7.5	5.5	11.25	8.75
Total Goal Kicking Performance	11.5	21.5	16.5	34.75	27.75
Level of Self-Efficacy	6	8.25	5.25	9	4.75
Strength of Self-Efficacy	34.8	40.4	32.3	37.1	33.8

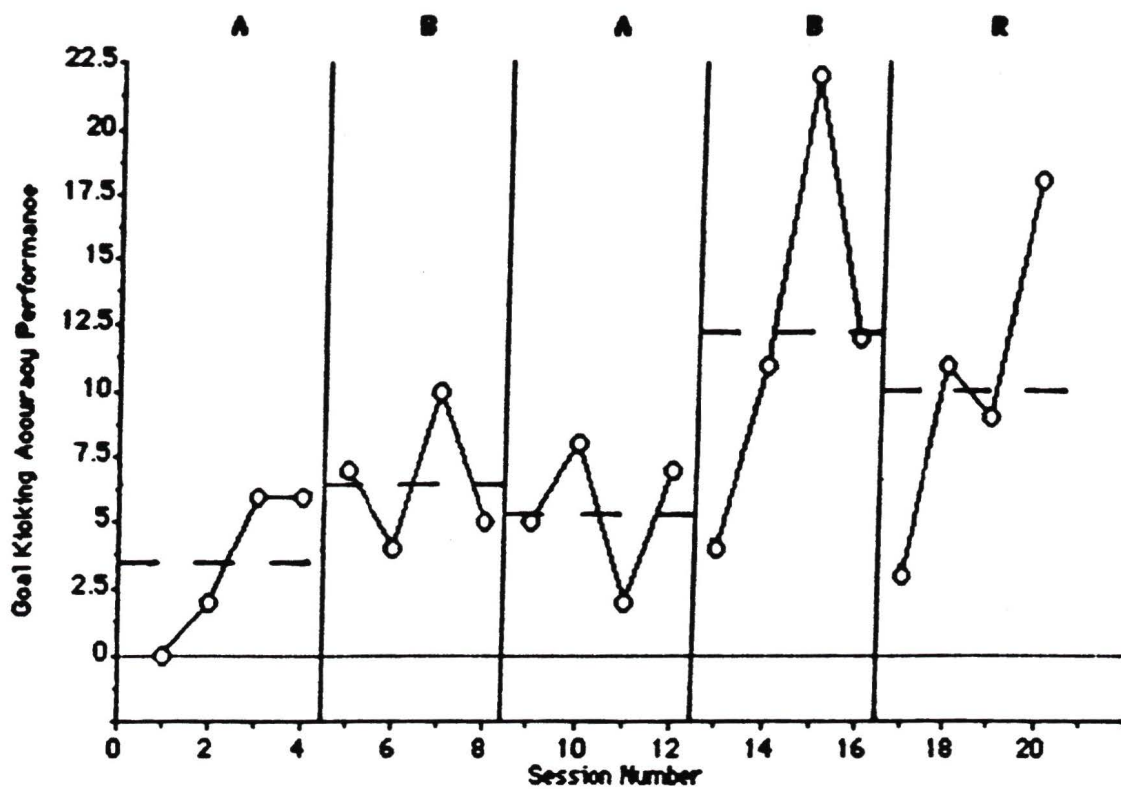


Figure 7.

Subject two's goal kicking accuracy performance across experimental phases.

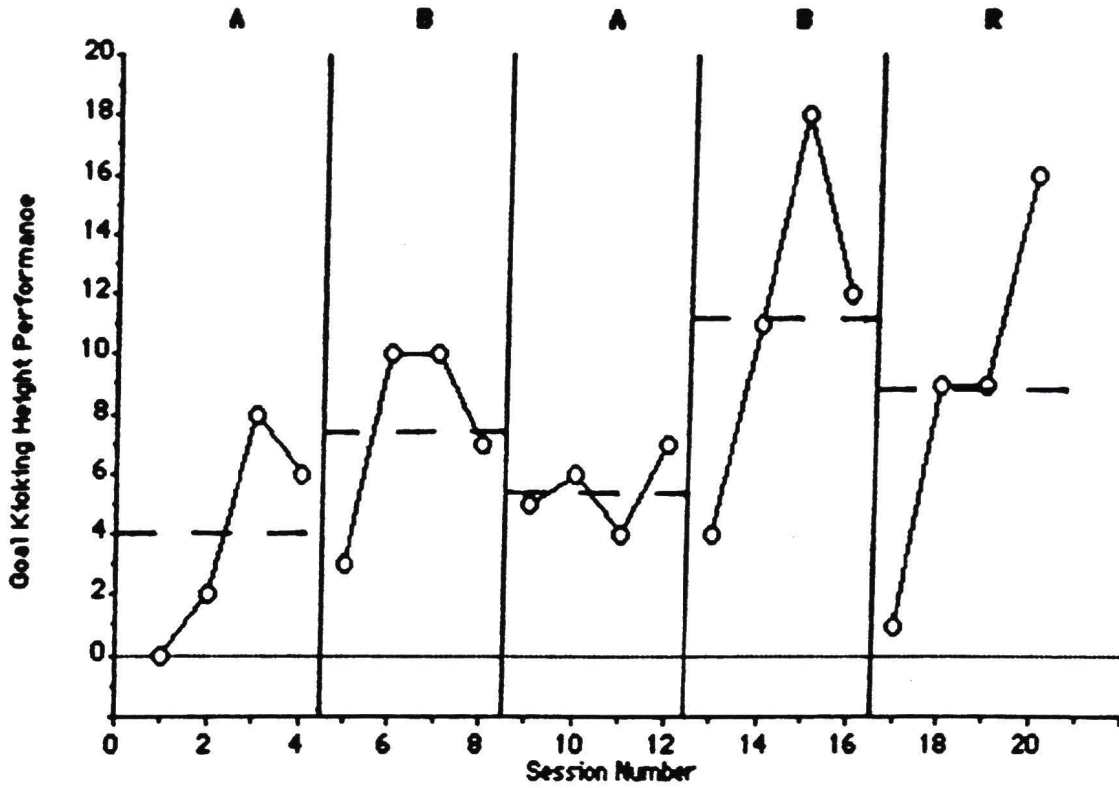


Figure 8.

Subject two's goal kicking height performance across experimental phases.

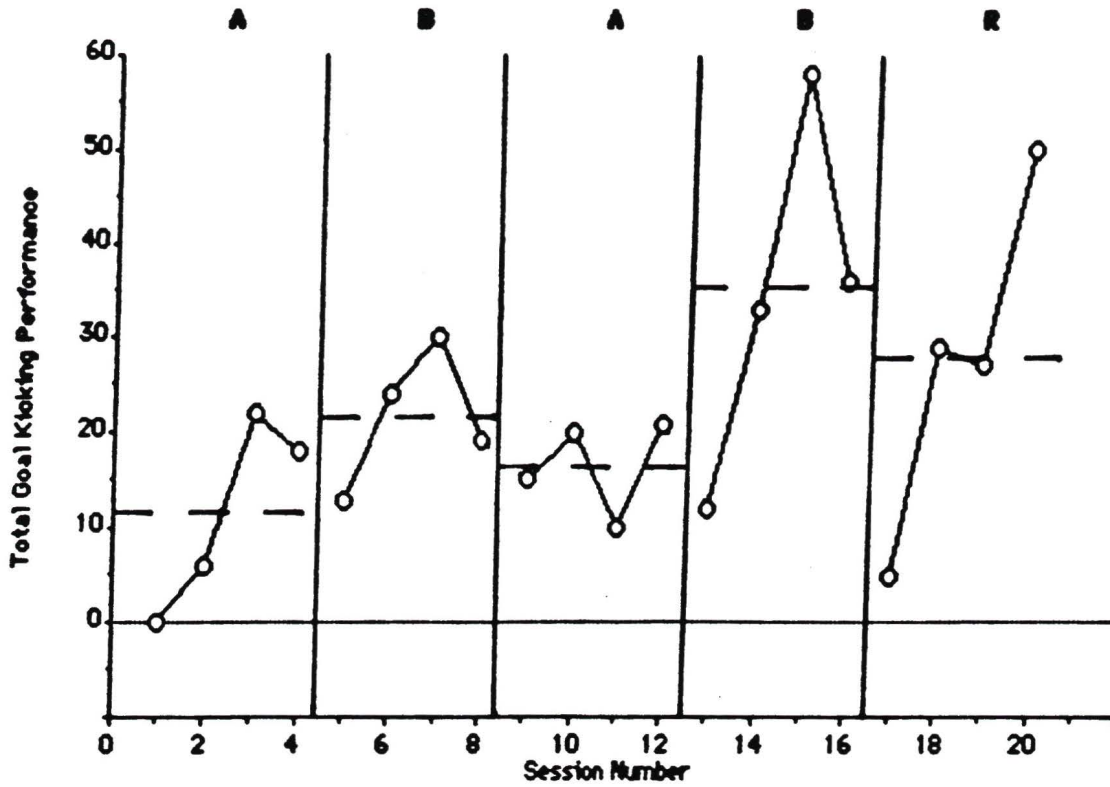


Figure 9.

Subject two's total goal kicking performance across experimental phases.

improving quickly enough and intervention effects may still be observed. The downward level shifts from the end of each non-intervention phase to the start of each intervention phase indicated no abrupt change with the introduction of the intervention. The retention phase mean decreased slightly from the final intervention phase and there was a large downward level shift. However, a large positive trend in the retention phase was evident. This indicated that the intervention was effective in producing a learning effect.

There were similar results in goal kicking accuracy performance (Figure 7), with increasing trends in all phases excepting a variable non-intervention phase, thus supporting the claim that the intervention produced orderly changes in performance. Goal kicking height performance (Figure 8) also illustrated a like pattern, with a stable non-intervention phase suggesting the intervention produced systematic changes in performance. The mean scores for both accuracy and height performance produced the desired model indicating intervention effects on performance. Goal kicking accuracy produced only one reliable level shift with an upward movement from the end of baseline to the first treatment session. No other reliable level changes occurred with either accuracy or height performances. The retention phase showed maintenance with both accuracy and height goal kicking performance, as despite a downward level shift, there was an increasing trend and mean scores decreased by relatively

small amounts.

These results provided partial support for the notion that imagery in combination with physical practice is effective for performance improvement (Feltz, Landers and Becker, 1988; McKenzie, 1989). The maintenance findings also lent support to Feltz and Landers (1983) and Ziegler (1987a) that imagery can be effective for improving motor-skill learning. The skill level of the performer seems to be a concern when investigating imagery effects. The use of a novice performer and the apparent success of the PI intervention gives further support to Schmidt's (1988) suggestion that imagery effects should have greater impression during the early stage of learning. However, the finding was somewhat contradictory because a lack of immediate performance change upon intervention and greater positive trend at the second intervention phase offered support to the conclusion that the effectiveness of imagery is enhanced once the performer has prior task experience (Corbin, 1972; Harris and Robinson, 1986). Support was also obtained for Wrisberg and Anshel's (1989) notion that young athletes can learn and use cognitive strategies to enhance performance.

An unstable decreasing trend in baseline was shown for level of self-efficacy (Figure 10). The unusually large score of twelve from twelve possible kicks at session one suggested that Subject 2 had a very high expectation of his

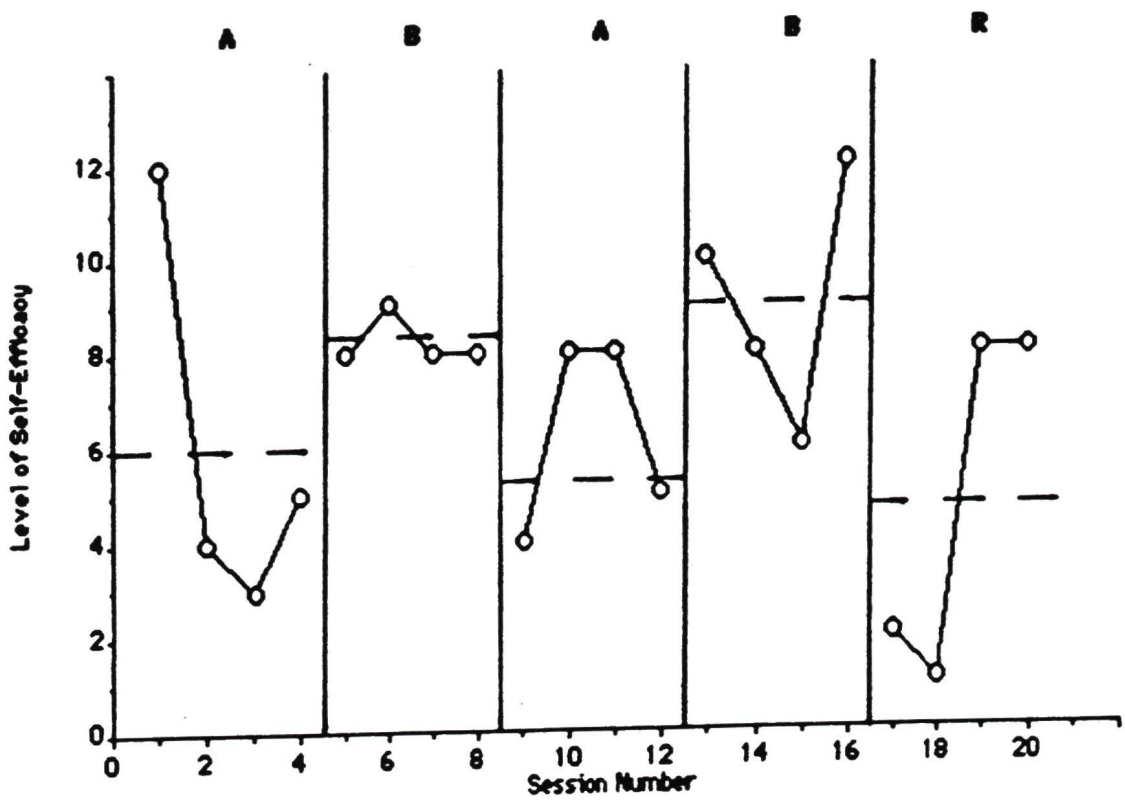


Figure 10.

Subject two's level of self-efficacy scores across experimental phases.

likely success. Following no goals being kicked Subject 2 indicated a lower likelihood of successful kicks at session two. The mean scores and level shifts throughout the ABAB phases followed the expected pattern suggesting positive effects of the intervention. However, the variable scores at the non-intervention phase and both intervention phases did not support any systematic changes in performance with the intervention. Therefore there were conflicting results in determining the effect of PI on a performer's expected performance success. The large downward level shift and lower mean in the retention phase suggested that PI was not successful in maintaining a level of self-efficacy.

The strength of self-efficacy baseline showed variable levels of confidence of a successful kick (Figure 11). The mean scores, level shifts and changes in trend during the phases were of the necessary design to support the positive effect of the intervention. Variable scores were shown in the retention phase, indicating no intervention effect on strength of self-efficacy maintenance. It appeared that the PI intervention was an effective technique in enhancing Subject 2's belief he could attain different grades of performance but was not effective in maintaining these beliefs.

These findings provided evidence that efficacy information, gained through vicarious experience, could increase perceived efficacy. It offered support to the

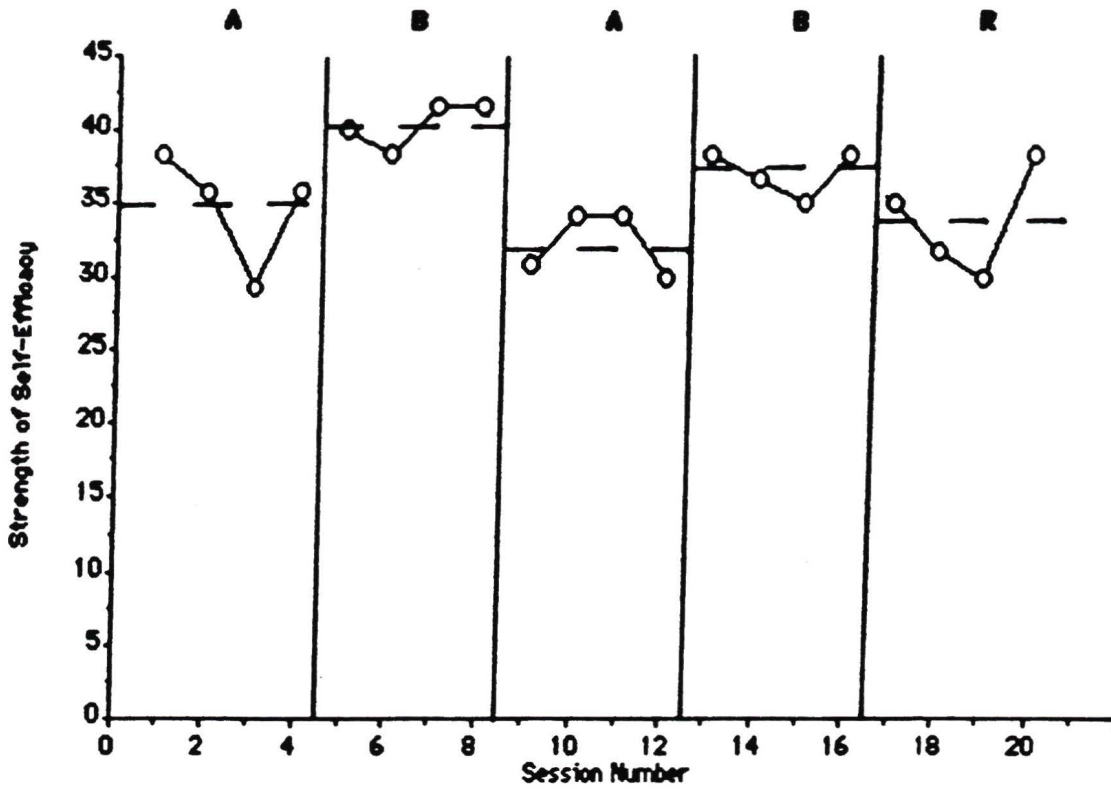


Figure 11.

Subject two's strength of self-efficacy scores
across experimental phases.

studies of Weinberg et al. (1979) and McAuley (1985) with enhanced strength of self-efficacy scores and shows partial support for Gould and Weiss (1981) and Feltz and Riessinger (1990) that higher strength and level of self-efficacy scores follow the use of imagery.

The self-report training log of Subject 2 indicated a consistent improvement in self-efficacy in the first intervention phase where strength of self-efficacy scored the highest in sessions seven and eight at 41.7% belief in successful performance. The subjects' self-report of his goal kicking practice and self-confidence, did not often match the actual performance or self-efficacy ratings. For example, at session fourteen Subject 2 scored 11, 11 and 33 points for accuracy, height and total goal kicking respectively, with 8 points for level of self-efficacy and 36.7% for strength of self-efficacy. However, Subject 2 reported his kicking was not good, despite that the session was his best achievement to date, and he felt confident even though his self-efficacy scores were lower than at numerous other sessions. This suggests that self-efficacy is not the only process involved for behavioral change in motor performance. As Bandura (1986) noted, self-efficacy is not the only cognitive mechanism used to explain motor performance, as other mechanisms may also influence behavior.

The comments of Subject 2 regarding imagery use during

the intervention phases showed his imagery ability improved throughout to a "good" level in the second intervention phase. The clarity of images improved with a report of "seeing through my own eyes but seeing myself as well" indicating a combined use of internal and external imagery. This combined use of imagery style is supported from the Cognitive Strategy Questionnaire. The strength of images became stronger especially in the second intervention phase, as did reality of the images but they were "not perfect". Subject 2 reported inconsistent use of imagery practice, more so in the first intervention phase and to a lesser degree in the second intervention phase. At each report, the subject commented on the ease of imaging prior to each kick.

The researcher's log noted an improved kicking technique in the intervention phases and a return to baseline techniques at the non-intervention phase. The technique deteriorated in the retention phase but to a lesser degree than at the non-intervention phase.

The Follow-Up Questionnaire indicated that Subject 2 found the goal kicking practice "interesting but at times difficult and frustrating". The subject felt his kicking had improved but "not to the degree hoped" and he became "more confident but not constant". Imagery was "not entirely new" as the subject used it "naturally" but it was "difficult at times".

The Cognitive Strategy Questionnaire revealed that

Subject 2 only practised imagery to a moderate degree(5) and found imagery of little help with his goal kicking performance(3). The combined internal and external imagery use(2) was, however, relatively easy to use(7), with clear images produced(7), along with moderately strong other sensations(6), but the images were mildly difficult to control(5). It seemed that in spite of the ease of imagery use, Subject 2 needed to practice more frequently to fully develop his imagery strategy. The report of Subject 2 partially concurred with Weinberg's (1982) conclusion that for maximum effectiveness an image should be controllable.

Subject 3.

Physical Practice / Imagery (PI)

A variable yet decreasing trend was shown for goal kicking accuracy baseline (Figure 12). The mean scores increased from baseline to the first intervention phase, decreased during the non-intervention phase, and increased with a return to intervention (Table 3). This implies that the intervention was responsible for the changes in performance. The level shifts produced throughout the ABAB phases suggest that the intervention was associated with reliable changes from one phase to another. The relatively stable non-intervention phase and only small increasing trends in the intervention phases raised a doubt as to the effectiveness of the intervention in producing change in

Table 3

Subject three's mean scores for each target behavior across experimental phases

Behavior	Baseline (A)	Intervention (B)	A	B	Retention
Goal Kicking Accuracy	3.0	5.5	4.0	9.0	8.33
Goal Kicking Height	2.5	4.0	3.0	9.5	5.0
Total Goal Kicking Performance	8.0	13.5	10.0	26.5	18.33
Level of Self-Efficacy	5.0	5.0	4.0	6.0	6.0
Strength of Self-Efficacy	41.1	47.9	52.4	53.3	52.8

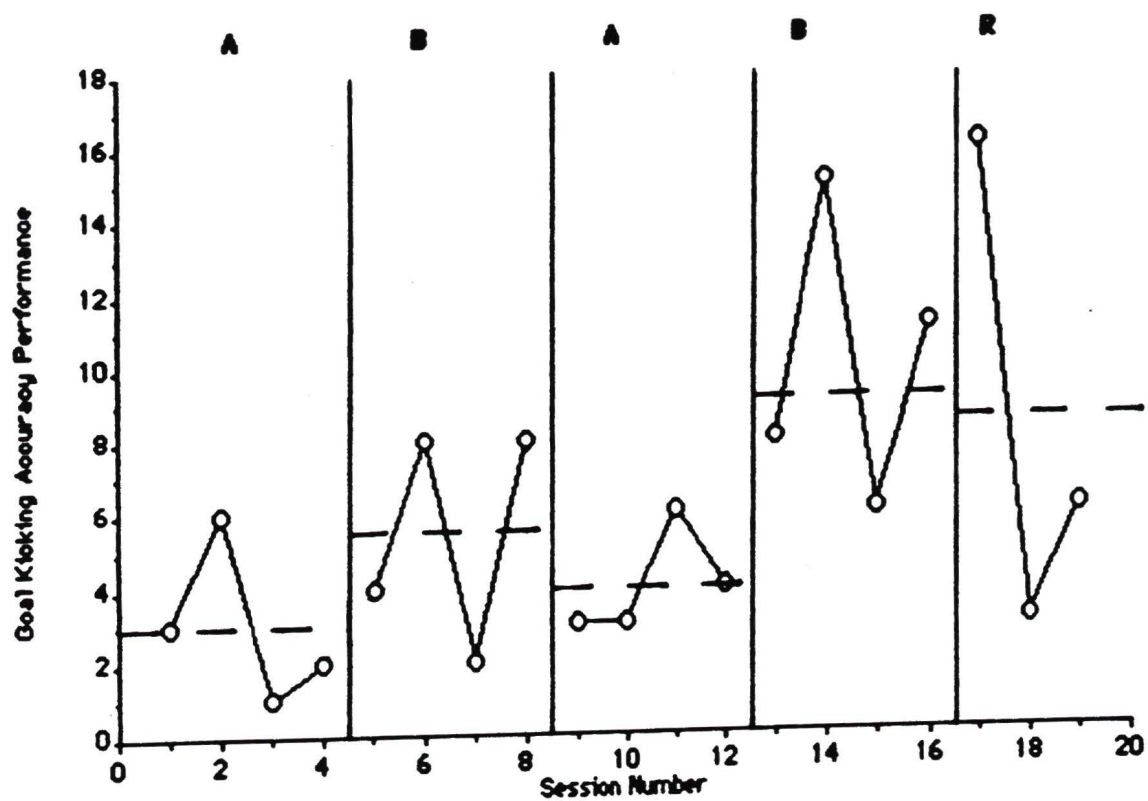


Figure 12.

Subject three's goal kicking accuracy performance across experimental phases.

goal kicking accuracy performance. The low score of 6 points at session seven in the first intervention phase was likely caused by Subject 3 having an injured foot and contributed to a variable trend. The effect of intervention upon learning was equivocal as although the mean score decreased only slightly, and there was an upward level shift from the last treatment session, a decreasing trend was evident. Subject 3 did not complete four sessions of the maintenance phase, as at session twenty the subject was very ill. This illness was likely to have had an influence on the lower session eighteen and nineteen scores reducing the retention effect.

Goal kicking height performance displayed an increasing trend in the baseline phase (Figure 13). This was coupled with variable scores in the first intervention phase and an increasing tendency in the non-intervention phase denoting a weak result that the intervention did not elicit systematic changes in performance. There was, however, an accelerated positive trend in the second intervention phase, suggesting a delayed behavior change as a result of intervention. The level shifts showed conflicting support for reliability of the intervention with appropriate shifts between the end of the non-intervention phase and start of the second intervention phase but an unreliable shift between the end of baseline and first intervention session. The mean scores, however, changed consistently with the introduction,

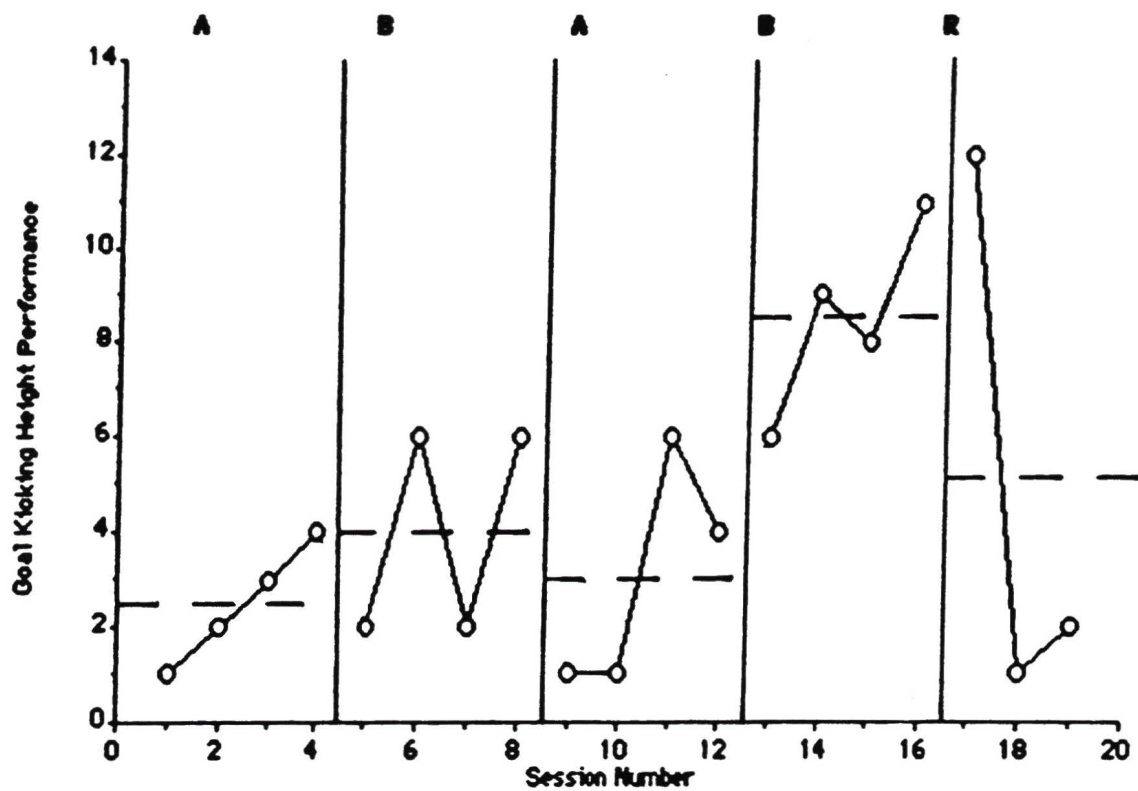


Figure 13.

Subject three's goal kicking height performance across experimental phases.

withdrawal and reinstatement of the intervention. Overall, evidence for the intervention being responsible for change in performance was inconclusive. The retention phase mean decreased and there was a decreasing trend and despite an upward level shift from the last treatment session, it appears that PI was not effective in maintaining performance.

Subject 3 displayed a relatively stable baseline for total goal kicking performance (Figure 14). The mean scores at each phase (Table 3) followed the criterion pattern, suggesting the intervention led to consistent changes in total goal kicking performance. The level shifts showed contradictory effects of the intervention, with reliable downward shifts between the end of the first intervention phase and start of the non-intervention phase, and an upward shift between the end of the non-intervention phase and start of the final intervention phase. However, a small downward shift was displayed between the end of the baseline and first intervention phase. The increasing trend in the non-intervention phase and variable scores in intervention phases questioned the efficiency of the intervention condition for total goal kicking performance. The retention phase produced a decreased mean and decreasing trend indicating no maintenance and learning effect of the PI intervention.

The effect of PI upon goal kicking performance for

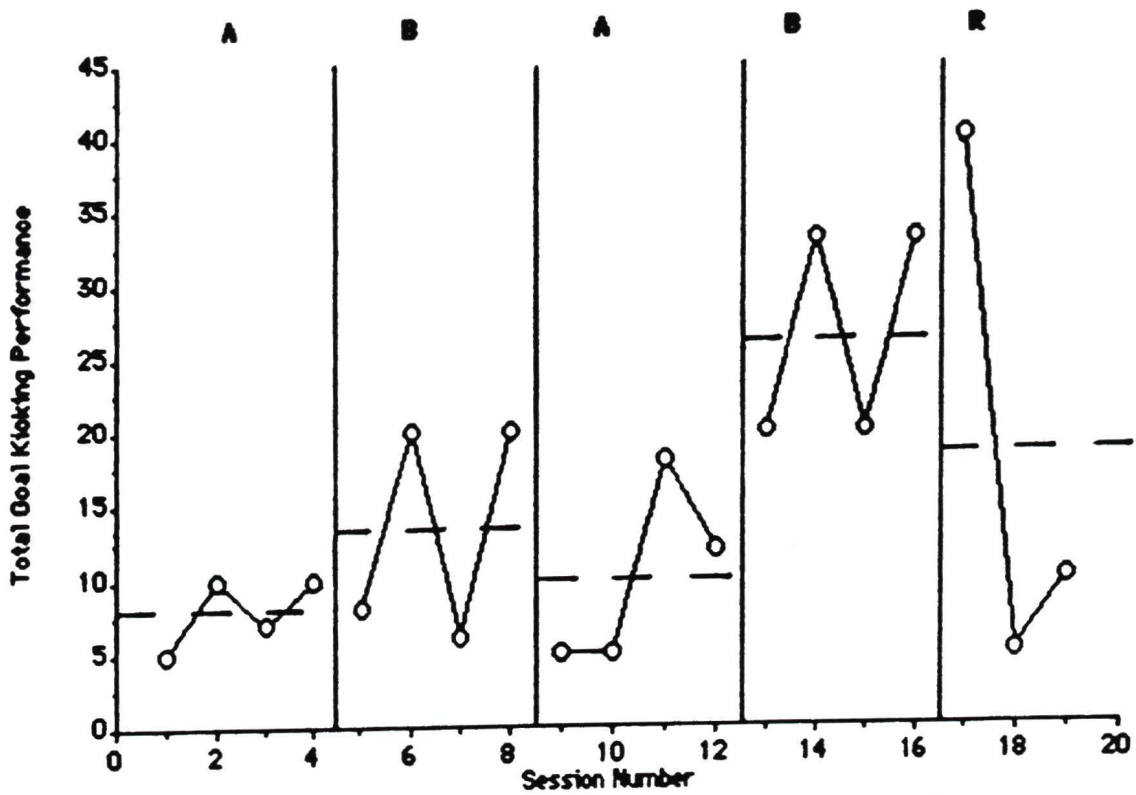


Figure 14.

Subject three's total goal kicking performance across experimental phases.

Subject 3 was equivocal. The baseline phases differed for each goal kicking target behavior, interfering with the evaluation of the intervention. The mean scores at each target behavior did change in response to the different baseline and intervention phases suggesting consistent PI effects. However, the level shifts in all goal behaviors, except accuracy, are contradictory. Changes in the trend are also questionable, particularly with total goal kicking performance. The accelerated trend in goal kicking height during the second intervention phase suggested a delayed effect of the intervention. The effect of the intervention upon goal kicking maintenance and learning was inconsistent for each of the accuracy, height, and total goal kicking behaviors.

These findings provided partial support for Eby (1986) and Kelly (1989) that imagery does not improve performance. The belief that imagery can facilitate motor-skill learning (Feltz and Landers, 1983; Ziegler, 1987a) is also in doubt. The accelerated positive trend in goal kicking height performance in the second intervention phase suggested a delayed behavior change and gives some support to Corbin (1972) and Harris and Robinson (1986) that prior experience of a task is needed to enhance effectiveness of imagery.

The mean level of self-efficacy scores at each phase did not follow the pattern representing intervention effects leading to consistent changes (Figure 15). The level shifts

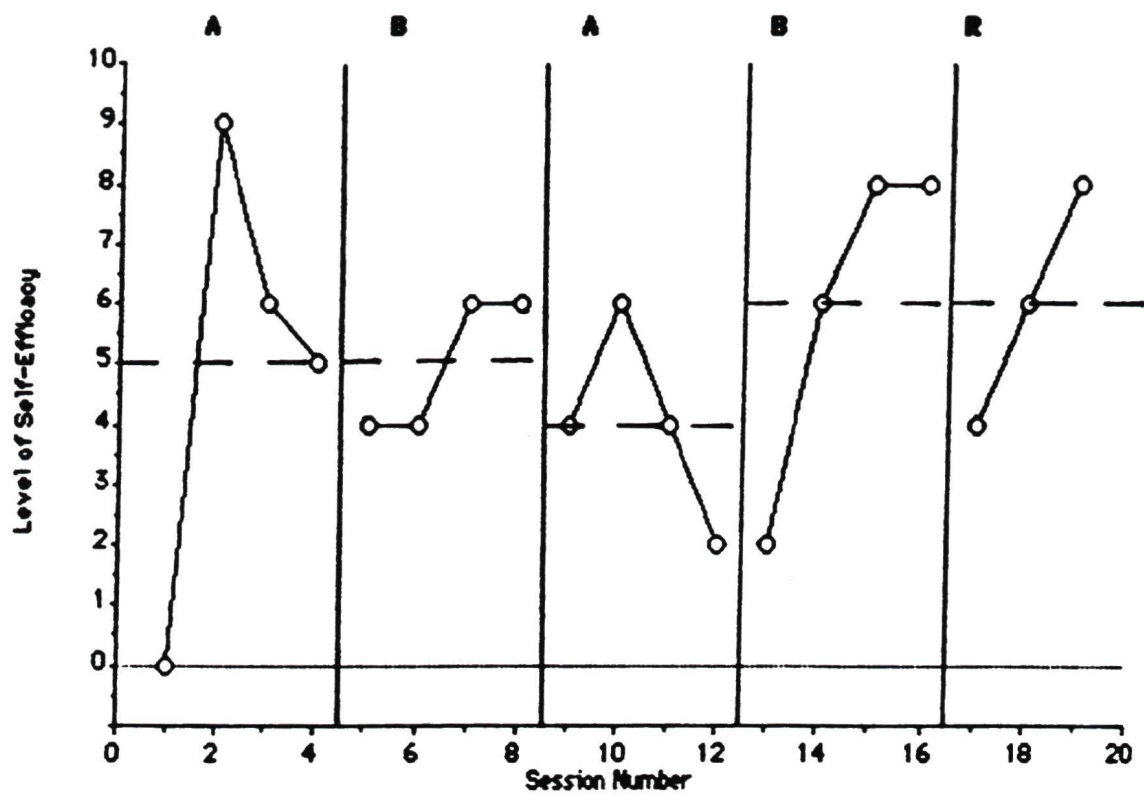


Figure 15.

Subject three's level of self-efficacy scores
across experimental phases.

between phases and decreasing trend in the non-intervention phase did, however, show systematic changes over time. The retention phase mean was maintained and showed an increasing trend suggesting a maintenance effect of PI on level of self-efficacy. However, the unstable baseline interfered with the evaluation of the intervention, resulting in weak results.

The strength of self-efficacy baseline showed a decreasing tendency (Figure 16). There was an immediate effect of the intervention upon the confidence of Subject 3 to kick successfully with an increased mean and upward level shift. However, these effects also occurred when intervention was withdrawn. The lack of a sizeable change in the mean thereafter and no level shift between the non-intervention and second intervention phase suggest little effect of PI upon strength of self-efficacy. It did appear though that there was a maintenance effect with the retention phase remaining stable.

The immediate intervention effect and retention for strength of self-efficacy provided incomplete support for the findings of Weinberg, et al. (1979) and McAuley (1985) that vicarious experience information increases efficacy. The weak result for level of self-efficacy does not support the findings of Gould and Weiss (1981) and Feltz and Riessinger (1990).

The self-report training log of Subject 3 indicated a

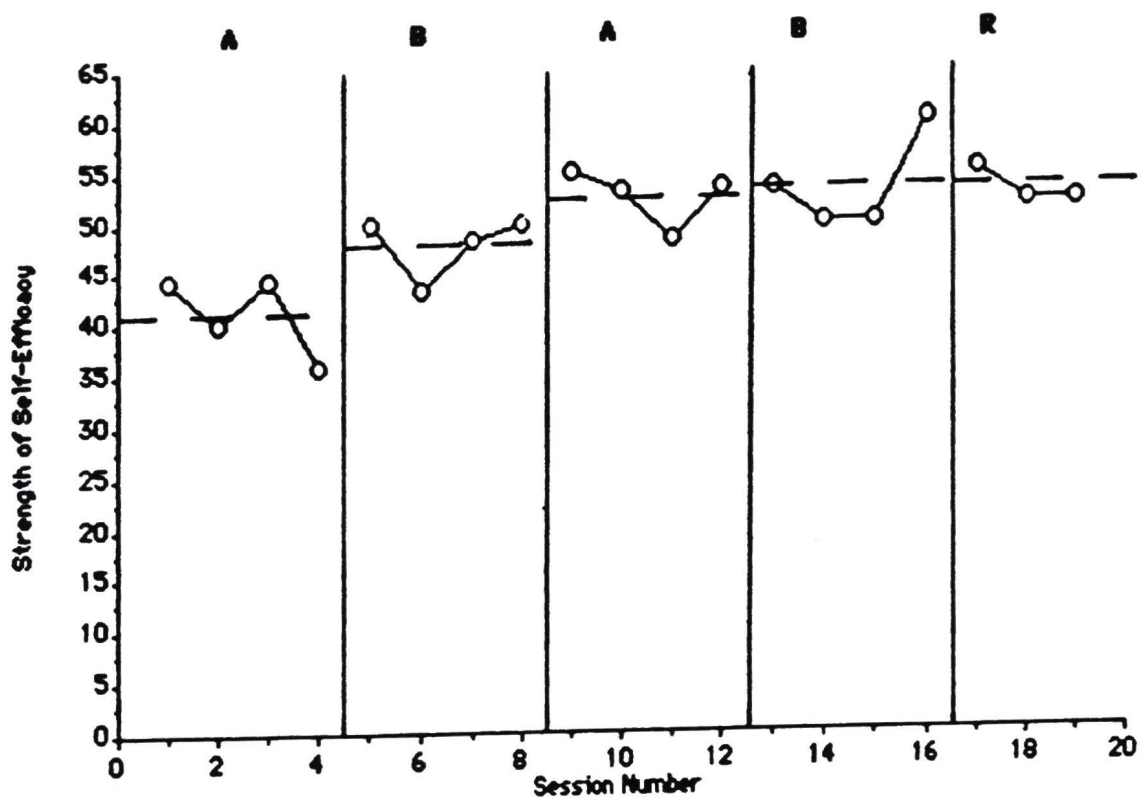


Figure 16.
Subject three's strength of self-efficacy scores
across experimental phases.

feeling of "not enough self-confidence" in the baseline phase. Upon introduction of PI, the subject felt "better about the goal kicking" and thought his self-confidence was improving "because of imagery". Into the non-intervention phase, the subject felt his goal kicking was "getting better...I think" but his confidence was "not good". With return to the intervention, it was reported goal kicking and self-confidence was "better than the last 2 weeks" of the withdrawal phase. The subject did not note any major changes in the retention phase. The anecdotal evidence given by Subject 3 supported McKenzie's (1989) suggestion that imagery elevates one's feelings of self-efficacy and confidence to perform.

The comments of Subject 3 regarding his imagery use showed relatively consistent improvement in all aspects of imagery ability, clarity, reality, and use prior to kicking. The subject, however, found it "hard to feel" the goal kicking action. At session seven, the subject reported "seeing self from a camera view" as for external imagery, while at session thirteen there was "seeing self from own eyes" as in the use of internal imagery. Throughout the intervention phase, Subject 3 commented on varying use of imagery practice prior to falling asleep and in the morning. The use of these times fluctuated but imagery was practised regularly.

The researcher's log noted an improved kicking

technique from baseline to the intervention phases and at retention. It was also noted that Subject 3 appeared to be imaging prior to each kick in the retention phase suggesting that the subject believed that imagery enhanced his performance. Along with the subject's own self-report, this supports Hellsteadt (1987) who claimed younger athletes are receptive to learning and applying cognitive strategies as long as they feel the cognitive strategies enhance performance.

The Follow-Up Questionnaire showed that the subject "tried to do my best" and grew more confident throughout the study. Imagery was thought to be "weird" but got "easier" over time.

The Cognitive Strategy Questionnaire revealed extensive imagery practice(7) by Subject 3 and a relatively high belief(6) in imagery helping goal kicking. Imagery was easy(8) to do, all from an external perspective or video view(9). The images were fairly clear(6) but sensations were weak(4) with little controllability(4). The lack of sensations and controllability concurred with Weinberg's (1982) opinion that, for maximum imagery effectiveness, individuals need to feel themselves going through the movement and have control of the image.

Subject 4.Physical Practice / Relaxation / Self-Talk (PRT)

Subject 4 showed improvements in the baseline for all goal kicking target behaviors (Figures 17, 18, and 19). The increasing trends interfered with evaluation of the intervention (Kazdin, 1982). The intervention produced small decreases in goal kicking accuracy mean (Table 4, Figure 17) from baseline to the first intervention phase and again to the non-intervention phase thereby showing no reliable changes in the mean. However, a delayed mean effect was demonstrated at the second intervention phase. The level shifts revealed between each phase were unreliable except between the end of the non-intervention phase and the start of the second intervention phase. This suggested a delayed performance effect. There were no systematic changes in the trends of the data at each phase. The retention phase showed a decrease in the mean, with no level shift but an increasing tendency in the final three sessions suggesting partial evidence for the maintenance and learning effects of PRT on goal kicking accuracy.

Goal kicking height (Figure 18) and total goal kicking performance (Figure 19) produced similar results. There were no consistent mean changes in performance but delayed effects of the intervention were shown at the second intervention phases. The level shifts demonstrated doubtful performance effects. Systematic trends in data for both

Table 4

Subject four's mean scores for each target behavior across experimental phases

Behavior	Baseline (A)	Intervention (B)	A	B	Retention
Goal Kicking Accuracy	20.25	20.0	19.75	27.5	24.0
Goal Kicking Height	24.25	21.0	24.25	31.0	31.5
Total Goal Kicking Performance	68.75	62.0	68.25	89.5	87.0
Level of Self-Efficacy	8.5	11.5	8.0	9.5	8.25
Strength of Self-Efficacy	61.1	59.4	54.6	58.3	52.7

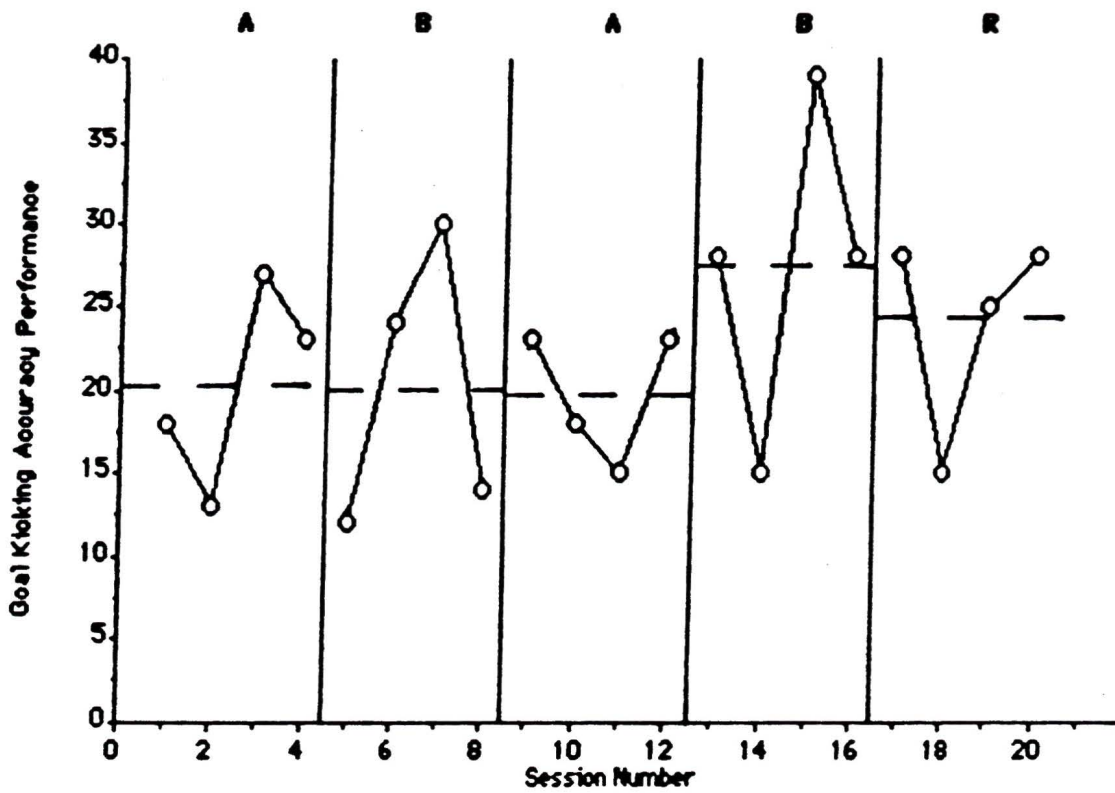


Figure 17.

Subject four's goal kicking accuracy performance across experimental phases.

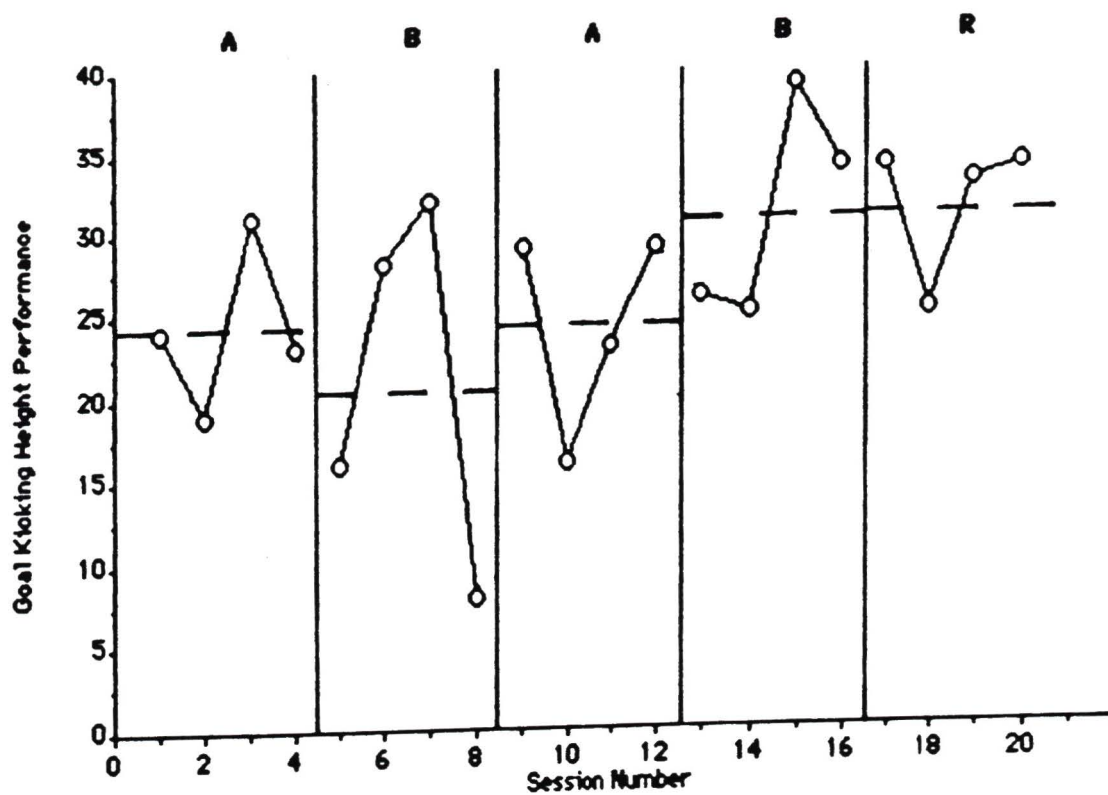


Figure 18.

Subject four's goal kicking height performance across experimental phases.

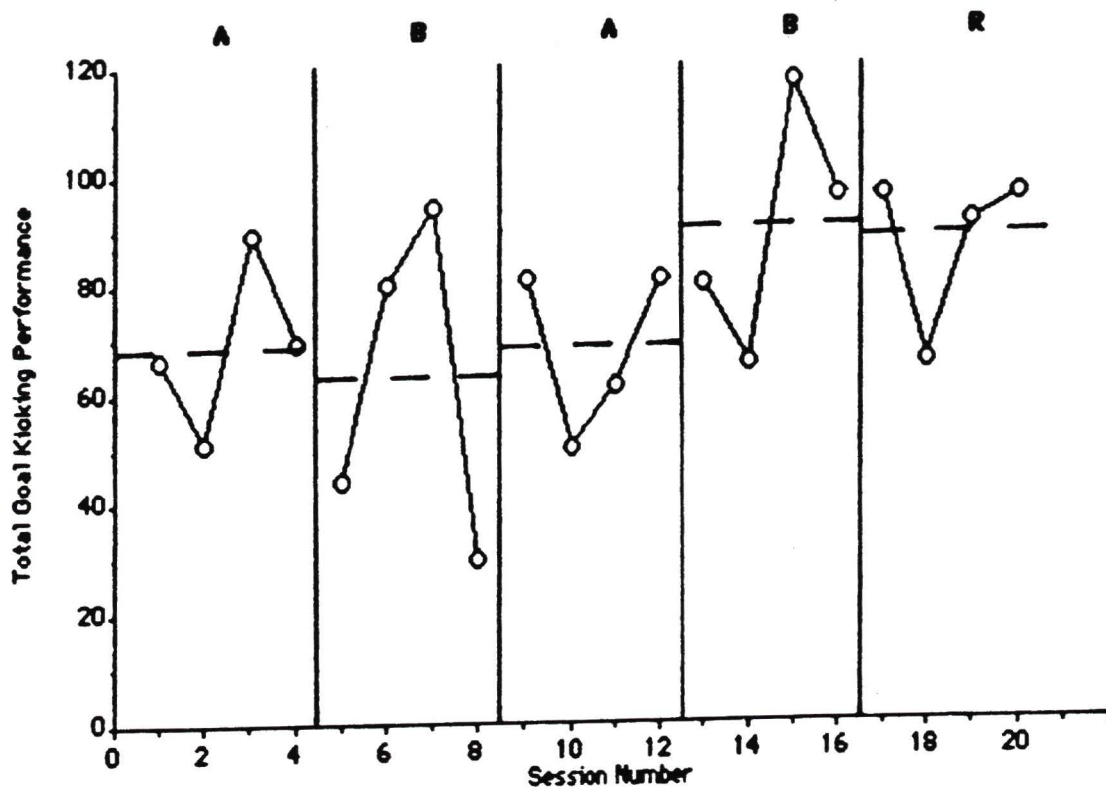


Figure 19.

Subject four's total goal kicking performance across experimental phases.

height and total performance were evident. The retention phase maintained the same and similar means respectively for height and total goal kicking, with no level shifts and relatively stable performances indicating learning effects of the intervention.

Overall, PRT was not effective for improving goal kicking accuracy performance but there was partial support for a learning effect. There was, however, evidence favouring acceptance of the intervention in producing delayed performance effects for goal kicking height and total goal kicking performance. Learning effects were maintained for these behaviors.

The lack of a performance effect of PRT for goal kicking accuracy supported the findings of Weinberg et al. (1981) and Wrisberg and Anshel (1989) that relaxation alone and Weinberg et al. (1980) that positive self-talk alone were not effective as performance enhancement techniques. To date, no research has utilised the technique of combining the strategies. The results for Subject 4 suggested for novice athletes, relaxation and positive self-talk in combination were not effective for performance enhancement on an accuracy task. There was, however, some evidence for a learning effect on goal kicking accuracy.

The results for goal kicking height and total performance were inconclusive. There were no consistent changes in mean scores and no reliable level shifts.

However, changes in the trend showed systematic alterations at each phase and there appeared to be a delayed effect of intervention at the second intervention phase. The findings of Ziegler (1987b) and Rushall et al. (1988) that positive self-talk is effective for improving performance were partially supported. A maintenance effect of PRT for total and height goal kicking scores was apparent. This indicated a learning effect of the intervention.

The delayed effect of the intervention upon the second intervention phase mean score suggested some prior experience of the task is needed to enhance intervention effects. Corbin (1972) and Harris and Robinson (1986) proposed that this is the case with mental practice. It would be reasonable that the same finding be evident with other cognitive strategies. Weinberg et al. (1980) stated that merely asking subjects to use cognitive strategies is not sufficient as practice is needed to fully develop the techniques. The lack of an immediate performance effect may have been due to the subject not using relaxation and self-talk strategy efficiently. Subject 4's training log did not, however, indicate any real difficulty in the use of the techniques in the first intervention phase.

Subject 4 displayed a stable baseline for level of self-efficacy (Figure 20). There was an immediate increase in mean score at the first intervention phase with a decreased non-intervention phase mean. This was followed by

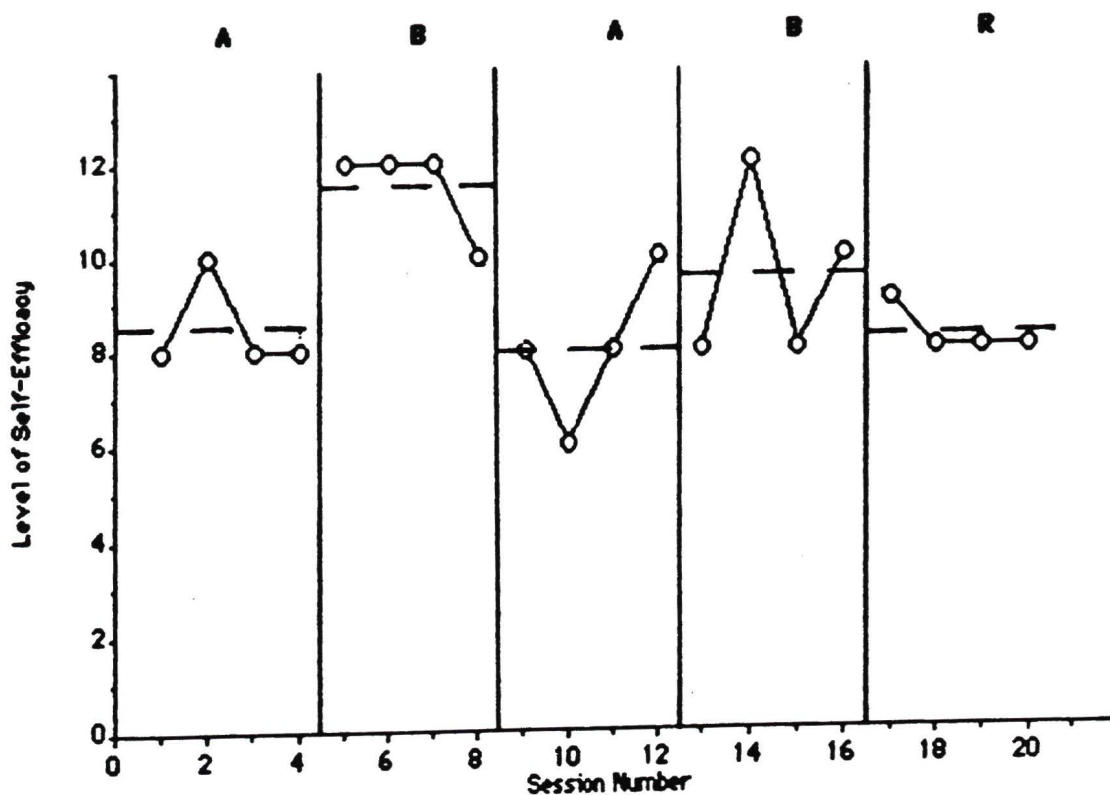


Figure 20.

Subject four's level of self-efficacy scores
across experimental phases.

an increased mean at the second intervention phase but not of the same magnitude as at the introduction of the intervention. This suggested that the intervention was responsible for changes in performance. Reliable level shifts occurred at the start of the first intervention phase and start of the non-intervention phase. However, an inappropriate downward shift took place between the end of the non-intervention phase and start of the second intervention phase. The lack of any systematic changes in trend questioned the effects of the intervention. Overall, the effect of PRT upon expectancy of success for Subject 4 was uncertain. The retention phase indicated no maintenance and learning effect of the intervention.

There was a stable baseline for strength of self-efficacy scores (Figure 21). The pattern of mean scores suggested that the intervention did not lead to consistent changes. The level shifts revealed were unreliable and changes in trend were irregular. Across all of the ABAB phases there was a decreasing trend indicating that the intervention was not able to produce improvements in the belief of Subject 4 that he could succeed. The retention phase revealed no maintenance and learning effects of the intervention.

The results for Subject 4 suggested that there was inconclusive evidence for intervention effects upon level of self-efficacy. There was no learning effect upon the

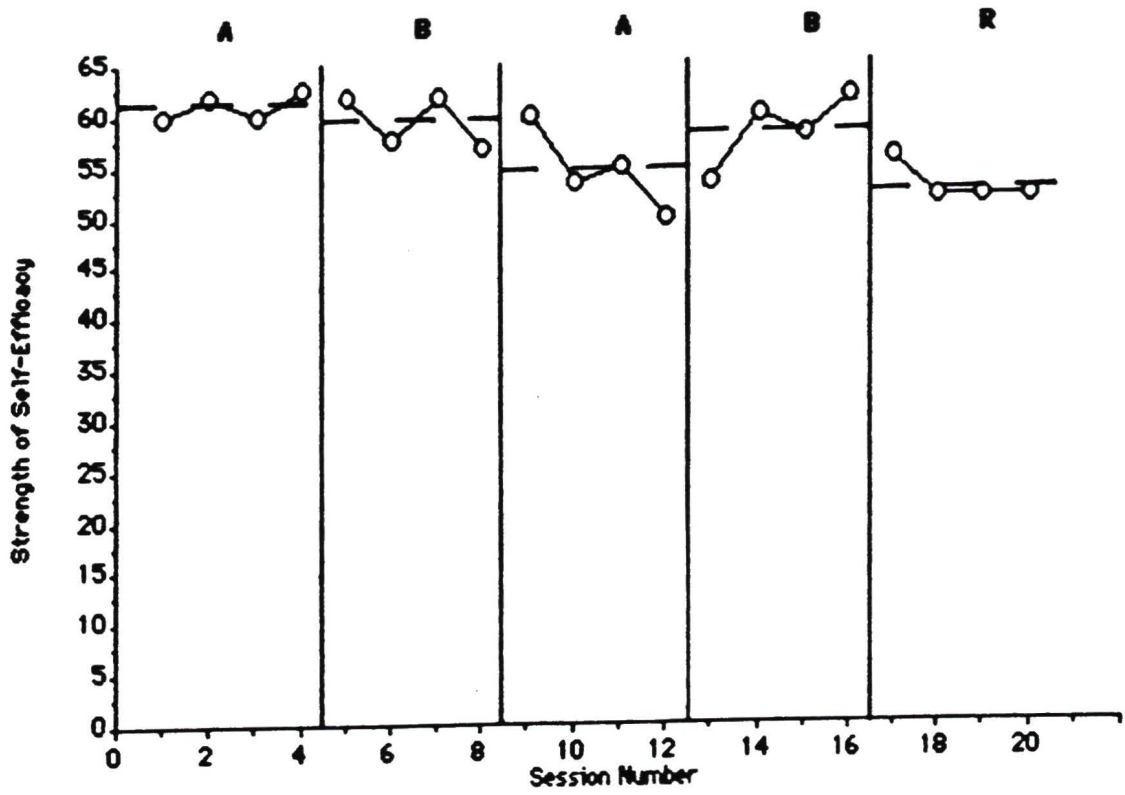


Figure 21.

Subject four's strength of self-efficacy scores across experimental phases.

subject's expectancy for success. PRT was found to be ineffective in improving strength of self-efficacy scores and had no learning effect on Subject 4's belief of success. Feltz (1988) reported that the research investigating persuasive techniques and emotional states as a source of efficacy information produced mixed results. The findings for Subject 4 add to the equivocal research.

The training log of Subject 4 indicated a "more confident" feeling towards successful kicks during intervention phases. At the non-intervention phase, Subject 4 reported "losing confidence" and the feeling of being "not very confident" also arose in the retention phase. The pattern of "more confidence" at intervention phases was shown for level of self-efficacy scores while both level and strength of self-efficacy scores indicated lower confidence at the non-intervention and retention phases. Following session five, the subject reported an immediate feeling of being "more confident with what we learnt" in reference to the PRT technique. Comments regarding the goal kicking practice indicated feelings of improvement in the first intervention phase with a sense of "kicking better and further" following session seven. During the non-intervention phase, the subject felt he needed "more practice". Upon return to the intervention, the subject noted he was "striking the ball better" but needed "more accuracy" in his kicking. This feeling of a need for more

accurate kicks was indicated by the subject's lower goal kicking accuracy performance scores. The subject's report following session seventeen noted a belief that "this way of teaching is very effective".

Despite inconclusive findings for PRT effects on self-efficacy, it appeared that the cognitive strategies were able to heighten the subject's feelings of confidence to perform.

The comments of Subject 4 regarding his use of deep breathing and positive self-talk showed an improvement throughout the intervention phases. The subject's ability to deep breathe, feel the air in his lungs, and deep breathe prior to each kick was done without difficulty and was practised regularly. The subject had some initial difficulty in breathing slowly and feeling the tension leave his body through deep breathing. It was noted the subject felt the deep breathing made him "more confident". Following session fifteen, it was noted by the subject's own comments that he felt his tension dissipate when he started his steps toward the ball.

In regard to the subject's positive self-talk use, there was little difficulty in his ability to self-talk and practice the strategy. Although the subject was able to use self-talk to encourage confidence, he found it hard to be 100% confident of a successful kick. The subject felt deep breathing and self-talk in combination was useful as it made

his kicks "go further". The anecdotal observations were consistent with Hellsteadt (1987) that younger athletes are open-minded to cognitive strategies when they feel the strategies improve performance.

The researcher's log noted the subject was hooking the ball in the baseline phase. This did not occur in the first intervention phase and was only evident once in the second intervention phase when the subject lifted his head. Overall, an improved technique was noted in intervention phases and in the retention phase.

The Follow-Up Questionnaire revealed that Subject 4 felt his kicking "went well" and that he progressed "slowly but surely". The subject felt his self-confidence improved and his deep breathing "gradually progressed and calmed" him. The subject felt self-talk did not progress and was "not greatly needed". Deep breathing was, however, "necessary for kicking".

The Cognitive Strategy Questionnaire revealed extensive use of both deep breathing(9) and positive self-talk(8). The subject found deep breathing relatively easy to use(7) but had more difficulty self-talking about successful kicks(6). The subject found it easy to "feel" tension leaving his body(8) and relatively easy for him to encourage confidence from using self-talk(7). Subject 4 viewed himself as being fairly relaxed(6) when goal kicking. In regard to performance assistance from the strategies, the subject felt

deep breathing assisted him greatly(8) while positive self-talk was not as helpful(6). The questionnaire findings coincided with Weinberg, Seabourne and Jackson (1981; 1982) and Kendall et al. (1990) that relaxation was beneficial.

Subject 5.

Physical Practice / Relaxation / Self-Talk (PRT)

Subject 5 showed variable baselines with increasing trends from session two to four for all goal kicking target behaviors (Figures 22, 23, and 24). The variable data and increasing tendency interfered with the conclusions about the intervention effects (Kazdin, 1982). Goal kicking accuracy performance (Table 5, Figure 22) displayed no consistent and reliable mean changes, level shifts, or systematic changes in trend as a result of the intervention. Although the retention phase revealed an increased mean and upward level shift, accuracy scores were variable with the retention mean only exceeding the baseline mean by 0.5 points. This indicated no maintenance and learning effect from the intervention. The extreme score of 34 points at the first session was difficult to explain. It did not appear that the subject was any more proficient with his technique at this session and although the subject reported high confidence, his self-efficacy scores were surpassed at other sessions. If session one is excluded as an outlying score, the mean for baseline would be 14 points and a delayed

Table 5

Subject five's mean scores for each target behavior across experimental phases

Behavior	Baseline (A)	Intervention (B)	A	B	Retention
Goal Kicking Accuracy	19.0	7.5	12.75	16.75	19.5
Goal Kicking Height	19.5	8.0	12.25	18.25	21.0
Total Goal Kicking Performance	58.0	23.0	37.25	53.25	61.5
Level of Self-Efficacy	6.0	5.25	4.75	8.0	8.5
Strength of Self-Efficacy	48.8	48.6	50.2	59.2	57.9

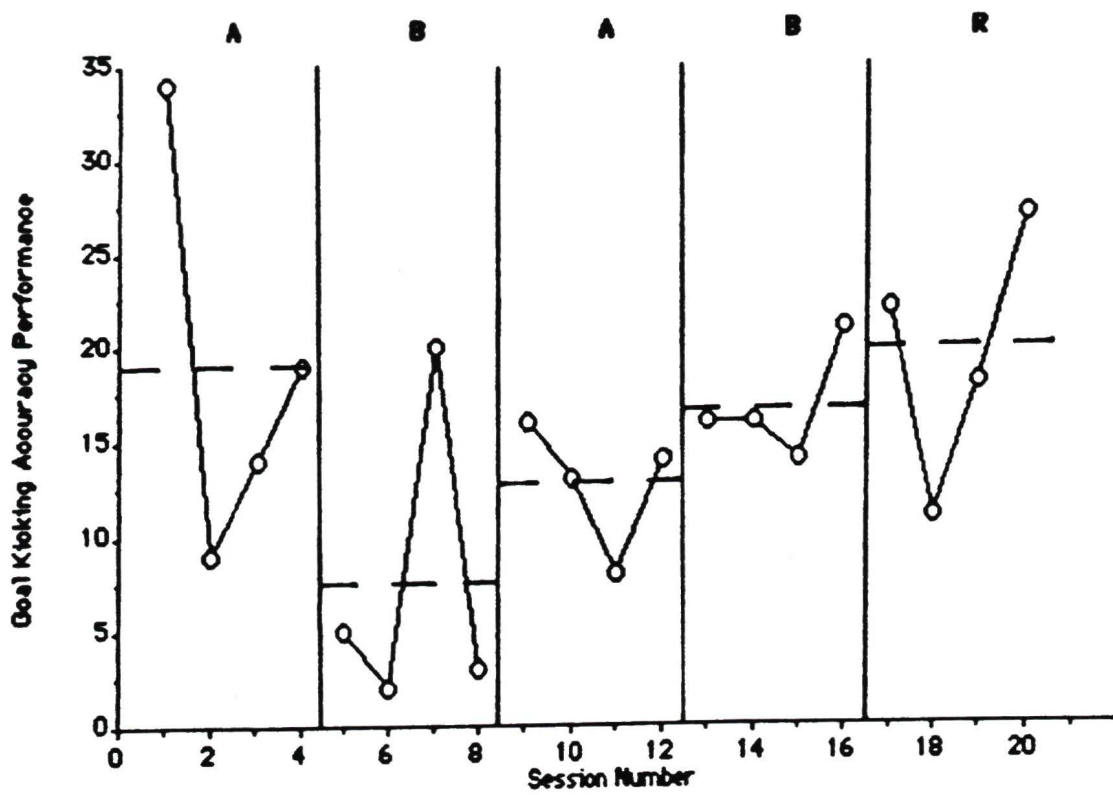


Figure 22.

Subject five's goal kicking accuracy performance across experimental phases.

effect upon the second intervention phase mean would occur.

Goal kicking height performance (Figure 23) and total goal kicking performance (Figure 24) exhibited similar results. There were no consistent and reliable mean changes and level shifts. However, systematic trends were demonstrated for goal kicking height. Total goal kicking produced variable scores in the first intervention phase but displayed systematic trend changes thereafter. The retention phases revealed no maintenance and learning effect of the intervention. Extreme scores at session one of 38 and 110 points occurred for goal kicking height and total goal kicking respectively. Omitting session one as an outlier would produce baseline means of 13.3 and 40.7 points and thereby suggest delayed effects upon the second intervention phase means.

Overall, PRT was not effective for improving goal kicking accuracy performance. The evidence for intervention effects upon goal kicking height and total goal kicking were inconclusive. There were no learning effects for any goal kicking target behaviors.

The goal kicking accuracy findings and inconclusive results for goal kicking height and total goal kicking performance support Weinberg et al. (1981) and Wrisberg and Anshel (1989) that relaxation alone and Weinberg et al. (1980) that positive self-talk alone are not effective for performance enhancement. The results for Subject 5 suggested

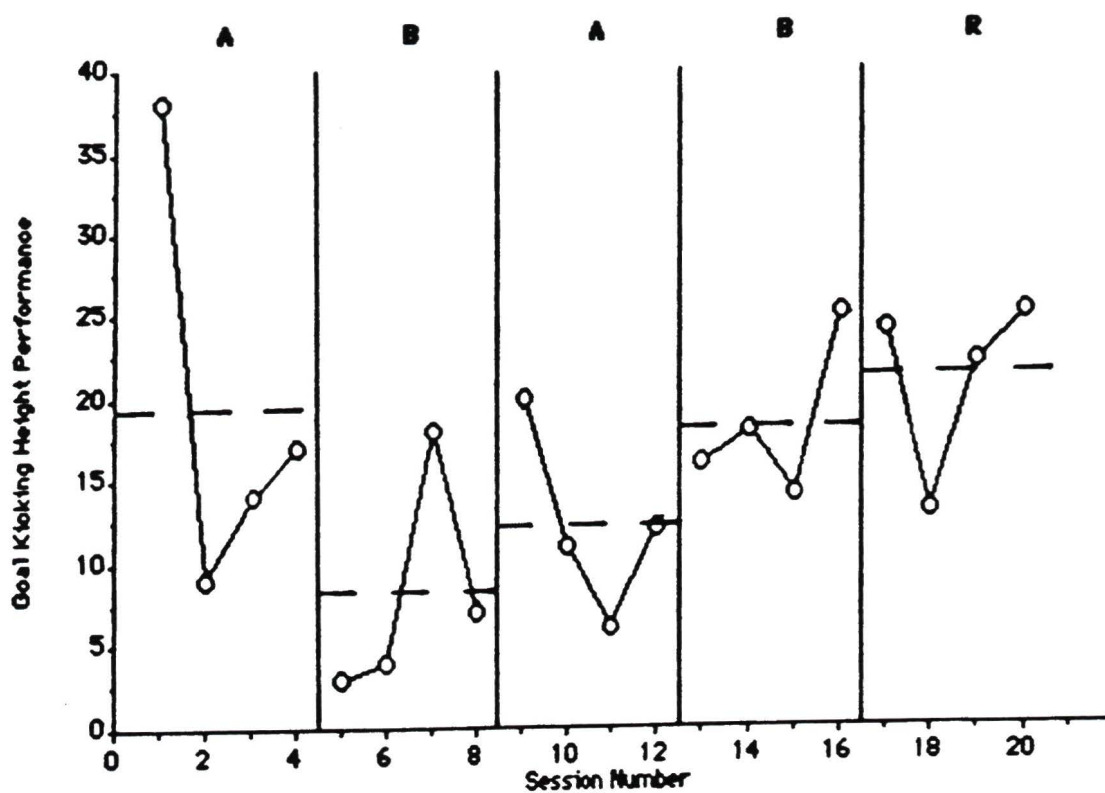


Figure 23.

Subject five's goal kicking height performance across experimental phases.

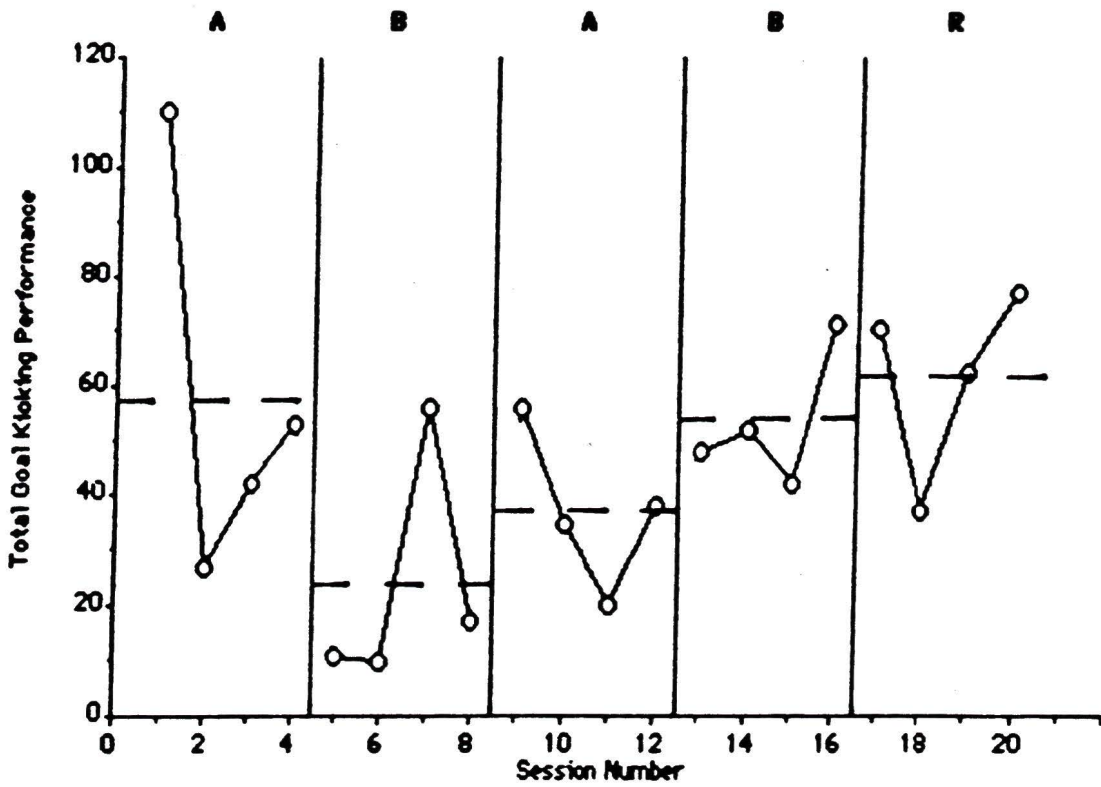


Figure 24.

Subject five's total goal kicking performance across experimental phases.

that the combination of relaxation and positive self-talk strategies were also not effective for enhancing performance. Similarly, the intervention was not effective in producing a learning effect.

The lack of positive intervention results may have been due to inefficient use of relaxation and self-talk. The subject's training log did indicate some difficulty in the use of the strategies as at all treatment sessions the subject reported problems with differing aspects of the strategies.

Subject 5 showed a stable baseline for level of self-efficacy (Figure 25). The mean changes were inconsistent with intervention effects, however, a delayed increase in the mean occurred at the second intervention phase. The level shifts shown were unreliable and there was no systematic changes in the trend. The retention phase produced an increase in the mean and a progression of the final intervention phase scores suggesting a maintenance effect of the intervention. There was no extreme score at session one, as had been shown for goal kicking target behaviors. Overall, there appeared to be no performance effect of PRT upon the expectancy of success for Subject 5. There may have been a delayed effect of the treatment at its second intervention. There was, however, a clear maintenance effect of the intervention.

There was a stable baseline for strength of self-

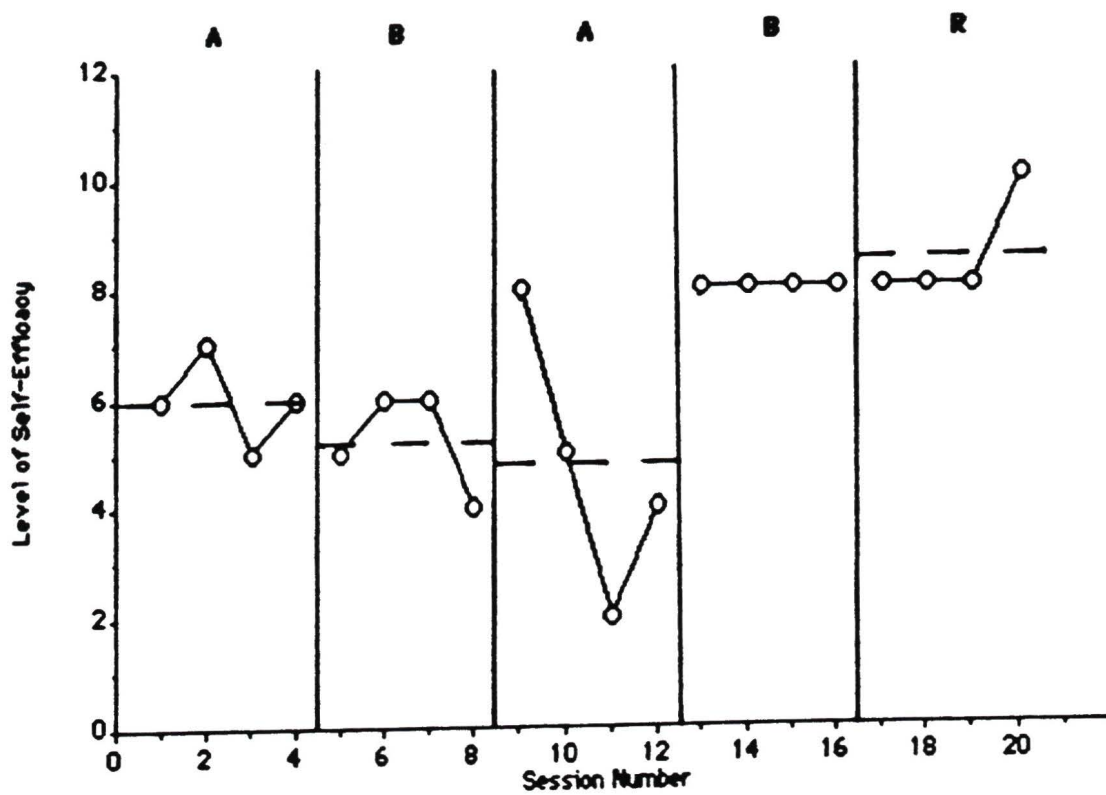


Figure 25.

Subject five's level of self-efficacy scores across experimental phases.

efficacy scores (Figure 26). The mean changed only slightly from baseline (49.8%), to the first intervention phase (48.6%) and non-intervention phase (50.2%). There was a delayed increase in mean at the second intervention phase (59.2%). The level shifts displayed were unreliable. There was an increasing tendency in the first intervention phase, followed by a negative trend in the non-intervention phase and stable scores in the second intervention phase. This demonstrated systematic changes in strength of self-efficacy scores. The retention phase produced a small decrease in the mean and downward level shift, with an increasing trend indicating a partial maintenance effect of the intervention. There was no extreme score at session one, as had been produced for goal kicking target behaviors. Overall, the findings for the effects of PRT upon strength of self-efficacy were equivocal. The systematic trends and delayed mean effect suggested partial support of the intervention. The maintenance findings for Subject 5 also gave some support for a learning effect.

The results for Subject 5 suggest PRT had no immediate effect upon level of self-efficacy and no learning effect on expectancy for success. There was partial evidence in favour of intervention effects upon the subject's belief of success as well as some support for a learning effect for strength of self-efficacy. The findings lend support to Weinberg's (1986) study where no interactions were found between levels

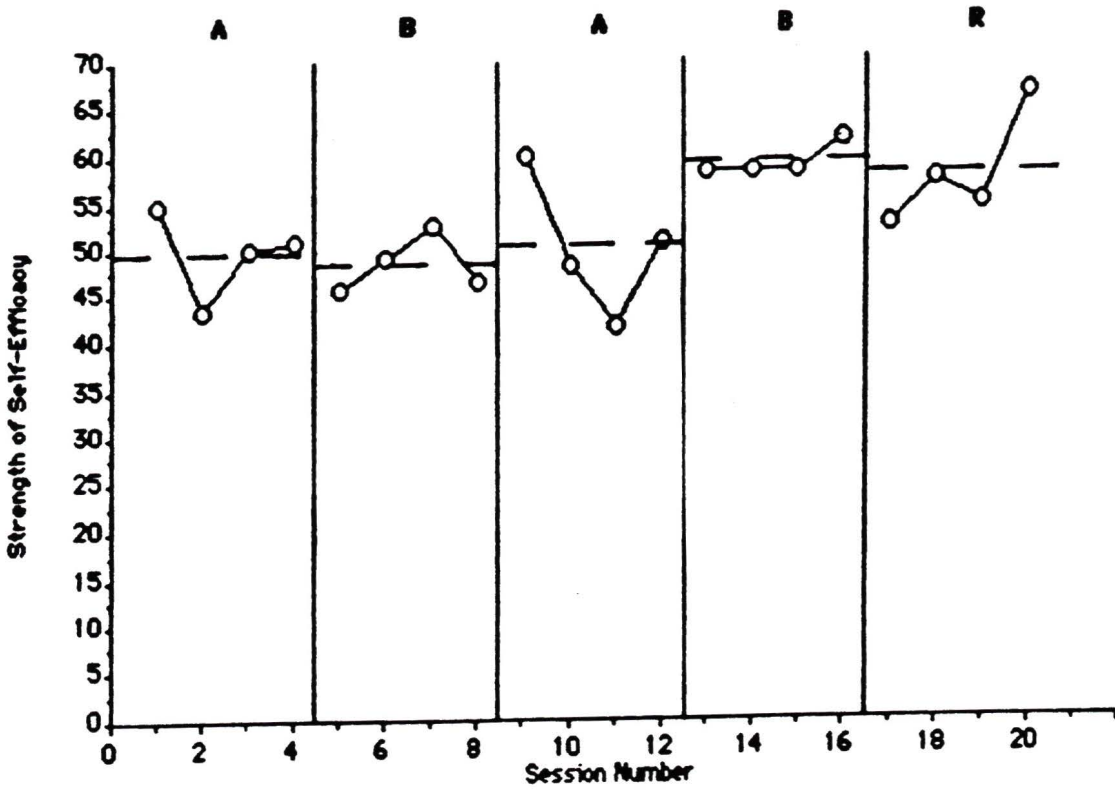


Figure 26.

Subject five's strength of self-efficacy scores across experimental phases.

of self-efficacy and positive self-talk. The findings add to the previous equivocal self-efficacy research (Feltz, 1988) involving persuasive techniques and emotional states as sources of efficacy information.

The self-report training log for Subject 5 indicated that confidence varied between sessions and between phases with no pattern emerging. It was apparent that the subject felt his confidence level was sufficiently high but dropped or rose depending on his kicking success. This indicated the subject's performance accomplishments were a source of information upon which to base self-efficacy judgements. This supports Bandura's (1977) theory. The influence of information gained through performance accomplishments may have overshadowed those of deep breathing and self-talk as suggested by Bandura (1977). Following session nine, Subject 5 indicated if his confidence "lowered I would use self-talk". The use of the self-talk strategy at session nine in a non-intervention phase, may have affected the relatively high scores for both goal kicking performance and self-efficacy measures at that session. The subject made few comments regarding his goal kicking practice.

The comments of Subject 5 regarding his use of deep breathing and self-talk indicated some difficulty for the various aspects of the treatment throughout both intervention phases. At no time did the subject indicate all positive comments for the various aspects of the treatment.

For example, following session five and introduction of the intervention, the subject noted a "good" ability to feel deep breathing, with a "fair" ability to breathe slowly and "very good" ability to feel less tension. The ability to use self-talk was "good" and he felt that the combination of the two was "great". Following the end of intervention at session fifteen, the subject noted a "good" ability to use deep breathing slowly, but only "fair" ability to feel less tension. The ability to use self-talk was "good" but ability to encourage confidence was only "fair". Prior to each kick the subject had only "fair" use of deep breathing and self-talk and felt the use of combining the two was "fair/bad". Subject 5 also reported differing thoughts of the ease of practice of the techniques. These discrepancies in the ability to use the techniques effectively from session to session may have influenced the overall performance of Subject 5.

The researcher's log noted that the subject showed an improved kicking technique in intervention phases and appeared more confident in the second intervention phase. Throughout all phases, however, it was noted the subject needed a "faster kicking leg" when contacting the ball in order to supply more power and distance.

The Follow-Up Questionnaire revealed that Subject 5 felt goal kicking performance "helped a lot and improved kicking skills" and "got better" throughout the sessions. In

regard to self-confidence, the subject reported feeling "more confident when teacher there to help". This referred to the intervention phases where the researcher was involved in taking the subject through the goal kicking practice and cognitive strategies. The subject felt deep breathing "did a lot of good to relieve the tension". He reported deep breathing "started off not very effectively but as I practised it worked well with positive self-talk". The positive self-talk "got better" throughout the session, and "works well with deep breathing". The subject also reported having "pictured myself, kicking the goal". These images of goal kicking were done naturally by the subject and he felt the pictures improved his kicks. The use of strategies other than those of the treatment is not new (Mumford and Hall, 1985; Wrisberg and Anshel, 1989). Mumford and Hall (1985) reported a high incidence of mental practice use among control subjects. The use of imagery by Subject 5 was perceived to affect his performance and it is likely that it was viewed as being more important than deep breathing and self-talk.

The Cognitive Strategy Questionnaire revealed extensive use of deep breathing(8) but less use of self-talk(5). The subject found deep breathing easy to use(7), and easy(8) to "feel" tension leaving his body. Subject 5 felt he was quite relaxed(7) when goal kicking. The subject felt it was moderately easy(6) to talk about successful kicks and

encourage confidence. It was felt deep breathing greatly assisted performance(7), whereas self-talk was not as helpful(4). The questionnaire findings concurred with Weinberg, Seabourne and Jackson (1981; 1982) and Kendall et al. (1990) that relaxation training was beneficial. Positive self-talk was used less extensively and he believed it had little performance benefit.

Subject 6.

Physical Practice / Relaxation / Self-Talk / Imagery (COM)

Subject 6 showed an increasing baseline tendency for all goal kicking behaviors (Figures 27, 28, and 29). The total goal kicking performance mean increased from baseline to the first intervention phase, decreased slightly with the non-intervention phase and greatly increased at the second intervention phase (Table 6, Figure 29). This pattern was indicative of the intervention producing consistent changes in performance. The positive trends at each intervention phase and stable scores at the non-intervention phase suggested that the intervention produced systematic changes in performance. Kazdin (1982) noted that although behavior improvements in the baseline interfere with evaluation, intervention effects may still be observable. The level shifts produced were contradictory, with a downward shift shown between the end of baseline and the first treatment session, but reliable shifts were presented elsewhere. The

Table 6

Subject six's mean scores for each target behavior across experimental phases

Behavior	Baseline (A)	Intervention (B)	A	B	Retention
Goal Kicking Accuracy	13.25	15.75	16.5	24.25	22.5
Goal Kicking Height	12.25	15.25	14.0	26.0	23.0
Total Goal Kicking Performance	37.75	46.25	44.5	76.75	68.5
Level of Self-Efficacy	4.75	5.0	3.0	4.25	6.5
Strength of Self-Efficacy	45.6	48.8	48.4	52.1	50.9

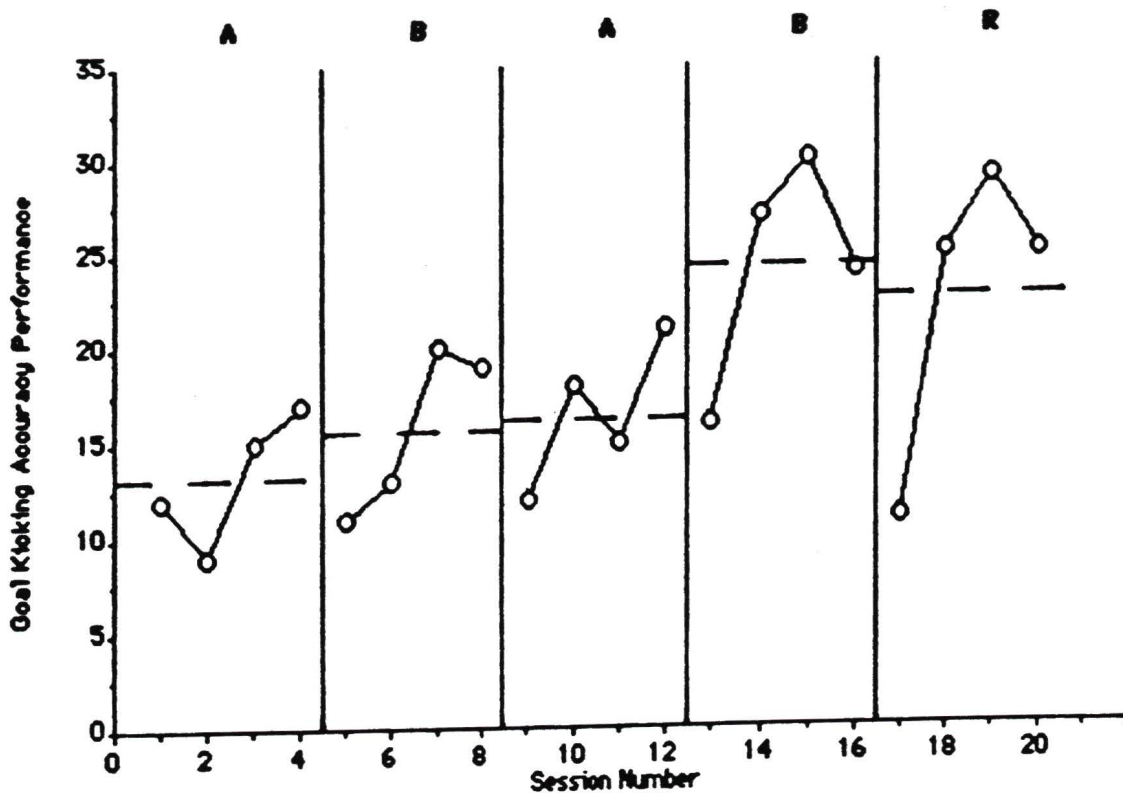


Figure 27.

Subject six's goal kicking accuracy performance across experimental phases.

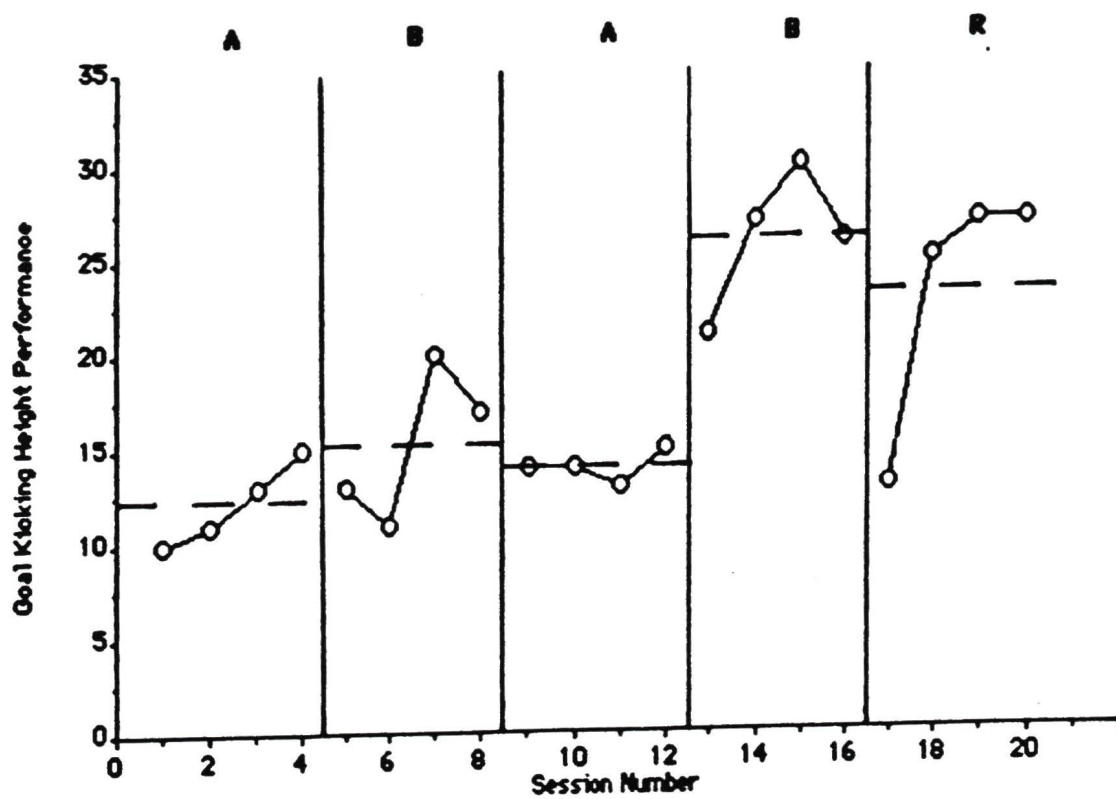


Figure 28.

Subject six's goal kicking height performance across experimental phases.

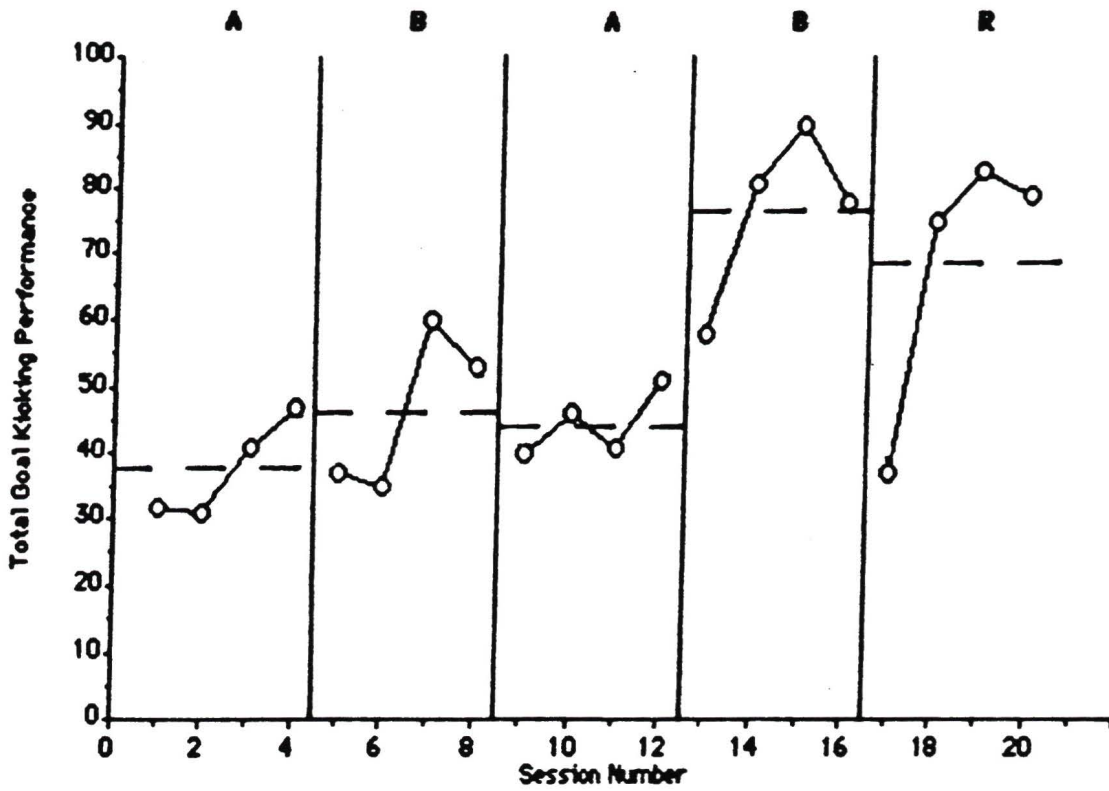


Figure 29.

Subject six's total goal kicking performance across experimental phases.

retention phase mean decreased slightly from the final intervention phase and there was a large downward level shift. However, a large positive trend was displayed in the retention phase, indicating that the intervention was effective in maintaining performance.

There were similar results for goal kicking height performance (Figure 28), with increasing trends in all phases excepting a stable non-intervention phase. This supported the notion that the intervention produced systematic changes in performance. The mean scores for height performance produced the required pattern indicating positive intervention effects. The level shifts were however contradictory, with reliable shifts shown except between end of baseline and the first treatment session. The retention phase produced a downward level shift from the end of intervention but exhibited a slightly lower mean and an increasing trend suggesting a possible maintenance and learning effect.

Goal kicking accuracy performance for Subject 6 produced conflicting evidence (Figure 27). Although the mean changes were inconsistent, there was only a small increase in mean from the first intervention phase to the non-intervention phase. A large increase in the mean at the second intervention phase suggested a delayed performance effect. The level shift shown were unreliable except between the end of first intervention phase and the start of the

non-intervention phase. Increasing trends were revealed at all phases thereby adding to the equivocal findings. The retention phase produced a downward level shift but displayed an increasing trend and a slightly lower mean than at the final intervention phase. This suggested a possible maintenance and learning effect of the intervention.

Overall, the results for goal kicking height performance and total goal kicking performance provided partial support for Hamilton and Fremouw (1985) and Kendall et al. (1990) that the combination of relaxation, self-talk and imagery were effective in enhancing performance. The results for goal kicking accuracy performance were not supportive but did, however, suggest a delayed performance effect at the second intervention phase. The large increase in the mean at the second intervention phase for all goal kicking behaviors suggested prior experience of the task may be a variable involved in the effectiveness of the intervention. Corbin (1972) and Harris and Robinson (1986) proposed this was the case with mental practice. It would seem reasonable the same finding occur with the combining of cognitive strategies.

The results for level of self-efficacy indicated an increasing baseline trend with consistent changes in mean scores (Figure 30). The level shifts revealed were unreliable and there were no systematic trend changes. This suggested that the intervention was not able to produce

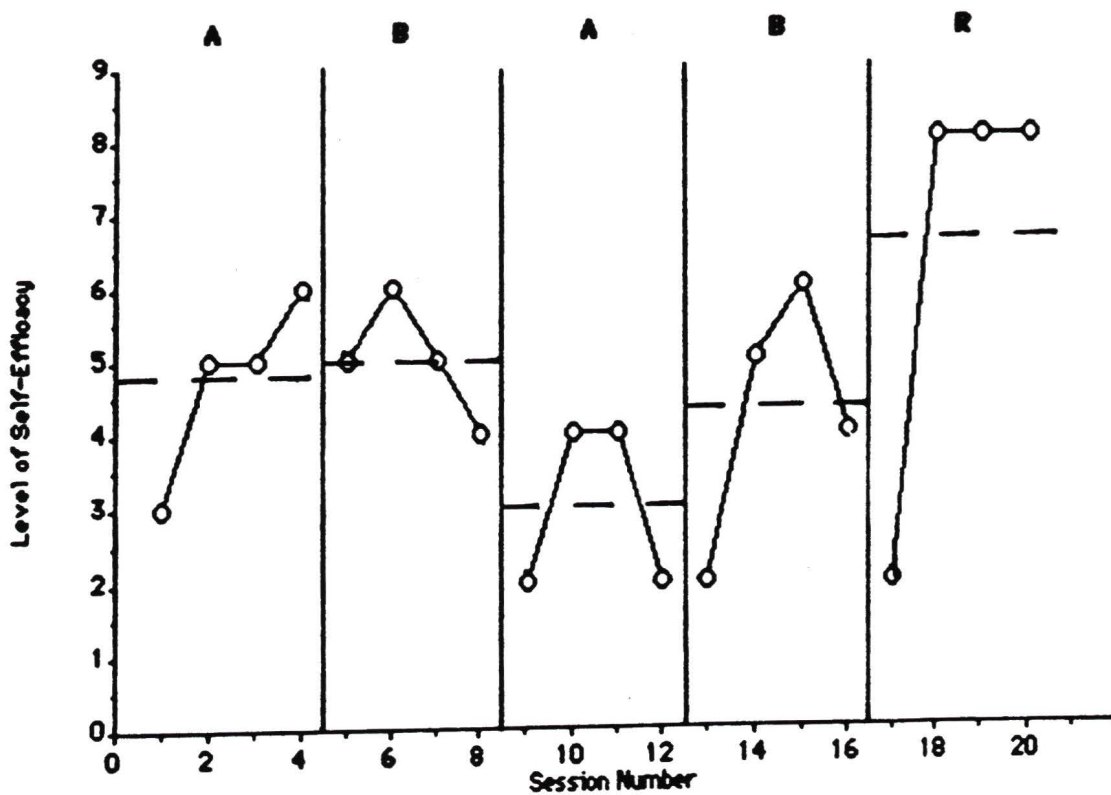


Figure 30.

Subject six's level of self-efficacy scores across experimental phases.

improvements in the expectancy of success for Subject 6. The retention phase produced an increased mean and stable scores greater than at any other phase. However, the positive baseline trend interfered with the evaluation of the retention phase, suggesting no learning effect of the intervention.

A stable baseline was shown for strength of self-efficacy (Figure 31). Although there were only small changes between the means at each phase, these changes were of the expected design to support a positive effect of the intervention. The level shifts produced were reliable and each phase produced stable scores. This indicated that COM was an effective technique in enhancing the belief of Subject 6 that he could succeed. The retention phase revealed a downward level shift but only a minutely decreased mean and an increasing tendency indicating a learning effect of the intervention.

Research combining relaxation, self-talk and imagery has not, to date, assessed their influence upon self-efficacy. Kendall et al. (1990) did indicate development of firm attitudes toward continued use of the strategies. The findings for Subject 6 carry this further, demonstrating cognitive strategies did play a role in determining his feelings of self-confidence.

The self-report training log of Subject 6 indicated a feeling his goal kicking and self-confidence were "good"

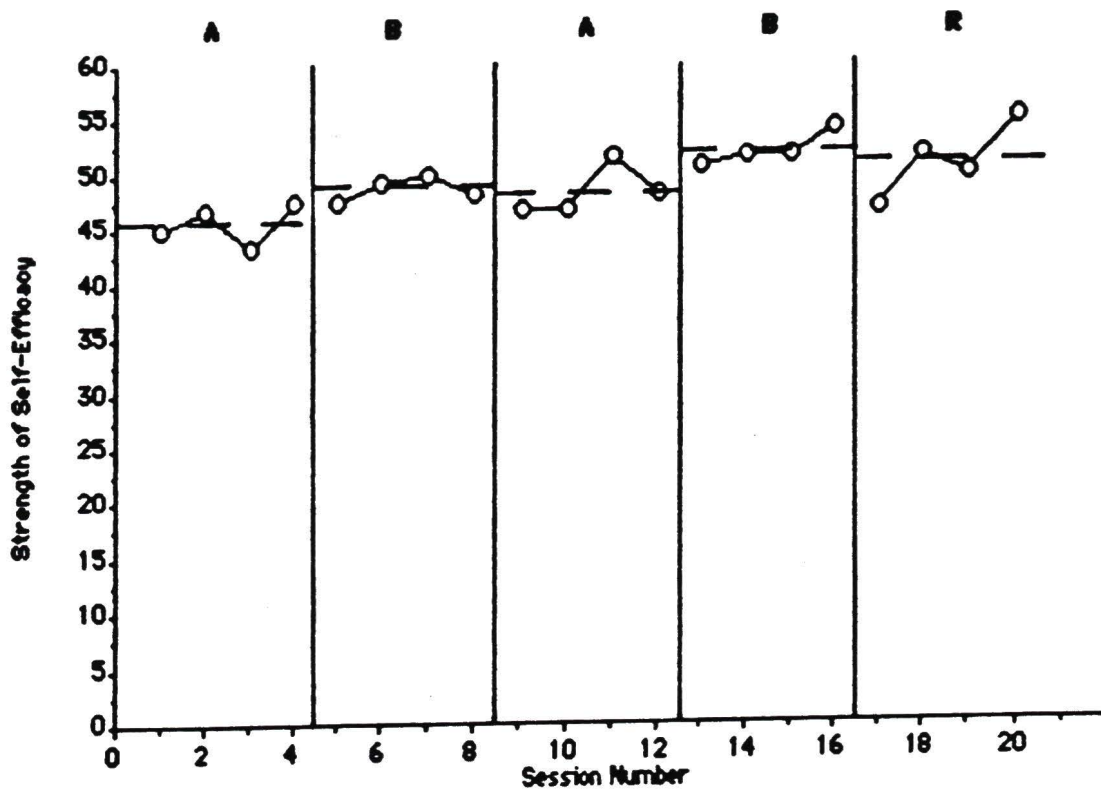


Figure 31.

Subject six's strength of self-efficacy scores across experimental phases.

throughout the study. Following session three, eighteen and nineteen, the subject felt he had been "over-confident". This was not clear from his self-efficacy scores. The subject reported following session six that "imagery helps" self-confidence. Following the first treatment session, Subject 6 commented he felt deep breathing helped him "concentrate on the kick" and that imagery "helped" him kick. It was also noted that positive self-talk "helped to get the image before the kick" and "helped me do what I was supposed to". The general feelings for all aspects of the strategies were "good" throughout the study. Subject 6 did, however, report having some difficulty at times in sensing the air in his lungs and the tension release. Also, some difficulty was reported in the reality of the images and in "feeling" the goal kicking action. The anecdotal reports were in general consistent with Hellsteadt (1987) that younger athletes are interested in learning and applying cognitive strategies when they feel the strategies improve performance.

The researcher's log noted a problem with the subject's run-up throughout the study. This was not solved, with the subject stating it was "too long" but not wanting to change. There did appear, however, to be better technique shown during the intervention phases. During session thirteen, the researcher noted minimal use of the cognitive strategies. Subject 6, however, did not report any less use during the

session.

The Follow-Up Questionnaire revealed that Subject 6 felt his goal kicking progressed "quite well" and that his self-confidence "got more positive over time". This was supported by the subject's strength of self-efficacy scores. In relation to strategy usage, the subject felt that both positive self-talk and imagery progressed "quite a lot" whereas deep breathing progressed "not much". Similarly, he felt that positive self-talk was "pretty good" and imagery was "okay", whereas deep breathing "helped a little but not a lot".

The Cognitive Strategy Questionnaire revealed little use of deep breathing(4), but moderate use of positive self-talk(6) and imagery(6). Deep breathing was, however, relatively easy to use(7) but produced weak sensations(3). Subject 6 felt he was moderately relaxed(6) when goal kicking. Positive self-talk was mildly easy to use(6) and the subject found it relatively easy to encourage confidence(7). The subject imaged from an entirely internal perspective(1) and found imagery relatively easy to use(7). The images produced were clear(7) and relatively easily controlled(7) but evoked fairly weak imagery sensations(5). In regard to performance assistance from the strategies, Subject 6 found both positive self-talk and imagery to be of fairly weak use(5), with deep breathing being ineffectual(2) as a performance enhancer.

Subject 7.Physical Practice / Relaxation / Self-Talk / Imagery (COM)

Subject 7 revealed variable baselines for all goal kicking behaviors (Figures 32, 33, and 34). The variable data interfered with the evaluation of the intervention (Kazdin, 1982). Goal kicking accuracy performance (Table 7, Figure 32) produced consistent mean changes but displayed unreliable level shifts. Although variable trends were displayed in the first intervention and non-intervention phases, an increasing trend was exhibited in the second intervention phase. This suggested that there was a possible delayed effect of the intervention. The retention phase showed a downward level shift but displayed an increased mean and positive trend suggesting a maintenance and learning effect of the intervention on goal kicking accuracy.

Goal kicking height performance (Figure 33) exhibited consistent mean changes in favour of an intervention effect. The level shifts produced were indefinite and the changes in trend were irregular. However, an increasing trend during the second intervention phases suggested a delayed effect of the intervention. The retention phase showed a downward level shift but revealed an increased mean and increasing trend suggesting a maintenance effect.

Total goal kicking performance (Figure 34) produced the expected mean score pattern indicating a positive effect of

Table 7

Subject seven's mean scores for each target behavior across experimental phases

Behavior	Baseline (A)	Intervention (B)	A	B	Retention
Goal Kicking Accuracy	9.25	11.25	9.0	15.5	22.25
Goal Kicking Height	10.25	13.25	9.25	18.5	26.75
Total Goal Kicking Performance	29.75	37.75	27.5	52.5	75.75
Level of Self-Efficacy	6.75	8.25	4.25	10.75	9.0
Strength of Self-Efficacy	43.1	51.9	60.6	44.8	48.8

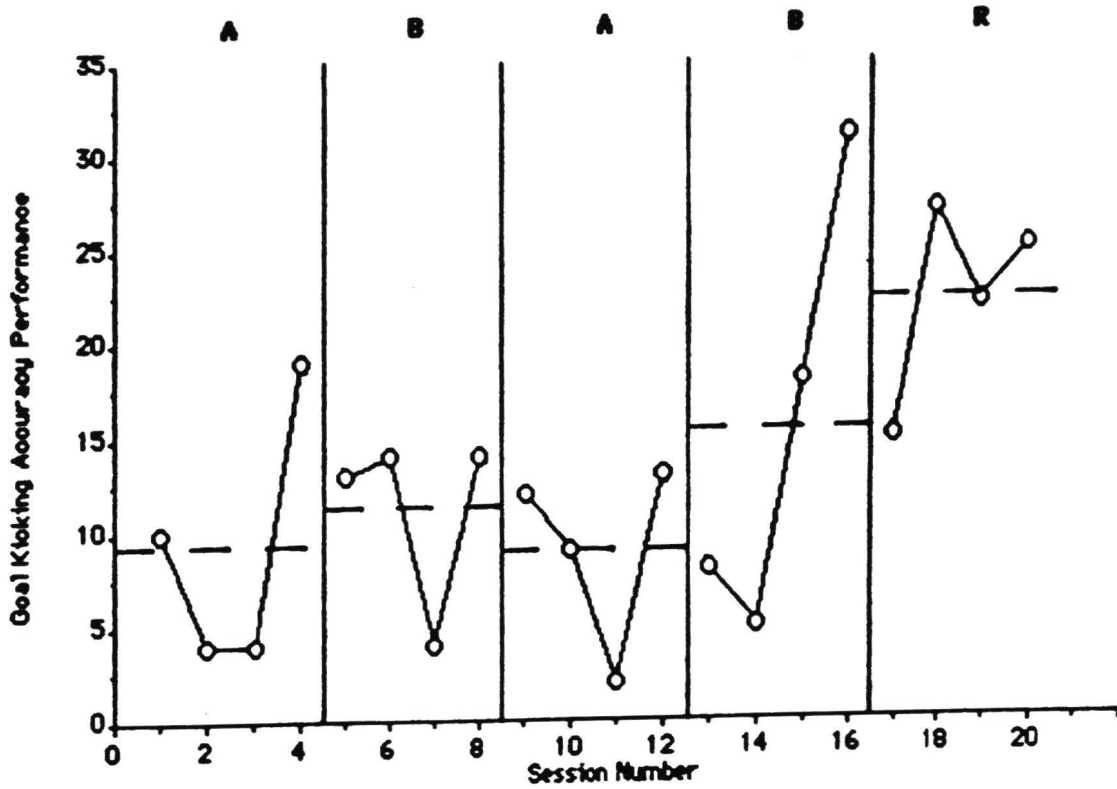


Figure 32.

Subject seven's goal kicking accuracy performance across experimental phases.

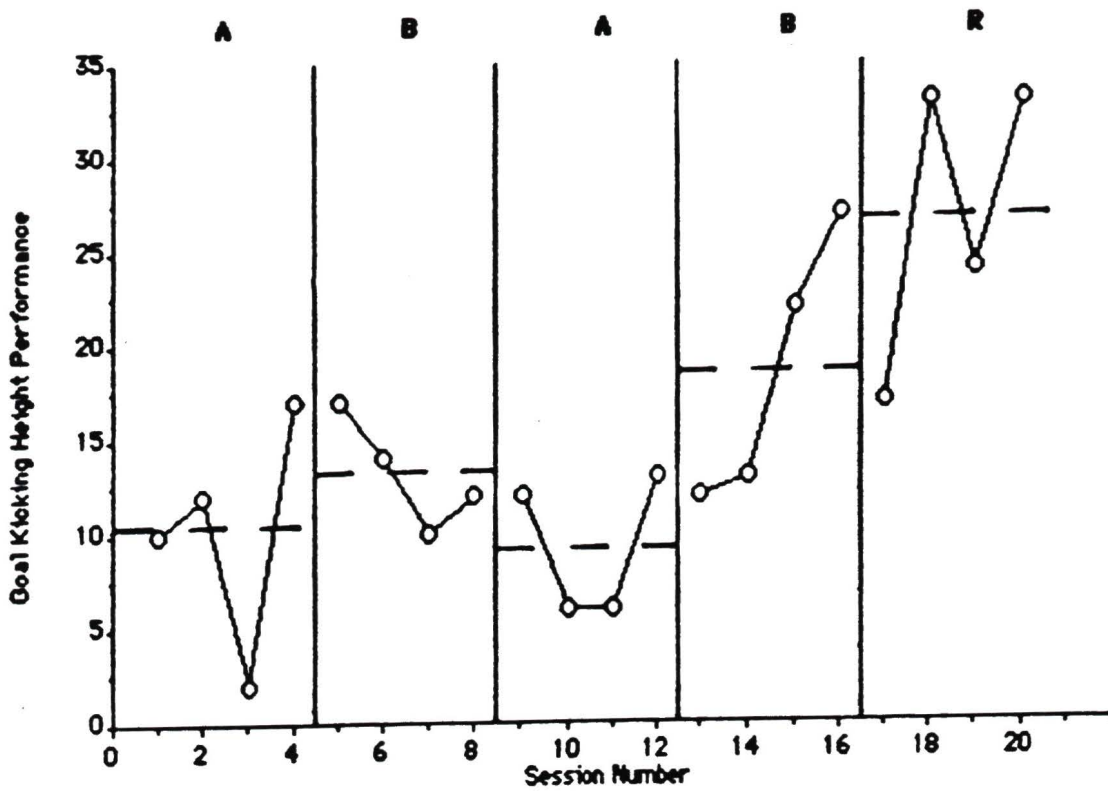


Figure 33.

Subject seven's goal kicking height performance across experimental phases.

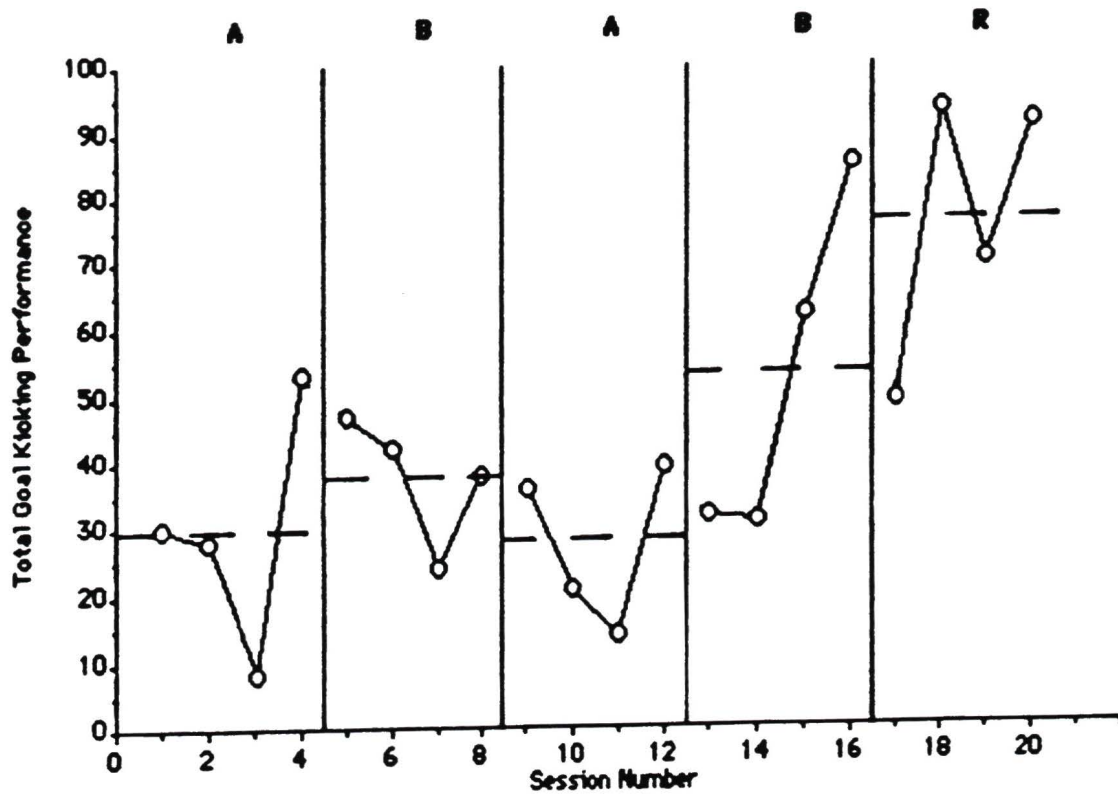


Figure 34.

Subject seven's total goal kicking performance across experimental phases.

the intervention. Unreliable level shifts were shown and a decreasing trend was revealed during the first intervention phase. However, the non-intervention phase displayed a decreasing trend toward baseline and there was an increasing trend in the second intervention phase indicating a delayed performance effect. Despite a downward level shift, the retention phase for total goal kicking behavior produced an increased mean and increasing tendency suggesting a learning effect of the COM intervention.

Overall, the results for all goal kicking behaviors were weak due to the variable baselines interfering with the intervention evaluation (Kazdin, 1982). The increasing trends at the second intervention phases for all goal kicking behaviors suggested prior experience may be a factor involved in the effectiveness of the intervention. Corbin (1972) and Harris and Robinson (1986) proposed this was the case with mental practice studies. It would appear reasonable that the same finding occur with the combination of cognitive strategies.

The level of self-efficacy baseline showed variable scores for expectancy of success (Figure 35). The mean scores and level shifts were of the necessary design to support a positive effect of the intervention. The trends shown for the intervention phases were however variable, giving conflicting evidence. The retention phase produced a decreased mean but stable scores and no level shift from the

final treatment session indicated a maintenance and learning effect.

A variable baseline was shown for strength of self-efficacy scores (Figure 36). The pattern of mean scores were inconsistent and the level shifts shown were unreliable indicating no COM effect upon Subject 7's belief of goal kicking success. Stable scores were produced in the first intervention phase and the non-intervention phase, while the second intervention phase displayed variable scores suggesting no intervention effects. The retention phase revealed a downward level shift and variable scores. The retention mean was greater than at the final intervention phase but remained below the mean of other phases. The findings suggested that there was no maintenance or learning effect.

The results for Subject 7 suggested that the COM intervention may have had some effect upon the subject's expectancy of success. A learning effect on level of self-efficacy was also produced. The intervention did not appear, however, to influence the subject's strength of self-efficacy scores. To date, research combining the strategies has not assessed their effects upon self-efficacy. Kendall et al. (1990) did, however, indicate development of very positive attitudes toward continued treatment use. The findings for Subject 7 suggested that cognitive strategies may play a role in determining feelings of self-confidence.

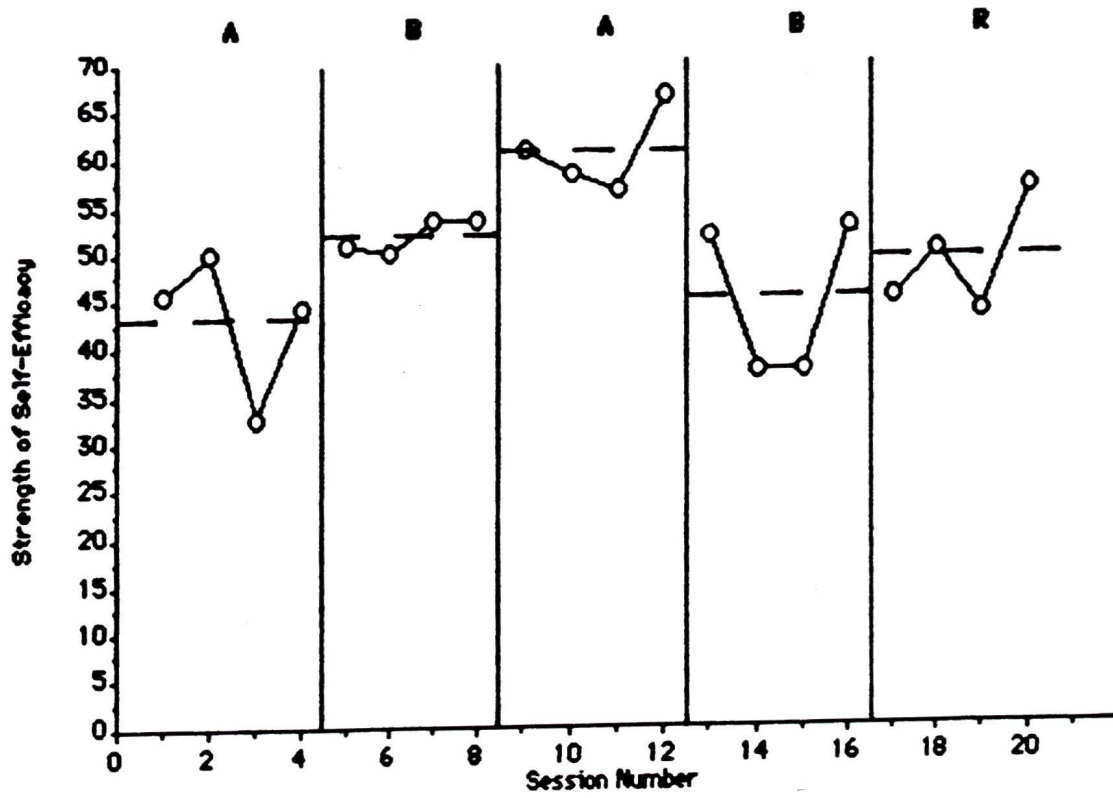


Figure 36.

Subject seven's strength of self-efficacy scores across experimental phases.

The self-report training log for Subject 7 noted an immediate feeling of confidence when goal kicking. During the baseline phase, the subject reported "a lot of confidence" and "steadily improved kicking" due to "positive thinking". The subject's self-efficacy baseline scores were, however, below those stated in other phases and the subject did not report feelings of positive thinking again in the study. In regard to cognitive strategy use, the subject reported following the first treatment session that he did not "really know about deep breathing, but positive self-talk and imagery was very simple". Throughout the intervention phases, it was reported by the subject that he had problems with differing aspects of the strategies. The subject's ability to deep breathe, self-talk about successful kicks and "feel" the goal kicking action were the areas of greatest concern. These feelings were supported by the Cognitive Strategy Questionnaire findings, indicating some difficulty in the use of deep breathing and positive self-talk and mild imagery sensations.

The researcher's log noted that the subject produced good kicking technique in the baseline phase and despite some problems with his follow-through, a steady technique was evident throughout the study. The retention phase produced the best series of consistent technique. The researcher noted, at sessions eight and thirteen, minimal use of the cognitive strategies by the subject. Subject 7,

however, did not report any major problems at these sessions. During session fifteen, the researcher recorded comments by the subject regarding "not enough power" when kicking and having "trouble with feel in imagery". The subject's own report following session fifteen did not, however, indicate these feelings. It was also noted that the subject took time in preparation for each kick, particularly in the retention phase, perhaps indicating continued use of the COM strategy.

The Follow-Up Questionnaire revealed that Subject 7 felt his goal kicking "gradually built up, subsided and finally was boosted up" and that his self-confidence "progressed well". In regard to the cognitive strategies, he felt that although deep breathing made "steady progress", he "did not think much about deep breathing". The subject felt that positive self-talk "progressed at a quick pace" and "was a good thing because it enhanced successful kicks". Imagery also "progressed well" and "was very helpful in the way that it helped you to picture a successful kick".

The Cognitive Strategy Questionnaire for Subject 7 revealed minimal use of deep breathing(3), along with limited positive self-talk use(5) and moderate use of imagery(6). The subject had some difficulty in deep breathing(5), yet found it fairly easy to "feel" deep breathing sensations(6). When goal kicking, Subject 7 felt he was very relaxed(9). The subject also had some difficulty

in self-talking about successful kicks(5) but found it relatively easy to encourage confidence(7). Imagery was performed from an entirely internal perspective(1). The subject had difficulty imaging goal kicking(3), with unclear images(4) and problems of controllability(4). Mild imagery sensations(5) were produced. In regard to performance assistance from the strategies, Subject 7 felt deep breathing was of almost no assistance(2), while imagery assisted performance to a limited degree(4). Positive self-talk, however, had a moderate(6) performance assistance effect.

Subject 8. Control (C)

Subject 8 demonstrated highly variable scores, yet an increasing tendency for all goal kicking behaviors (Figures 37, 38, and 39). The increasing tendencies were the likely consequence of the subject attempting technical correction as indicated by the self-reports from Subject 8's training log. The maintenance phases revealed conflicting results. Goal kicking accuracy and total goal kicking performance exhibited increased mean scores (Table 8) and upward level shifts but also produced variable performances. Goal kicking height performance displayed an increased mean and upward level shift but also showed a decreasing maintenance tendency. This suggested that the subject may have been operating at the associative phase of the task before

Table 8

Subject eight's mean scores for each target behavior across experimental phases

Behavior	Control (C)	Post-Check (PC)
Goal Kicking Accuracy	14.5	20.75
Goal Kicking Height	15.25	23.75
Total Goal Kicking Performance	45.0	68.25
Level of Self-Efficacy	6.63	8.0
Strength of Self-Efficacy	39.6	44.2

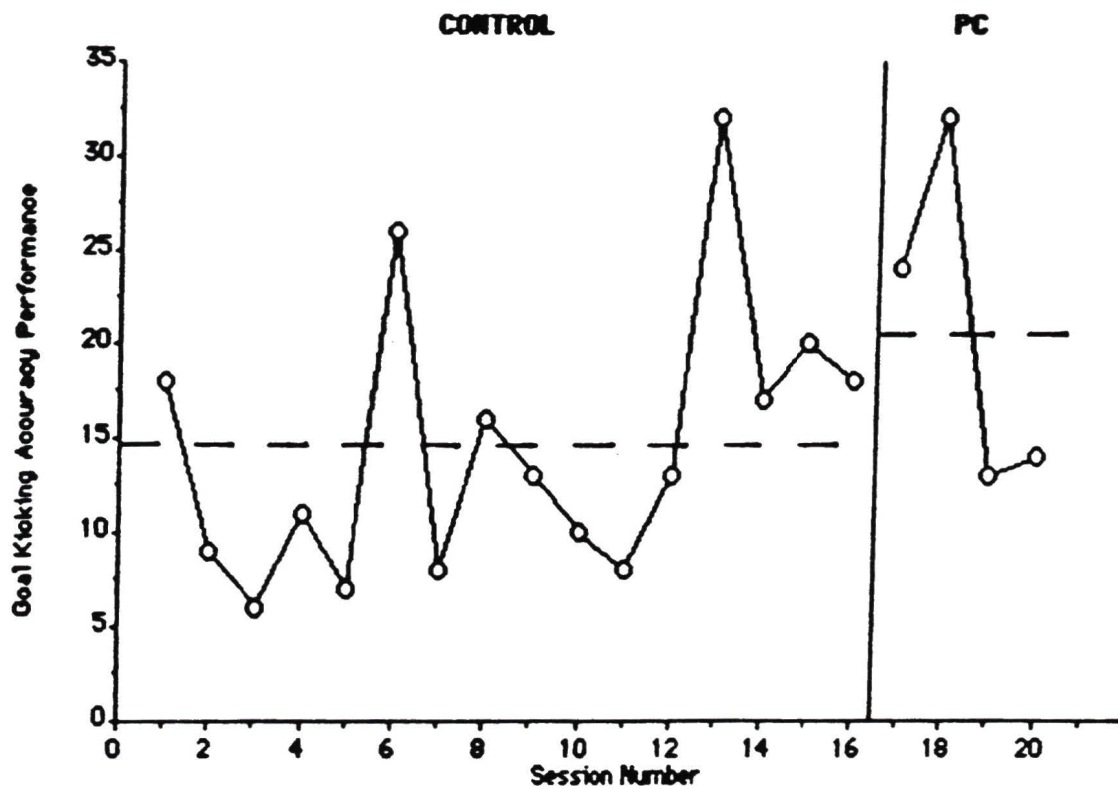


Figure 37.

Subject eight's goal kicking accuracy performance.

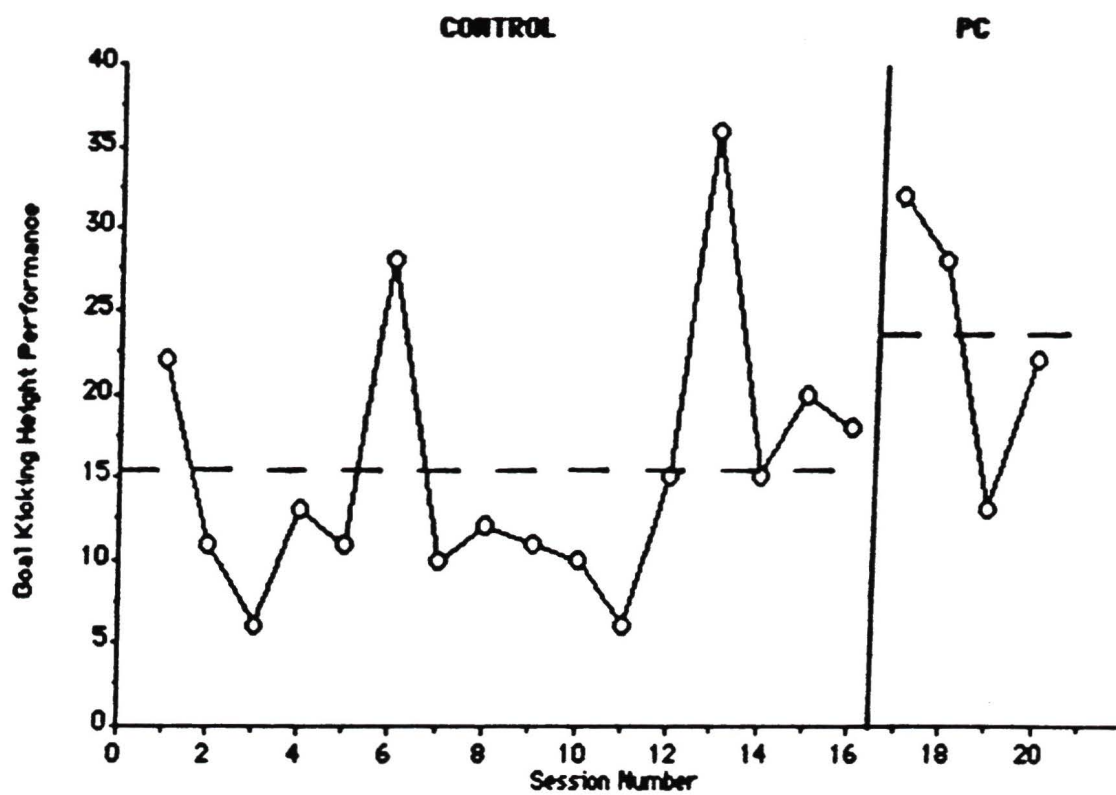


Figure 38.

Subject eight's goal kicking height performance .

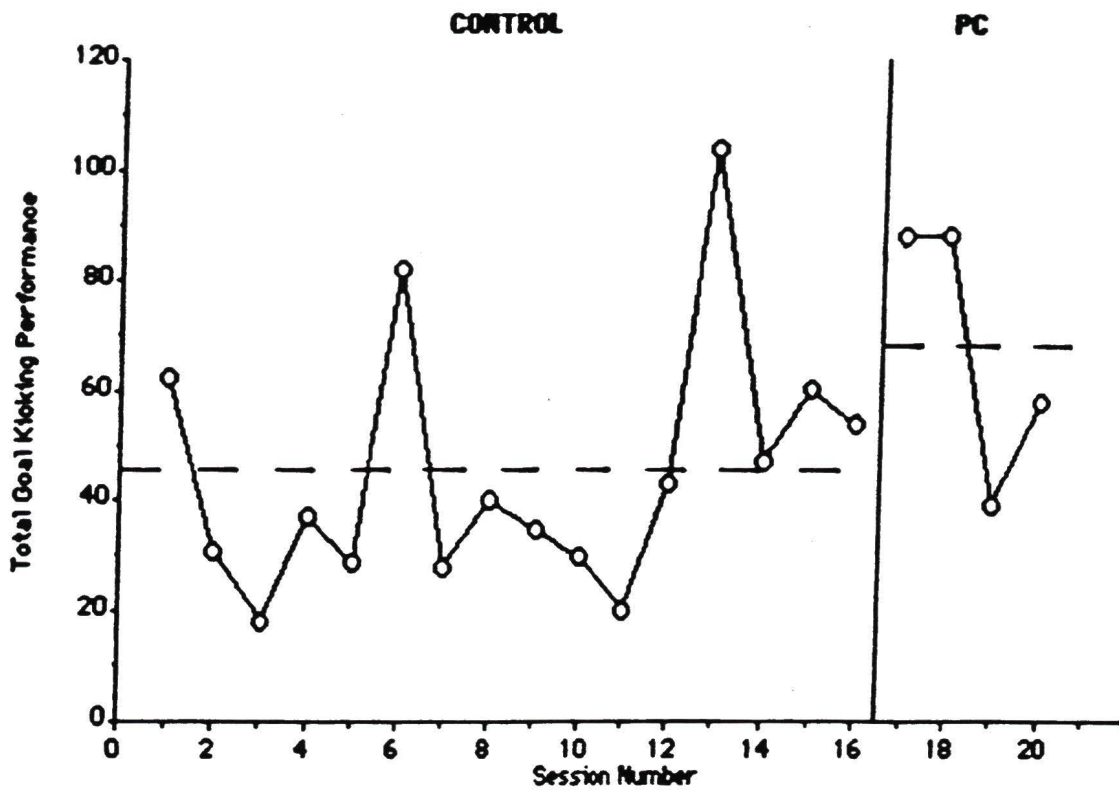


Figure 39.

Subject eight's total goal kicking performance .

producing error-free performance at the autonomous level (Fitts and Posner, 1967).

Subject 8 also produced variable scores for both level of self-efficacy and strength of self-efficacy measures (Figures 40, 41). Despite an increasing trend for level of self-efficacy scores from session one to five, the subject's expectancy for success became stable at 8 goals from session twelve onward, including throughout the maintenance phase. This suggested a plateaued effect of the subject's feelings toward expected performance success. It suggested that, without the teaching of kicking techniques and/or cognitive strategies, level of self-efficacy scores would remain the same.

A small increasing tendency was shown for the subject's strength of self-efficacy scores. Although a slightly increased mean was revealed in the maintenance phase, the subject's belief of performance success remained stable at 45% over the last three sessions. This indicated a plateaued effect for strength of self-efficacy and suggested a possible need for learning of goal kicking techniques and/or cognitive strategies to enhance performance.

The self-report training log of Subject 8 noted several comments regarding points of technique that needed to be addressed. In doing this, the subject was attempting to improve his performance through self-correction. This included comments regarding "not to kick hard ... just swing

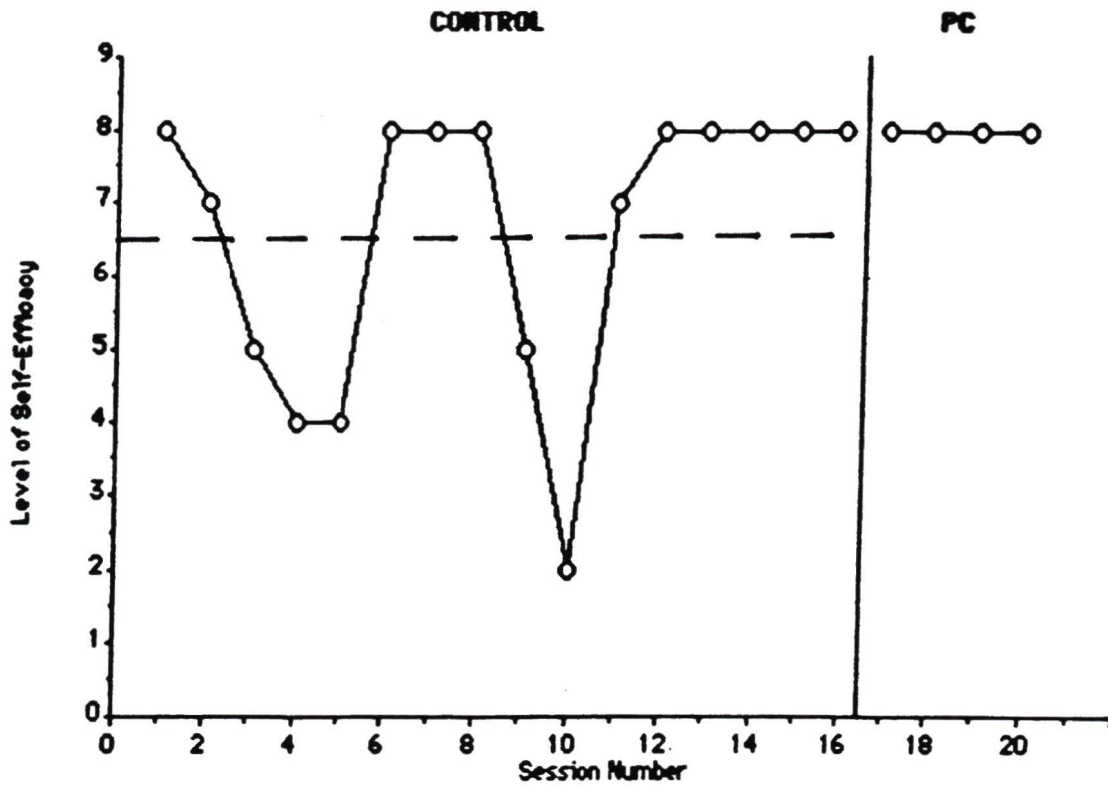


Figure 40.

Subject eight's level of self-efficacy scores.

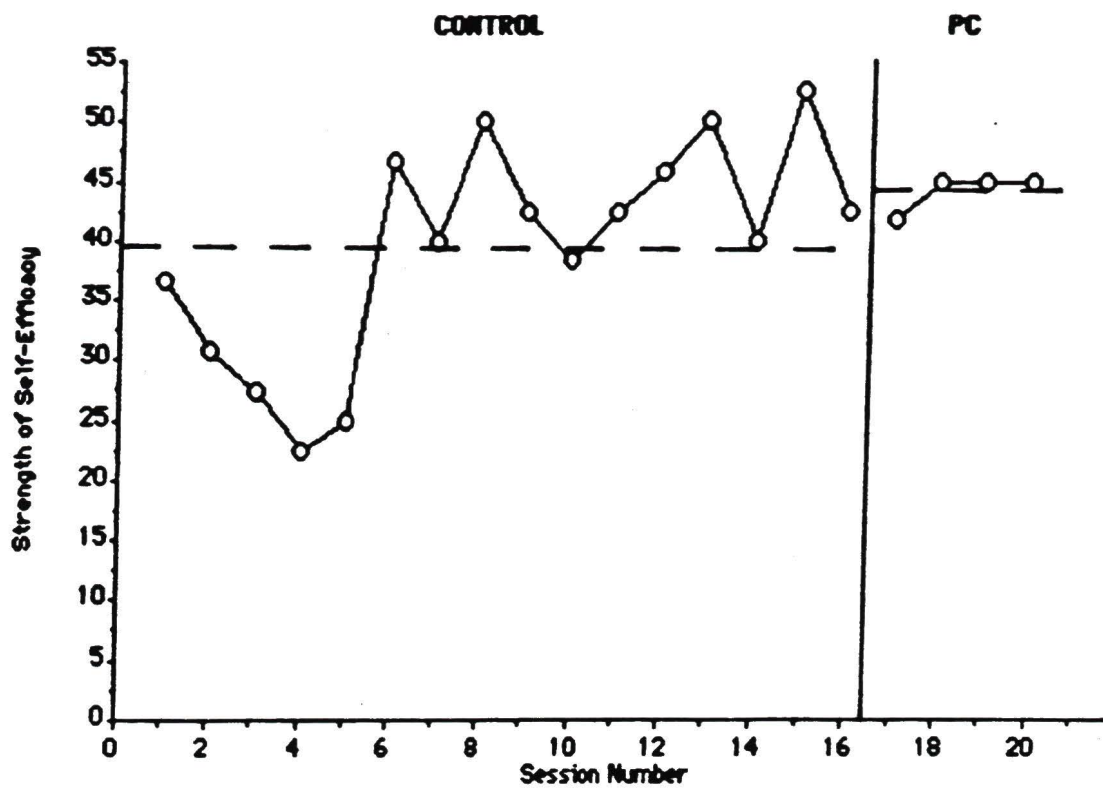


Figure 41.

Subject eight's strength of self-efficacy scores.

the leg", "control the distance between the ball and my feet" and "kick middle of ball". The comments involved teaching points of striking the ball, follow through and placement of the non-kicking foot that the subject felt he needed to change. Following session thirteen, the subject reported that he felt he had "kicked well, but when I think it is easy, I kicked wrong". Session thirteen was the subject's best goal kicking performance. His comment was in reference to his second attempt from a position 10m directly in front of the goal-posts. Subject 8 had made a successful kick at his first attempt and indicated 100% certainty of a goal on the second attempt. In spite of a well struck kick with sufficient height, the kick was inaccurate. The subject's feeling of over-confidence may have influenced his performance.

The researcher's log noted several kicking technique problems for Subject 8. The main areas of concern were problems in striking the ball, a head up rather than down position, and an inconsistent pattern or approach to the ball. These are all important factors in goal kicking. A continuation of these problems was also evident in the maintenance phase. This indicated that despite the subject's attempts at self-correction, he was not addressing the main areas of concern, and had not made the necessary corrections.

The Follow-Up Questionnaire revealed that Subject 8

felt his goal kicking had "developed". He felt that "when I began, it was hard to control ball, now I can kick ball with control". In regard to his feelings toward self-confidence, the subject thought he had made "good progress".

Subject 9. Control (C)

Subject 9 exhibited variable, yet increasing tendencies for all goal kicking behaviors (Figures 42, 43, and 44). The maintenance phase showed an increased mean (Table 9) and upward level shift for all goal kicking behaviors, indicating further performance improvement. However, a decreasing trend was evident in all goal kicking maintenance phases suggesting a plateaued performance effect for accuracy, height and total goal kicking performance.

Subject 9 produced relatively stable level of self-efficacy scores throughout both control and maintenance phases (Figure 45). This suggested no improvement in the subject's expectancy of goal kicking success. An increasing trend was displayed for the subject's strength of self-efficacy scores (Figure 46). The maintenance phase exhibited an increased mean, however, there was a downward level shift and the scores were relatively stable. This suggested a plateaued effect for the subject's belief of successful goal kicking.

The self-report training log of Subject 9 noted a feeling of being "quite confident" throughout the study. The

Table 9

Subject nine's mean scores for each target behavior across experimental phases

<u>Behavior</u>	<u>Control (C)</u>	<u>Post-Check (PC)</u>
Goal Kicking Accuracy	22.69	30.75
Goal Kicking Height	24.13	29.75
Total Goal Kicking Performance	70.94	90.25
Level of Self-Efficacy	8.0	9.0
Strength of Self-Efficacy	77.7	89.6

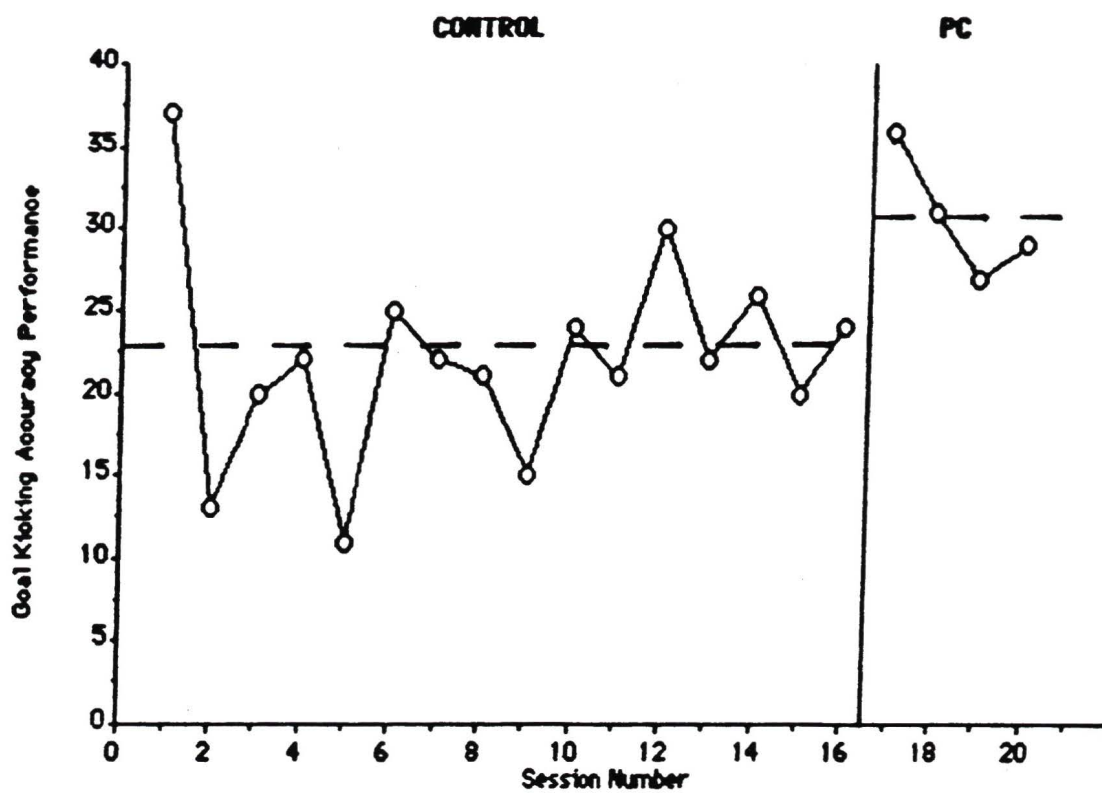


Figure 42.

Subject nine's goal kicking accuracy performance.

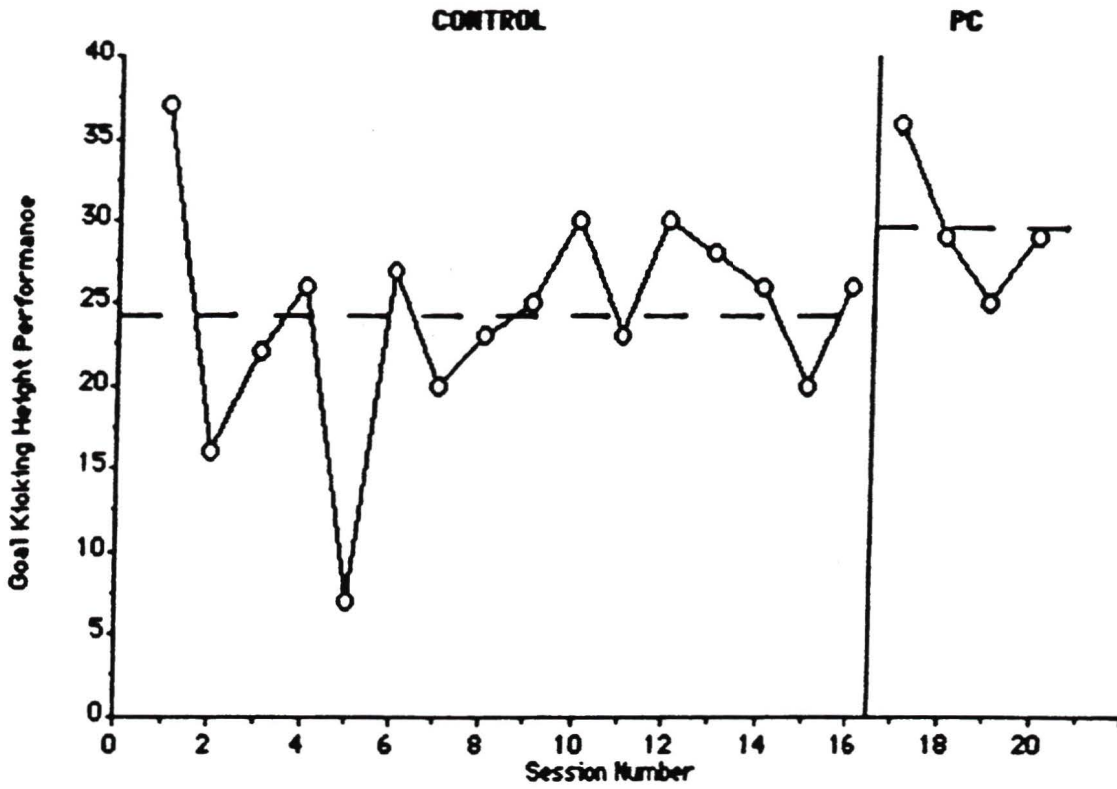


Figure 43.

Subject nine's goal kicking height performance.

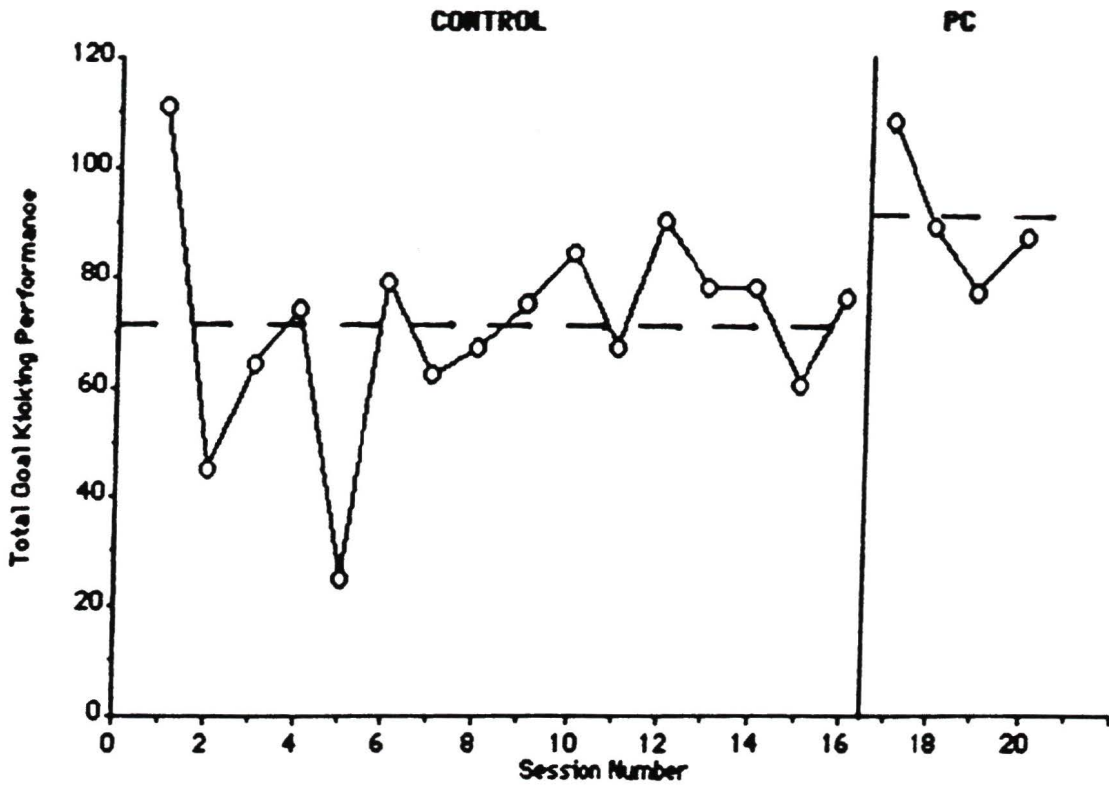


Figure 44.

Subject nine's total goal kicking performance.

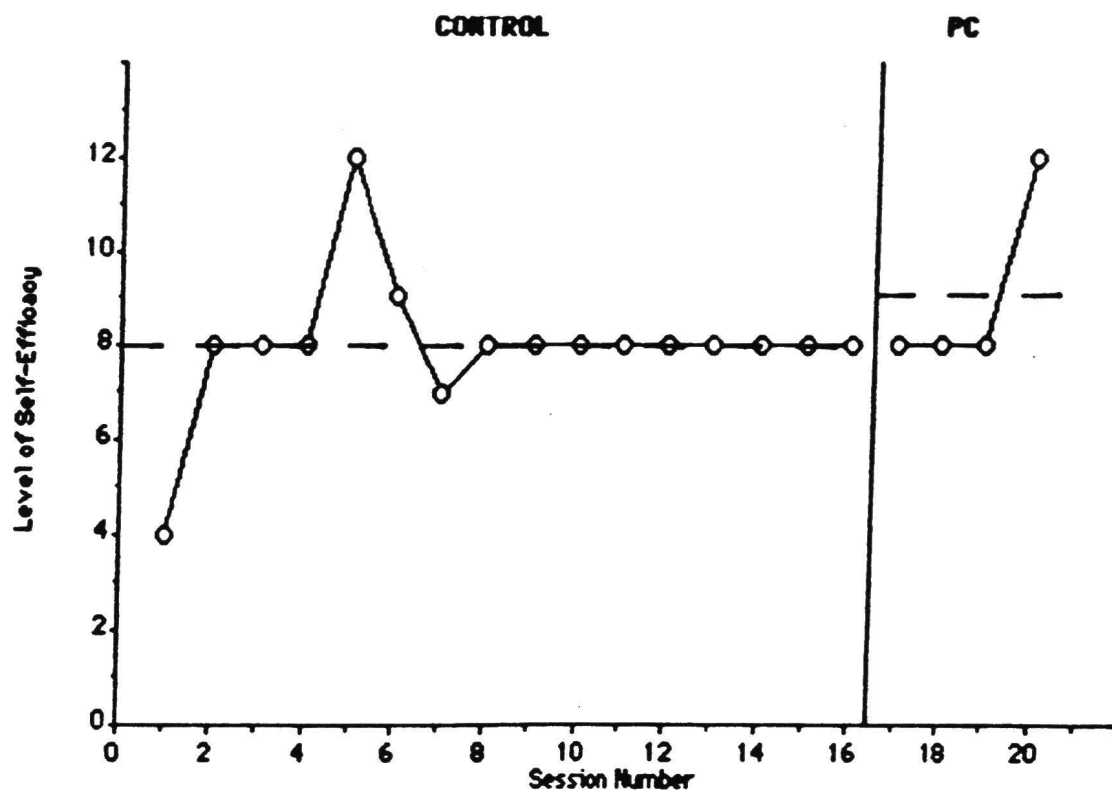


Figure 45.

Subject nine's level of self-efficacy scores.

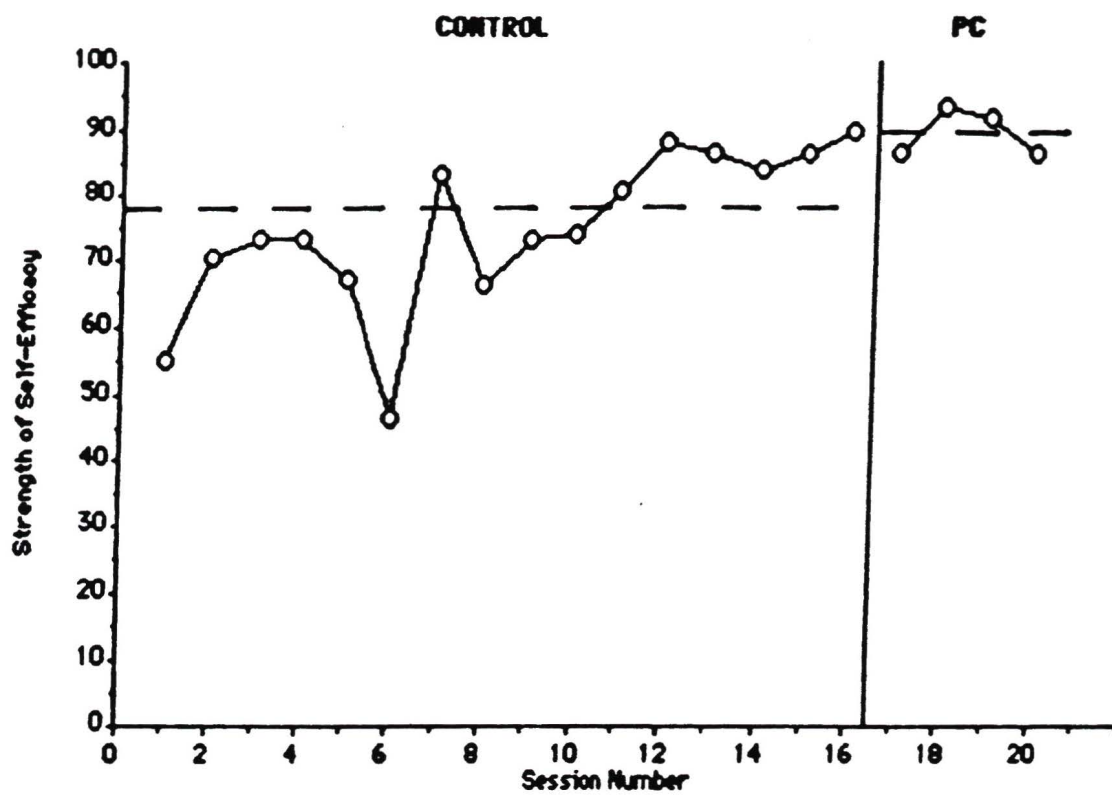


Figure 46.

Subject nine's strength of self-efficacy scores.

subject did however report, following sessions one and eight, feeling "quite disturbed after I missed the first few goals ... it affects all the upcoming kicks". This suggested that the subject's performance accomplishments were a source of information upon which he based self-efficacy judgements. The influence of information gained through performance accomplishments supports Bandura's (1977) theory. Subject 9 also reported, following session sixteen, a feeling that "I don't think it (self-confidence) plays a large role in my kicking". This further supported the strong influence of performance accomplishments.

The researcher's log noted two main kicking problems of the subject having an erratic, inconsistent pattern and approach to the ball, and a head up position. The approach to the ball and head position are important factors in goal kicking. The erratic patterns continued in the maintenance phase, whilst a correct head down position was noted during sessions nineteen and twenty. The researcher also noted during session eight that the subject felt he was "not concentrating", and during session thirteen being "over-confident". The subject's own training log did not clearly illustrate these problems.

The Follow-Up Questionnaire revealed that Subject 9 felt the goal kicking practice was "extremely interesting" and that his goal kicking "got much better". He felt his self-confidence "seemed to progress very well".

Subject Summary.

The PP intervention proved to be effective for improving all goal kicking behaviors for the one subject in this condition (Table 1, Figures 2, 3, and 4). A delayed effect at each intervention phase also suggested prior experience of the task may have been a variable influencing effectiveness of the intervention. No learning effects were, however, apparent. It may have been Subject 1 was operating at the cognitive stage of the task (Fitts and Posner, 1967).

PP had a direct influence on Subject 1's level of self-efficacy scores but was unable to continue to increase the subject's expectancy of success. Similarly, the intervention had an immediate effect on strength of self-efficacy scores but did not heighten the subject's belief of success. PP was, however, adequate in maintaining both level and strength of self-efficacy measures. Subject 1 believed he became more confident when goal kicking. This indicated that the PP intervention was a source of efficacy information upon which he based self-efficacy judgements and supported Bandura's (1977) theory that performance accomplishments are a major source of efficacy information.

The results for PI effects upon goal kicking were contradictory (Figures 7, 8, 9, 12, 13, and 14). Subject 2 provided partial support for the research of Feltz, Landers and Becker (1988) and McKenzie (1989) that imagery in combination with physical practice is effective for

performance enhancement. In opposition, Subject 3's findings supported Eby (1986) and Kelly (1989) that imagery does not improve performance. Subject 2's maintenance results also lent support to Feltz and Landers (1983) and Ziegler (1987a) that imagery can be effective for motor-skill learning, whereas Subject 3's outcomes for learning were ambiguous.

The skill level of the subjects seemed to be a variable that influenced PI effects. Both Subject 2 and Subject 3 produced delayed performance effects thereby supporting the conclusion of Corbin (1972) and Harris and Robinson (1986) that the effectiveness of imagery is enhanced once the performer has prior task experience.

Subject 2's results for level and strength of self-efficacy (Figures 10, 11) offered support to the suggestion efficacy information gained through vicarious experience such as imagery, may increase perceived efficacy (Weinberg et al., 1979; Gould and Weiss, 1981; McAuley, 1985; Feltz and Riessinger, 1990). Subject 3 (Figures 15, 16) however, was not able to provide complete support for the previous research.

Subject 2's self-report training log revealed self-efficacy was not the only process involved for behavioral change in motor performance. This supported the thought of Bandura (1986) that other cognitive mechanisms may also influence behavior. Subject 3 reported relatively extensive imagery practice and moderate performance assistance belief

from imagery. His anecdotal reports supported McKenzie's (1989) suggestion that imagery elevates a performer's feelings of self-efficacy and confidence to achieve. The Cognitive Strategy Questionnaire findings concurred with Weinberg (1982) that imagery needed to be vivid and controllable. The researcher's log noted improved kicking techniques for both Subject 2 and 3 during the intervention phases.

Subjects 4 and 5 showed increasing baseline trends for all goal kicking behaviors (Figures 17, 18, 19, 22, 23, and 24), thus interfering with the evaluation of the PRT intervention (Kazdin, 1982). The findings were consistent for each subject, indicating that the intervention was not effective for improving goal kicking accuracy performance. This supported the research of Weinberg et al. (1981) and Wrisberg and Anshel (1989) that relaxation alone and Weinberg et al. (1980) that self-talk alone were not effective for performance enhancement. There was conflicting evidence for goal kicking accuracy learning effects.

The results for goal kicking height and total goal kicking performance were inconclusive for both Subjects 4 and 5. There did, however, appear to be a delayed performance effect for Subject 4. This gave partial support to Ziegler (1987b) and Rushall et al. (1988) that positive self-talk can be effective for performance improvement. The delayed effects also suggested prior experience of the task

is needed to enhance intervention. Corbin (1972) and Harris and Robinson (1986) submitted that this was the case with mental practice. It may be that this is also the situation for other cognitive strategies.

The findings for both level and strength of self-efficacy of Subjects 4 and 5 were equivocal. Subject 4 produced some evidence for PRT effects on level of self-efficacy (Figure 20), whereas Subject 5 produced no intervention effects (Figure 25). Both subjects revealed no level of self-efficacy maintenance effects. In regard to strength of self-efficacy, Subject 4 found no improvement and no maintenance effects (Figure 21), whilst Subject 5 found some evidence in favour of both intervention and maintenance effects (Figure 26). Feltz (1988) reported the research investigating persuasive techniques such as self-talk, and emotional states such as relaxation, as sources of efficacy information have produced mixed results. The findings for Subjects 4 and 5 add to the equivocal research.

The self-report training log of Subject 4 indicated that the positive self-talk and relaxation strategies were able to heighten the subject's feelings of self-confidence to perform. Subject 5's comments, however, indicated his performance accomplishments were a source of information upon which he based self-efficacy judgements. The influence of information from performance accomplishments may have over-shadowed those of deep breathing and self-talk as

suggested by Bandura (1977). Subject 4 also reported deep breathing and self-talk improvements throughout the intervention phases, whereas Subject 5 had difficulty in using the cognitive strategies. This may have influenced his overall performance. The researcher's log noted improved goal kicking technique in the intervention phases for both subjects.

The Follow-Up Questionnaire divulged that both Subject 4 and 5 felt goal kicking practice and self-confidence improved. Subject 4 reported that deep breathing was imperative, whereas positive self-talk was less important. Similarly, Subject 5 felt that deep breathing was beneficial, as also was positive self-talk. Subject 5 also reported the use of mental practice during the study. Subject 5 perceived that the use of imagery improved his goal kicking. It is likely the use of imagery was viewed as being more important than deep breathing and self-talk.

Subjects 4 and 5 both extensively used deep breathing and found it easy to use. They also both felt relaxed when goal kicking. Subject 4 reported extensive use of positive self-talk, whereas Subject 5 reported moderate self-talk use. Both subjects reported considerable performance assistance from deep breathing but felt limited assistance from self-talk. This concurred with Weinberg, Seabourne and Jackson (1981; 1982) and Kendall et al. (1990) that relaxation training was beneficial.

The COM intervention produced conflicting findings for each subject. The results for Subject 6 provided partial evidence for improved goal kicking height and total goal kicking performance (Figures 28, 29). A delayed performance effect was indicated for Subject 6's goal kicking accuracy performance (Figure 27). Maintenance effects were evident for all goal kicking behaviors of Subject 6. The variable baselines for all goal kicking behaviors of Subject 7 interfered with the evaluation of the intervention, thereby producing weak results (Kazdin, 1982). However, delayed performance effects were evident for all goal kicking behaviors. Maintenance effects were indicated for all goal kicking behaviors of Subject 7.

The weak results for Subject 7 were in contrast to the research of Hamilton and Fremouw (1985) and Kendall et al. (1990) who found that the combination of imagery, relaxation, and self-talk was effective for performance enhancement. Subject 6's results, however, provided partial support for effectiveness of the intervention.

The delayed performance effects for Subjects 6 and 7 suggested that prior experience of the task may be a variable involved in the effectiveness of the intervention. Corbin (1972) and Harris and Robinson (1986) proposed prior experience was influential in mediating mental practice effects. It may be that this could also apply to the combining of cognitive strategies.

The influence of the COM intervention upon self-efficacy measures also produced inconsistent findings for each subject. The level of self-efficacy results for Subjects 7 gave conflicting evidence of an intervention effect upon expectancy of success (Figures 35). Subject 6 produced an increasing baseline trend that interfered with the intervention evaluation (Figure 30). His results suggested that the intervention was not able to produce improvements in level of self-efficacy scores. Maintenance effects for level of self-efficacy were found for Subject 7. The positive baseline trend for Subject 6 hindered his possible maintenance evaluation.

Strength of self-efficacy was found not to be influenced by the COM intervention for Subject 7 (Figure 36). However, the results for Subject 6 indicated that the intervention was an effective technique in enhancing his belief of success (Figure 31). A maintenance effect was indicated for Subject 6 but was not apparent for Subject 7.

Research combining relaxation, self-talk, and imagery has not, to date, assessed their influence upon self-efficacy. Kendall et al. (1990) did, however, indicate development of very positive attitudes toward continued use of the intervention procedures. The findings for Subject 6 and 7 suggested that cognitive strategies may play a role in determining feelings of self-confidence.

The self-report training logs indicated that Subjects 6

and 7 both reported good self-confidence levels throughout the study. Subject 7 did however, on occasion, report feelings of over-confidence that influenced his goal kicking. In regard to cognitive strategy use, Subjects 6 and 7 both indicated some problems in the use of the strategies. Subject 7 reported difficulty in his ability to deep breathe, self-talk about successful kicks and sense the goal kicking action. Subject 6 reported some imagery difficulties but felt his goal kicking was helped by the use of imagery in association with positive self-talk.

The researcher's log noted better goal kicking technique for Subjects 6 and 7 during the intervention phases than at the baseline and non-intervention phases. Subject 7 produced very sound technique in the retention phase, taking time in preparation before each kick, especially so in the retention phase. It may have been that he was continuing to use the cognitive strategies.

The Follow-Up Questionnaire revealed that Subject 6 felt self-talk as well as imagery were helpful, but that deep breathing was not as useful. Similarly, Subject 7 indicated feelings that self-talk and imagery enhanced his goal kicking, while deep breathing was ineffectual.

The Cognitive Strategy Questionnaire disclosed minimal use of deep breathing by Subjects 6 and 7, with feelings that deep breathing was ineffectual as a performance enhancer. Subject 6 and 7 both reported feeling at least

moderately relaxed when goal kicking. In regard to positive self-talk, Subject 7 had limited self-talk use. However, he felt that positive self-talk gave reasonable performance assistance. Subject 6 reported moderate self-talk use, but found it to be of limited performance assistance. Imagery was used to a moderate degree by Subjects 6 and 7, who both imaged from an entirely internal perspective. Subjects 6 and 7, however, felt the assistance of imagery to goal kicking was reasonably weak. It appears overall, that there was disparity between Subjects 6 and 7 in their ability to utilize the cognitive strategies and this may have influenced their goal kicking and self-confidence.

Control subjects 8 and 9, both demonstrated variable yet increasing tendencies for all goal kicking behaviors (Figures 37, 38, 39, 42, 43, and 44). Subject 8's self-report training log indicated that his improvements were the likely consequence of attempts at technical self-correction. His maintenance phase results were conflicting and suggested that he was operating at the associative stage for goal kicking (Fitts and Posner, 1967). The maintenance phase for Subject 9 indicated a plateau effect for all goal kicking behaviors, suggesting a possible need for learning goal kicking techniques and/or cognitive strategies to enhance performance. The self-efficacy measures also produced ceiling effects for level of self-efficacy for Subject 8 (Figure 40) and strength of self-efficacy for both Subjects

8 and 9 (Figures 41, 46). Subject 9's level of self-efficacy results suggested no improvements in his expectancy for success (Figure 45). The plateau scores indicated a possible requirement for the learning of goal kicking techniques and/or cognitive strategies.

Subject 8's self-report training log and the researcher's log noted that despite an attempt at self-correction, he was not addressing the main technical problems. Similarly, Subject 9 had problems with his technique. The comments from Subject 9 suggested that his performance accomplishments were a source of information upon which he based self-efficacy judgements. This supported Bandura's (1977) theory. The Follow-Up Questionnaire revealed that both Subjects 8 and 9 felt their goal kicking had improved and that their self-confidence levels had also progressed.

Conclusions

The conclusions will address the six research questions. The nine subjects will be discussed with reference to their goal kicking behaviors and self-efficacy measures and the results generated by this research.

1. Will each subject's goal kicking performance improve as a result of each of the different training conditions?

Goal kicking performance was improved for Subject 1 (PP) and Subject 2 (PI) for all goal kicking behaviors.

Subject 6 (COM) produced improved performances for goal kicking height and total goal kicking behaviors.

A delayed goal kicking effect was also illustrated for Subject 1 (PP), Subjects 2 and 3 (PI), Subjects 4 (PRT), and Subjects 6 and 7 (COM). This suggested that prior experience of the task may be influential in mediating cognitive strategy effects. This endorsed the findings of Corbin (1972) and Harris and Robinson (1986).

The effects of deep breathing and positive self-talk may have been masked for Subject 5 (PRT) as he reported the use of imagery and expressed the feeling that imagery improved his goal kicking. However, both Subjects 4 and 5 (PRT) felt that deep breathing assisted goal kicking and this supported Weinberg, Seabourne and Jackson (1981; 1982) and Kendall et al. (1990) that relaxation training was beneficial.

2. Which training condition will produce greater shifts in magnitude and rate of change with each subject's goal kicking performance?

The PP intervention (Subject 1) and PI intervention (Subjects 2 and 3) produced consistent and systematic improvements in goal kicking performance. This supported the opinions of Feltz, Landers and Becker (1988) and McKenzie (1989) that PP and PI are effective for performance enhancement. The Cognitive Strategy Questionnaire findings for PI concurred with Weinberg (1982) that imagery needs to

be vivid and controllable.

3. Will each subject's goal kicking self-efficacy increase as a result of each of the different training conditions?

The results for Subject 2 (PI), Subject 4 (PRT), and Subject 7 (COM) provided partial evidence for increases in level of self-efficacy measures as a consequence of the interventions.

The results for Subject 2 (PI), Subject 5 (PRT), and Subject 6 (COM) provided support for intervention effects increasing strength of self-efficacy measures.

4. Which training condition will produce greater shifts in magnitude and rate of change with each subject's goal kicking self-efficacy?

The PI intervention (Subject 2) produced the greatest improvements in both level and strength of self-efficacy measures. This maintained the findings of Weinberg et al. (1979), Gould and Weiss (1981), McAuley (1985), and Feltz and Riessinger (1990) that efficacy information gained through vicarious experience (imagery) may increase perceived efficacy. The anecdotal evidence of Subject 3 (PI) also supported McKenzie's (1989) suggestion that imagery elevates one's feelings of self-efficacy and confidence to perform. However, the self-report training log of Subject 2 supported Bandura's (1986) notion that self-efficacy is not the only process influencing behavioral change, as other

mechanisms may also motivate behavior.

5. Will goal kicking and self-efficacy be maintained as a result of the different conditions?

The maintenance results for goal kicking indicated learning effects for Subject 2 (PI) and Subject 6 (COM) for all goal kicking behaviors. Subject 4 (PRT) showed learning effects for goal kicking height and total goal kicking behavior.

The results for level of self-efficacy showed maintenance effects for Subject 1 (PP) and Subject 7 (COM).

The strength of self-efficacy results produced maintenance effects for Subject 1 (PP) and Subject 6 (COM), and Subjects 2 and 3 (PI).

6. Which training condition will produce greater goal kicking and self-efficacy maintenance?

The PI intervention (Subject 2) and COM intervention (Subject 6) produced equally strong goal kicking maintenance effects. This supported the imagery studies of Feltz and Landers (1983) and Ziegler (1987a), and the combined imagery, relaxation, and self-talk research of Hamilton and Fremouw (1985) and Kendall et al. (1990) that the interventions can be effective for motor-skill learning.

The PP intervention (Subject 1) produced the greatest maintenance effects for both level and strength of self-efficacy. This adhered to the theory of Bandura (1977) that performance accomplishments are the major source of efficacy

information. The self-report comments of Subject 5 (PRT) and Subject 9 (C) also suggested that performance accomplishments were a source of efficacy information.

Self-efficacy maintenance effects were also produced for the PI intervention (Subjects 2 and 3) and the COM intervention (Subjects 6 and 7). This provided support for Feltz and Riessinger (1990) and Kendall et al. (1990) that the combination of cognitive strategies as sources of efficacy information, may be influential in increasing an athlete's self-confidence.

In summary, it appeared that cognitive strategies were useful in mediating self-efficacy, learning and performance. However, most importantly the individuality of the results needs to be stressed. There is a need for more understanding of what strategies would assist each individuals behavior.

Recommendations

1. There is a need for further research to examine the specific relationships of skill level, skill acquisition, and the confirmation of cognitive strategy findings.

2. There is a need for further research to examine Bandura's (1977) self-efficacy theory with regard to determining the cognitive mechanisms influencing behavior and the interrelation between sources of efficacy information.

3. There is a need for further research to carry out

detailed manipulation checks to identify subject's reactions to intervention procedures and experimental outcomes.

4. There is a need for further research to include long-term follow-up assessments to assess the maintenance effects of the interventions.

5. There is a need for further research to assess intervention effects in competitive game situations.

6. There is a need for further research applying appropriate single-subject designs for evaluating psychological interventions for sport skills acquisition and performance enhancement.

7. There is a need for further research to address effects of the different interventions with more experienced subjects, females, in other sports.

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APPENDIX A
SCHOOL REQUEST FORM



UNIVERSITY OF VICTORIA

P.O. BOX 1700, VICTORIA, B.C., CANADA V8W 2Y2
 TELEPHONE (604) 721-8373 TELEX 049-7222

SCHOOL OF PHYSICAL EDUCATION

SCHOOL REQUEST FORM

Request to Use St. Michaels University School
 Students and Facilities in Research

Name of Researcher: Bruce Kuklinski
 Phone: 595-3581 or 721-8373 (message).
 Faculty: University of Victoria,
 School of Physical Education

Name of Supervisor: Dr. Bruce L. Howe

Status of Applicant: Graduate Student

Reason for Project: Thesis requirement

Title of Project: **Effect of Cognitive Strategies on
 Enhancing Self-Efficacy and Learning
 and Performance of Goal Kicking in
 Rugby**

Brief Summary of Project

The Primary purpose of this study will be to investigate the effects of physical practice, physical practice plus imagery, physical practice plus relaxation training and positive self-talk, and physical practice plus relaxation training, positive self-talk and imagery, on the learning and performance of goal kicking in rugby. A secondary purpose will be to determine the effects of each intervention on the enhancement of subjects' goal kicking self-efficacy.

Grade Level of Students: Nine
 Number of Students Required: Fifteen
 Other Characteristics: Male, novice rugby goal kickers
 Access to students: Individually

Times of access: Lunch hours
 Immediately following the end of
 the school day
 Weekends

Length of time with each student: 30 minutes per session
 Number of contacts with each student: 28
 Will there be any interruption in class time: No

Schools Facilities Needed: Rugby field, rugby balls, kicking
 tees

Expected starting date: 10th January, 1990
 Expected Date of Completion in Schools: 24th April, 1990
 Expected Date of Final Report: October, 1990

We certify the above information to be correct, and agree to
 the conditions set by the school.

 Researcher

 Supervisor

APPENDIX B
INFORMED CONSENT

**UNIVERSITY OF VICTORIA**

P.O. BOX 1700, VICTORIA, B.C., CANADA V8W 2Y2
TELEPHONE (604) 721-8373 TELEX 049-7222

SCHOOL OF PHYSICAL EDUCATION

INFORMED CONSENT

I _____ have been advised of the purpose of this research being undertaken by Dr. Bruce L. Howe and Mr. Bruce Kuklinski of the University of Victoria. I fully understand the intent of the study, and I also understand that I may withdraw from the study at any time.

Name: _____

(please print)

Signature: _____

Date: _____

APPENDIX C
INFORMATIONAL LETTER / PARENTAL CONSENT

**UNIVERSITY OF VICTORIA**

P.O. BOX 1700, VICTORIA, B.C., CANADA V8W 2Y2
TELEPHONE (604) 721-8373 TELEX 049-7222

SCHOOL OF PHYSICAL EDUCATION

14th December, 1989.

To: **The Parents/Guardians of -**

Dear Parent/Guardian:

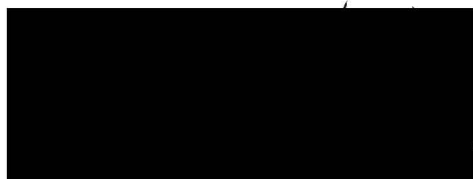
I am a graduate student working in the area of Sport Psychology and I am presently investigating the effects of cognitive strategies on enhancing performance and self-efficacy in rugby goal kicking. As a means of investigation I propose to use

as a subject in my research. This research will involve the use of physical practice in conjunction with cognitive strategies of imagery, positive self-talk, and relaxation training.


has agreed to participate in this study (see enclosed Consent Form). It would be appreciated if you would give your consent by signing the enclosed form and returning it to me in the envelope provided.

Thank you for your cooperation. Should you require any further information please do not hesitate to contact me at my home address: 3400 Richmond Road, Victoria., V8P 4P5 or at the School of Physical Education, University of Victoria.

Yours sincerely,



Dr. Bruce L. Howe,
Professor & Supervisor



Bruce W. Kuklinski
Graduate Student & Researcher

APPENDIX D
INFORMATION QUESTIONNAIRE

INFORMATION QUESTIONNAIRE

Name: _____

Address:
Victoria: _____

Home: _____

Phone Number:
Victoria: _____

Home: _____

Birthdate: _____

Grade: _____

Height: _____

Weight: _____

Rugby Playing Experience:

Starting Age: _____

Number of years played: _____

Position played: _____

Team currently playing for: _____

Goal Kicking Experience:

Previously in rugby: _____

Preferred kicking foot: _____

APPENDIX E
TREATMENT CONDITION PROTOCOLS

PHYSICAL PRACTICE CONDITION

There are seven key factors of the goal kick:

- i). addressing the ball
- ii). steps back
- iii). head position
- iv). approach
- v). placement of the non-kicking foot
- vi). striking the ball
- vii). follow through.

- i). Addressing the ball

The ball is placed firmly on the tee in an upright position or with a slight forward lean. The lace or seam is pointed to the goal-posts. This should be done from a kneeling or squat position over top of the ball. Stand up to the ball with the kicking foot at its instep directly behind the back seam. The non-kicking foot will be level with the back of the ball, slightly to the side, and facing in the direction of the goal-posts. Look up and check the line to the goal-posts.

- ii). Steps Back

Retire at an angle that is approximately 45° to the line through the ball to the goal-posts. A set pattern should be established with the same number of steps back on each kick, for example 6-8 steps, so that the same consistent pattern occurs for each kick. Take a look at the goal-posts so that you know where the target is.

iii). Head Position

Look down at the contact point low on the back seam of the ball. Keep the head down throughout the rest of the kicking sequence with the eyes forward on the point of contact. Your head must stay down. Ensure that you are focused and balanced.

iv). Approach

Approach slowly, with a slight forward lean, gradually getting faster but never progressing to a run. The first step is a walk, increasing positively so that the last step and swing gives you the power. It is the leg swing and its speed at the hitting area that provides the power.

v). Placement of the Non-Kicking Foot

The non-kicking foot, pointing at the goal-posts, should land firmly, to the side of the ball, and level at the rear of the ball, in order to get correct leverage and hip swing movement.

vi). Striking the Ball

The kicking leg swings through the ball in a fast, smooth, rhythmical action, with contact being made at the bottom of the swing. The ball is hit with the top of the foot at the instep, and the foot makes contact on the back seam of the ball. Remember the eyes must stay on the point of contact.

vii). Follow Through

The follow through with the kicking leg should aim

through the ball, in an upwards direction, to a point beyond the goal-posts and come slightly across, and in front, of the body. The opposite arm should be raised to act as a counter balance. The head must stay down until well after the ball has been kicked.

It is important to remember to complete your log sheets every practice day. Please remember it is very important that other subjects are not aware of the instructions that have been given to you. Please do not communicate any details of the instructions to any of the other subjects.

PHYSICAL PRACTICE / IMAGERY CONDITION

There are eight key factors of the goal kick:

- i). addressing the ball
- ii). steps back
- iii). head position
- iv). approach
- v). placement of the non-kicking foot
- vi). striking the ball
- vii). follow through
- viii). imagery.

- i). Addressing the ball

The ball is placed firmly on the tee in an upright position or with a slight forward lean. The lace or seam is pointed to the goal-posts. This should be done from a kneeling or squat position over top of the ball. Stand up to the ball with the kicking foot at its instep directly behind the back seam. The non-kicking foot will be level with the back of the ball, slightly to the side, and facing in the direction of the goal-posts. Look up and check the line to the goal-posts.

- ii). Steps Back

Retire at an angle that is approximately 45° to the line through the ball to the goal-posts. A set pattern should be established with the same number of steps back on each kick, for example 6-8 steps, so that the same consistent pattern occurs for each kick. Take a look at the

goal-posts so that you know where the target is.

iii). Head Position

Look down at the contact point low on the back seam of the ball. Keep the head down throughout the rest of the kicking sequence with the eyes forward on the point of contact. Your head must stay down. Ensure that you are focused and balanced.

iv). Approach

Approach slowly, with a slight forward lean, gradually getting faster but never progressing to a run. The first step is a walk, increasing positively so that the last step and swing gives you the power. It is the leg swing and its speed at the hitting area that provides the power.

v). Placement of the Non-Kicking Foot

The non-kicking foot, pointing at the goal-posts, should land firmly, to the side of the ball, and level at the rear of the ball, in order to get correct leverage and hip swing movement.

vi). Striking the Ball

The kicking leg swings through the ball in a fast, smooth, rhythmical action, with contact being made at the bottom of the swing. The ball is hit with the top of the foot at the instep, and the foot makes contact on the back seam of the ball. Remember the eyes must stay on the point of contact.

vii). Follow Through

The follow through with the kicking leg should aim through the ball, in an upwards direction, to a point beyond the goal-posts and come slightly across, and in front, of the body. The opposite arm should be raised to act as a counter balance. The head must stay down until well after the ball has been kicked.

viii). Imagery

An important aspect of successful goal kicking performance is the ability to imagine yourself performing the correct goal kicking movements. This technique is called imagery. Imagery is used extensively to help goal kickers improve their skills. I am going to ask you to form some mental images that are related to goal kicking.

First, I want you to realise that there are different ways to image, and the way you form images is important. To generate an image in your mind, you should attend to as much detail as possible by including other senses. For example, the sounds of the goal kicking action, what the goal kicking looks like, and the feel of the action. Make the image as realistic and as accurate as possible. When you are forming the images, make sure that each kick is successful. This will become easier with practice. You may want to close your eyes, although it is not necessary to do so.

Begin your image from the moment of addressing the ball. Notice everything you do, seeing it perfectly, just

the way you want it to be done, and just the way it should be done. Feel yourself placing ball, stepping back, focusing on the ball, your head position, striking the ball, and the follow through. See the kick as being successful. Be aware of how it feels, what it looks and sounds like to achieve the perfect and successful kick.

If during the image you make a mistake, go back and do it over again, correctly, perfectly, exactly as you know you can do it. The images will become easier with practice.

For the next few minutes I want you to simply practice goal kicking by forming images. Run through the skill as many times as you wish until you feel comfortable with your image. Go ahead and start going through the skill, until I tell you to stop. (2 minute pause).

Imagery is most effective when it is practised every day for at least 20 minutes. You may find just before bed, or just after waking up is a good time. Be willing to experiment for a short time, to find out the most effective time and situation to use imagery.

When we are out practising goal kicking, you can use imagery immediately before performing each kick. For example, imagery could be done when you are addressing the ball and/or after stepping back as you focus on the ball. Always try to finish your image with a successful kick.

It is also important to remember to complete your log sheets every practice day, describing any imagery that you

do. Please remember it is very important that other subjects are not aware of the instructions that have been given to you. Please do not communicate any details of the instructions to any of the other subjects.

PHYSICAL PRACTICE / RELAXATION / POSITIVE
SELF-TALK / CONDITION

There are eight key factors of the goal kick:

- i). addressing the ball
- ii). steps back
- iii). head position
- iv). approach
- v). placement of the non-kicking foot
- vi). striking the ball
- vii). follow through
- viii). relaxation / positive self-talk.

- i). Addressing the ball

The ball is placed firmly on the tee in an upright position or with a slight forward lean. The lace or seam is pointed to the goal-posts. This should be done from a kneeling or squat position over top of the ball. Stand up to the ball with the kicking foot at its instep directly behind the back seam. The non-kicking foot will be level with the back of the ball, slightly to the side, and facing in the direction of the goal-posts. Look up and check the line to the goal-posts.

- ii). Steps Back

Retire at an angle that is approximately 45° to the line through the ball to the goal-posts. A set pattern should be established with the same number of steps back on each kick, for example 6-8 steps, so that the same

consistent pattern occurs for each kick. Take a look at the goal-posts so that you know where the target is.

iii). Head Position

Look down at the contact point low on the back seam of the ball. Keep the head down throughout the rest of the kicking sequence with the eyes forward on the point of contact. Your head must stay down. Ensure that you are focused and balanced.

iv). Approach

Approach slowly, with a slight forward lean, gradually getting faster but never progressing to a run. The first step is a walk, increasing positively so that the last step and swing gives you the power. It is the leg swing and its speed at the hitting area that provides the power.

v). Placement of the Non-Kicking Foot

The non-kicking foot, pointing at the goal-posts, should land firmly, to the side of the ball, and level at the rear of the ball, in order to get correct leverage and hip swing movement.

vi). Striking the Ball

The kicking leg swings through the ball in a fast, smooth, rhythmical action, with contact being made at the bottom of the swing. The ball is hit with the top of the foot at the instep, and the foot makes contact on the back seam of the ball. Remember the eyes must stay on the point

of contact.

vii). Follow Through

The follow through with the kicking leg should aim through the ball, in an upwards direction, to a point beyond the goal-posts and come slightly across, and in front, of the body. The opposite arm should be raised to act as a counter balance. The head must stay down until well after the ball has been kicked.

viii). Relaxation / Positive Self-Talk

An important aspect of successful goal kicking performance is the ability to relax and use positive self-talk. Relaxation and positive self-talk are used extensively to help goal kickers improve their skills and perform the correct goal kicking movements. I am going to ask you to relax and use positive self-talk in relation to goal kicking.

First, I want you to realise that there are different ways to relax, and the way you relax is important. To relax, you should take several deep, slow, and complete breaths. Each deep and complete breath should come from the diaphragm and should fill up the lungs from the bottom. You should feel the lungs filling up slowly and deeply so that breathing is continuous and smooth. When breathing out, you should feel the air draining out from the lungs and your body becoming more relaxed. This will become easier with practice. You may want to close your eyes, although it is

not necessary to do so.

Each breath should be comfortable, with long, slow, deep inhalation through the nose, inhaling as much air as possible. Exhalation should be slow, and complete, and you should feel all tension leaving the body as the air is exhaled.

There are also different ways of using positive self-talk, and the way you use it is important. When using positive self-talk, you should be constantly talking to yourself about successfully making each kick. You should be encouraging yourself about how confident you are that you will kick each goal. You should be thinking that you are very good and that you are going to kick each goal successfully.

You should be telling yourself that "I can do it", "I can make this kick", "I will kick this goal", "I am confident of a successful kick". Repeat statements like these, over and over, to yourself. This will become easier with practice. You may want to close your eyes, although it is not necessary to do so.

For the next few minutes I want you to practice the breathing and positive self-talk techniques. It may be best to use these techniques together, so that you are encouraging yourself as you are deep breathing. Go ahead and start the deep breathing and positive self-talk techniques, until I tell you to stop. (2 minute pause).

Deep breathing and positive self-talk are most effective when it is practised every day for at least 20 minutes. You may find just before bed, or just after waking up is a good time. Be willing to experiment for a short time, to find out the most effective time and situation to use deep breathing and positive self-talk.

When we are out practising goal kicking, you can use deep breathing and positive self-talk immediately before performing each kick. For example, the techniques could be used when you are addressing the ball and/or after stepping back as you focus on the ball.

It is also important to remember to complete your log sheets every practice day, describing any relaxation and positive self-talk training that you do. Please remember it is very important that other subjects are not aware of the instructions that have been given to you. Please do not communicate any details of the instructions to any of the other subjects.

PHYSICAL PRACTICE / RELAXATION / POSITIVE
SELF-TALK / IMAGERY CONDITION

There are eight key factors of the goal kick:

- i). addressing the ball
- ii). steps back
- iii). head position
- iv). approach
- v). placement of the non-kicking foot
- vi). striking the ball
- vii). follow through
- viii). relaxation / positive self-talk / imagery.

- i). Addressing the ball

The ball is placed firmly on the tee in an upright position or with a slight forward lean. The lace or seam is pointed to the goal-posts. This should be done from a kneeling or squat position over top of the ball. Stand up to the ball with the kicking foot at its instep directly behind the back seam. The non-kicking foot will be level with the back of the ball, slightly to the side, and facing in the direction of the goal-posts. Look up and check the line to the goal-posts.

- ii). Steps Back

Retire at an angle that is approximately 45° to the line through the ball to the goal-posts. A set pattern should be established with the same number of steps back on each kick, for example 6-8 steps, so that the same

consistent pattern occurs for each kick. Take a look at the goal-posts so that you know where the target is.

iii). Head Position

Look down at the contact point low on the back seam of the ball. Keep the head down throughout the rest of the kicking sequence with the eyes forward on the point of contact. Your head must stay down. Ensure that you are focused and balanced.

iv). Approach

Approach slowly, with a slight forward lean, gradually getting faster but never progressing to a run. The first step is a walk, increasing positively so that the last step and swing gives you the power. It is the leg swing and its speed at the hitting area that provides the power.

v). Placement of the Non-Kicking Foot

The non-kicking foot, pointing at the goal-posts, should land firmly, to the side of the ball, and level at the rear of the ball, in order to get correct leverage and hip swing movement.

vi). Striking the Ball

The kicking leg swings through the ball in a fast, smooth, rhythmical action, with contact being made at the bottom of the swing. The ball is hit with the top of the foot at the instep, and the foot makes contact on the back seam of the ball. Remember the eyes must stay on the point of contact.

vii). Follow Through

The follow through with the kicking leg should aim through the ball, in an upwards direction, to a point beyond the goal-posts and come slightly across, and in front, of the body. The opposite arm should be raised to act as a counter balance. The head must stay down until well after the ball has been kicked.

viii). Relaxation / Positive Self-Talk / Imagery

An important aspect of successful goal kicking performance is the ability to relax, use positive self-talk, and imagine yourself performing the correct goal kicking movement. Relaxation, positive self-talk, and imagery are used extensively to help goal kickers improve their skills and perform the correct goal kicking movements. I am going to ask you to relax, use positive self-talk, and imagery in relation to goal kicking.

First, I want you to realise that there are different ways to relax, and the way you relax is important. To relax, you should take several deep, slow, and complete breaths. Each deep and complete breath should come from the diaphragm and should fill up the lungs from the bottom. You should feel the lungs filling up slowly and deeply so that breathing is continuous and smooth. When breathing out, you should feel the air draining out from the lungs and your body becoming more relaxed. This will become easier with practice. You may want to close your eyes, although it is

not necessary to do so.

Each breath should be comfortable, with long, slow, deep inhalation through the nose, inhaling as much air as possible. Exhalation should be slow, and complete, and you should feel all tension leaving the body as the air is exhaled.

There are also different ways of using positive self-talk, and the way you use it is important. When using positive self-talk, you should be constantly talking to yourself about successfully making each kick. You should be encouraging yourself about how confident you are that you will kick each goal. You should be thinking that you are very good and that you are going to kick each goal successfully.

You should be telling yourself that "I can do it", "I can make this kick", "I will kick this goal", "I am confident of a successful kick". Repeat statements like these, over and over, to yourself. This will become easier with practice. You may want to close your eyes, although it is not necessary to do so.

There are also different ways to image, and the way you form images is important. To generate an image in your mind, you should attend to as much detail as possible by including other senses. For example, the sounds of the goal kicking action, what the goal kicking looks like, and the feel of the action. Make the image as realistic and as accurate as

possible. When you are forming the images, make sure that each kick is successful. This will become easier with practice. You may want to close your eyes, although it is not necessary to do so.

Begin your image from the moment of addressing the ball. Notice everything you do, seeing it perfectly, just the way you want it to be done, and just the way it should be done. Feel yourself placing ball, stepping back, focusing on the ball, your head position, striking the ball, and the follow through. See the kick as being successful. Be aware of how it feels, what it looks and sounds like to achieve the perfect and successful kick.

If during the image you make a mistake, go back and do it over again, correctly, perfectly, exactly as you know you can do it. The images will become easier with practice.

For the next few minutes I want you to simply practice the breathing and positive self-talk techniques. I also want you to practice goal kicking by forming images. It may be best to use these techniques together, so that you are imaging each kick, encouraging yourself and deep breathing. Go ahead and start rehearsing these techniques, until I tell you to stop. (2 minute pause).

Deep breathing, positive self-talk, and imagery are most effective when it is practised every day for at least 20 minutes. You may find just before bed, or just after waking up is a good time. Be willing to experiment for a

short time, to find out the most effective time and situation to use deep breathing, positive self-talk, and imagery.

When we are out practising goal kicking, you can use deep breathing, positive self-talk, and imagery immediately before performing each kick. For example, the techniques could be used when you are addressing the ball and/or after stepping back as you focus on the ball.

It is also important to remember to complete your log sheets every practice day, describing any relaxation, positive self-talk, and imagery training that you do. Please remember it is very important that other subjects are not aware of the instructions that have been given to you. Please do not communicate any details of the instructions to any of the other subjects.

CONTROL CONDITION

The control subjects will be informed only of the general task directions and the schedule of participating. No mention will be made of any cognitive strategy, nor any technique teaching points.

Control subjects will be reminded to complete their log sheets every practice day. They will also be reminded not to communicate any details of the instructions given to them with any of the other subjects.

APPENDIX F
GOAL KICKING PERFORMANCE TEST

Goal Kicking Points Scoring

Accuracy:

	5	
1		1
	3	

Height:

	5	
3		3
1	1	1

Height and Accuracy Combination:

	15	
7		7
3	5	3

APPENDIX G
SELF-EFFICACY QUESTIONNAIRE

SELF-EFFICACY QUESTIONNAIRE

Name:
Condition:

Date:
Session #:

LEVEL OF SELF-EFFICACY

For each kick, please circle on the yes-or-no scale the likelihood that your kick will be successful.

Location of Kicks	Will you kick this goal? Yes/No	
	yes	no
	yes	no
	yes	no
	yes	no
	yes	no
	yes	no
	yes	no
	yes	no
	yes	no
	yes	no
	yes	no
	yes	no

APPENDIX H
TRAINING LOGS

vi) ease of early morning imagery -

vii) ease of imaging prior to each kick -

4. Other comments:

vi) ease of early morning deep breathing -

vii) ease of breathing prior to each kick -

4. Comments you may have about your positive self-talk use:

i) your ability to talk about successful kicks -

ii) your ability to encourage confidence -

iii) ease of positive self-talk prior to falling asleep -

iv) ease of early morning positive self-talk -

v) ease of positive self-talk to each kick -

vi) ease of combining deep breathing and positive self-talk -

5. Other comments:

vi) ease of early morning deep breathing -

vii) ease of breathing prior to each kick -

4. Comments you may have about your positive self-talk use:

i) your ability to talk about successful kicks -

ii) your ability to encourage confidence -

iii) ease of positive self-talk prior to falling asleep -

iv) ease of early morning positive self-talk -

v) ease of positive self-talk to each kick -

5. Comments you may have about your imagery use:

i) your ability to image -

ii) your ability to see yourself -

iii) your ability to feel the goal kicking action -

iv) how real the imagery felt -

v) ease of imaging prior to falling asleep -

vi) ease of early morning imagery -

vii) ease of imaging prior to each kick -

viii) ease of combining deep breathing, positive self-talk, and imagery -

6. Other comments:

APPENDIX I
FOLLOW-UP QUESTIONNAIRE

**UNIVERSITY OF VICTORIA**

P.O. BOX 1700, VICTORIA, B.C., CANADA V8W 2Y2
TELEPHONE (604) 721-8373 TELEX 049-7222

SCHOOL OF PHYSICAL EDUCATION

**FOLLOW-UP QUESTIONNAIRE FOR THE STUDY ON THE EFFECT OF
COGNITIVE STRATEGIES ON SELF-EFFICACY, AND LEARNING
AND PERFORMANCE OF GOAL-KICKERS IN RUGBY.**

Thank you for participating in this study. Your training and testing is now over. To complete the study, I will need you to fill out the remaining forms.

Please do the questionnaire immediately. It is imperative that you do not discuss this questionnaire with any of the others in the study.

Name: _____

Date: _____

Finally, please answer the following:

1. What did you think about the goal kicking practice?

2. How did your goal kicking progress over the training sessions?

3. How did your self-confidence progress over the training sessions?

4. What did you think of imagery?

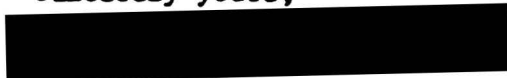
5. How did your imagery progress over the training sessions?

6. When goal kicking, did you think of things other than imagery?
If so, what did you think about?

7. Did what you think about change during the study? If so, how?

Again, thank you for your cooperation in this study.
Results will follow shortly.

Sincerely yours,

A solid black rectangular redaction box covering the signature area.

Bruce Kuklinski



UNIVERSITY OF VICTORIA

P.O. BOX 1700, VICTORIA, B.C., CANADA V8W 2Y2
TELEPHONE (604) 721-8373 TELEX 049-7222

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SCHOOL OF PHYSICAL EDUCATION

FOLLOW-UP QUESTIONNAIRE FOR THE STUDY ON THE EFFECT OF
COGNITIVE STRATEGIES ON SELF-EFFICACY, AND LEARNING
AND PERFORMANCE OF GOAL-KICKERS IN RUGBY.

Thank you for participating in this study. Your training and testing is now over. To complete the study, I will need you to fill out the remaining forms.

Please do the questionnaire immediately. It is imperative that you do not discuss this questionnaire with any of the others in the study.

Name: _____ Date: _____

Finally, please answer the following:

1. What did you think about the goal kicking practice?
2. How did your goal kicking progress over the training sessions?
3. How did your self-confidence progress over the training sessions?
4. What did you think of imagery?
5. How did your imagery progress over the training sessions?
6. When goal kicking, did you think of things other than imagery?
If so, what did you think about?

7. How did your positive self-talk progress over the training sessions?
8. When goal kicking, did you think of things other than deep breathing and positive-self? If so, what did you think about?
9. Did what you think about change during the study? If so, how?

Again, thank you for your cooperation in this study.
Results will follow shortly.

Sincerely yours,



Bruce Kuklinski



UNIVERSITY OF VICTORIA

P.O. BOX 1700, VICTORIA, B.C., CANADA V8W 2Y2
TELEPHONE (604) 721-5373 TELEX 049-7222

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SCHOOL OF PHYSICAL EDUCATION

FOLLOW-UP QUESTIONNAIRE FOR THE STUDY ON THE EFFECT OF
COGNITIVE STRATEGIES ON SELF-EFFICACY, AND LEARNING
AND PERFORMANCE OF GOAL-KICKERS IN RUGBY.

Thank you for participating in this study. Your training and testing is now over. To complete the study, I will need you to fill out the remaining forms.

Please do the questionnaire immediately. It is imperative that you do not discuss this questionnaire with any of the others in the study.

Name: _____

Date: _____

Finally, please answer the following:

1. What did you think about the goal kicking practice?
2. How did your goal kicking progress over the training sessions?
3. How did your self-confidence progress over the training sessions?
4. What did you think of imagery?
5. How did your imagery progress over the training sessions?
6. When goal kicking, did you think of things other than imagery?
If so, what did you think about?

7. How did your positive self-talk progress over the training sessions?
8. What did you think of imagery?
9. How did your imagery progress over the training sessions?
10. When goal kicking, did you think of things other than deep breathing, positive self-talk and imagery? If so, what did you think about?
11. Did what you think about change during the study? If so, how?

Again, thank you for your cooperation in this study.
Results will follow shortly.

Sincerely yours,

A solid black rectangular box redacting the signature of Bruce Kuklinski.

Bruce Kuklinski

APPENDIX J
COGNITIVE STRATEGY QUESTIONNAIRE

7. Do you think positive self-talk helped you with your goal kicking performance?

Not at all 1 2 3 4 5 6 7 8 9 An extensive amount

8. How easy was it for you to self-talk about successful kicks?

Very difficult 1 2 3 4 5 6 7 8 9 Very easy

9. How easy was it for you to encourage goal kicking confidence?

Very difficult 1 2 3 4 5 6 7 8 9 Very easy

7. Do you think positive self-talk helped you with your goal kicking performance?

Not at all 1 2 3 4 5 6 7 8 9 An extensive amount

8. How easy was it for you to self-talk about successful kicks?

Very difficult 1 2 3 4 5 6 7 8 9 Very easy

9. How easy was it for you to encourage goal kicking confidence?

Very difficult 1 2 3 4 5 6 7 8 9 Very easy

10. How much imagery did you use with regard to goal kicking?

None at all 1 2 3 4 5 6 7 8 9 An extensive amount

11. Do you think imagery helped you with your goal kicking performance?

Not at all 1 2 3 4 5 6 7 8 9 An extensive amount

12. How easy was it for you to image about goal kicking?

Very difficult 1 2 3 4 5 6 7 8 9 Very easy

APPENDIX K
GOAL KICKING ANALYSIS SHEET

APPENDIX L
DATA RESULTS

Data Results

Appendix L includes data obtained from observing each of the nine subjects. The five target behaviors of goal kicking accuracy, goal kicking height, total goal kicking performance (height and accuracy in combination), level of self-efficacy, and strength of self-efficacy were analyzed by examining; (a) stability of baseline, (b) changes in mean and level between experimental phases, and (c) changes in trend across experimental phases.

Subject 1.

Physical Practice (PP)

Goal Kicking Accuracy Performance

The baseline remained stable at zero points except for session three where 4 accuracy points were scored. The baseline had a mean of 1 point with a range from zero to 4 points (Table 1, Figure 2).

Subject 1 showed a slight increase from baseline (1 point) to the first intervention phase (1.5 points). Upon withdrawal of treatment, there was a move back toward original baseline scores, with a zero mean. An increase occurred in the second B phase, with a mean score of 3.5 points. During the retention phase, mean accuracy increased further to 5.5 points.

In relation to level shifts between phases, Subject 1 displayed no change in level from the last baseline session

to the first treatment session, where no points were scored. A downward level shift was shown from the end of the first intervention phase (3 points) to the beginning of the second A phase (zero points). An upward level shift of 3 points was evident from the end of the second A phase to the start of the second B phase. Another upward shift existed between the end of the second B phase (4 points) to the first retention session (8 points).

With regard to changes in trend across experimental phases, both A phases revealed a stable trend in the data. Within both intervention phases an increasing trend was evident, while a decreasing trend was shown in the retention phase.

Goal Kicking Height Performance

Subject 1 showed a stable baseline of zero points except for session three where 2 points were scored. The baseline mean was 0.5 points, with a range from zero to 2 points (Table 1, Figure 3).

The mean goal kicking height remained the same from baseline, at 2 points during the first intervention phase. The mean decreased to zero during the second A phase. Upon return to treatment, the mean increased to 2 points. The retention phase mean increased to 3.75 points.

Subject 1 revealed no level shift from the last baseline session to the first treatment session, where no points were scored. A downward level shift occurred from the

end of the first intervention phase (1 point) to the start of the second A phase zero points). An upward shift in level of 1 point was evident from the second A phase to the start of the second B phase. A further upward shift occurred from the end of treatment (4 points) to the first retention session (6 points).

A small increasing trend was apparent in the first intervention phase and a larger positive trend was shown in the second B phase. A decreasing trend occurred in the retention phase. The second A phase produced zero points at each session.

Total Goal Kicking Performance

Subject 1 showed a relatively stable baseline with three sessions scoring zero and one (session three) scoring 8 points. Baseline mean was 2 points, with a range from zero to 8 points (Table 1, Figure 4).

A small increase in mean from 2 to 2.5 points occurred between baseline and the first intervention phase. A decrease to zero points took place when intervention was withdrawn. Upon return to the PP intervention, the mean increased to 7.5 points. Another increase in mean to 13 points accompanied the retention phase.

Increasing trends in the data were evident in both intervention phases, whereas a decreasing trend occurred in the retention phase. The second A phase produced zero points at each session.

Level of Self-Efficacy

Subject 1 indicated no likelihood of kicking a successful goal at baseline. This gave a perfectly stable baseline (Table 1, Figure 5).

The mean level of self-efficacy increased from zero to 3.25 goals during the first intervention phase. With no treatment, the mean decreased to 1.5 goals and then increased to 2 goals at the second B phase and to 2.5 goals at the retention phase.

An immediate increase in level took place from the end of baseline (zero goals) to the first treatment session (7 goals). Decrease in level occurred at the end of the first intervention phase from 2 goals to zero at the start of the second A phase. No other level changes were evident between experimental phases.

Level of self-efficacy scores were relatively stable at each phase.

Strength of Self-Efficacy

Subject 1 showed a relatively stable baseline with a range from 19.2% to 24% and a mean of 21.2% (Table 1, Figure 6).

The mean strength of self-efficacy made a large increase from 21.2% to 35.8% during the first intervention phase. Only very small changes in mean occurred between the remaining phases. A large level shift was revealed between end of baseline (19.2%) and the start of the PP intervention

(40.6%). Only minute changes in level were evident between the remaining phases.

A decreasing trend was shown during the first intervention phase, while relatively scores were produced in the second A phase. Variable scores were shown in the second B phase, and an increasing tendency was revealed in the retention phase.

Subject 2.

Physical Practice / Imagery (PI)

Goal Kicking Accuracy Performance

Subject 2 showed an increasing tendency in the baseline with a range from zero to 6 points and a mean of 3.5 points (Table 2, Figure 7).

The mean accuracy performance demonstrated an increase from baseline (3.5 points) to intervention (6.5 points). Upon withdrawal of treatment, the mean decreased to 5.5 points in the second A phase. With a return to treatment, the mean increased to 12.25 points while following the retention interval decreased to a score of 10.25.

Subject 2 displayed a small increase in level from the last baseline session (6 points) to the first treatment session (7 points). There was no level shift between the end of the first intervention phase and the start of the second A phase. A decrease in level occurred between the end of the second A phase (7 points) and the beginning of the second B

phase (4 points). A relatively large decrease in level was evident between the final treatment session (12 points) and the first retention session (3 points).

All phases, excepting a variable second A phase, demonstrated increasing trends.

Goal Kicking Height Performance

Subject 2 showed an increasing trend in the baseline with a range from zero to 8 points and a mean of 4 points (Table 2, Figure 8).

The mean goal kicking height scores increased from baseline (4 points) to the first intervention phase (7.5 points). A decrease in mean was displayed during the second A phase (5.5 points), with an increase in mean during the final intervention phase (11.25 points). The retention phase had a decreased mean of 8.75 points.

Decreasing level shifts occurred between all phases. From the end of baseline (6 points) a drop of 3 points was shown at the beginning of treatment. A decrease in level took place between the end of the first B phase (7 points) and the second A phase (5 points). A further drop in level occurred from the end of the second A phase (7 points) to the start of the final intervention phase (4 points). A large change in level was shown from the final treatment session (12 pints) to the first retention session (1 point).

All phases, excepting a relatively stable second A phase, demonstrated increasing trends.

Total Goal Kicking Performance

Subject 2 showed an increasing baseline tendency with a range from zero to 22 points and a mean of 11.5 points (Table 2, Figure 9).

Mean goal kicking scores increased from baseline (11.5 points) to the first intervention phase (21.5 points). A decrease in mean to 14.5 points occurred within the second A phase. The mean increased again following reinstatement of the physical practice intervention (34.75 points) and decreased to 27.75 points within the retention phase.

Subject 2 displayed downward level shifts between all experimental phases. A downward shift from the end of baseline (18 points) to the first treatment session (13 points) was evident. A further downward shift was noted from the end of the first intervention phase (19 points) to the start of the second A phase (15 points). There was a downward shift from the end of the second A phase (21 points) to the start of the second B phase (12 points). A large downward level shift was shown from the final treatment session (36 points) to the first retention session (5 points).

An increasing trend was illustrated in all phases, excepting the second A phase, where performance was relatively stable. A comparatively small increasing trend was shown in the first intervention phase, whilst large positive trends can be seen in the second intervention and retention phases.

Level of Self-Efficacy

Subject 2 demonstrated an unstable decreasing tendency in the baseline with a range from 3 to 12 goals and a mean likelihood of successfully kicking 6 of the 12 goals (Table 2, Figure 10).

The mean increased from the baseline (6 goals) to 8.25 goals during the first intervention phase and decreased to 5.25 goals following the withdrawal of treatment but increased to 9 goals upon return of the intervention. The retention mean was lower at 4.75 goals.

Subject 2 revealed level shifts from baseline (5 goals) to 8 goals at the first treatment session. A decrease in level occurred from 8 goals at the end of the first B phase to 4 goals at the start of the second A phase. A further increase in level took place between the end of the second A phase (5 goals) to the beginning of the second B phase (10 goals). There was a large downward level shifts from the last treatment session (12 goals) to the first retention session (2 goals).

The first intervention phase produced relatively stable scores. The second A phase and final intervention phase showed variable scores. The retention phase showed a large positive trend.

Strength of Self-Efficacy

Subject 2 showed a variable baseline with a range from 29.2% to 38.3% and a mean of 34.8% (Table 2, Figure 11).

The mean scores demonstrated small changes from 40.4% in the first B phase, a drop to 32.3% in the second A phase, an increase to 37.1% in the second B phase, and to 37.8% in the retention phase.

An upward level shift occurred between the end of baseline (35.8%) to the first intervention session (40%). A downward level shift was shown from 41.7% at the end of the first B phase to 30.8% at the start of the second A phase. An upward level shift occurred from 30% at the end of the second A phase to 38.3% at the start of the second B phase. A small downward shift took place from the end of treatment (38.3%) to the first retention session (35%).

Relatively stable scores were evident in both intervention phases and the second A phase. Variable scores were produced in the retention phase.

Subject 3.

Physical Practice / Imagery (PI)

Goal Kicking Accuracy Performance

Subject 3 showed a variable, decreasing trend in the baseline with a range from 1 to 6 points and a mean of 3 points (Table 3, Figure 12).

The mean accuracy score increased from baseline (3 points) to 5.5 points at the first intervention phase. A decrease in mean followed to 4 points during the second A phase. The mean increased to 9 points with a return to

treatment and decreased slightly to 8.33 points during the retention phase.

Level changes were displayed between each of the phases, with an upward shift between the end of baseline (2 points) and the first treatment session (4 points). A downward shift occurred from the end of the first intervention phase (8 points) to the start of the second A phase (3 points). Upon reinstatement of treatment the level moved upward from 4 points at the end of the second A phase to 8 points at the beginning of the second B phase. A further upward shift was noted between the last treatment session (11 points) to the first retention session (16 points).

A relatively stable trend was shown in the second A phase with variable small increasing trends in both B phases. A decreasing trend was evident in the retention phase.

Goal Kicking Height Performance

Subject 3 displayed an increasing tendency in the baseline with a range from 1 to 4 points and a mean of 2.5 points (Table 3, Figure 13).

An increase in the mean height score occurred between the baseline (2.5 points) and the first intervention phase (4 points). The mean decreased to 3 points in the second A phase but a relatively large increase to 8.5 points was evident upon treatment reinstatement. The retention phase

mean was lower at 5 points.

Level shifts were evident between each experimental phase with an initial drop from 4 points at the end of baseline to 2 points at the first treatment session. A further downward shift took place between the end of the first intervention phase (6 points) and the beginning of the second A phase (1 point). An upward level shift occurred between the end of the second A phase (4 points) and the start of the second B phase (6 points). There was also an upward shift from the last treatment session (11 points) to the first retention session (12 points).

Variable scores were evident in the first intervention phase, whereas increasing trends were revealed in the second A phase and the final intervention phase. A decreasing trend was shown in the retention phase.

Total Goal Kicking Performance

Subject 3 displayed a relatively stable baseline with a range from 5 to 10 points and a mean of 8 points (Table 3, Figure 14).

The mean goal kicking performance score increased from 8 points at baseline to 13.5 points in the intervention phase. A decrease to 10 points occurred in the second A phase followed by a large increase to 26.5 points in the second intervention phase. The mean decreased to 18.33 points in the retention phase.

A small downward level shift was displayed between the

end of the baseline (10 points) and the first treatment session (8 points). A further downward shift appeared between the end of the first B phase (20 points) and the start of the second A phase (5 points). Upward level shifts were demonstrated between the end of the second A phase (12 points) and the start of the final intervention phase (20 points), as well as between the last treatment session (33 pints) and the first retention session (40 points).

Subject 3 displayed an increasing trend in the second A phase and a decreasing trend in the retention phase. Variable scores were produced in each intervention phase.

Level of Self-Efficacy

Subject 3 showed an unstable baseline with a range from zero to 9 kicks likely to succeed and a mean of 5 goals (Table 3, Figure 15).

The mean likelihood of successful goals was the same at the baseline and first intervention phase (5 goals). A small decrease to 4 goals was evident in the second A phase with an increase to 6 goals in the final B phase. The mean of 6 goals was maintained in the retention phase.

Subject 3 revealed a downward level shift from 5 goals at the end of baseline to 4 goals at the onset of treatment. A small upward shift occurred between the end of the first B phase (5 goals) and the start of the second A phase (5.5 goals). No level was shown between the end of the second A phase and the start of the second B phase, remaining at 5.33

goals. A small downward shift occurred between the last treatment session (6 goals) and the first retention session (5.5 goals).

Positive trends in the data were clear at each intervention phase and a decreasing trend was apparent at the second A phase. The retention phase showed an increasing trend.

Strength of Self-Efficacy

Subject 3 demonstrated a small decreasing tendency in the baseline with a range from 35.8% to 44.2% and a mean of 41.1% (Table 3, Figure 16).

An increase in the mean strength of self-efficacy occurred between each A to B, and B to A phase. A change in mean from 41.1% in baseline to 47.9% in the first intervention phase was noticeable. The mean increased again to 52.4% in the second A phase. Limited changes occurred thereafter.

Level shifts were demonstrated between all phases except the second A phase and second B phase. An upward level shift was displayed from the last baseline session (35.8%) to the first treatment session (50%). There was an upward level shift from the last session of the first B phase (50%) to the second A phase (55%). The strength of self-efficacy score remained at 53.3% between the end of the second A phase and the start of the second B phase. A downward shift occurred from the last treatment session

(60%) to the first retention session (55%).

Relatively stable scores were displayed at each phase.

Subject 4.

Physical Practice / Relaxation / Self-Talk (PRT)

Goal Kicking Accuracy Performance

Subject 4 showed an increasing tendency in the baseline with a range from 13 to 27 points and a mean of 20.25 points (Table 4, Figure 17).

The mean goal kicking accuracy dropped 0.25 points from baseline to the first intervention phase (20 points) and again to the second A phase (19.75 points). An increase in the mean was demonstrated in the second intervention phase to 27.5 points. There was a decrease in the retention phase to 24 points. Level changes were revealed between all phases except that of the final treatment session and the retention phase. A downward level shift from 23 points to 12 points took place between the last baseline session and the first treatment session. An upward shift was displayed between the end of the first B phase (4 points) and the beginning of the second A phase (23 points). There was a further upward shift between the end of the second A phase (23 points) and the first session of the second B phase (28 points).

Subject 4 revealed an increasing trend in the first intervention phase from session five (12 points) to seven (30 points). A decreasing trend was evident in the second A

phase from session nine (23 points) to eleven (15 points). The second B phase illustrated variable accuracy performance. The retention phase showed an increasing trend from session eighteen (15 points) to twenty (28 points).

Goal Kicking Height Performance

Subject 4 showed an increasing tendency in the baseline with a range from 19 to 31 points and a mean of 24.25 points (Table 4, Figure 18).

A slight decrease in the mean scores were displayed between the baseline (24.25 points) and the first intervention phase (21 points). This was followed by an increase in mean of the second A phase back to 24.25 points. A further mean increase continued in the second B phase to 31 points. The mean was maintained in the retention phase (31.5 points).

Subject 4 demonstrated a downward level shift from the baseline session (23 points) to the first treatment session (16 points). A large upward level shift was evident between the end of the initial intervention phase (8 points) to the start of the second A phase (29 points). A small downward shift occurred between the end of the second A phase (29 points) and the start of the second B phase (26 points). No level shift occurred between the last treatment session and first retention session with goal kicking height maintaining at 34 points.

Subject 4 showed an increasing trend in the first

intervention phase from session five (16 points) to seven (32 points). A variable increasing trend was evident in the second A phase. The second intervention phase also produced an increasing tendency while the retention phase showed relatively stable goal kicking height performance.

Total Goal Kicking Performance

Subject 4 showed an increasing trend in the baseline with a range from 51 to 89 points and a mean of 68.75 points (Table 4, Figure 19).

A small decrease in mean performance was shown from baseline (68.75 points) to the first intervention phase (62 points). The mean increased slightly in the second A phase to 68.75 points. A further increase in the mean occurred with return of the PRT intervention (89.5 points). There was a very small decrease in the retention phase to 87 points.

A downward level shift occurred between the last baseline session (69 points) and the first treatment session (44 points). A large upward level shift was evident between the end of the first B phase (30 points) and the start of the second A phase (81 points). A very small downward level shift took place between the end of the second A phase (81 points) and the start of the second B phase (80 points). Total goal kicking performance was maintained from the last treatment session to first retention session at 96 points.

Subject 4 showed an increasing trend during the first intervention phase from session five (44 points) to session

seven (94 points). The second A phase produced a variable increasing trend and the second intervention phase showed an increasing tendency. The retention phase remained relatively stable.

Level of Self-Efficacy

Subject 4 displayed a relatively stable baseline with a range from 8 to 10 goals and a mean 8.5 goals (Table 4, Figure 20).

An increase in mean occurred between baseline (8.5 goals) and the first intervention phase (11.5 goals). A decrease in mean followed in the second A phase (8 goals). The mean increased to 9.5 goals in the second B phase before dropping to 8.25 goals in the retention phase.

Subject 4 revealed an upward level shift from 8 goals at end of baseline to 12 goals at the first treatment session. A downward level shift took place between the end of the first intervention phase (10 goals) to the second A phase (6 goals). A further downward shift occurred between the end of the second A phase (10 goals) and the start of the second B phase (8 goals). A small downward shift occurred between the last treatment session (10 goals) and first retention session (9 goals).

Relatively stable scores were evident in the first intervention phase whereas an increasing trend was shown in the second A phase. The second intervention phase produced variable level of self-efficacy scores. The retention phase

revealed stable scores.

Strength of Self-Efficacy

Subject 4 showed a relatively stable baseline with a range from 60% to 62.5% and a mean of 61.1% (Table 4, Figure 21).

A small decrease in mean was displayed from baseline (61.1%) to the first intervention phase (59.4%). A further decrease in mean occurred in the second A phase (54.6%). There was an increase in mean in the second B phase to 58.3% followed by a decrease to 52.7% in the retention phase.

Subject 4 demonstrated a minute level shift from the end of baseline (62.5%) to the first treatment session (61.7%). A small upward level shift was shown between the end of the first intervention phase (56.7%) to the start of the second A phase (60%). A further small upward shift was evident between the end of the second A phase (50%) to the start of the second B phase (53.3%). A downward level shift was shown from the last treatment session (61.7%) to first retention session (55.8%).

A small decreasing trend was displayed in the first intervention phase and in the second A phase. An increasing trend was evident in the second B phase. The retention phase was relatively stable. Overall, a small decreasing trend across phases was revealed.

Subject 5.Physical Practice / Relaxation / Self-Talk (PRT)Goal Kicking Accuracy Performance

Subject 5 showed a variable baseline with a range from 9 to 34 points. There was an increasing trend from session two (9 points) to four (19 points). Session one yielded an extreme score of 34 points. The baseline mean was 19 points (Table 5, Figure 22).

A decrease in the mean goal kicking accuracy occurred from baseline (19 points) to the first intervention phase (7.5 points). There was an increase in mean performance in the second A phase to 12.75 points and in the second B phase to 16.75 points. A further increase in mean occurred in the retention phase (19.5 points).

Subject 5 displayed a downward level shift from the last baseline session (19 points) to the first treatment session (5 points). An upward level shift occurred from the end of the first intervention phase (3 points) to the start of the second A phase (16 points). A small upward shift took place from the end of the second A phase (14 points) to the start of the second B phase (16 points). An additional small upward shift was evident from the last treatment session (21 points) to first retention session (22 points).

Variable accuracy scores were evident in all experimental phases.

Goal Kicking Height Performance

Subject 5 showed a variable baseline with a range from 9 to 38 points. There was an increasing trend from session two (9 points) to four (17 points). Session one produced an extreme score of 38 points. The baseline mean was 19.5 points (Table 5, Figure 23).

A decrease in the mean goal kicking height was recorded from baseline (19.5 points) to the first intervention phase (8 points). Mean performance increased to 12.25 points in the second A phase and increased again to 18.25 points in the second B phase. There was an increased mean in the retention phase to 21 points.

Subject 5 exhibited a downward level shift between the end of baseline (17 points) to the first treatment session (3 points). An upward shift took place between the end of the first B phase (7 points) and the start of the second A phase (20 points). A further upward level shift occurred between the end of the second A phase (12 points) and the start of the second B phase (16 points). A small downward shift was shown from the last treatment session (25 points) to first retention session (24 points).

An increasing trend was demonstrated during the first intervention phase from session five (3 points) to seven (18 points). A decreasing trend was evident in the second A phase. The second intervention phase produced an increasing trend. The retention phase was relatively stable.

Total Goal Kicking Performance

Subject 5 showed a variable baseline with a range from 27 to 110 points. An increasing tendency was displayed from session two (27 points) to four (53 points). Session one yielded an extreme score of 110 points. The baseline mean was 58 points (Table 5, Figure 24).

The mean goal kicking performance decreased from baseline (58 points) to 23.5 points at the first intervention phase. The mean increased to 37.25 points at the second A phase and increased further to 53.25 points at the second B phase. The retention phase had a mean of 61.5 points.

Subject 5 revealed a downward level shift from the end of baseline (53 points) to the first treatment session (11 points). An upward shift was evident between the end of the first B phase (17 points) and the start of the second A phase (56 points). Another upward shift took place between the end of the second A phase (38 points) and the start of the second B phase (48 points). Total goal kicking performance was maintained from the end of treatment (71 points) to first retention session (70 points).

The PRT intervention produced variable performance at its introduction. A decreasing tendency was shown in the second A phase followed by an increasing trend in the second B phase. The retention phase was relatively stable.

Level of Self-Efficacy

Subject 5 showed a relatively stable baseline with a range from 5 to 7 goals and a mean of 6 goals (Table 5, Figure 25).

A small decrease in the mean likelihood of a successful goal took place from baseline (6 goals) to the first intervention phase (5.25 goals). Another small decrease occurred in the second A phase (4.75 goals). A large increase in the mean was evident in the second intervention phase (8 goals). A small increase occurred in the retention phase (8.5 goals).

Subject 5 demonstrated a small downward level shift from the end of baseline (6 goals) to the first treatment session (5 goals). A large upward level shift was evident between both the end of the first B phase (4 goals) to the start of the second A phase (8 goals) and between the end of the second A phase (4 goals) and the start of the second B phase (8 goals). No level shift occurred between end of treatment and the retention phase.

The first intervention phase produced relatively stable scores, whereas a large decreasing trend was revealed in the second A phase. Perfectly stable scores of 8 goals were evident in the second B phase and these were maintained in the retention phase.

Strength of Self-Efficacy

Subject 5 showed a relatively stable baseline with a

range from 43.3% to 55% and a mean of 49.8% (Table 5, Figure 26).

There was a minute decrease in mean between baseline (49.8%) and the first intervention phase (48.6%). A small increase in mean followed in the second A phase (50.2%). A further increase in the mean occurred in the second B phase (59.2%). There was a small decrease in mean in the retention phase (57.9%).

Subject 5 displayed a downward level shift from the end of baseline (50.8%) to the first treatment session (45.8%). A large upward shift took place between the end of the first B phase (46.7%) and the start of the second A phase (60%). An upward shift also occurred from the end of the second A phase (50.8%) to the start of the second B phase (58.3%). A downward shift was evident between the last treatment session (61.7%) to the first retention session (52.5%).

The first intervention phase illustrated a small increasing tendency whereas the second A phase produced a large decreasing trend. The second intervention phase was stable while an increasing trend was shown in the retention phase.

Subject 6

Physical Practice / Relaxation / Self-Talk / Imagery (COM)

Goal Kicking Accuracy Performance

Subject 6 showed an increasing tendency in the baseline

with a range from 9 to 17 points and a mean of 13.25 points (Table 6, Figure 27).

The mean accuracy performance increased slightly from baseline (13.25 points) to the first intervention phase (15.75 points). Another small increase in the mean was evident in the second A phase (16.5 points). A relatively large increase in the mean was evident in the second B phase (24.25 points). The retention phase mean was maintained at 22.5 points.

Subject 6 exhibited a downward level shift from the last baseline session (17 points) to the first treatment session (11 points). A downward shift was also demonstrated from the end of the first intervention phase (19 points) to the start of the second A phase (12 points). A further downward shift took place between the end of the second A phase (21 points) and the start of the second B phase (16 points). A large downward level shift was evident from the last treatment session (24 points) to first retention session (11 points).

The first intervention phase revealed an increasing trend, as did the second A phase. An increasing trend was also illustrated in the second B phase from session thirteen (16 points) to fifteen (30 points). The retention phase exposed an increasing trend from session seventeen (11 points) to nineteen (29 points).

Goal Kicking Height Performance

Subject 6 showed an increasing tendency in the baseline with a range from 10 to 15 points and a mean of 12.25 points (Table 6, Figure 28).

The mean height performance increased slightly from baseline (12.25 points) to the first intervention phase (15.25 points). A small decrease was noted in the second A phase (14 points). A relatively large increase in the mean followed in the second B phase (26 points). The retention phase produced a small decrease to 23 points.

Level shifts were exposed between each experimental phase. A small downward shift was shown from the end of baseline (15 points) to the first treatment session (13 points). A further slight downward shift took place from the end of the first B phase (17 points) to the start of the second A phase (14 points). An upward level shift was revealed from the end of the second A phase (15 points) to the start of the second phase (21 points). A large downward shift occurred from the last treatment session (26 points) to first retention session (13 points).

Subject 6 displayed an increasing trend in the scores of the first intervention phase. Relatively stable performance was shown in the second A phase. An increasing tendency was in effect during the second B phase from session thirteen (21 points) to fifteen (30 points). An increasing trend was also evident in the retention phase.

Total Goal Kicking Performance

Subject 6 showed an increasing trend in the baseline with a range from 31 to 47 points and a mean of 37.75 points (Table 6, Figure 29).

An increase in the mean goal kicking performance was established from baseline (37.75 points) to the first intervention phase (46.25 points). A small decrease in the mean followed to 44.5 points. Upon reinstatement of the COM intervention, the mean increased to 76.75 points. The retention phase mean was 68.5 points.

Subject 6 displayed a downward level shift from the end of baseline (47 points) to the first treatment session (37 points). A further downward move followed between the end of the first B phase (53 points) and the start of the second A phase (40 points). A small upward level shift was displayed from the end of the second A phase (51 points) to the start of the second B phase (58 points). A large downward shift occurred between the final treatment session (78 points) and first retention session (37 points).

An increasing trend in performance was illustrated in the first intervention phase with stable scores being evident in the second A phase. The second B phase produced an increasing trend from session thirteen (58 points) to fifteen (90 points). The retention phase revealed an increasing tendency.

Level of Self-Efficacy

Subject 6 showed an increasing trend in the baseline with a range from 3 to 6 goals and a mean of 4.75 goals (Table 6, Figure 30).

A minute increase in the mean likelihood of successful goals occurred from baseline (4.75 goals) to the first intervention phase (5 goals). The second A phase produced a reduced mean of 3 goals. An increase in the mean took place in the second B phase to 4.25 goals. The retention phase mean increased further to 6.5 goals.

Subject 6 revealed a small downward level change from the end of baseline (6 goals) to the first treatment session (5 goals). A further downward shift was evident from the end of the first B phase (4 goals) to the start of the second A phase (2 goals). No level shift was in effect between the second A and B phases. A downward shift was apparent from the last treatment session (4 goals) to first retention session (2 goals).

A decreasing tendency was shown in the first intervention phase, with variable performance in the second A phase. The second B phase demonstrated an increasing trend from session thirteen (2 goals) to fifteen (6 goals). Stable scores were exhibited in the retention phase from sessions eighteen to twenty (8 goals).

Strength of Self-Efficacy

Subject 6 showed a relatively stable baseline with a

range from 43.3% to 47.5% and a mean of 45.6% (Table 6, Figure 31).

A small increase in the mean took place from baseline (45.6%) to the first intervention session (48.8%). A minute decrease followed in the second A phase to 48.4%. The second B phase mean increased slightly to 52.1%. The retention phase mean was 50.9%.

There was no level shift between the end of baseline and first treatment session. A small downward move was revealed from the end of the first B phase (48.3%) to the start of the second A phase (46.7%). A small upward shift occurred from the end of the second A phase (48.3%) to the start of the second B phase (50.8%). A downward level shift was revealed from the last treatment session (54.2%) to the first retention session (46.7%).

Relatively stable scores were shown in each baseline and intervention phase. The retention phase exposed a small increasing tendency.

Subject 7.

Physical Practice / Relaxation / Self-Talk / Imagery (COM)

Goal Kicking Accuracy Performance

Subject 7 exhibited a variable baseline with a range from 4 to 19 goals and a mean of 9.25 goals (Table 7, Figure 32).

A small increase in the mean was demonstrated from

baseline (9.25 points) to the first intervention phase (11.25 points). A decrease in the mean took place in the second A phase (9 points). The second B phase produced an increased mean of 15.5 points. The mean increased further in the retention phase to 22.25 points.

Subject 7 revealed a downward level shift from the end of baseline (19 points) to the first treatment session (13 points). A small downward shift took place from the end of the first B phase (14 points) to the start of the second A phase (12 points). Another downward move occurred from the end of the second A phase (13 points) to the beginning of the second B phase (8 points). A large downward shift was evident from the last treatment session (31 points) to first retention session (15 points).

Variable scores were displayed in the first intervention phase and the second A phase. An increasing trend was depicted in the second B phase from session fourteen (5 points) to sixteen (31 points). The retention phase also showed an increasing tendency.

Goal Kicking Height Performance

Subject 7 exhibited a variable baseline with a range from 2 to 17 points and a mean of 10.25 points (Table 7, Figure 33).

The mean goal kicking height performance increased from baseline (10.25 points) to the first intervention phase

(13.25 points). A decrease in the mean followed during the second A phase (9.25 points). There was a relatively large mean increase in the second B phase to 18.5 points. The retention mean also increased to 26.75 points.

There were no level shifts between either the baseline and the first B phase, or between the first intervention phase and the second A phase. A small downward shift occurred from the end of the second A phase (13 points) to the start of the second B phase (12 points). There was a large downward move from the last treatment session (27 points) to first retention session (17 points).

Subject 7 displayed a decreasing trend in the first intervention phase, followed by variable performance in the second A phase. An increasing tendency was illustrated in the second B phase and in the retention phase.

Total Goal Kicking Performance

Subject 7 showed a variable baseline with a range from 8 to 53 points and a mean of 29.75 points (Table 7, Figure 34).

There was an increase in the mean from baseline (29.75 points) to the first COM phase (37.75 points). A decrease in the mean followed in the second A phase (27.5 points). The second B phase produced a relatively large increase in the mean to 52.5 points. The mean increased further in the retention phase to 75.75 points.

Subject 7 demonstrated downward level shift from the

end of baseline (53 points) to the first treatment session (47 points). A minute downward move occurred from the end of the first B phase (38 points) to the start of the second A phase (36 points). There was an additional small downward shift from the end of the second A phase (39 points) to the start of the second B phase (32 points). A large downward level shift took place from the last treatment session (85 points) to first retention session (49 points).

Goal kicking performance showed a decreasing tendency in both the first intervention phase and second A phase. There were increasing tendencies in the second B phase and retention phase.

Level of Self-Efficacy

Subject 7 showed a slightly variable baseline with a range from 4 to 8 goals and a mean of 6.75 goals (Table 7, Figure 35).

The mean likelihood of a successful goal increased from baseline (6.75 goals) to the first intervention phase (8.25 goals). The mean decreased to 5.75 goals in the second A phase. There was a large increase to 10.75 goals in the second B phase. The retention mean was 9 goals.

Subject 7 demonstrated a small upward level shift from baseline (8 goals) to the first treatment session (9 goals). An upward move also occurred from the end of the first B phase (4 goals) to the second A phase (6 goals). A large upward level shift followed from the end of the second A

phase (5 goals) to the second B phase (9 goals). No change was in effect from the end of treatment to the retention phase.

Variable scores were displayed for both intervention phases and the second A phase. Stable scores were shown in the retention phase.

Strength of Self-Efficacy

Subject 7 showed a variable baseline with a range from 32.5% to 50% and a mean of 43.1% (Table 7, Figure 36).

There was an increase in strength of self-efficacy scores from baseline (43.1%) to the first intervention phase (51.9%). Another increase occurred in the second A phase (60.6%). The mean decreased to 44.8 % in the second B phase and rose slightly to 48.8% in the retention phase.

Subject 7 displayed an upward level shift from the end of baseline (44.2%) to the first treatment session (50.8%). An additional upward move took place from the end of the first B phase (53.3%) to the start of the second A phase (60.8%). A downward shift was evident from the end of the second A phase (66.7%) to the start of the second B phase (51.7%). Another downward level shift occurred from the last treatment session (52.5%) to first retention session (45%).

Relatively stable scores were produced in the initial intervention and second A phase, followed by variable scores in the second B phase and retention phase.

Subject 8. Control (C)

Goal Kicking Accuracy Performance

Subject 8 exhibited variable performance in the C phase with an increasing tendency and a range from 6 to 32 points (Table 8, Figure 37). The mean accuracy score was 14.5 points. The maintenance phase produced variable performance from 13 to 32 points while the mean increased to 20.75 points. There was an upward level shift between phases from 18 points at the end of the C phase to 24 points at the first treatment session.

Goal Kicking Height Performance

Subject 8 displayed variable performance in the C phase with an increasing tendency and a range from 6 to 36 points (Table 8, Figure 38). The mean height score was 15.25 points. The mean increased to 23.75 points in the maintenance phase. An upward level shift occurred from the end of control (18 points) to first treatment session (32 points). A decreasing tendency was evident in the maintenance phase.

Total Goal Kicking Performance

Subject 8 demonstrated variable goal kicking performance in the C phase with an increasing tendency and a range from 18 to 104 points (Table 8, Figure 39). The mean performance was 45 points. The mean increased to 68.25 points in the maintenance phase. An upward level shift took place from the end of the C phase (54 points) to first

treatment session (88 points). The maintenance phase produced variable performance scores.

Level of Self-Efficacy

Subject 8 produced variable level of self-efficacy scores with a range from 2 to 8 goals and a mean of 6.63 goals (Table 8, Figure 40). A decreasing trend was evident in session one (8 goals) to five (4 goals) but stable scores were established from session twelve to sixteen at 8 goals. No level shift occurred from C to the maintenance phase. The maintenance maintained stable scores with a mean of 8 goals.

Strength of Self-Efficacy

Subject 8 showed variable C scores with a small increasing tendency and a range from 22.5% to 52.5% (Table 8, Figure 41). The C phase mean was 39.6%. A minute downward level shift occurred from control (42.5%) to first treatment session (41.7%). The maintenance phase mean increased slightly to 44.2% and remained stable.

Subject 9. Control (C)

Goal Kicking Accuracy Performance

Subject 9 exhibited a variable C phase with an increasing tendency and range from 11 to 37 points (Table 9, Figure 42). The mean performance increased from control (22.69 points) to the maintenance phase (30.75 points). There was an upward level shift between control (24 points) and first treatment session (36 points). A decreasing

tendency was revealed in the maintenance phase.

Goal Kicking Height Performance

Subject 9 displayed a variable C phase with an increasing tendency and a range from 7 to 37 points (Table 9, Figure 43). The mean performance increased from control (24.13 points) to the maintenance phase (29.75 points). There was an upward level move from control (26 points) to first treatment session (36 points). A decreasing tendency was exposed in the maintenance phase.

Total Goal Kicking Performance

Subject 9 showed a variable control phase with an increasing tendency and a range from 25 to 111 points (Table 9, Figure 44). The mean performance increased from control (70.94 points) to 90.25 points in the maintenance phase. An upward level shift took place between control (76 points) and first treatment session (108 points). A decreasing tendency was illustrated in the maintenance phase.

Level of Self-Efficacy

Subject 9 showed relatively stable level of self-efficacy scores with a range from 4 to 12 goals and a mean of 8 goals (Table 9, Figure 45). The mean increased to 9 goals in the maintenance phase. There was no level shift from control to the maintenance phase, where stable scores were produced.

Strength of Self-Efficacy

Subject 9 exhibited an increasing trend in control with

a range from 55% in session one to 86.7% in session sixteen (Table 9, Figure 46). The mean increased from control (77.7%) to the maintenance phase (89.6%). A small downward level shift was evident from control (90%) to first treatment session (86.7%). Relatively stable scores were maintained in the maintenance phase.

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