Where should Training for Athletes Begin? Examining the Efficacy of Mental Training with Track and Field Athletes of the University of the West Indies, Mona Campus

Olivia Rose, University of the West Indies, Mona

Abstract: This research investigated the effect of a twelve-week mental skills training program to achieve optimal performance in competitions with athletes from the University of the West Indies, Mona Track and Field Team. The research design for this intervention included a two group pretest- post test true experiment in which track athletes were randomly assigned to either a group workshop focusing on mental preparation (control group; n = 10) or to the group workshop plus intensive individual sessions (treatment; n=10). All athletes were full-time students of the University of the West Indies, Mona between the ages of 18 and 25 years. The research examined how controlling anxiety-provoking situations and increasing positive mental energy through the use of psychological techniques affected the performance of athletes. Results showed that mental training of student athletes increased physical preparation and performance for sports competitions and other areas of their lives.

Keywords: mental training, sports psychology intervention, athletes

Introduction

It has been said that ‘winning is ten percent physical and ninety percent mental’. Even with this knowledge, many athletes seem to be unaware of the effectiveness of mental skills training and practice (Davies, 1995). Athletes usually train to improve their physical skills in order to enhance their performance during competitions.

Mental training is oftentimes overlooked without an understanding of how crucial it is in maximizing athletes’ potential. It would have been more understandable if less emphasis was placed on psychological preparation of athletes in decades before, but in the 21st century, this should no longer be. Nideffer (1976) believed that the psychological preparation of athletes was ignored because of the lack of psychological theories in the area of sports. In recent times, Ungerleider (2005) believes that mental training is now being included in many training programs for athletes and noted that athletes have even attested to the fact that they have won because they were both mentally and physically prepared.

The aim of this research is to find out the following: Is a sports psychology program effective in helping to improve mental training of track athletes in the Caribbean? To what extent are psychological techniques accepted and used in the preparation of UWI track and field athletes? And what impact does mental training have on the performance of track athletes during...
competitions? Finally, must this training be provided on an individual basis or can it be provided in group sessions? It is important to answer these questions because while the Caribbean is known to produce excellent track athletes, little or no information is known about the impact mental training has on the performance of Caribbean track athletes.

The argument surrounding this paper is based on the fact that sporting competitions induce an enormous amount of stress, anxiety and tension and under such circumstances some athletes fail to perform to their maximum potential. Therefore, designing and implementing a sports psychology intervention to help in the mental preparation of athletes should help them to better handle stress, anxiety and tension, and in turn improve their performance. This research will also help to form a theoretical and practical framework of the importance of mental training to athletes’ performance in the Caribbean context.

**Literature Review**

*Application of Cognitive Behavior Therapy and the Sports Psychology Intervention*

Cognitive Behavior Therapy (CBT) has been used successfully in a variety of areas, including in mental training programs for athletes. CBT focuses on techniques that reinforce positive behavior and weaken negative behavior in achieving a specific objective (Behncke, 2004). Cognitive Behavior Therapy attempts to help an individual to form specific ways to produce desired psychological states towards the accomplishment of their goals (Behncke, 2004). Cognitive Behavior Therapy has been used by sports psychologists to help their athletes to change their approach towards training and competition and to help them to improve their performance (Kirschenbaum & Bale, 1984; Steinberg, Chaffin & Singer, 1998).

Cognitive Behavior Therapy is a method that allows the athletes to change their negative attitudes about competitions and create an environment which makes it easier to practise other types of mental skills such as visualization, progressive relaxation and imagery (Behncke, 2004). The sports psychology intervention with the track and field athletes from the University of the West Indies was implemented based on the core principles of Cognitive Behavior Therapy.

While Cognitive Behavior Therapy can be very effective in helping athletes to achieve their goals, Kirschenbaum & Wittrock, (1984), believed that one of the essential problems of CBT is self-regulation. This means that efforts to change habits and transform attitudes towards a given situation rely strongly on the individual’s ability to control their own behavior (Behncke, 2004). A five-stage process of self-regulation of Cognitive Behavior Therapy proposed by Behncke (2004) to change behavior towards a given task was used as a guideline for this intervention. The stages include problem identification, commitment, execution, environmental management and generalization.

**Mental and Physical Preparation of Athletes**

Why do some athletes have the winning edge over others, even when they appear to engage in the same amount of physical training? What is it that they do differently from athletes who underperform during competitions? Mental and physical preparation are important areas to fully
equip the aspiring athlete to perform well in competitions. Most often, emphasis is placed solely on the physical aspects of training (Petras, 2008), however, the mental aspects of sport are also very essential. Most professional athletes feel that mental training is one of the main differences between winning and losing (Petras, 2008).

Athletes engage in physical training in order to improve their endurance (Kimball, as cited in Petras, 2008). Physical training allows the body to learn the correct execution skills while mental training teaches the mind to use strategies that can enhance the performance of an athlete (Kimball, as cited in Petras, 2008). Mental training is very effective in equipping athletes with the psychological techniques and abilities to manage their thinking and emotions, ultimately, leading to an increase in their performance (Kimball, as cited in Petras, 2008). Mental training should not be considered as a program to be implemented for weak or underperforming athletes. Instead, mental skills training should be used with professional and amateur athletes to help them to use their minds to consistently improve their performance (Kimball, as cited in Petras, 2008).

World records no longer take decades before they are broken, since athletes in the twenty-first century have been using more contemporary approaches to improve their performance, which now includes a combination of physical and mental training to help them to perform at their best. The field of sports psychology is relatively new and still evolving. Even with this being so, more athletes are still searching for qualified persons to teach them how to use practical techniques to deal with the stresses of competition and enhance performance (Petras, 2008). It is, therefore, not surprising that physical and mental training were very crucial components in the delivery of the sports psychology intervention with the UWI track athletes. Since more attention will be paid to athletes from the individual component of the intervention, the researcher hypothesises that these athletes will not only be more mentally prepared but also more physically prepared for competitions.

Anxiety and its impact on athletes’ performance

From time to time, athletes experience anxiety and nervousness, especially before competitions, that can impair their performance. The physiological reactions of athletes point to an increased flow of adrenaline under competitive, stressful states (Nideffer, 1976). It should be noted that the increases of adrenaline can cause some athletes to perform well and others to perform poorly in competitions. Nideffer (1976) conducted a study examining anxiety and performance and found that as anxiety increases, attention narrows. In other words, the more anxious an athlete becomes in competition, the lower will be his ability to focus and block out distractions. While this is the case for most athletes, there are also varying levels of optimal arousal for specific competitions. Anxiety can be a major problem for many sportspersons, especially those competing in individual sports (Davies, 1989).

Bearing this in mind, anxiety can help to increase or decrease the performance of athletes in competitions based on the level of anxiety required for that individual (Nideffer, 1976). High levels of anxiety can severely inhibit athletes’ ability to perform at their maximum potential in competitive sport (Davies, 1989). Yerkes and Dobson (1908) found that high levels of anxiety in athletes were associated with poor performance standards. The fear of failure is one of the main contributing factors for high levels of anxiety experienced by athletes in competitions (Nideffer,
Another contributing source for increased levels of anxiety of athletes is low self-efficacy (Nideffer, 1976).

In preparing athletes mentally for competitions, it is very important to consider practical ways to teach athletes how to reduce anxiety. One such method that has been proven effective in reducing anxiety of athletes is progressive relaxation. Progressive relaxation can help athletes to reduce anxiety and nervousness that they might encounter on the day of competitions. The stress-prone athlete must learn to relax in order to maximize their potential (Nideffer, 1976).

Developed by Edmund Jacobson in 1930’s, progressive relaxation is characterized by tensing and relaxing the muscle groups, and is typically accompanied by deep breathing exercises. It entails tensing a particular muscle group, maintaining the tension briefly, and then releasing the tension (Nideffer, 1976).

Progressive relaxation is a highly effective technique that has been used extensively to help athletes to deal with stress, tension, and worry (Davies, 1989). Relaxation can help to slow down panic reactions and enables the athlete to compete in a way that is more decisive, calm and controlled, especially in anxiety provoking situations (Davies, 1989). Progressive relaxation should be accompanied with other forms of stress management and practised repeatedly with anxious athletes until it becomes the automatic, dominant response in anxiety-provoking situations (Davies, 1989). Athletes who learn how to relax during stressful competitions are better able to practise imagery and visualization (Ungerleider, 1996).

High levels of anxiety can be reduced if athletes are mature and emotionally prepared (Davies, 1989). Both athletes from the treatment and control group received training in progressive relaxation. However, more training on the use of this technique was conducted with athletes from the treatment group. Based on the use of progressive relaxation in this intervention, it is hypothesized that athletes from the treatment group will be more relaxed than athletes from the control group.

Self-efficacy and its impact on athletic performance

It was Henry Ford who said, “Whether you believe you can do a thing or not, you are right.” Believing in one’s ability to execute a task usually makes the difference between success and failure. Bandura (1977) defined self-efficacy as one’s belief in being able to execute a specific task successfully. For example, believing that one can run a time of 10.1 in a 100-metre race, in order to obtain a certain outcome, such as self-satisfaction, whether it is a medal or the coach’s recognition. Self-efficacy beliefs are opinions of what one can accomplish with the skills and resources that they have (Bandura, 1986).

Bandura (1986) used these models to demonstrate how a person’s belief can influence how well they accomplish a specific task. Self-efficacy and confidence is developed when athletes are allowed to model the behavior of a competent, confident competitor with a positive attitude performing under stressful situations (Davies, 1995). It is very important to ensure that athletes believe in their ability to perform well in competitions because self-efficacy is pivotal for peak performance for athletes (Bandura, 1986).
Martin and Hrycaiko (1983) purposed that effective coaching helps to improve the performance of athletes through verbal instructions, demonstrations, role-playing and corrective feedback. This coaching approach, Bandura (1977) believed, increases self-efficacy, which in turn increases the skill and motivation of athletes. Past performance in competitions exposes athletes to personal successes and failures and gives them the opportunity to be more aware of their capabilities in achieving consistent outcomes (Nideffer, 1976). Positive affirmation and positive evaluative feedback by significant others have been found to be some of the ways of boosting self-efficacy in young athletes especially after a loss (Feltz & Lirgg, 1998). Mills, Munroe, and Hall, (2001) conducted a study examining the relationship between imagery and self-efficacy in competitive athletes and found that athletes who were high in self-efficacy in competition had a tendency to use more positive imagery than athletes who were low in self-efficacy.

Although coaching styles are different and vary from individual to individual, coaches play a pivotal role in boosting athletes’ belief in their abilities (Bandura, 1997). Coaches help athletes to believe in themselves, provide corrective feedback and model confidence (Bandura, 1997).

Based on self-efficacy literature, the researcher hypothesized that athletes from the treatment group will have a higher belief in their ability to perform well in competitions, because they were constantly encouraged by the researcher that they should believe in themselves and that they can achieve their goals. They were also sent individual inspirational messages encouraging them to believe in their own abilities to perform well in competitions.

Concentration and its impact on athletes’ performance during competitions

Competitions are usually stressful environments which decrease the athlete’s ability to attend to what is most important (Nideffer, 1976). Concentration refers to the ability to focus on the relevant stimuli by totally excluding all irrelevant stimuli (Davies, 1989). Concentration is one of the principal determinants of performance. Mistakes as a result of the lack of focus are more easily identified in sports than any other area (Nideffer & Bond, 1998). The ability to concentrate completely on a particular performance during competitions is extremely important for peak performance in any sport (Davies, 1989).

Nideffer (1976) pointed out the importance of individual differences in response to stressful situations, noting that all athletes do not respond to stress with the same level of anxiety and arousal. However, most athletes experience physical changes during competitions which frequently increase frustration, narrow attention and reduce concentration (Nideffer, 1976).

Nideffer & Bond, (1998) conducted a research with elite athletes from the United States, Canada, Brazil, South Africa, France, Italy, Spain, and Australia who competed in a wide range of different sports. They measured the athletes’ ability to focus and follow through (NAR inventory) with record holders. Nideffer & Bond, (1998) found that high-level performers were able to successfully compete in situations which required them to use their main concentration skills. Results from their analyses showed that unless athletes have the ability to focus and follow through, they will not be able to maximize their true potential.
Concentration in athletics does not work in isolation of other mental techniques, for example, controlled breathing, which is very important for an athlete to stay focused (Ungerleider, 1996). Uncontrolled breathing, even under favourable circumstances, might cause the athlete to become fatigued and overly aroused in that they lose their ability to focus and end up underperforming (Ungerleider, 1996). Concentration can help to reduce physical discomfort from tense and tired muscles (Davies, 1989). Some things that might appear unimportant can serve as major distractions for the competing athlete. Travelling, equipment, gears and lodging arrangements should be organized ahead of competitions to limit distractions and improve concentration (Ungerleider, 1996). The hypothesis based on this area of the research is that athletes from the treatment group will be less able to block out distractions during competitions than athletes from the control group because of the level of anxiety and stress that they will encounter during competitions.

Goal Setting and the impact on athletes’ performance

Setting specific, measurable, attainable, realistic and time-bound goals is a process that allows individuals to work towards achieving their objectives in all areas of life, and sports is no exception. “Goals provide direction and purpose” (Goldstein, 1993, p. 36), goal commitment, feedback and task complexity are three components which Locke and Latham (2002) believe are crucial in setting goals. Ungerleider (1996) believed that one of the main ground rules of mental practice for athletes is setting goals. Athletes should decide what they want to accomplish and plan their training accordingly.

The goals that athletes set should be centred on improving performance which is more internally than externally driven (Weinberg, 1984; Martens, 1987; Rushall, 1992). Goals help to facilitate intrinsic motivation in athletes, giving the athlete a more objective perspective of themselves. When athletes are intrinsically stimulated it helps to decrease their self-centred propensities so that they can monitor their performance at various events and aid in their own self-development (Dishman, 1984). In this way, athletes not only set goals to outperform their opponents but also to achieve their personal best or break records. Burton (1989) believed that setting goals focused on external rewards such as winning or losing have been found to be a source of great stress and anxiety because of the irregularity of external situations.

Monsma (2007) believed that athletes should make goals that are specific, measurable with a precise time line. For example, goals may be set to be achieved by the end of the week, by the end of the month or by the end of the season in which the goal will be achieved. Goals should be moderately difficult because such goals motivate athletes to extend themselves and are more satisfying when they are achieved (Monsma, 2007). Goals are futile if forgotten and should be written whenever possible (Monsma, 2007), according to the process, performance and outcome that the individual wants to achieve (Monsma, 2007).

Athletes should set goals that they would like to realize not only in competitions but also at practices (Monsma, 2007). Goals should be set in a positive rather than negative direction. For example, a goal should be set to increase rather than reduce a certain objective. The goals athletes set should be known by significant others so that they can help to ensure that they
achieve their objectives. Most important, athletes should set their own goals (Monsma, 2007). High levels of perceived self-efficacy correlate with athletes being motivated and implementing strategies to achieve their goals (Motovidio & Bobko, 1986). Goals should be accepted and internalized by the athlete (Monsma, 2007). For the purpose of this paper, the researcher hypothesizes that athletes from the treatment group will use goal setting more than athletes from the control group because of the emphasis that will be placed on working towards achieving their goals.

**Visualization and its effectiveness on athletic performance**

“The body achieves what the mind believes.” Sometimes in order to achieve great things you have to first envision it from your mind’s eye. Visualization allows athletes to practise their performance many times before the actual event (Wexler, 1995) by creating a mental map of an event before it actually happens.

Athletes can engage in practice and competition visualization techniques. The practice visualization allows athletes to imagine how they would go through a typical track and field practice, including warming up, running and jumping so that they can visualize themselves having a productive and successful practice (Wexler, 1995). The competition visualization offers athletes the opportunity to see themselves in many different competition scenarios, such as hearing the crowds, seeing their opponents, getting comfortable in new venues, reacting to different situations (Wexler, 1995).

Visualization as a mental preparation strategy has several advantages, which include tailoring situations to meet the particular needs of athletes in terms of time and available resources (Davies, 1989). Relaxation is irreconcilable with anxiety. Therefore, using a combination of visualization and relaxation for stressful encounters allows the athlete to learn a new association (Davies, 1989). In other words instead of the athlete visualizing that at competitions they will become anxious and underperform, they can now mentally rehearse prior to the event and on the actual competition be controlled and calm. Based on the intensive training that the treatment group will receive, the researcher hypothesizes that athletes from the treatment group will use visualization more than athletes from the control group.

**The Individual Component of the Program**

The individual component of the sports psychology program included ten randomly assigned athletes from the treatment group of the mental skills training intervention. The athletes in the individual component of the program received individual sessions which lasted for one hour over a five-week period. In addition to the one-hour individual sessions, the athletes from the individual component also attended eight mental skills training seminars that lasted over a twelve week period. The individual component of the program was hypothesized to be more effective than the group sessions because of the intensive mental training and rehearsal of each component that was administered in the sports psychology intervention. More attention, follow-up and feedback were given to the athletes from the individual component of the program and based on this premise, it was expected that athletes from the treatment group would utilize visualization,
concentration, self-efficacy, goal setting and progressive relaxation techniques more than the athletes from the control group.

**Hypotheses**

This research seeks to explore the effectiveness of using a combination of psychological techniques on athletes from the University of the West Indies. Specifically, it is hypothesised that:

Hypothesis 1: Athletes from the treatment group will be more physically prepared than athletes from the control group.

Hypothesis 2: Athletes from the treatment group will experience less anxiety during competitions than the control group.

Hypothesis 3: Athletes from the treatment group will have a higher belief in their ability to perform well during competitions than the control group.

Hypothesis 4: Athletes from the treatment group will be less able to block out distractions during competitions than athletes from the control group.

Hypothesis 5: Athletes from the treatment group will use goal setting more than athletes from the control group.

Hypothesis 6: Athletes from the treatment group will use visualization more often than athletes from the control group.

**Method**

**Participants**

This research included all twenty members of the track and field team from the University of the West Indies, Mona Campus. The sample comprised of 10 males and 10 female athletes. The athletes for this study were between the ages of 18 and 25 years old. The track and field athletes who participated in this research were full-time undergraduate students from the faculties of Humanities and Education, Social Sciences, Medical Sciences and Pure and Applied Sciences. The sample included athletes from St. Lucia, Trinidad and Tobago and Jamaica.

**Research design**

The research design used for this study was a pretest-post test two-group true experiment. The athletes who participated in this study were randomly assigned either to the treatment or to the control group (minimal treatment group) using a table of random numbers. An equal number of male and female students were assigned to both the treatment and control groups.

At the start of the study, athletes were given a consent form outlining that their participation was voluntary and that they could withdraw from the study at anytime. The consent form also
described the content of the mental skills training program as well as assured athletes that participation in the study would have no harmful effects.

Measures

A battery of six simple psychological measures was administered to the control and treatment groups before and after the intervention. These measures included: the Physical Preparation Scale, the Comrey and Costello Anxiety Scale, the Physical Self-Efficacy Scale, the concentration scale, the goal setting scale and the visualization scale.

Physical Preparation Scale. The Physical Preparation Scale measured the athletes’ perception of how physically prepared they felt before competitions. The Physical Preparation Scale was a five item scale. The scale was a five-point intensity scale, ranging from 1: strongly disagree to 5: strongly agree. After the item analysis was conducted three items were deleted leaving only two items. The two items were: I feel physically prepared for a competition; and my coach helps me with my physical preparation. The Physical Preparation Scale had an acceptable degree of internal consistency reliable with alpha of .84.

Comrey and Costello Anxiety Scale. The Comrey and Costello Anxiety Scale (1967) is a nine (9) item scale which measures people’s predisposition to develop anxious emotional states. The scale was a five-point intensity scale, ranging from 1: strongly disagree to 5: strongly agree. Some of the items include: I get nervous easily, I am a tense and jittery person and my hand shakes when I try to do something. The Comrey and Costello anxiety scale has a moderate test-retest reliability of .72.

Physical Self-Efficacy Scale. The Physical Self-Efficacy Scale (Ryckman & Robins, (1982) is a seventeen-item scale which measures athletes’ perceived physical competence. Specifically, it assesses people’s belief about their ability to execute a task based on their cognitive, affective and behavioral patterns. Some of the items included: I can usually handle whatever comes my way, I can’t run fast, and my physique is rather strong. The Physical Self-Efficacy scale has a high internal consistency with an alpha of .80. The Physical Self-Efficacy Scale has an acceptable level of concurrent validity as reflected by its correlation to the Tennessee Physical Self-Concept Scale (r=.73) and the Texas Social Behaviour Inventory (r=.60).

Concentration scale. The concentration scale measured athletes’ perceptions of their ability to focus on their events and to block out distractions before and during competitions. The scale was a five-point intensity scale, ranging from 1: strongly disagree to 5: strongly agree. An item analysis was done on the initial scale of six (6) items. After the item analysis was conducted three items were deleted leaving only three items. The items included: I can block out distractions easily, I can solve most problems if I am focused and I am not easily distracted. The concentration scale had a low level of reliability with an alpha of .52.

Goal setting scale. The goal setting scale was initially a ten item scale that measured athletes’ ability to set realistic, specific, measurable, attainable and time-bound goals as well as the support and necessary resources available in order to achieve athletic goals. The scale was a five-point intensity scale, ranging from 1: strongly disagree to 5: strongly agree. An item analysis
was conducted and five items were deleted with five (5) remaining. The items included: I make my own goals, I work hard to achieve my goals, when I have a goal I am able to monitor my progress towards my goal, the goal I set for myself helps me to improve my performance and my coach helps me to achieve my goals. The goal setting scale had an acceptable degree of internal consistency with an alpha of .80.

Visualization scale. The visualization scale measured athletes’ ability to mentally rehearse their competitions before the event. The visualization scale was initially a seven item scale which became a four item scale after an item analysis was conducted. The scale was a five-point intensity scale, ranging from 1: strongly disagree to 5: strongly agree. The items that remained included: I see myself finishing the race ahead of all my opponents, I see myself achieving my personal best, I visualize hearing my anthem and seeing my flag being raised at the Olympics and I see myself holding a world record one day. The visualization scale had an acceptable degree of internal consistency reliability with an alpha of .70.

Procedure

Implementation of the mental skills training seminars

The mental training program was delivered through group sessions or through a combination of group and individual sessions over a twelve-week period. The control (minimal intervention) group received only the group sessions while the treatment group received both the group and individual sessions. The group sessions lasted for two and a half hours and included both the athletes from the treatment and control groups. The group sessions were interactive and allowed the athletes to find practical ways in which they could practise the techniques that they learnt. Handouts with a summary of the various psychological techniques with simple exercises were provided at the end of each session. Athletes were provided with a healthy meal at the end of each group session.

Participants in the treatment group received five individual sessions which lasted for one hour each, in addition to the group sessions. The individual sessions included extensive training and follow-ups on how to use progressive relaxation, goal setting, visualization, positive self-talk, self-efficacy and concentration to help to improve their goals. The individual sessions were conducted in a quiet room with comfortable chairs at a mutually convenient time for the athletes.

Data collection

A package of scales, formatted into a questionnaire, was administered just prior to and just after the intervention to both the treatment and control groups. All participants in the intervention, both treatment and control, were assembled into a central room and the package of scales handed out to them. Athletes were allowed 45 minutes to complete the package of scales. At the end of the session, the package of scales was collected by research assistants and the researcher.

The hypotheses for the sports psychology intervention with the UWI track athletes were as follows:

H1: After the program there will be an increase in the use of all psychological techniques by the athletes who participated in the sports psychology intervention.
H2: Athletes from the individual component will use the psychological techniques more than athletes from the group sessions.

Results

Overview
The overall impact of the mental skills training intervention, collapsing across treatment and control groups, will be presented first. The results indicated that the program was successful in visualization, progressive relaxation and concentration. Following this, the added impact of the individual sessions will be presented. In general, the addition of the individual sessions produced athletes who were able to apply some of these techniques in other areas of their lives.

The general changes for the sports psychology intervention were an overall increase in the mental preparation of the track and field athletes who participated in this program.

Overall impact of the intervention
Participation in the mental skills intervention appeared to have some positive effects. Following the intervention athletes experienced increases in visualization, concentration and progressive relaxation and decreases in goal setting and self-efficacy (Table I).

Results of the hierarchical regression analysis indicated that athletes experienced a slight, non-significant drop in their levels of anxiety ($\beta = .31, p < .05$) following participation in the mental skills training sessions.

Results of the hierarchical regression analysis indicated that athletes experienced a slight, non-significant increase in their levels of concentration ($\beta = .07, p < .05$) following participation in the mental skills training sessions.

Results of the hierarchical regression analysis indicated that athletes experienced a slight, non-significant increase in their levels of visualization ($\beta = .15, p < .05$) following participation in the mental skills training sessions.

Results of the hierarchical regression analysis indicated that athletes experienced a statistically significant decrease in their use of goal setting technique ($\beta = .39, p < .05$) following participation in the mental skills training sessions.

Results of the hierarchical regression analysis indicated that athletes experienced a slight, non-significant decrease in their levels of self-efficacy ($\beta = .12, p < .05$) following participation in the mental skills training sessions.

Impact of individual sessions

The second set of analyses examined the incremental benefits of providing individual training over group training in mental skills preparation. The results of several regression analyses indicated that some aspects of the individual component were more effective than other areas.
Only three components from the program, visualization, progressive relaxation and concentration were used more by athletes from the individual component of the intervention.

Hypothesis 1: The first hypothesis predicted that athletes who received individual sessions in addition to the group sessions would be more physically prepared for competitions than athletes who only received group sessions. Results of the hierarchical regression analysis indicated that there was a significant difference between the treatment group and the control groups in physical preparation at the end of the sports psychology program. \( \Delta R^2 = .23, F(1,17)=5.18, p < .05 \). Examining the regression coefficient it appears that the athletes from the treatment group were more physically prepared than athletes from the control group. (Table 2; \( \beta = 1.81, t(17)= 2.28, p < .05 \)). See table II.

Hypothesis 2: The second hypothesis predicted that athletes who received individual and group sessions would be less anxious for competitions than athletes who only received group sessions. The results of the hierarchical regression analysis indicated no statistically significant difference between the treatment group and the control groups in anxiety at the end of the sports psychology program. (Table 3, \( \Delta R^2 = .08, F(1,17)=1.56, p > .05 \)). See table III. Examining the regression coefficients, it appears that athletes from the treatment group were more anxious than athletes from the control group. (\( \beta = 1.40, t(17)= 1.25, p > .05 \)).

Hypothesis 3: The third hypothesis predicted that athletes who received individual and group sessions would have a higher belief in their own ability to perform well during competitions than athletes who only received group sessions. Results of the hierarchical regression analysis indicated that the treatment and the control groups were not significantly different in levels of self-efficacy (Table 4, \( \Delta R^2 = .04, F(1,17)=.75, p > .05 \)). Examining the regression coefficients it appears that the athletes from the treatment group believed less in their ability to perform well in competitions than athletes from the control group. (\( \beta = -1.76, t(17)= -.87, p > .05 \)).

Hypothesis 4: The fourth hypothesis predicted that athletes who received individual sessions would be less able to block out distractions during competitions than athletes who only received group sessions. Results of the hierarchical regression analysis indicated that the change in concentration between the treatment and the control groups was not statistically significant. (Table 5, \( \Delta R^2 = .10, F(1,17)=1.79, p > .05 \)). Examining the regression coefficients it appears that the athletes from the treatment group were better able to block out distractions during competitions than athletes from the control group. (\( \beta = .86, t(17)= 1.34, p > .05 \)). See table V.

Hypothesis 5: The fifth hypothesis predicted that athletes from the treatment group will use goal setting more than athletes from the control group. The results of the hierarchical regression analysis indicated no statistically significant difference in goal setting between the treatment group and the control group at the end of the sports psychology program. (Table 6, \( \Delta R^2 = .00, F(1,17)=.02, p > .05 \)). Examining the regression coefficients it appears that the athletes from the treatment group used goal setting less than athletes in the control group to improve their performance. (\( \beta = .24 t(17)= .13, p > .05 \)). See table VI.
Hypothesis 6. The final hypothesis predicted that athletes who received individual and group sessions would use visualization more than athletes who only received group sessions. The results of the hierarchical regression analyses indicated a non-significant change in the use of visualization among the athletes at the end of the sports psychology program. (Table 7. $\Delta R^2=.01$, $F(1, 17)=.12$, $p > .05$). Examining the regression coefficient, it appears that athletes from the treatment group used goal setting to improve their performance less than athletes in the control group. ($\beta = .58$, $t(17)= .35$, $p > .05$). See table VII.

Discussion

The purpose of this research was to examine the outcome of the use of visualization, goal setting, self-efficacy, concentration, anxiety, physical preparation and progressive relaxation in the training program of the track and field athletes of the University of the West Indies. At the end of the intervention, there was an increase in the use of concentration, visualization and progressive relaxation among the track and field athletes who participated in this intervention. There was a slight decrease in self-efficacy and goal setting of the track and field athletes towards the end of the intervention.

Progressive Relaxation

It was not surprising that athletes reported a decline in levels of anxiety as they learned simple and practical ways in which they could relax themselves before and during competitions. They were also encouraged to practise these techniques in their free time, in addition to during the workshops. Davies (1989) reported that high levels of anxiety can severely impair athletes’ ability to perform at their best in competitive sport.

Ungerleider (1996) also proposed that controlled breathing is very important for an athlete to stay focused. Given this fact, the athletes were continually reminded and encouraged to practise how to progressively relax different muscle groups in their bodies so that they could improve their performance in competitions. When athletes are relaxed they can think more clearly, deal with stress more effectively and compete in a more decisive, calm and controlled manner (Davies, 1989). Considering that progressive relaxation helps athletes to utilize other psychological techniques, it explains why there was an increase in the use of concentration and visualization by the track and field athletes by the end of this intervention.

Visualization

It is also not surprising that the results showed that the athletes increased their use of visualization to help them to improve their performance in competitions. Ungerleider (1986) found that athletes who learn how to relax during competitions were better able to practise imagery and visualization. This suggests that there may be a relationship between progressive relaxation and visualization. Visualization may allow athletes to practise their performance many times before the actual event (Wexler, 1995). The results from this research support Davies’ (1989) who reported that using a combination of visualization and relaxation for stressful encounters may allow athletes to learn how to embrace competitions with a more positive attitude.
It is possible that the athletes in this research used visualization to help them to mentally correct and control anxiety provoking situations before competitions. This reduction in anxiety may have prevented the athletes from underperforming. Having mentally practised these corrections, it seemed as if the athletes were able to use this technique to improve their performance. Athletes from the treatment group used visualization more than athletes from the control group, which can be explained by the intense practise and rehearsal of this technique by the athletes from the treatment group.

The results also showed that by the end of the intervention, athletes were better able to focus and control distractions during competitions. This meant that their ability to concentrate during events had increased and could also be explained by the fact that they were less anxious and used visualization more. This can also be explained by Cognitive Behavior Therapy which allows the athletes to change their negative perceptions and conceptions about competitions and create an environment which makes it easier to practise other forms of mental skills, such as visualization, progressive relaxation and imagery (Behncke, 2004).

Goal setting decreased by the end of the intervention

Neither increases in goal setting nor self-efficacy occurred following the mental skills intervention. In fact, the opposite occurred – statistically significant decreases in goal setting occurred following the intervention. While there was a general decrease in the use of goal setting following the intervention, it should be noted that the goal setting scale measured how realistic athletes’ goals were, the amount of support athletes received and the amount of resources available to accomplish the goals.

Consequently, it is possible that the measure of goal-setting did not accurately measure the changes the program was designed to bring about. Alternatively, it is possible that goal setting could have decreased because athletes’ goals before the intervention were unrealistic, given their ability, their support and the availability of resources. However, a more favourable picture was produced for the individual sessions. In comparison to athletes who received only the group sessions, those who receive both the group and individual sessions showed some, small, statistically non-significant increases in the use of goal setting. Based on the fact that athletes from the treatment group were taught how to set progressively challenging goals, given visual reminders of their goals and constantly encouraged to achieve their goals it was expected that there would have been an increased in the use of this technique by athletes from the individual component of the program.

Self-efficacy decreased by the end of the intervention

One possible explanation could have been that in the pre-test phase of the intervention, athletes might have had false ideas or exaggerated beliefs in their abilities to perform well in competitions. Being able to realistically measure their ability from their past performance at the various competitions could explain why athletes’ self-efficacy decreased by the end of the intervention. If athletes did not perform well in their previous competitions, this poor performance may also impact athletes’ belief that they would perform well in a future competition. Past performance in competitions exposes athletes to personal successes and
failures. It gives them the opportunity to be more aware of their capabilities in achieving consistent outcomes (Nideffer, 1976). In such instances, self-efficacy could also be increased with feedback from the coach, however, after effective performances, supportive praises were often unforthcoming from the team coach.

According to Martin and Hrycaiko (1983) the main characteristics of effective coaching are the use of verbal instructions, demonstrations, role-playing and corrective feedback. This coaching approach (Bandura, 1977) is thought to increase self-efficacy that in turn may lead to enhanced skill and motivation. Past research (Feltz & Lirgg, 1998) suggests that positive affirmation and positive evaluative feedback by significant others can boost self-efficacy in young athletes, especially after a loss.

Bandura (1997) noted that athletes should understand the situational nature of performance, such that different occasions mean different determinants, in perceived self-efficacy, goal aspirations, expected outcomes and perceived constraints. This could explain why athletes’ goal setting and self-efficacy did not increase by the end of the intervention. As there may be a correlation between goal setting and self-efficacy, it is possible that unrealistic goals could have reduced athletes’ self-efficacy. It should also be noted that although increased self-efficacy is usually correlated with improved performance, it should not be generalized to all circumstances. Even though the results showed that there was a decrease in self-efficacy by the end of the intervention, some athletes achieved their personal best and even surprised themselves regarding their own ability to do well in competitions.

Low self-efficacy by the end of the intervention did not seem to impair performance of athletes during competitions and seems to have been mostly attributable to lack of appropriate feedback from the coach. Cognitive Behavior Therapy requires that careful consideration be given to the athlete’s environment, support networks associated with attaining his or her desired goal and the coach, services and facilities provided by management, which would help to provide a psychologically and physiologically secured environment for the athletes (Behncke, 2004). As stated above, oftentimes support from the coach was not available, which might again account for the decrease in self-efficacy among the athletes from the individual component.

Results of the evaluation suggest that the group administered mental skills training did have some positive effects on athletes. However, it appears that the individual interventions did not significantly improve athletes’ achievement of the program’s goals. Instead, it appears that the workshops were very potent in achieving the short-term goals of the intervention. One possible explanation for the absence of a substantial effect for the individual sessions is that the control group was less exposed to stressful and anxiety-provoking situations, since they did not always participate in competitions at various track meets the team attended. The researcher predicted that the individual component would have been very effective in this sports psychology intervention since track and field is a highly individualistic sport. However, towards the end of the intervention the athletes reported that a team spirit was created. This effect may have swamped the possible impact of the individual sessions.
Physical Preparation

The results from the sports psychology intervention indicated that athletes from the treatment group were more physically prepared than athletes from the control group. This difference was statistically significant. It is not surprising that the results indicated that athletes from the individual component of the intervention were more physically prepared because they were constantly reminded and encouraged to attend physical training more than athletes from the control group. It is also possible that the athletes from the treatment group understood the importance of physical training more than the control group since they competed in more events and used physical training to improve their performance and build endurance. Kimball (as cited in Petras, 2008) also believed that athletes engage in physical training in order to improve their endurance and that physical training allows the body to learn the correct execution skills, while mental training teaches the mind to use strategies that can enhance the performance of an athlete. The results on physical preparation support the hypothesis that athletes from the treatment group would be more physically prepared than athletes from the control group.

The results from this research showed that by the end of the intervention, athletes from the treatment group (individual component) were more anxious for competitions than athletes from the control group. This can be explained by the fact that more athletes from the treatment group participated in more competitions exposing them to more anxiety provoking situations than athletes from the control group. The results on anxiety should not be interpreted to indicate that the individual sessions on progressive relaxation were not effective.

The results on self-efficacy indicated that there was a non-significant reduction in self-efficacy for athletes from the treatment group by the end of the intervention. These results could have been attributed to the fact that the athletes from the treatment group competed in more events and possibly used their past performance to determine their belief in their capabilities. Bandura (1977) believed that self-efficacy of athletes can be increased with positive affirmation and evaluative feedback from significant others even when performance was not good. While this approach might have helped to improve the athletes’ self-efficacy in competitions, it was often never used by the coach.

Interestingly, the results also indicated that self-efficacy for the athletes in the control group increased. This could again be as a result of the fact that most of the athletes from the control group competed in fewer events and therefore were less able to measure their self-efficacy based on past performance. Therefore, a sensible deduction based on the findings could be that one’s belief in his or her capabilities to perform well can be extremely high, moderately high or even unrealistic until it is actually tested in a competition. The results on self-efficacy did not support the hypothesis that athletes from the treatment group would have higher self-efficacy towards the end of the intervention than athletes from the control group.

Concentration

The results indicated that athletes from the treatment group were slightly, but not significantly better able to concentrate on their events than athletes from the control group. It can be speculated that being able to focus and control distractions seemed to have allowed the athletes
from the treatment group to be better able to reduce discomfort and tension from tired muscles (Davies, 1989). Increased concentration might also have helped to explain how athletes from the treatment group were able to perform well and even achieve their personal bests at the different events. The ability to concentrate completely on a particular performance during competitions is extremely important for peak performance (Davies, 1989). These results did not support the hypothesis that athletes from the treatment group would be less able to concentrate during competitions than athletes from the control group. This might be attributable to the fact that the athletes from the treatment group received extensive training on how to focus and control distractions during competitions.

**Goal setting**

The results indicated that there was a small, statistically significant increase in the use of goal setting by athletes from the control group at the end of the intervention. These results should not be interpreted as negative findings since the measure of goal setting did not focus on actual goal attainment but on availability of resources, support towards the goal and how realistic the goals were. Athletes participating in the sports psychology intervention sometimes did not have sufficient support, especially in terms of resources available to help them in achieving their goals. However, goal setting is a very important strategy that can allow athletes to decide what they want to accomplish and plan their training accordingly (Ungerleider, 1996), even though this strategy was not strongly embraced by the athletes from the treatment group.

The results did not support the hypothesis that athletes from the treatment group will use goal setting more than athletes from the control group. Considering that the treatment group competed in more competitions this might have explained why there was a decrease in the use of goal setting, because they had the opportunity to actually measure how realistic and attainable their goals were in comparison to the control group, which competed in fewer competitions.

**Visualization**

The results indicated that athletes in the treatment group slightly, but not significantly, used more visualization than athletes in the control group by the end of the sports psychology intervention. This could have been explained by the fact that athletes were constantly reminded and encouraged to practise this technique frequently before competitions. Visualization allowed athletes to reduce anxiety (Davies, 1989) which could also explain why anxiety decreased by the end of the intervention. Visualization might have been used to help athletes to concentrate better and even improve their performance on the actual events.

The results support the hypothesis that athletes from the treatment group will use visualization more than athletes from the control group. A possible explanation which might account for the treatment group using visualization more than the athletes from the control group could have been attributed to the fact that they were sometimes made aware of the competitions that they would be competing in a week before the actual event. Being privy to this information, allowed the mental trainer the opportunity to help them to rehearse their events several times before they actually competed. Based on this reason, it is not alarming that the athletes from the treatment group used visualization more than the athletes from the control group.
Limitations

The implementation of the sports psychology intervention seemed to have worked better with some techniques than others. There are a few factors which could further explain why this was the case, including the fact that only quantitative methods were used. Using a combination of quantitative and qualitative methods could have produced results which might have shown that the program was very effective in helping the athletes to prepare for competitions.

Although athletes were randomly assigned based on gender for the treatment and control groups, they were not randomly assigned based on ability and performance. Consequently, most of the athletes from the treatment group were ‘superior’ athletes of the team.

Recommendations

Based on the limitations mentioned above, it is recommended that a larger sample size with a true comparison group using a combination of qualitative and quantitative methods be used in future research. It is also recommended that objective measures of athletes’ track performance should be measured before and after the intervention. Athletes should be followed up for a longer period of time in order to truly measure the efficacy of the mental skills training and athletes’ performance in the future. Finally, greater resources should be provided for the psychological preparation of the athletes from the University of the West Indies, Mona Campus.

Conclusion

Psychological training of athletes can make an important impact on athletes’ performance and preparation for competition. Mental skills training intervention based on the Cognitive Behavior Therapy model have produced noticeable changes in the athletes’ behavior and attitudes towards competitions. The results from this intervention indicated that the individual component of the program was very effective with the use of progressive relaxation, visualization and concentration than group sessions.

The research aimed at finding out the extent to which psychological techniques would be accepted and used in the preparation of UWI track athletes. The results of the sports psychology intervention showed that all techniques introduced were used by the athletes to help them to mentally prepare for competitions. Based on the findings, the group administered sessions seemed to have been very effective in the mental training program offered to the athletes and it would be safe to conclude that the individual component of the program could be removed.

More than half of the program’s short-term goals were achieved. These included a reduction in anxiety of athletes before competitions, increase in mental concentration, increase in self monitoring and increase in the use of visualization. However, three months is a short time to accurately measure long-term change and, therefore, sufficient time has not yet passed to conclude that the program achieved its long-term goal of increasing mental skills preparation of the track and field athletes of the University of the West Indies. However, due to the small sample size and short time of implementation these findings should not be generalized.
Appendix A

Testimonials from some of the student athlete who participated in the Sports Psychology Intervention

“The Mental skills workshop hosted by Olivia Rose is one of the best things I have ever experienced in my life. It is amazing how after a few weeks a person's belief in himself can be completely transformed from doubtful to confident. Sometimes in life all a person needs is somebody to tell them that they can; that is exactly what the workshops did for me. It highlighted the fact that I can achieve what my mind can perceive. After going through goal setting, positive self talk, visualization, concentration, progressive relaxation, self efficacy with Ms. Olivia Rose I started believing in myself and was therefore able to win a goal medal at the UWI intramural sports day. I would recommend Ms. Rose to work with the Asafa and Veronica Campbell in Jamaica because of how persistent she was in equipping the members of the UWI track team with the confidence they needed to go out and compete. This nation is known for producing the best athletes Ms. Rose's contribution will only enhance the best becoming even better. This workshop has also facilitated me becoming a more composed individual, I am not nervous for races, nor big events in my life, I am ready to conquer the world.”

Anonymous Athlete

“When you introduced me to positive self talk it literally changed my life. I must say that I have known about the concept of “positive thinking equals to positive outcomes” but never truly believed it. In the seminars where you explained the process really opened my eyes and I must say thanks. I will reiterate sentiments I heard from a fellow team mates that you Olivia Rose is the best thing to happen to the sports department and I wish you get a chance to impact others as you did.”

Anonymous Athlete

“The first sports psychology seminar was on relaxation. I sat there in the session and thought this is a waste of time “I don't need to breathe and exhale I relax by sitting quiet and focusing”. The weeks passed and each new session we were welcomed with a fun and interactive icebreaker then topics like goal-setting and we had to write down a list of things we believe we can do and how we will achieve them as well as our weak areas. I think the seminar which had the greatest impact on me was the final one on the power of the mind where we watched a DVD. I have definitely taken this with me- positive self talk will attract only positive energies. I rehearsed in my mind my race for sports day and when I was at my usual weak point I just rehearsed in my mind to stay relaxed and stay focus and indeed I passed my opponents to run my personal best. I was on cloud 9 after my race. Now I have the little inspirational phrases stuck on my wall and I tell all my friends keep positive.”

Anonymous Athlete
“For me what worked the most were relaxation techniques. I now use them in daily activities (at the dentist and at church) not just athletics. The others helped to some extent but relaxation stood out.”

*Anonymous Athlete*

“Before attending the sessions put on by Olivia I was not really a weak person but would get nervous sometimes especially when I saw person I knew at a track meet. Olivia has allowed me to realize that I could focus those thoughts and energy to something positive and that’s when I was introduced to visualizing, positive self talk and the entire progressive relaxation including the mind. These sessions have helped me the systematically plan out my goals setting short term stepping stones that will propel me to achieving my dreams. These sessions have not only helped me in sports but also in my path to life and career. Olivia was so good and I even I contemplated going to trials but right now my mind has not yet conceived that so my body cannot yet achieve it either. From the famous quote that we have learnt about *the body achieves what the mind believes*. Thanks a lot for your support you were indeed a tower of strength.”

*Anonymous Athlete*

“My personal experience being participating in this sports psychology intervention has been one filled with more positives than negatives. This started from my first relaxation seminar and has ended with the realization that I not only can achieve the goals I set but also that I attract the things that I think of. I personally learnt a lot during the psychology seminars even though initially I did not want to do attend. I do in fact think that this should be continued as it will benefit others the same way of even more than it has benefited me. However, my experience with track and field has been one filled, unlike the psychology seminars with more negatives starting from some members who work in the sports administrative office to those in charge of physical training. I first hope that those who join the previously “good” sport will have a better experience than the one I had. I believe that some adjustments from the sporting department should be made, adjustments that have more clarity, structure, organization and geared towards the athletes’ social and academic development.

*Anonymous Athlete*
## Tables

### Table I
*Mean Scores of Athletes Before and After the Sports Psychology Intervention*

<table>
<thead>
<tr>
<th>Outcome</th>
<th>n</th>
<th>Pretest</th>
<th>Post test</th>
</tr>
</thead>
<tbody>
<tr>
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<td>16.00</td>
<td>14.50</td>
</tr>
<tr>
<td>Concentration</td>
<td>20</td>
<td>10.95</td>
<td>11.20</td>
</tr>
<tr>
<td>Visualization</td>
<td>20</td>
<td>12.95</td>
<td>13.40</td>
</tr>
<tr>
<td>Goal Setting</td>
<td>20</td>
<td>28.17</td>
<td>23.52 *</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>20</td>
<td>16.05</td>
<td>15.75</td>
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</tbody>
</table>

*Note* *p*.05.

### Table II
*Summary of Multiple Regression Analysis for Variable Examining Athletes’ Perception of Physical Preparation*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Step 1</em></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Physical Preparation Before</td>
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<td>1.77</td>
<td>.00</td>
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<tr>
<td><em>Step 2</em></td>
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<td></td>
<td></td>
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<tr>
<td>Physical Preparation Before</td>
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<td>1.62</td>
<td>-.04</td>
</tr>
<tr>
<td>Type of Group</td>
<td>1.81</td>
<td>1.80</td>
<td>.49*</td>
</tr>
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</table>

*Note* R²=.00 for step 1; ΔR²=.23 for step 2; *(p)<.05)*

### Table III
*Summary of Multiple Regression Analysis for Variable Examining Anxiety of Athletes*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Step 1</em></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Anxiety Before</td>
<td>17.28</td>
<td>2.02</td>
<td>-.31</td>
</tr>
<tr>
<td><em>Step 2</em></td>
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<tr>
<td>Anxiety Before</td>
<td>16.58</td>
<td>2.12</td>
<td>-.31</td>
</tr>
<tr>
<td>Type of Group</td>
<td>1.40</td>
<td>1.12</td>
<td>.28</td>
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</tbody>
</table>

*Note* R²=.31 for step 1; ΔR²=.08 for step 2; *p*>.05
Table IV  
*Summary of Multiple Regression Analysis for Variable Examining Athletes’ Self-Efficacy*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
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<tr>
<td>Self-Efficacy Before</td>
<td>14.65</td>
<td>4.00</td>
<td>.07</td>
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<td><strong>Step 2</strong></td>
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<tr>
<td>Self-Efficacy Before</td>
<td>14.62</td>
<td>4.03</td>
<td>.12</td>
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<tr>
<td>Type of Group</td>
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<td>-.21</td>
</tr>
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Note: $R^2 = .07$ for step 1; $△R^2 = .04$ for step 2; $p > .05$

Table V  
*Summary of Multiple Regression Analysis for Variable Examining Athletes’ Ability to Concentrate*

<table>
<thead>
<tr>
<th>Variable</th>
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<th>β</th>
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</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
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<td>Concentration Before</td>
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<td><strong>Step 2</strong></td>
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<tr>
<td>Concentration Before</td>
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<td>-.07</td>
</tr>
<tr>
<td>Types of Group</td>
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<td>.64</td>
<td>.32</td>
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Note: $R^2 = .03$ for step 1; $△R^2 = .10$ for step 2; $p > .05$

Table VI  
*Summary of Multiple Regression Analysis for Variables Examining Athletes’ Use of the Goal Setting Technique*

<table>
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<th>Variable</th>
<th>B</th>
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<th>β</th>
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</thead>
<tbody>
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<td><strong>Step 1</strong></td>
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<td>Goal Setting Before</td>
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<td><strong>Step 2</strong></td>
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<tr>
<td>Goal Setting Before</td>
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<tr>
<td>Types of Group</td>
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</table>

Note: $p > .05$
Table VII

Summary of Multiple Regression Analysis for Variable Examining Athletes’ Use of Visualization

<table>
<thead>
<tr>
<th>Variable</th>
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<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
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<tr>
<td>Visualization Before</td>
<td>15.68</td>
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<tr>
<td><strong>Step 2</strong></td>
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<td></td>
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<tr>
<td>Visualization Before</td>
<td>15.37</td>
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<td>-.15</td>
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<tr>
<td>Types of Group</td>
<td>.58</td>
<td>1.67</td>
<td>.08</td>
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p>.05

References


