

**A profile and training programme of
psychological skills for track and field athletes**

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Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the authorship owner thereof and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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Date: 18 November 2013

Abstract

The purpose of this study was to compile a sport psychological skills profile of track and field athletes and to determine whether a purposefully-developed psychological-skills training (PST) programme would affect this profile and athletic performance.

The study was conducted in two phases. During the first phase 143 student athletes completed sport psychological skills questionnaires before competing in the 2011 University Sport South Africa (USSA) Athletics Championship. The athletes' perceived importance of psychological skills, psychologically preparedness, and need for psychological skills training were investigated.

The athletes' best performances at the championship were recorded and their IAAF performance points calculated.

The majority of the athletes perceived PST as important. However, in contrast, a large percentage was uncertain about their need for PST programmes and, alarmingly, most of the athletes under-utilized the services of sport psychologists. This could possibly indicate a resistance to PST.

Overall, the results revealed poor sport psychological skill levels. Only the achievement motivation and goal directedness dimensions showed satisfactory results. Effect sizes were used to compare the sport psychological skill levels of more and less successful athletes. This revealed significant differences between the respective groups. The within-group comparisons showed that the more successful sprinters outscored the less successful sprinters in the subscales of stress control and achievement motivation. Achievement motivation was the only aspect that differed significantly between the more and less successful middle and long-distance athletes. Among the jumpers, confidence and stress control distinguished between the top and bottom athletes. The more successful throwers recorded higher imagery and achievement motivation scores than the less successful throwers.

The results from the first phase were used to develop a PST programme aimed at improving the sport psychological skill levels and performance of student track and field athletes.

In Phase Two, athletes from Stellenbosch University were divided into an experimental (n = 24) and control group (n = 18). Both groups underwent pre and post-testing of the same psychological skills questionnaires used in the first phase, whilst their athletic performances were recorded on both occasions. The experimental group participated in a PST programme consisting of seven sessions which covered the following topics: achievement motivation, goal-directedness, managing somatic anxiety, managing cognitive anxiety, self-confidence, concentration, and imagery. In addition to these sessions daily activities and assignments were completed in a workbook.

The effectiveness of the PST programme in improving the athletes' sport psychological skills levels is evident from the improvements observed in nine of the eleven subscales among the experimental group opposed to four skills among the control group. Inexplicably, the control group's athletic performance improved significantly more than that of the experimental group. Further research into the role and effectiveness of PST in track and field is recommended.

Opsomming

Die doel van hierdie studie was om 'n sportsielkundige vaardigheidsprofiel vir baan- en veldatlete saam te stel en om te bepaal tot watter mate 'n sportsielkundige vaardigheidsprogram (SVP) hierdie profiel en atletiekprestasie sal beïnvloed.

Die navorsing het uit twee fases bestaan. Gedurende fase een het 143 studente-atlete verskeie sportsielkundige vraelyste voltooi voor deelname aan die 2011 Suid-Afrikaanse Studente-Atletiekkampioenskappe (USSA). Die atlete se persepsie oor die belangrikheid van sielkundige vaardighede, sielkundige voorbereiding en behoefte aan onderrig in sielkundige vaardighede is ondersoek.

Die atlete se beste vertonings tydens die kampioenskappe is gemonitor en hul IAAF-prestasiepunte bereken.

Die meerderheid van hierdie atlete het aangedui dat sportsielkundige vaardigheidsontwikkeling belangrik is, maar in teenstelling hiermee het 'n groot persentasie aangedui dat hulle onseker is oor hul behoefte aan sportsielkundige vaardigheidsontwikkeling. Die bevinding dat die meerderheid van die atlete nie genoegsaam van sportsielkundige dienste gebruik maak nie, is kommerwekkend. Hierdie verskynsel kan op 'n weerstand teen sportsielkundige vaardigheidsontwikkeling dui.

In geheel het die sportsielkundige profiel van hierdie baan- en veldatlete swak vertoon, behalwe vir prestasieмотivering en doelgerigtheid wat bevredigende resultate opgelewer het. Effekgroottes is gebruik om die sportsielkundige vaardighede van minder en meer suksesvolle atlete met mekaar vergelyk. Dit het beduidende verskille tussen die groepe opgelewer. Die binnegroepvergelykings het getoon dat meer suksesvolle naellopers hoër tellings as minder suksesvolle naellopers in die volgende subskale behaal het: stresbeheer en prestasieмотivering. Prestasieмотivering was ook die enigste subskaal wat tussen meer en minder suksesvolle middel- en langafstandatlete kon onderskei. Selfvertroue en stresbeheer was twee aspekte wat tussen meer en minder suksesvolle springers gediskrimineer het. Prestasieмотivering en beelding was die enigste sportsielkundige dimensies wat

tussen meer en minder suksesvolle gooiers kon onderskei. Die meer suksesvolle gooiers het beter vlakke met betrekking tot hierdie twee subskale getoon.

Die resultate van die eerste fase is gebruik om 'n sportsielkundige intervensieprogram te ontwikkel waardeur sielkundige vaardighede en prestasie van tersiêre baan- en veldatlete verbeter kan word.

In die tweede fase is atlete van die Stellenbosch Universiteit in 'n eksperimentele- (n = 24) en kontrolegroep (n = 18) verdeel. Beide groepe het dieselfde sportsielkundige vraelyste as in die eerste fase, voor en na afloop van die intervensieprogram, waaraan die eksperimentele groep meegedoen het, voltooi. Alle deelnemers se atletiekprestasies is voor en na afloop van die intervensieprogram genoteer. Die eksperimentele groep het aan die ontwikkelde sportsielkundige vaardighedsprogram deelgeneem wat uit die volgende sewe sessies bestaan het: prestasie-motivering, doelgerigtheid, somatiese angsbeheer, kognitiewe angsbeheer, selfvertroue, konsentrasie en beelding. Hierdie sessies is deur daaglikse aktiwiteite aangevul en opdragte wat in 'n werkboek voltooi moes word.

Die effektiwiteit van die program in die ontwikkeling van sielkundige vaardighede blyk duidelik uit die bevinding dat die eksperimentele groep betekenisvolle verbeteringe getoon het in nege uit elf sportsielkundige vaardighede teenoor die vier vaardighede wat by die kontrolegroep verbeter het. 'n Onverklaarbare bevinding was egter dat die kontrolegroep se atletiekprestasies betekenisvol meer verbeter het as die eksperimentele groep s'n. Verdere navorsing oor die rol en effektiwiteit van sportsielkundige vaardighedsontwikkeling in atletiek word aanbeveel.

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Chapter One

Problem Statement

Background

Track and field (commonly referred to as “athletics”) is among the oldest of all sporting events. The first recorded organized track and field events at a sports festival was during the Ancient Olympic Games (Instone, 2011). There is some uncertainty about how and when the Games at Olympia originated. However, it is generally accepted that the first recorded Olympic Games were held in 776 B.C. (Van der Merwe, 2005).

The Greek word *athlos* means battle or struggle, and reflects the competitive nature of running, jumping and throwing (Quercetani, 1990). According to Van der Merwe (2005) Pierre de Coubertin proposed the Olympic motto; *Citius, Altius, Fortius*, which is Latin for faster, higher, stronger. Although this motto is not limited to competitive athletics, these objectives are especially evident in track and field sport. Track and field events are predominantly individual contests with athletes challenging each other to decide a single victor. The running events consist of sprints, middle and long-distance races, hurdling and relays. The jumping events include long jump, triple jump, high jump and pole vault, while the throwing events are shot put, javelin, discus and hammer throw. There are also "combined events", such as the heptathlon (consisting of seven items) and decathlon (consisting of ten items). Depending on the particular event, there are many factors that may contribute to success. Talent, training, trainability, physical factors, body composition, nutritional status, technique, tactical awareness, motivation and other psychological characteristics are key contributors to success in most sports (Maughan, 2009).

Physically, many top athletes have the innate abilities to become champions, but for some reason, they don't perform to their full potential. Noakes (2001) believes that the preparation of the mind is more important in determining performance than physical preparation. The question that now arises is: how should athletes train their minds to ensure peak performance?

According to Weinberg and Gould (2007), coaches and athletes are in agreement that arousal regulation, imagery/mental preparation, self-confidence, motivation, commitment, goal setting and attention/concentration skills are important factors in preparing athletes to become mentally tough and perform successfully. The following definition on mental

toughness emerged after Jones *et al.* (2002: 209) had studied elite athletes with international experience for an average period of five years: “Being mentally tough means to have the natural or developed psychological edge that enables you to generally cope better than your opponents with the many demands (competition, training, lifestyle etc.) that sport places on a performer”. These researchers noted that mentally tough performers consistently remain more determined, focused, confident and in control despite the pressures and demands that top level sport places on them. Therefore, mental toughness provides competitors with a psychological advantage over their opponents. This advantage, either innate or developed through years of experience and/or by means of psychological skills training (PST), enables the performer to have superior self-regulatory skills (Jones *et al.*, 2002). Self-regulation refers to athletes’ ability to work towards their short- and long-term goals by monitoring and managing their thoughts, feelings and behaviours (Weinberg & Gould, 2007). The ultimate goal of PST programmes is, therefore, the effective functioning of the athlete without the constant direction from a coach or sport psychologist.

PST refers to the “systematic and consistent practice of psychological skills to enhance performance, increase enjoyment and achieve greater self-satisfaction in sport” (Weinberg & Gould, 2007: 250). Researchers have been trying to determine the effectiveness of these programmes in improving sporting performance. From the 45 studies examined by Williams (2006), 38 (84.4%) of the them showed a positive effect of PST programmes on performance in a variety of competitive sports such as golf, karate, skiing, boxing, basketball, volleyball, gymnastics, baseball, tennis and figure skating. Most of these studies employed a variety of psychological techniques as part of the PST programme.

According to Weinberg and Gould (2007), PST programmes generally follow a set structure with three distinct phases, namely: education, acquisition, and practice. During the educational phase, the sport psychology consultant usually raises the athlete’s awareness of the importance of mental skills in performing optimally. In this regard Williams (2006) noted that athletes prefer an educational approach as opposed to a clinical approach. She also recommends a combination of interviews, written psychological inventories and behavioural observation when assessing athletes. During the acquisition phase the emphasis is on the development of the various psychological skills to which the athletes had been introduced during the previous phase (Weinberg & Gould, 2007). The sport psychology consultant has to individualise strategies according to the athletes’

unique abilities and needs after which it is important to give feedback to highlight their psychological strengths and weaknesses.

One of the few studies on track and field athletes by Wann and Church (1998) underlined the importance of PST programmes and mental preparation. Pieterse and Potgieter's (2006) PST programme, consisting of relaxation skills, self-talk, goal setting, imagery and concentration skills, resulted in significantly improved performances among middle-distance athletes. Apart from these two studies, fairly little is known about the psychological skill levels and the needs of track and field athletes. Furthermore, the effect of psychological skills and PST programmes on athletic performance has received insufficient research attention.

Purpose of the study

Due to these shortcomings, the subsequent purpose of this study was to compile the sport psychological skills profile of track and field athletes and determine to what extent a PST programme could affect this profile and athletic performance.

Specific aims

The specific aims of this study are to...

1. compile a sport psychological skills profile of track and field athletes by making use of sport psychological skills inventories.
2. compare the sport psychological skills levels of more successful and less successful athletes based on their athletic performances during the 2011 University Sport South Africa (USSA) Athletics Championships.
3. develop and implement a PST programme aimed at improving the athlete's sport psychological skill levels and athletic performance.
4. determine the effectiveness of this programme in developing the athlete's sport psychological skill levels and improving his/her athletic performance.

Potential outcomes of the study

The compilation of a sport psychological skills profile of track and field athletes should contribute to a better understanding of the psychological demands placed on these athletes and increase awareness about the performance benefits of being mentally tough. By implementing the purposefully-developed PST programme it is foreseen that the psychological skills profile and performance of these track and field athletes would improve.

Chapter Two

Literature Review

There is a surprising dearth of information in research literature focusing specifically on the psychological skills of track and field athletes. However, much has been written about “mental toughness”, its measurement and importance in other sport codes.

This chapter reviews various researchers’ findings regarding psychological skills training (PST) of track and field athletes. PST refers to “the systematic and consistent practice of mental or psychological skills for the purpose of enhancing performance, increasing enjoyment, or achieving greater sport and physical activity self-satisfaction” (Weinberg & Gould, 2007: 250).

This literature discussion deals with the following sport psychology topics: achievement motivation, goal directedness, imagery, arousal regulation, concentration, self-confidence, as well as methods to develop relevant psychological skills.

A number of studies have been conducted on psychological skills and its importance in other sport codes, with recent studies, for example, focusing on cricketers (Bull *et al.*, 2005), footballers (Gucciardi *et al.*, 2009) and hockey players (Eloff *et al.*, 2011). Due to the scarcity of information regarding psychological skills of specifically track and field athletes, literature from other sport codes is included in this review.

Data-bases such as *EBSCOhost*, *Sciencedirect*, *Google Scholar* and *Wiley Online Library* were used to find relevant information. The following keywords were prominent in the literature search: mental toughness, sport psychological and/or mental skills training programme(s), profiles, track and field athletes.

A variety of frameworks exist for implementing PST interventions. It is therefore necessary to outline the framework that will be used in this study and to explain the different theories underlying this particular approach.

Frameworks for implementing PST programmes

One of the most widely used frameworks, implemented by applied sport psychology researchers for facilitating sport psychological skills, is the cognitive-behavioural therapy framework (Hill, 2001). This framework is a combination of two methodologies: the

cognitive and behavioural approaches. The next section briefly describes these two approaches separately, before combining them again.

The cognitive approach

Cognitive interventions try to identify and modify thoughts, assumptions and schemas that lead to undesirable actions and feelings. The purpose of this approach is to reshape information processing to promote realistic thinking (Hill, 2001). This model is appealing to coaches and athletes because of its educational approach. The aim of this approach is to deal with negative symptoms and to provide the necessary skills to control cognitive processes. Gordon (1995) proposes that an individual's attempt to alter habits, whether psychological or physical, in order to change attitudes toward a given situation, depends on the individual's ability to regulate his/her own behaviour. Kirschenbaum (1987) refers to self-regulation as the processes through which people manage their own behaviours that are directed toward specific goals.

Kirschenbaum (1984) developed a five-stage model of self-regulation. The first stage is problem identification. Awareness is a critical step on the road to improvement. The main concern at this stage is to assist athletes in evaluating their training and behaviour for possible ways to enhance performance (Behncke, 2004). The second stage is commitment to schedules and training sessions, taking responsibility for behaviour and a desire to succeed. Stage three is execution, which involves regulating behaviour by observation or self-monitoring, evaluating behaviour and communicating feedback. The next self-regulation stage is environmental management. In sport one needs to manage the environment, which includes teammates, friends and coaches, as well as specific playing and practice conditions. The athlete's social and physical support networks are the foundations for psychological and physiological security (Weinberg & Williams, 2006). Without these, anxiety concerning the support network may adversely affect attempts at self-regulation. Therefore, environmental management is necessary to focus concentration on important matters (Behncke, 2004). The final stage is generalization. In order to change habits in the long term, a specific method must be generalized into all aspects of life, such as work and study. This stage involves extending behaviours to new conditions and settings. In order to be successful, constant distractors such as irrelevant thoughts and stresses from other areas of life that might cause deviation from the original goals, must be addressed (Behncke, 2004).

The behaviourism approach

The “founders” of behaviourism (e.g., Watson, Pavlov, Thorndike, and Skinner) proposed that learning from the environment determines people’s actions. Initially their theory only focused on observable behaviours and environmental factors that accompanied these behaviours. Thoughts, feelings, attitudes and a person’s mind were viewed as a “black box” and therefore led to criticism from behaviourists because it could not account for fundamental covert psychological concepts such as personality. Additionally, the role of the social environment and the impact of others on personal behaviour, were introduced to the behavioural approach. Hence the umbrella of behavioural theory includes consideration of the interactions among cognitions, emotions, actions, as well as social and physical environments. Behavioural theory conceptualizes humans as learning organisms with the capacity to learn to account for personality, thoughts, emotions behaviours and most aspects of the self. Therefore, learning is defined as a permanent change in behaviour that occurs as a result of experience. The resultant focus of consulting sessions is therefore on learned experiences in order to substitute self-enhancing behaviours for previously learned maladaptive action patterns (Hill, 2001).

The cognitive-behavioural framework

Cognitive-behaviour therapy (CBT) has been used successfully in a range of applications and is one of the most widely used models in sport psychology. CBT is an umbrella label for the two approaches originally based on cognitive therapy and behaviour therapy and describes interventions that aim to decrease psychological distress and maladaptive behaviours by modifying cognitive processes. This model emphasises the interaction between current situations, cognitions (what we think), emotions (what we feel) and behaviour (what we do) (Hill, 2011).

Research on the effectiveness of cognitive interventions has shown that they are useful in controlling anxiety, coping with recovery from injury and improving skill level (Hill, 2001). Primarily, CBT focuses on methods that strengthen positive behaviour and weaken negative behaviour. Over time and with maintenance of treatment it conditions the individual to think in specific ways to create desired psychological states as a foundation for psycho-somatic events. The overall goal of CBT is to change the way that the athlete approaches a given task and lay the foundation for implementing specific performance-enhancement techniques (Behncke, 2004).

Experiential learning served as the underlying method for the implementation of the developed PST programme in this study. Experiential learning is a process whereby knowledge is created through the transformation of experience and consists of activities which engage participants in a process that assists their learning experience, focusing on their thoughts, feelings, perceptions and behaviour (Kolb & Kolb, 2005). Case studies are presented in groups to stimulate the automated use of their newly-learned psychological skills. Group sessions offer a unique learning environment where members can learn from each other's experiences by recreating real-life situations and practising new skills and behaviours in a supportive atmosphere before trying them in real-world situations. Another advantage of group sessions is the facilitation of a sense of belonging where members will often identify with one another and then feel part of a whole. Group members allow one another to learn new methods of coping and give each participant an opportunity to commit to improving certain behaviours (Jacobs *et al.*, 2009).

Sport PST programmes

Sport psychology literature is replete with research that investigates the predictive relationship between psychological dimensions and athletic performance. According to Cox (2007) research involving athletic performance and personality was popular during the 1960s and 70s. One personality trait associated with healthy persons is that of hardiness. Kobasa (1979) claims that people with a hardy personality exhibit characteristic attitudes such as control (the ability to feel and act as if one is in control of life situations); commitment (the tendency to involve rather than distance oneself from whatever one is doing); and challenge (the ability to understand that change is normal). Based on the more applied aspects of sport psychology, Clough *et al.* (2001) added another component to the hardiness approach, namely confidence. This combination is referred to as the 4Cs model of mental toughness. With the addition of confidence to the hardy personality, successful athletes are seen as individuals who are sociable and outgoing, who are able to remain calm and relaxed, and who are competitive in many situations and have lower anxiety levels than others. Furthermore, they possess a high sense of self-belief and an unshakeable faith that they control their own destiny, enabling them to remain relatively unaffected by competition or adversity.

In today's competitive sport environment and with the establishment of professional sport, PST has received increasing recognition. At present, there is an interest in predicting athletic performance on the basis of psychological skills.

It is important to identify psychological skills. In this regard Vealey (1988) notes that psychological interventions are the systematic application of techniques to promote a desired outcome, i.e., sound psychological skills. With this in mind, Vealey mentions techniques such as: goal setting, imagery, physical relaxation, thought control, physical practice, and education.

In an effort to identify a common set of psychological skills related to successful performance, researchers such as Loehr (1994), Wann and Church (1998), Fourie and Potgieter (2001), Gould *et al.* (2002), and Andrew *et al.* (2007), concluded that psychological skills and techniques such as goal setting, imagery, competition, coping skills, thought control, arousal management, anxiety control, attention and focus skills correlate positively with peak performance.

After recording statements of expert coaches and elite athletes from different sports codes by means of an inductive content analysis, Fourie and Potgieter (2001) identified twelve components of mental toughness. The highest order mental-toughness themes emerging from the analysis were: motivation level, coping skills, confidence maintenance, cognitive skill, discipline and goal-directedness, competitiveness, possession of prerequisite physical and mental requirements, team unity, preparation skills, psychological hardiness, religious convictions, and ethics. It is clear that mental toughness is multi-dimensional and an important psychological construct that is related to successful sport performance.

The above-mentioned findings confirmed the earlier work of Loehr (1994) who had concluded that talent and skill are not the only contributing factors to success among highly successful athletes. After many years of research on athletes he concluded that mental toughness has become a three-dimensional concept involving physical, mental and emotional components. He highlighted four indicators of mental toughness: emotional flexibility, emotional responsiveness, emotional strength, and emotional resiliency.

In their research on this topic Gould *et al.* (2002) found that Olympic athletes are characterized by: the ability to control and cope with anxiety, confidence, mental toughness, sport intelligence, the ability to maintain concentration/focus, strong work ethic, goal directedness, coachability, high levels of dispositional hope, optimism, and adaptive perfectionism.

According to Weinberg and Gould (2007) coaches and athletes reported that arousal regulation, imagery (mental preparation), confidence building, increasing motivation,

commitment (goal setting), and attention/concentration skills (self-talk, mental plans) to be important in preparing athletes to be successful performers. For example, a study of rugby players showed that top players had greater self-confidence, and better activation control than the lower-ranked rugby players (Andrew *et al.*, 2007).

Sport psychology researchers have been trying to determine the effectiveness of PST programmes in improving sport performance. Of the 45 studies examined by Weinberg and Williams (2006), 84% had a positive effect on performance. These studies included sports such as golf, karate, skiing, boxing, basketball, volleyball, gymnastics, baseball, tennis, and figure skating. Many of the studies employed a variety of psychological techniques as part of the psychological intervention programme.

Fourier *et al.* (2005) implemented a PST programme with 10 female gymnasts for 35 minutes per week over a period of 10 months. The intervention programme consisted of relaxation, self-talk, goal setting, focusing and visualization. The performance of the gymnasts who participated in the programme increased 5% more than the gymnasts who did not take part in the intervention.

Sheard and Golby's (2006) study on 36 national adolescent swimmers, found that after exposure to a PST programme, their performance in three swimming strokes improved significantly. There was also an overall improvement in the post-intervention psychological profiles of these swimmers. The PST programme consisted of goal setting, visualization, relaxation, concentration and thought stopping and was presented over a seven week period for 45 minutes per week.

In one of the few studies conducted on track and field athletes, Pieterse and Potgieter (2006) investigated the effect of a PST programme on the performance of six athletes in the 1 500m event. The programme was developed following a comprehensive review of sport psychology literature. The intervention programme was implemented on a one-one-one basis over a five-day period. The programme included relaxation, self-talk, goal setting, imagery and concentration skills. Performance scores were plotted for each 1 500m run within the intervention period over 30 days. The study demonstrated that the developed PST programme was effective in enhancing athletic performance.

Another study conducted on track and field athletes underlined the importance of PST programmes in mental preparation (Wann & Church, 1998). The use of questionnaires or interviews provides useful information regarding the development and implementation of a

PST programme that addresses the specific needs or shortcomings of athletes. To enable outstanding performance, such PST programmes should be adapted according to the psychological and physiological demands of the particular sport.

Weinberg and Gould (2007) point out that effective PST programmes must be individualized and implemented over an extended period of time. They must follow a set structure with three distinct phases namely: education, acquisition, and practice.

During the education phase, the sport psychology consultant usually raises the athlete's awareness of the important role of mental skills in performing optimally. Williams (2006) noted that athletes prefer an educational style as opposed to a clinical approach. He also recommends a combination of interviews, written psychological inventories and behavioural observation when assessing athletes' needs.

In the acquisition phase the emphasis is on the development of the psychological skills which were introduced to the athletes during the previous phase. The sport psychology consultant individualises strategies according to the athletes' unique abilities and needs after which it is important to give feedback to highlight their psychological strengths and weaknesses (Williams, 2006).

According to Weinberg and Gould (2007) there are three primary objectives during the final practice phase: To automate skills through over-learning, to teach athletes to systematically integrate psychological skills into their performance situations and to simulate the skills they would want to apply in actual competitions.

Typical content of sport PST programmes

To gain a better understanding of sport PST programmes, typical psychological topics included in such programmes are discussed.

Achievement motivation

Coaches often say that elite performers are "driven" and that they are "hungry" for success. The question that arises is what are the perceived forces that drive a person to pursue excellence in the sporting arena and why are some athletes more motivated than others?

Martens (1987) believe that good athletes tend to have a predominantly internal locus of control because they have learned that their abilities and efforts reward them in the form of athletic success. He labels people who describe the course of their lives as being the

result of external forces such as luck, chance and powerful other people, as having an external control. He also states that being predominantly internally controlled was desirable and that coaches should assist athletes to develop this characteristic by helping them experience situations in which their personal actions produced the desired consequences. They should be taught to set realistic goals and to take responsibility for their actions.

A study by Mallet and Hanrahan (2004) of Australian track and field athletes (who had placed in the top ten at either the Olympic Games and/or the World Championships in the previous six years) found that they were highly driven by personal goals, had a strong self-belief and their lives revolved around their sport endeavours. Interviews revealed that these athletes had both task and ego orientation regarding their goals. Their task oriented disposition focused on improving performance. This promoted internally-regulated behaviours and subsequently self-determined motivation. The literature search indicated that to date this was the only empirical study focusing on motivation of elite track and field athletes.

There are a variety of achievement motivation theories. The following are often encountered in the relevant literature: The achievement-need theory, the attribution theory, the goal-orientation theory, and the competence-motivation theory.

According to Shaw *et al.* (2005), an individual's need for achievement is a function of an approach tendency minus an avoidance tendency, multiplied by the probability of success and the incentive value of a desirable outcome. Weinberg and Gould (2007) identify two additional primary considerations of the achievement-need theory, namely task preference and performance predictions. Potgieter (2006) stated that situations that have a low probability for success are more appealing for athletes because the incentive is much higher. On the other hand, if the likelihood of success is very low or very high, athletes may lose interest in the task at hand. However, low-achievers may be motivated by early success. Therefore, according to Weinberg and Gould (2007), situations that offer a 50-50 chance of success, provide high achievers with the strongest incentive for engaging in achievement behaviour. In contrast with this, low-achievers tend to prefer easy tasks where success is guaranteed or unrealistically difficult tasks where failure is almost certain and where no one expects them to succeed. However, according to Shaw *et al.* (2005), generally most participants prefer tasks of intermediate difficulty. They suggest that there is little supportive evidence that those with a high need for achievement perform any better

than those low in need for achievement. Consequently, research findings are not very supportive of this theory.

Heider (1958) proposes that people strive for an understanding of daily events in order to give their lives stability and predictability. Attribution theory focuses on how individuals explain their successes and failures (Cox, 2007). Weiner (1985) proposes that outcomes are either attributed internally (to the person) or externally (to the environment). Effective personal functioning is based on internal attributional factors of ability and effort, whereas external attributional factors are task difficulty, and luck. This model proposes that an interaction exists between personal attributions of ability and the external attributions of task difficulty. In Heider's causal attribution scheme, ability is classified as being internal and stable, effort as internal and unstable, task difficulty as external and stable, and luck as external and unstable. The theory predicts that following success, stable and internal attributions will produce higher levels of motivation and that after failure, motivation is least damaged by unstable and external attributions (Shaw *et al.*, 2005). Weiner (1974) reported that high achievers attribute their successes more frequently to the degree of effort expended than did either intermediate or low achievers, whilst intermediate achievers ascribe successful outcomes to luck. Potgieter (2006) believes that athletes can improve their performance by changing their attributions towards success and failure. Shaw *et al.* (2005) recommend that athletes need to be encouraged to attribute success to internal, stable factors rather than to weaknesses of the opposition. They should also refrain from attributing success to luck. However, after failure, coaches should encourage external and unstable attributions.

Nicholls (1984) originally developed the goal-orientation theory to explain behaviour in educational achievement situations. Duda (1987) introduced this theory to the sport and exercise domain. The theory states that people have personality dispositions or orientations in relation to achievement situations. These orientations have an important influence on attitudes about achievement, motivation in achievement settings and consequently actual achievement behaviour. With regards to attitudes, task-orientated athletes see the purpose of sport as providing opportunities for personal growth, whereas for ego-orientated athletes the focus is on comparing oneself with others. Sport psychologists argue that a task orientation leads to a stronger work ethic and provides the athletes with greater control, which results in optimal performance (Weinberg & Gould, 2007). Researchers also believe that task-orientated athletes prefer more challenging tasks than ego-orientated athletes. Task-orientated athletes do this in order to get

feedback on their progress, whereas ego-orientated athletes are more interested in the result (i.e., winning or losing) (Shaw *et al.*, 2005). Shaw and his co-workers propose that attention need to be given to athletes' achievement orientation, as well as consideration of the prevailing atmosphere at training sessions. Coaches and parents often determine the atmosphere by creating an ego-orientated climate or a task-orientated environment by emphasising outcome results.

Finally, the competence-motivation theory of Harter (1978) holds that individuals strive for competence in their daily lives. This theory also contends that athletes' perception of control, along with self-worth and competence evaluations, influence their motivation (Weinberg & Gould, 2007). An individual's perception of success can subsequently develop negative or positive feelings. Harter's competence-motivation theory suggests that feelings of personal competence encourage athletes to make further mastery attempts in their quest for competence (Cox, 2007).

Goal directedness

Martens (1987) argued that goals clarify expectations and increase intrinsic motivation, pride, satisfaction and self-confidence. Setting goals is not only an effective way to motivate athletes, but also improves dedication, productivity and performance (Potgieter, 2006). According to Weinberg and Gould (2007) psychologists have studied goal setting as a motivational technique, focusing on whether setting specific, difficult goals improves performance more than setting no goals or setting a goal of simply doing your best. They observed that best performances repeatedly occurred where specific goals are set that are moderately to very difficult.

Potgieter (2006) identifies several benefits of effective goal setting. It...

- increases motivation.
- creates a feeling of responsibility and self-belief when athletes are included in the goal-setting process.
- contributes to better communication between the athlete and coach by exposing potential misunderstandings.
- improves performance by facilitating the athlete's focus.
- strengthens athletes' determination and commitment.

For some athletes setting goals can be stressful because standards are being set by which success or failure is highlighted. This might intimidate athletes with poor self-esteem. This could result in a downward performance spiral that has a negative influence on self-

esteem and might eventually lead to sport dropout. Another problem could occur when goals are set too high as this could frustrate the athlete. On the other hand, when goals are set too low it negates the goal-setting process (Potgieter, 2006).

To avoid the negative effect of ineffective goal setting, the acronym SMART has been used to help athletes with effective goal setting (Smith, 1994). According to this principle SMART goals need to be...

- Specific
- Measurable
- Action-oriented
- Realistic
- Timely.

The SMART principle suggests that goals should indicate precisely what is to be done. Goals should be quantifiable and indicate something that needs to be done. Goals should be achievable given various constraints and attainable within a reasonable timeframe.

Weinberg and Gould (2007) indicate that there is a difference between outcome goals, performance goals, and process goals. Outcome goals focus on the result of the contest and do not only depend on one's own efforts, but also on the ability of the opponent(s). Performance goals focus on achieving standards independent of other competitors. These goals are based on comparisons with one's own previous performances. Process goals focus on actions to be completed in order to achieve the outcome or performance goals.

Researchers underlined the importance of setting short-term goals, because it allows athletes to see immediate improvements and in doing so, enhances motivation. Short-term goals set a basis for attaining long-term goals. An important ingredient for an effective goal-setting programme is to develop a strategy to attain one's goals. Too often, goals are properly set, but never accomplished because athletes fail to identify strategies to achieve them. It is suggested that whenever possible, goals should be stated positively by identifying behaviours that should be exhibited as opposed to behaviours that should be avoided (Weinberg & Gould, 2007).

Activation control

Extremely high expectations are placed on modern-day athletes regardless of their abilities, reasons for participation, and skill levels. These high expectations place stress on

athletes. The stress experienced during competition might cause competitive anxiety in athletes and create an additional element for them to manage (Khodayari *et al.*, 2011).

Athletes should learn to control the excitement inherent in their sport, the anxiety associated with it, as well as the expectations of other people, in order to achieve optimal performance (Ravizza, 2006). They need to become aware of their own experience of optimal performance. To gain this control, athletes must learn how competitive stress affects their performance. The first step is to develop an awareness of one's arousal level and to adjust it as needed. Arousal, according to Weinberg and Gould (2007) refers to a person's physiological and psychological state. When someone is highly aroused he/she is mentally and physically very alert. Anxiety might be the result of high levels of arousal and can be described as a negative emotional state characterized by nervousness, and apprehension.

Athletes should be able to recognise situations that negatively affect their performance and need to develop strategies to prepare for and cope effectively with these stressors. Once athletes recognize and understand these stressors, they must become aware of the way these situations are experienced. They have to distinguish between facilitative and debilitating feelings. A study by Eubank and Collins (2000) found that youth sport participants who perceive their anxiety as facilitative coped more effectively and consequently performed better. Individuals are more likely to use both problem-focused and emotion-focused coping when they perceive their anxiety as facilitative towards performance. However, individuals who perceive their anxiety as debilitating, limit the availability of coping strategies.

Hull (1943) proposed one of the early theories regarding the relationship between arousal and performance: the drive-theory. The drive theory is a complex stimulus-response theory of motivation and learning. It is a theory of competing responses, in which increased drive (arousal) facilitates the elicitation of the dominant response (Cox, 2007). It also implies a positive linear relation between arousal and performance (Potgieter, 2006). Cox (2007) further reported that this theory suggests that low levels of arousal should increase a beginner's chances of a successful performance and in turn, the experience of success should strengthen self-confidence. Skilled athletes, on the other hand, would benefit from an increase in arousal. This theory is not well supported, because this linear relation is only true when a task is easy or the performer's skill level is well developed. When the dominant response is the incorrect response, performance could be influenced negatively.

In contrast to the drive theory, the Inverted U-hypothesis has been popular in explaining the relationship between arousal and athletic performance. The inverted-U relationship between arousal and performance is illustrated in Figure 2.1. This theory associates high performance with an optimal level of arousal and lesser performance with either low or very high arousal levels (Arent & Landers, 2003). According to Landers and Shawn (2006) the inverted U-hypothesis predicts that with an increase in arousal levels, a progressive increase in performance will occur. With further increases of arousal levels beyond a critical point, towards a state of high excitement, there is a progressive decrease in performance. Although this view has been accepted in general, critics question the shape of the arousal curve, doubting whether optimal arousal always occurs at the midpoint of the arousal continuum. Sport psychologists have consequently begun to explore other views in order to obtain a better understanding of the relationship between arousal and performance (Weinberg & Gould, 2007).

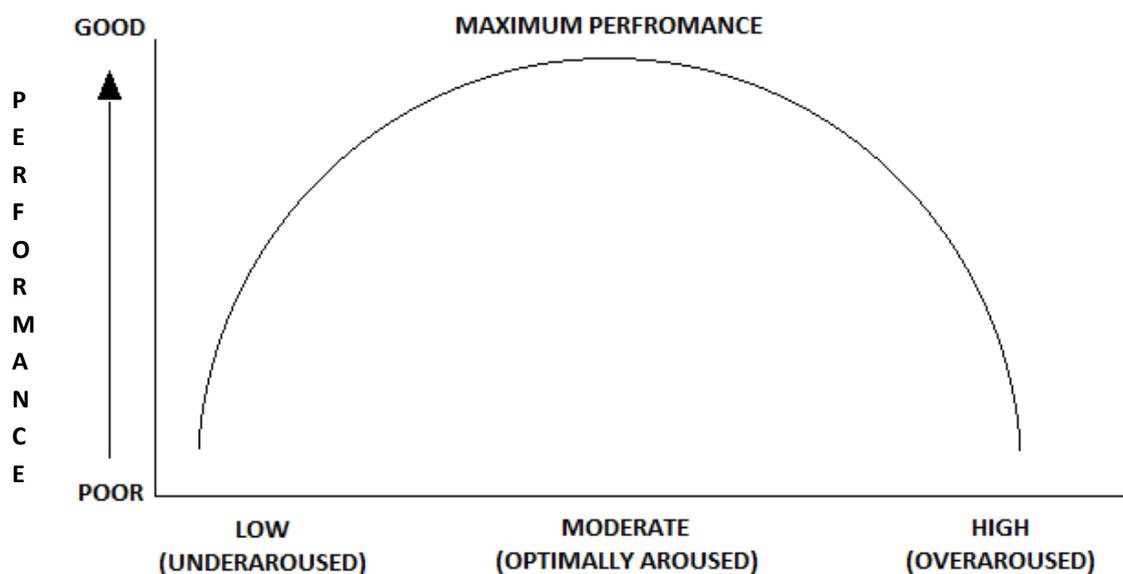


Figure 2.1: The inverted-U relationship between arousal and performance

Hanin (2000) proposes an alternative view of the above-mentioned theory. He found that top athletes have a zone of optimal state anxiety in which their best performance occurs, which vary from one athlete to another. He used the inverted-U hypothesis to explain that athletes can have an optimal functioning at the lower end of the curve, some in the midrange and others at the upper end. Kerr and Cox (1991) confirmed the above-mentioned theory in their study of squash players. They found that skilled squash players had higher arousal levels compared to novice and average players. Their higher arousal levels were reported as non-stressful and were, therefore, associated with positive and

pleasant feelings. This study demonstrated the complexity of arousal level and its relation to performance and the need to explore individual differences in greater detail.

In addition to Hanin's individual-zones-of-optimal-functioning (IZOF) theory, the multidimensional anxiety theory distinguishes between the relationship of somatic state anxiety and cognitive state anxiety with performance. It postulates that cognitive state anxiety is negatively related to performance, but that the somatic state anxiety-performance relationship could be represented by an inverted-U whereby an increase in anxiety facilitates performance up to a certain level, but that further increases in anxiety would cause performance to decline (Weinberg & Gould, 2007). This theory is illustrated in Figure 2.2.

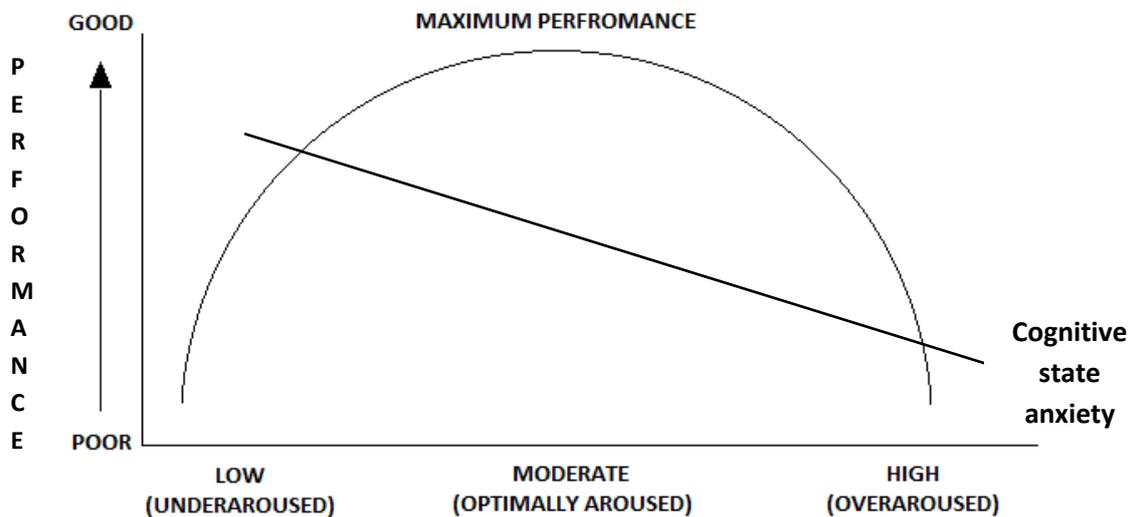


Figure 2.2: The relationship between athletic performance and (cognitive and somatic) state anxiety

Although this explanation is appealing and practical, some studies failed to confirm this theory. A study by Jerome and Williams (2000) on the performance of participants in the sport of bowling found the opposite results. They observed an inverted-U relationship between pre-competition cognitive state anxiety and bowling performance and a negative linear relationship between somatic state anxiety and bowling performance. A possible reason for these findings could be that the relationship between anxiety and performance may vary from one sport to another and that, in this specific study, only one performance and anxiety observation was recorded for each bowler. Cox (2007) argues that these results might have been different if other game observations were used instead.

Another fundamental weakness of the multi-dimensional theory is that it claims that cognitive anxiety and somatic anxiety have independent effects upon athletic performance. Cox (2007) suggests that cognitive and somatic anxiety must interact to explain the effect on performance. Hardy (1990) also believes that performance depends on the interaction of arousal and cognitive anxiety. He states that physiological arousal is related to performance in an inverted-U fashion, but only when an athlete is not worried or has low cognitive anxiety. Therefore, the catastrophe model predicts that with low worry, increases in arousal or somatic anxiety are related to performance in an inverted-U manner. With increased cognitive anxiety, any increase in the arousal levels would improve performance, but only to an optimal threshold, beyond which additional arousal would cause a “catastrophic” dramatic decline in performance as illustrated in Figure 2.3.

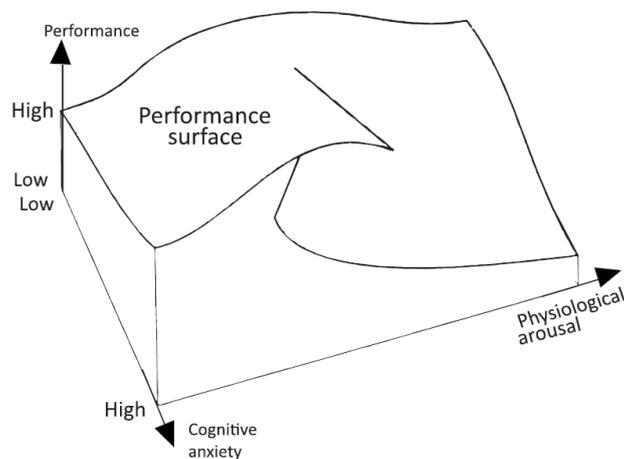


Figure 2.3: The catastrophe model of the relationship between cognitive and somatic anxiety and performance

Weinberg and Gould (2007) point out that increased arousal and state anxiety causes increased muscle tension, fatigue and interference with coordination which usually result in inferior performance. An increase in arousal also narrows one’s attention and decreases environmental scanning. By gaining a greater awareness of arousal and a better understanding of how arousal affects performance, athletes could enhance their performance (Weinberg & Gould, 2007).

Robazza *et al.* (2004) observed that athletes use imagery and self-talk to facilitate emotions by rehearsing successful execution and competitions and controlling negative self-statements and substituting them with action-orientated thoughts. To facilitate activation, athletes can use energising techniques such as rapid breathing, muscular tensing, and imagining energising thoughts. Self-talk is crucial to combat cognitive anxiety.

Positive self-talk involves reassuring oneself with positive and rational thoughts (Wann & Church, 1998).

Self-confidence

Vealey *et al.* (1998) conclude that researchers consider self-confidence as the most critical psychological characteristic influencing sport performance. It is the most consistent factor that distinguishes successful athletes from less-successful athletes (Weinberg & Gould, 2007). This fascination with self-confidence in sport is fuelled by the dramatic impact that a loss of self-confidence has on sport performance.

Zinsser *et al.* (2006) found that confident athletes think about themselves and their actions differently to the way less-confident athletes do. The way athletes think about themselves and the content of their self-talk have an influence on their performance. This emphasises the need to not train only their bodies, but to also train their minds. Inappropriate thinking generally leads to poor performance, because thoughts affect feelings and ultimately one's actions (Zinsser *et al.*, 2006).

Self-confidence is related to the concept of self-efficacy. Bandura (1977) defined self-efficacy as the trust in one's ability to plan and execute a required action to produce desired outcomes. Bandura's self-efficacy theory states that when one is assured of being in control and has the means to produce the desired outcome, one will be motivated to attempt a task. In the realm of sport, self-efficacy positively predicts performance.

In their development of a multidimensional anxiety theory, Martens *et al.* (1990) propose a positive linear relationship between self-confidence and performance. More specifically, Chow *et al.* (2012) found that self-efficacy can predict performance in sports such as diving, gymnastics, baseball, weightlifting and wrestling. They also found that self-efficacy has a positive effect on the squat performances of American football players.

A study by Bawden *et al.* (2009) of world-class athletes from different sports, suggests that interventions designed to enhance sport confidence must reflect the individual needs of the athlete. It also involves identifying an athlete's sources of confidence.

Bandura (1977) identifies four important sources of self-efficacy:

Performance accomplishment

This is an important source, because it is based on mastery experiences. Success raises expectations and with regular reinforcement, the occasional failure is likely to be reduced.

Cox (2007) affirms the importance of experiencing success, especially when a difficult task is being learned or when coaching a beginner athlete. He recommends that, if necessary, the coach should find a way to reduce the difficulty of a task so that the athlete can accomplish success.

Vicarious experience

When someone sees another person executing a difficult task successfully, the observer's expectations could be improved. Cox (2007) suggests that in learning a new task, it is wise to make use of a template or a model. A video, competent teammate or an instructor could be used to successfully demonstrate the skill.

Persuasion

Bandura (1977) maintains that people can cope successfully with overwhelming experiences when they are persuaded into believing that they could indeed cope successfully. Persuasion usually comes in the form of verbal encouragement from coaches, parents, or peers (Cox, 2007). Persuasion can also take the form of self-persuasion by means of self-talk. Bandura warns that persuasion on its own might not always be affective in increasing self-efficacy, but that it is a helpful technique when correcting performance.

Emotional arousal

Bandura (1977) pointed out that emotional arousal is a source of information that could affect perceived ability, because of the negative correlation that exists between anxiety and performance. Therefore, individuals are more likely to expect success when they experience low levels of anxiety. Fearful thoughts can cause a rise in emotional arousal on a much higher scale than what the actual situation would normally have caused. Performance accomplishment and modelling could reduce the effect of anxiety (Bandura, 1977).

Problems arise when self-confidence levels are either too low or too high (Weinberg & Gould, 2007). Self confidence levels decline when one has negative expectations about certain situations. Such negative thoughts increase expectations of future failures. Athletes lacking confidence tend to focus on their weaknesses instead of on their strengths. This distracts them from the task at hand. Self-doubt causes higher anxiety levels which could result in impaired performance (Weinberg & Gould, 2007).

Although most studies support a positive relationship between self-confidence and performance, there are some notable exceptions. Woodman *et al.* (2010) for example, observed that some self-doubt might result in improved performance. They concluded that although the evidence generally suggests that self-confidence is positively related to performance, there are indications that this relationship is not simply positive and linear. In addition, Chow *et al.* (2012) noted that individuals who suffer a reduction of self-efficacy after a subpar performance may actually practice or study harder to improve future performance.

Weinberg and Gould (2007) warn that athletes should not believe that they can be successful without adequate preparation. This creates false confidence and is deemed to be a recipe for failure. Weinberg and Gould (2007) illustrated the relationship between confidence and performance as an inverted-U with the highest point skewed towards overconfidence. Figure 2.4 illustrates that performance improves as confidence levels increase, but only up to a certain point whereupon further elevation causes decrements in performance.

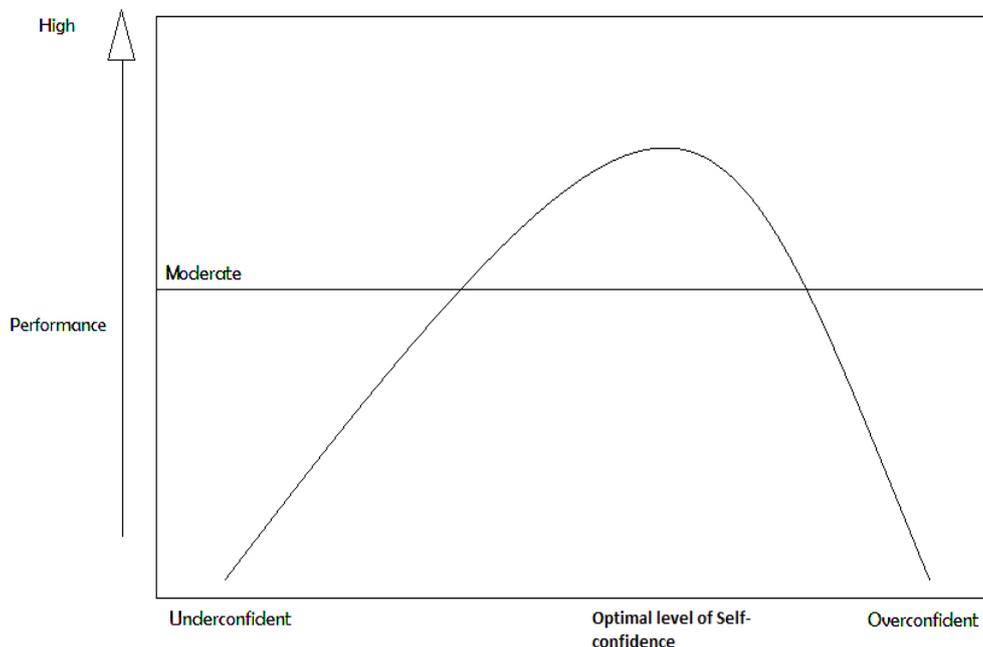


Figure 2.4: The inverted-U relationship between confidence and performance

Self-talk is a valuable tool to counter disruptive thoughts, enhance concentration and helps when acquiring a new skill. Self-talk reduces the frequency of interfering thoughts and thus keeps participants focused more sharply on the task at hand.

Self-talk is categorized in three types: positive, instructional, and negative. Positive self-talk focuses on increasing energy levels where instructional self-talk focuses on task-related aspects of performance in order to improve execution. Negative self-talk creates anxiety and is deemed to be counterproductive. Therefore, athletes should evaluate the type of task and the most appropriate type of self-talk likely to enhance performance. Zinsser *et al.* (2006) suggest that self-talk is a valuable tool when new or difficult skills are learned. This could be accomplished by reminding oneself of key instructions or using cue words. Zinsser *et al.* (2006) emphasise the importance of self-talk in controlling attention. By using a specific set of verbal cues, an athlete can focus more effectively on the task. According to Bandura (1977) self-efficacy is influenced by verbal persuasion, both from others and from the athlete self in the form of self-talk. Zinsser *et al.* (2006) agree that the uses for self-talk are multiple. They suggest that the coach plays a significant role in introducing this tool to athletes.

Concentration

Weinberg and Gould (2007: 367) define concentration as “the ability to maintain focus on relevant environmental cues and the ability to change attentional focus when the environment changes.” According to Southard (2011) there is ample evidence that attention has a significant effect on the practice and learning of motor skills. Martens (1987) stated that when attention is directed totally towards the process of performing a skill, excluding everything else, athletes are functioning in an optimal zone. According to Martens an optimal energy zone can be reached only when one is in a state of flow which is associated with superior performance.

Shaw *et al.* (2005) explain attention as the ability to direct one’s mental processes to the task at hand. According to Cox (2007) an athlete’s ability to pay selective attention to relevant information is of great value. To explain the importance of attention, Nideffer (1976) conceptualized two dimensions: width and direction of attention. The width dimension can range from narrow to broad, while the direction dimension lies somewhere on a continuum from internal to external. Narrowly-focused athletes filter out a great deal of information compared to athletes with a broad focus. External stimuli originate from the environment, whilst internal stimuli are created by inner thoughts and feelings (Nideffer, 1976). Nideffer proposes that the ideal athlete is strong in all four styles and is able to shift readily from one attentional focus to another.

Nideffer (1976) found that athletes tend to have a dominant attentional style. He distinguished between four attentional styles: broad-internal, broad-external, narrow-external, and narrow-internal. He reported that broad-internal athletes are thinking players; they're quick to make tactical adjustments and are skilful analysers of their opponents. However, such athletes can get so caught up in analysing and outguessing themselves that they miss important cues. Athletes with a predominant broad-external style take in a considerable amount of information. This makes them vulnerable to information overload, which could lead to doubt about how to respond. External stimuli such as a noisy crowd, fellow competitors or adverse weather conditions might contribute to information overload, resulting in disrupted focus and poor performance.

Athletes who maintain a strong narrow-external style tend to perform well in tasks in which focus must be pinpointed. In contrast to the track events, the more technical field events may require this particular attentional style in which athletes are required to focus on the task at hand without any direct competitors. Athletes who adopt a narrow-external style may struggle to respond to fluctuations in the environment such as changing weather conditions, or the actions of fellow competitors that necessitate tactical adaptations to ensure optimal performance.

Athletes with a narrow-internal style tend to be critical self-analysers and usually perform better in sports in which change takes place slowly. Team sports often require a broad focus of attention where individual sports such as athletics, require a narrow focus of attention. Attention can be directed internally where muscle tension or problem-solving are important, whilst it could also be focused externally on the opponent or the flash of the starting gun (Nideffer & Sagal, 2006).

In enhancing an athlete's concentration abilities, it is important to assess his/her most prominent attentional style. According to Weinberg and Gould (2007) effective attenders concentrate on several stimuli without getting overloaded and are able to narrow their attentional focus without omitting important information. Training to control attentional focus could enhance the execution of motor skills.

Pieterse's (2004) study of middle-distance runners highlighted the importance of "centering" to regain focus after a break in concentration. Centering refers to the process used to focus on one's centre of gravity and to create a feeling of being centered (in balance) by diaphragmic breathing and muscle relaxation (Nideffer & Sagal, 2006).

Pieterse (2004) is of the opinion that one's thoughts are more focused on relevant tasks when routines are implemented. Routines are beneficial because they provide the athlete with important information about the task at hand. Routines also help to execute a skill automatically by shutting out interference from irrelevant cues.

Psychological factors such as competitive anxiety, motivation, and confidence are some of the potential distractions that might impair the athlete's performance. Environmental factors such as a noisy crowd, presence of officials, and the behaviour of the opposition are factors that need to be simulated during the training sessions.

Weinberg and Gould (2007) support the use of simulations in training sessions to deal with distractors during contests. By simulating an actual competition situation, the athlete includes factors that are not present to the same degree as in the training environment.

Imagery

Visualising, mental rehearsal, symbolic rehearsal, covert practice, imagery and mental practice are terms that refer to an athlete's mental preparation for competition. It involves creating or recreating an experience in the mind (Weinberg & Gould, 2007). Imagery (commonly known as "visualisation") is an experience similar to a sensory experience, but it occurs in the absence of the usual external stimuli (Martens, 1987). Weinberg and Gould (2007) refer to imagery as a form of simulation. Although vision is usually the dominant sense, imagery can also involve other senses: the auditory, olfactory, tactile, and kinaesthetic senses.

There are two categories of imagery: external and internal. External imagery involves visualising the performance from the vantage point of a spectator, whereas during internal imagery one actually "sees" oneself performing a task through one's own eyes (Shaw *et al.*, 2005). Imagery can help athletes acquire or practise motor skills, rehearse competition strategies, and acquire psychological skills (Martens, 1987).

A comprehensive review of several studies from a variety of different sport codes such as basketball, tennis, golf, swimming, karate, running and hockey, concluded that mental practice of motor skills enhances performance (Vealey & Greenleaf, 2006). Research also shown that the use of imagery immediately before a performance helps athletes perform better. In addition to helping athletes perform better, research has supported the effectiveness of imagery in enhancing self-confidence, attentional control, and dealing with precompetitive anxiety (Vealey & Greenleaf, 2006). Jones and Stuth (1997) further

reported that performance could be enhanced by controlling an athlete's arousal state. Imagery could, for example, be used either to increase arousal ("psych up") or as a way to induce relaxation, thereby decreasing arousal levels. Imagery is also used to deal with cognitive anxiety by changing maladaptive thoughts and images (Jones & Stuth, 1997).

Weinberg and Gould (2007) support the importance of practising imagery. According to them, good imagers create vivid, detailed images. One must be able to control and manipulate images to create the correct sequence of action (Weinberg & Gould, 2007). Orlick (1986) concurs that elite athletes are able to create vivid and clear images. Good imagers use all their senses to make their images as clear as possible and as closely related to the actual experience possible. When athletes practise imagery they must pay particular attention to detail such as environmental factors (e.g., weather, playing conditions) their emotions, thoughts and feelings such as anxiety, concentration, frustration or anger that are associated with competing (Weinberg & Gould, 2007).

Many athletes have difficulty controlling their images and often repeat their mistakes when they visualize. Orlick (1986) emphasises the importance of regularly practising imagery to become proficient at it. A key to effective visualising is to control images to help the athlete picture what he/she wants to accomplish instead of rehearsing errors.

When introducing a basic training programme for imagery, the consultant should include exercises aimed at improving vividness and controllability, as well as exercises that enhance self-awareness (Vealey & Greenleaf, 2006). By improving the vividness, the senses that are important in sport performance are strengthened.

Measurement of sport psychological skills

Considerable emphasis has been placed on identifying important sport psychological skills and instructing coaches and athletes how to acquire and implement them. In order to determine the effectiveness of PST programmes, the various psychological skills need to be measured objectively and accurately. Measuring instruments need to be practical, reliable and valid in assessing the psychological attributes of sportspersons (Durand-Bush *et al.*, 2001). A broad range of assessment instruments are available. *The Directory of Psychological Tests in the Sport and Exercise Sciences* (Ostrow, 1990) contains descriptions of 175 valid and reliable questionnaires for use in sport and exercise settings.

Some of the best-known instruments within a sport performance context are the *Test of Attentional and Interpersonal Style* (TAIS), developed by Nideffer (1976), the *Sport*

Competition Anxiety Test (SCAT) of Martens (1982), the *Competitive State Anxiety Inventory-2* (CSAI-2) introduced by Martens *et al.* (1990), and the *Ottawa Mental Skills Assessment Tool* (OMSAT-3) that measures various subscales of psychological skills (Durand-Bush *et al.*, 2001).

Within the South African context, Wheaton (1998) developed the *Psychological Skills Inventory* (PSI) that measures six sport psychological skills believed to be related to athletic performance. This instrument proved to be able to differentiate between successful and less successful athletes and the preliminary validity and reliability coefficients showed promise. However, Wheaton pointed out that further research is required before using this instrument for research or applied purposes.

The PSI was administered within a high-performance programme of the *Sport Information and Science Agency* (SISA) – a government sponsored programme for elite South African sportspersons. Unfortunately, the data collected from 768 elite South African athletes over a period of five years revealed poor reliability scores and unsatisfactory confirmatory factor analysis results (Potgieter & Kidd, 2011). These authors then developed the *Peak Performance Profile* (PPP) which provides a practical, brief and valid way of assessing three important mental factors that affect sport performance: stress control, concentration, and confidence.

Both the PSI and the PPP will be discussed in more detail in Chapter Three that deals with the research methodology implemented in this study.

Chapter Three

Research Methodology

This study was approved by the Research Ethics Committee: Human Research (Non-health) of Stellenbosch University (Reference number 485/2010).

The study consisted of two phases. The first phase surveyed the sport psychological skills of athletes who participated in the 2011 University Sport South Africa (USSA) Athletics Championships. From this data a sport psychological skills profile was compiled and used to develop a PST programme. During the second phase, a quasi-experimental research design was used during which the participants were divided into an experimental and control group. The experimental group took part in a purposefully developed PST programme, whereas the control group were not subjected to any intervention.

Participants

Phase One

A total of 143 athletes, who participated in the 2011 USSA Athletics Championships in Stellenbosch, took part in the first phase of the study. The mean age of this sample was 21.5 (\pm 2.42) years. This group consisted of a few more male ($n = 75$) than female ($n = 68$) athletes. All the participants were registered students from the following five South African universities: Stellenbosch University, University of Johannesburg, University of the Free-State, University of Pretoria, and the North-West University. All participants signed an informed consent form before completing the research questionnaires.

Athletes qualified for inclusion in Phase One if they...

1. competed in at least one event during the 2011 USSA Athletics Championships. In cases where athletes took part in more than one event, their best IAAF score for these events was used for further analysis.
2. completed the sport psychological questionnaires in full.

Phase Two

A total of 42 registered members of the Maties Athletics Club (from Stellenbosch University) participated in Phase Two of the study. These participants were registered students at the Stellenbosch University and competed at club, provincial or national level during the 2011/2012 season. Convenience sampling was used and the participants were divided into an experimental ($n = 24$) and control ($n = 18$) group based on their ability and

willingness to take part in the PST programme. The mean age of participants in the experimental group (13 male and 11 female) was 20.3 (\pm 2.27) years, whilst that of the control group (13 male and five female) was 21.1 (\pm 2.01) years. The participants were required to complete an informed consent form. The athletes had to refrain from consulting another sport psychologist for the full duration of Phase Two of the research project.

Participants were included in Phase Two of the study if they...

1. were members of the Maties Athletics Club.
2. completed the sport psychological questionnaires in full during both pre and post-testing.
3. participated in both the 2012 Maties Club Championships (or another sanctioned athletics competition during the same period) (pre-testing) and the 2012 USSA Athletics Championship (post-testing).

Athletes were excluded from Phase Two of the study if they...

1. missed any of the PST programme sessions (experimental group).
2. consulted another sport psychologist during the study period.
3. were injured during the course of the season.

Subsequently, the data of all 42 athletes were used to compare the pre and post-intervention psychological skills scores. Unfortunately, only 13 athletes from the experimental group and 14 from the control group recorded IAAF scores during the aforementioned competitions (pre and post-testing). The experimental group consisted of seven male and six female athletes with a mean age of 20.2 ± 1.30 years, whereas the control group consisted of 10 male and four female athletes with a mean age of 21.4 ± 2.21 years. The results pertaining to the psychological skills scores and athletic performance, therefore, refer to two different samples.

Measuring instruments

Demographic, general athletic and sport psychological questionnaire

Demographic information (name, surname, birth date, test date), track and field history (years of competing, preferred event) and sport psychology background (visits to sport psychologists (individually or in a team), the perceived importance of sport psychological skills, the extent to which the athlete felt he/she could prepare him/herself psychologically for training sessions and competitions, and the need for sport psychological services were included in this questionnaire.

The Psychological Skills Inventory (PSI)

Wheaton (1988) constructed the PSI after an extensive review of sport psychology literature. A provisional 82-item inventory was administered to 304 university sport science students. Test-retest reliability (over a period of one week) yielded correlations ranging from 0.79 to 0.97. The ten best correlated items from each mental skill were included in a 60-item inventory. It comprised the following six sport psychological subscales (consisting of ten items each): achievement motivation, goal directedness, activation control, maintaining self-confidence, concentration, and imagery. The items are scored on a five-point Likert-type scale anchored by descriptors ranging from “Never” [0] to “Always” [4]. Reversed scoring applies to 18 of the 64 items. Results are expressed as percentage scores, with higher values reflecting better sport psychological skill levels. Preliminary results showed that this inventory was able to differentiate between successful and less-successful athletes. However, Wheaton, recommended that the final inventory needs to be subjected to more testing to determine the correlation with other inventories or measures.

The Peak Performance Profile (PPP)

The 60-item PSI was administered over a period of more than five years to 768 elite sportspersons, who were part of the government-sponsored *Sport Information and Science Agency* (SISA) high-performance programme. A confirmatory factor analysis (CFA) was performed on the data, which produced disappointing results. These included a root mean square error of approximation (RMSEA) of 0.13 (acceptable value: < 0.05), a goodness-of-fit index (GFI) of 0.8 (acceptable value: >0.95) and an adjusted goodness-of-fit index (AGFI) of 0.79 (acceptable value: > 0.95) (Potgieter & Kidd, 2011).

The data were then split into a calibration and a validation sample. After an exploratory factor analysis (EFA) four independent factors (concentration, confidence, stress control, and visualisation) with loadings of >0.5 emerged, which consisted of 22 items: These four factors explained 61% of the variance of the data. The factor analysis resulted in a limited number of mental dimensions. It was consequently decided to present the few remaining items as a profile of mental attributes instead of an inventory of mental skills. After this decision, visualisation was eliminated because it didn't follow the new pattern of thinking. Confirmatory Factor Analysis (CFA) was conducted on the calibration data using the 15 items, after two of the concentration items were again included to determine if they could be used in the confidence category (Potgieter & Kidd, 2011).

After including the two confidence items, 34 and 40, to determine if they could be used, they were eliminated because of unsatisfactory goodness-of-fit (GFT). The confirmatory factor analysis of the remaining items (13), yielded satisfactory goodness-of-fit scores (RMSEA=0.41; GFI=0.99; AGFI=0.98). The variance extracted and Chronbach alpha for concentration (variance extracted = 0.59, Chronbach alpha = 0.85) and (variance extracted = 0.56, Chronbach alpha = 0.82) for stress control. The variance extracted and Chronbach alpha for confidence were just below the usual norms (variance extracted > 0.5 and Chronbach alpha > 0.7). Two new items were added to the confidence subscale for future analysis. The authors envisage further development especially in the confidence subscale, planned as part of their next phase in developing the instrument (Potgieter & Kidd, 2011).

Chronbach alpha coefficients were calculated for the data gathered during Phase One of the current study. Table 3.1 reports the reliability statistics for the two instruments (PPP and PSI) used in this study.

Table 3.1: Chronbach alpha coefficients for the Psychological Skills Inventory (PSI) and Peak Performance Profile (PPP) subscales

Psychological skills subscale	Chronbach Alpha
Psychological Skills Inventory (PSI) Total	0.85
* <i>Achievement motivation</i>	0.72
* <i>Goal directedness</i>	0.82
* <i>Activation control</i>	0.83
* <i>Maintaining self-confidence</i>	0.86
* <i>Concentration</i>	0.77
* <i>Imagery</i>	0.84
Peak Performance Profile (PPP) Total	0.86
* <i>Confidence</i>	0.71
* <i>Stress control</i>	0.83
* <i>Concentration</i>	0.72

Dependent and independent variables

The dependent variable for both Phases One and Two was the performance of the athletes as calculated from the IAAF scoring tables. These tables express individual athletic performances as points, enabling direct comparisons between different events, as well as between athletes from different genders and ages. The data for Phase One were gathered during the 2011 USSA Athletics Championships, whereas the performances of the participants in Phase Two were monitored over a three-month period during the 2011/2012 track and field season. The independent variables for both phases were the psychological dimensions of the participants as measured by the PSI (Wheaton, 1998) and the PPP (Potgieter & Kidd, 2011).

Procedures

Phase One

The participants were given a brief overview of the nature, purpose and potential benefits of the study. This was followed by an assessment of the athletes' psychological skills by means of the PSI and the PPP. The IAAF scores of athletes were calculated for each event in which they competed in and their best score was used for further analysis. The results from Phase One were used to develop a PST programme which was implemented during Phase Two.

Phase Two

Following the development of the PST programme, Phase Two of the study was advertised to members of the Maties Athletics Club. Participation was voluntary. Forty-two athletes attended the introductory session, which also served as pre-testing of their psychological skills.

The dependent variable, athletic performance (IAAF score) was gathered at two competitions. The pre-test data were collected before the start of the PST programme, during the 2012 Maties Club Championships held at Coetzenburg on 18 February or during the Suzman Schield meeting hosted at the Bellville Velodrome on 15 February. The post-test data were collected during the 2012 USSA Athletics Championships in Johannesburg on 27 and 28 April 2012.

Introduction and pre-testing

Participants were given a brief overview of the study and the aims thereof, after which the test protocol, procedures, benefits and rights of the participants were explained. The

participants completed informed consent forms and demographic information, athletic history and perceptions on sport psychology and PST were gathered. In addition, their psychological skill levels were assessed by means of the PSI and PPP questionnaires. Pre-testing took place during pre-competition training, with approximately 12 weeks to go to the most important competition on the South African student athletics calendar, the 2012 USSA Athletics Championships.

Feedback session

A general feedback session was held where participants received their individual psychological skills profile, whilst the group results were also discussed. Thereafter, the group was divided into a control group and an experimental group. All the participants were instructed to refrain from consulting other sport psychologists for the full duration of the study. If they decided to consult with another sport psychologist they were requested to inform the primary researcher as they would no longer qualify to take part in the study.

A sport-specific PST programme was developed by the researcher, based on the needs identified during the first phase of the study. Only participants from the experimental group were exposed to this programme. The control group members were not permitted to attend the PST sessions throughout the study period.

The purposefully-developed PST programme consisted of seven sessions (one session per week, each lasting approximately one hour) dealing with the following sport psychological topics:

Session 1: Goal setting

Session 2: Achievement motivation

Session 3: Imagery

Session 4: Managing somatic anxiety

Session 5: Managing cognitive anxiety

Session 6: Concentration

Session 7: Self-confidence

Participants in the experimental group received a workbook containing specific activities for each day during this seven-week long intervention period (See appendix). During the delivery of the programme, participants were divided into smaller groups to provide a learning environment where group members could learn from each other's experiences. The delivery method for the PST programme focused on recreating experiences through

thoughts, feelings, perceptions and behaviour and creating an atmosphere where these experiences could be shared. The PST programme generally followed a set structure with a strong educational approach during which awareness of the specific sport psychological skills was raised (within the context of track and field) followed by an acquisition phase. During this stage techniques were introduced for learning the various sport psychological skills. The workbook activities incorporated the opportunity to practise and individualise these techniques.

Post-testing

The experimental and control groups completed the PSI and PPP questionnaires four weeks after the last PST session was conducted. Post-testing of the participants' athletic performance was collected during the 2012 USSA Athletics Championships held in Johannesburg, 12 weeks after the pre-testing.

Statistical analysis

The Statistical Data Processing package was used to analyse the data (StatSoft, Inc, 2010). Descriptive statistics (means and standard deviations) were calculated. Effect sizes (ES) and ANOVA's were used to determine the differences between groups in Phase One: comparing the bottom 21, average 21 and top 21 sprinters, the top 20 and bottom 21 middle and long-distance athletes, top eight and bottom nine jumpers, top eight and bottom nine throwers and top three and bottom three multi-event athletes. Descriptive statistics were again calculated as well as determining differences between the experimental and control groups' sport psychological skills and athletic performances prior to and after completing the PST programme. Statistical significance was set at $p \leq 0.05$ throughout. Effect sizes (ES) were calculated according to the formula described by Thomas *et al.* (2005), i.e., $ES = (M_1 - M_2)/s_p$. Here, M_1 = the mean value of the group at pre-testing, M_2 = the mean value of the group at post-testing and s_p = the pooled standard deviation.

$$s_p = \sqrt{\frac{s_1^2(n_1 - 1) + s_2^2(n_2 - 1)}{n_1 + n_2 - 2}}$$

Here, S_1^2 = the variance of the participants during pre-testing; S_2^2 = the variance of the participants during post-testing; n_1 = the number of participants during pre-testing; n_2 = the number of participants during post-testing. Effect sizes of around 0.8 indicate large practical significance; around 0.5 indicate moderate practical significance; and around 0.2 indicate small practical significant differences between the respective groups.

Chapter Four

Results

The results from the two phases of the study will be reported separately. Phase One dealt with the descriptive statistics and within-group comparisons of 143 athletes who participated in the 2011 USSA Athletics Championships. Phase Two focused on the effectiveness of a purposefully-developed PST programme aimed at improving the sport psychological skills levels and performance of athletes from Stellenbosch University.

Phase One

Figures 4.1 to 4.6 represent the gender composition for the sample of athletes, their perceived importance of PST programmes, their previous consultations with sport psychologists and/or exposure to PST programmes, their perceived ability to prepare mentally for training sessions and competitions, and their need for PST programmes.

Figure 4.1 shows that the total sample comprised of almost equal numbers of male and female athletes.

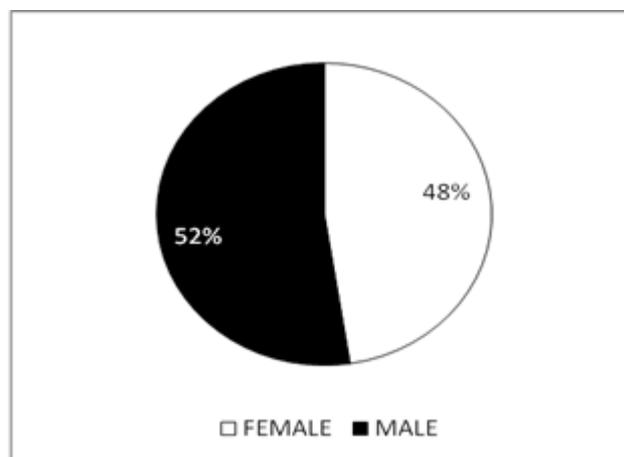


Figure 4.1: Gender composition of the total sample

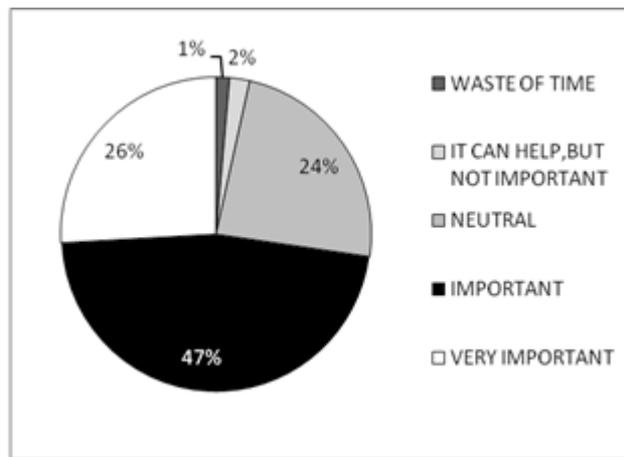


Figure 4.2: Perceived importance of PST programmes of the total sample

Figure 4.2 shows that 73% of the total group perceived PST programmes as “important” or “very important”. Almost a quarter (24%) of the participants held a neutral perception about its importance, whereas very few (3%) deemed PST to be unimportant or a waste of time.

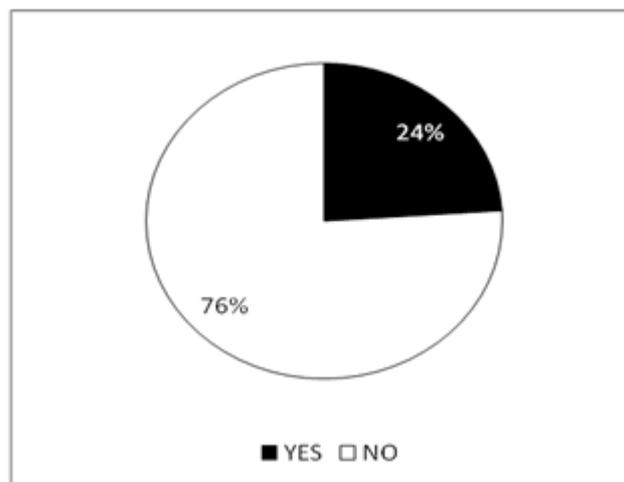


Figure 4.3: Previous consultations with a sport psychologist and/or exposure to PST programmes

Despite the perceived importance of PST programmes as pointed out in Figure 4.2, Figure 4.3 shows that 24% of the participants had previously consulted a sport psychologist and/or had any exposure to PST programmes.



Figures 4.4 & 4.5: Perceived ability to prepare mentally for training sessions and competitions

Figures 4.4 and 4.5 show similar findings with regard to the athletes' perceived ability to prepare mentally for training sessions and competitions. In addition, these figures showed that 40% of the participants could potentially benefit from PST as they perceived their ability to prepare mentally for training sessions and competitions as either "average" or "below average".

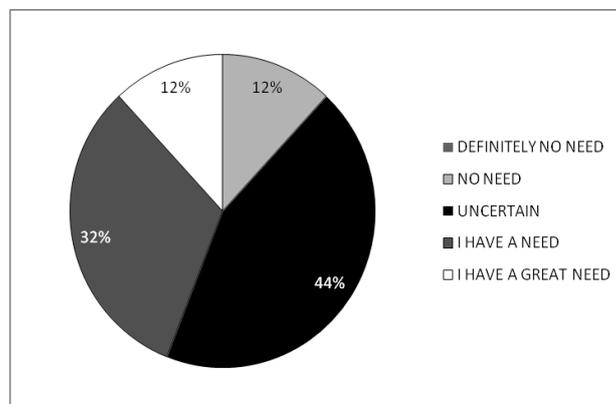


Figure 4.6: Need for PST programmes

Despite the room for improvement implied in Figures 4.4 and 4.5, 44% of the participants were uncertain about their need for PST programmes, whilst 12% expressed no need for such programmes.

Table 4.1 reports the means and standard deviations for the nine psychological skills subscales for the total sample (N = 143), as well as for the group of sprinters (n = 63), middle and long-distance athletes (n = 41), jumpers (n = 17), throwers (n = 16), and multi-event participants (n = 6), respectively. In addition, the means and standard deviations for

the best performances (IAAF performance score) at the 2011 USSA Athletics Championships are reported for each of the above-mentioned groups. From this table it is evident that the sprinters were both the biggest subgroup (n = 63) and the group that achieved the best IAAF scores during the championships. The multi-event participants were the smallest group (with only six athletes in the group), as well as the group that obtained the lowest IAAF scores during the championships.

Table 4.1: Mean and standard deviations of the PPP, PSI and IAAF scores of the total sample and subgroups

	TOTAL GROUP (N = 143)	SPRINTERS (n = 63)	MIDDLE & LONG DISTANCE (n = 41)	JUMPERS (n = 17)	THROWERS (n = 16)	MULTI-EVENT ATHLETES (n = 6)
	MEAN ± SD	MEAN ± SD	MEAN ± SD	MEAN ± SD	MEAN ± SD	MEAN ± SD
PPP Total	60.0 ± 13.84%	58.4 ± 14.00%	58.4 ± 13.59%	66.3 ± 11.90%	64.8 ± 13.08%	56.7 ± 17.16%
* <i>Concentration</i>	56.7 ± 17.37%	55.2 ± 15.69%	53.9 ± 19.48%	66.2 ± 14.63%	60.0 ± 16.73%	55.0 ± 22.80%
* <i>Stress control</i>	66.9 ± 16.24%	64.5 ± 16.50%	67.6 ± 16.17%	72.4 ± 16.40%	69.7 ± 14.31%	63.3 ± 18.07%
* <i>Confidence</i>	56.4 ± 15.78%	55.6 ± 16.56%	53.7 ± 14.28%	60.3 ± 14.84%	64.7 ± 16.07%	51.7 ± 14.02%
PSI Total	63.5 ± 10.40%	62.5 ± 10.57%	64.1 ± 9.83%	64.2 ± 12.07%	64.9 ± 9.73%	65.0 ± 11.75%
* <i>Achievement motivation</i>	75.7 ± 10.45%	74.7 ± 10.50%	75.7 ± 10.13%	76.6 ± 12.90%	77.5 ± 9.66%	77.1 ± 8.58%
* <i>Goal Directedness</i>	70.1 ± 15.09%	69.2 ± 15.13%	73.8 ± 12.60%	61.6 ± 19.34%	71.4 ± 11.83%	75.4 ± 18.13%
* <i>Activation Control</i>	56.9 ± 15.11%	55.4 ± 15.56%	55.4 ± 14.53%	61.0 ± 14.42%	62.7 ± 13.18%	55.4 ± 19.71%
* <i>Maintaining self-confidence</i>	59.3 ± 12.07%	57.5 ± 12.83%	58.6 ± 10.43%	63.7 ± 14.06%	63.9 ± 10.20%	59.2 ± 10.08%
* <i>Concentration</i>	59.7 ± 13.74%	58.3 ± 12.05%	58.5 ± 14.82%	66.2 ± 13.26%	62.2 ± 13.38%	58.8 ± 22.46%
* <i>Imagery</i>	59.3 ± 16.78%	59.8 ± 15.38%	62.3 ± 13.97%	55.9 ± 19.28%	51.7 ± 23.18%	64.2 ± 19.15%
IAAF score	877.1 ± 1572.2	918.6 ± 119.70	839.0 ± 200.16	894.7 ± 83.94	865.6 ± 113.30	681.3 ± 248.44

Figures 4.7 and 4.8 illustrate the mean percentage scores of each subscale of the Peak Performance Profile (PPP) and the Psychological Skills Inventory (PSI) for the total group of participants (N = 143).

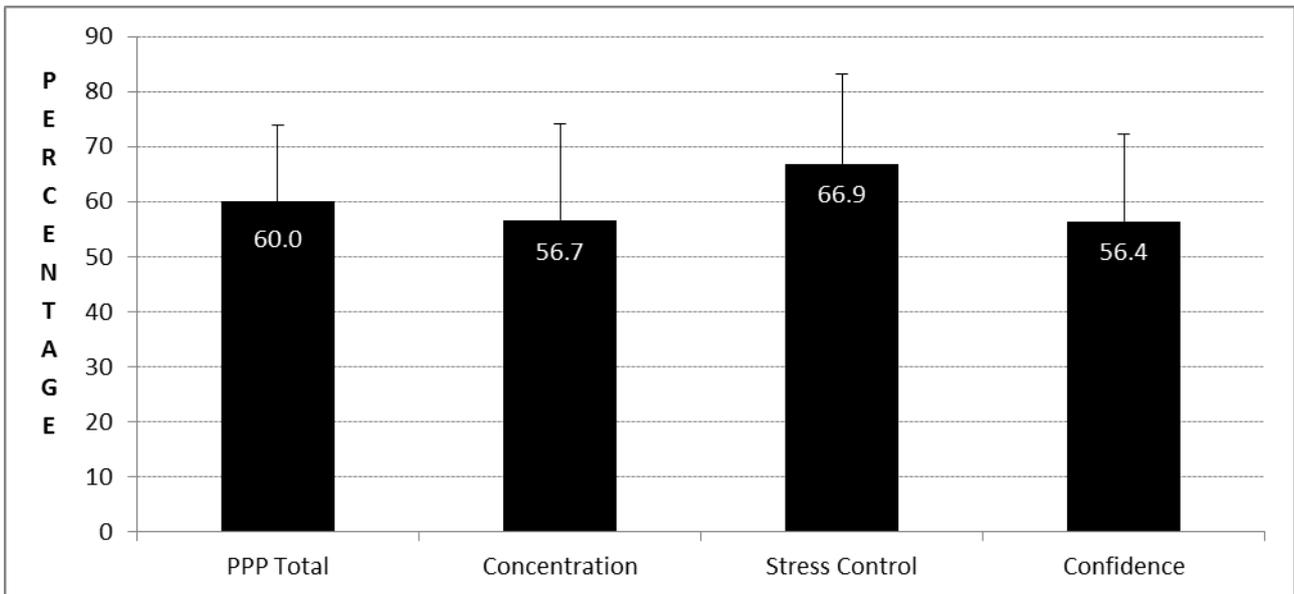


Figure 4.7: The PPP subscale scores (mean ± SD) of the total sample

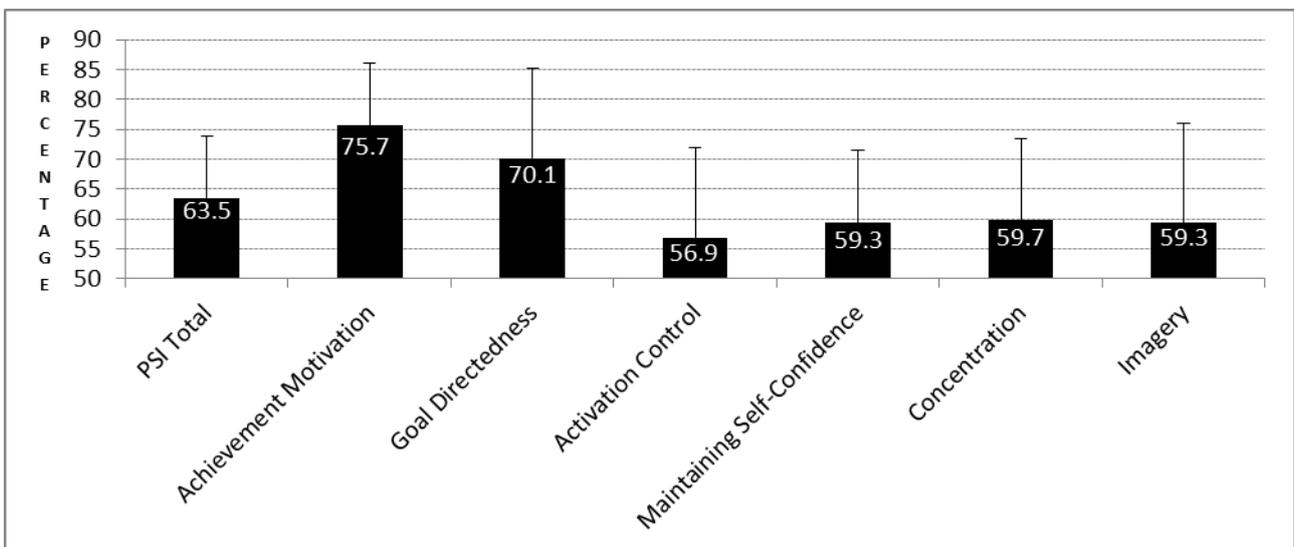


Figure 4.8: The PSI subscale scores (mean ± SD) of the total sample

The aim of Phase One of the study was not to conduct between-group comparisons (e.g., comparing sprinters with middle and long-distance runners), but rather to conduct within-group comparisons (e.g., comparing the sprinters based on their performances as reflected by their IAAF scores). Subsequently, Tables 4.2 to 4.6 and Figures 4.9 to 4.18 report the within-group comparisons in an attempt to highlight the influence of psychological skills levels on athletic performance.

Table 4.2 provides the psychological skills scores for the sprinters (100m, 200m, 400m, 100mh, 110mh, 400mh). The sprinters were categorized into three groups according to their athletic performances (IAAF scores): Bottom 21 (scores ranged from 530 - 896), Average 21 (903 - 980) and Top 21 (981 - 1099).

Table 4.2: Comparison of the PPP, PSI and IAAF scores of the three groups of sprinters

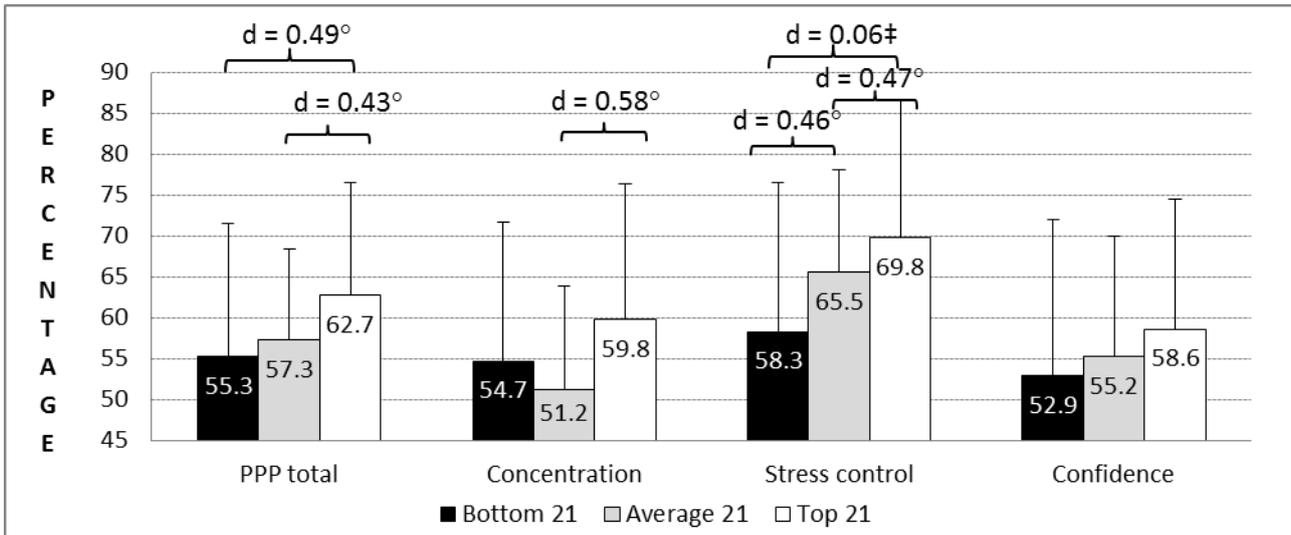
	BOTTOM 21 (MEAN ± SD)	AVERAGE 21 (MEAN ± SD)	TOP 21 (MEAN ± SD)	Effect size results (Cohen's <i>d</i> -value) Practical significant difference between			ANOVA (p-value) Statistically significant difference between		
				Bottom 21 & Average 21	Bottom 21 & Top 21	Average 21 & Top 21	Bottom 21 & Average 21	Bottom 21 & Top 21	Average 21 & Top 21
PPP Total	55.3 ± 16.26%	57.3 ± 11.11%	62.7 ± 13.76%	0.14	0.49°	0.43°	0.88	0.20	0.42
* <i>Concentration</i>	54.8 ± 16.99%	51.2 ± 12.64%	59.8 ± 16.62%	0.24	0.30°	0.58°	0.73	0.55	0.18
* <i>Stress control</i>	58.3 ± 18.26%	65.5 ± 12.54%	69.8 ± 16.84%	0.46°	0.65°°	0.47°	0.32	0.06 ‡	0.66
* <i>Confidence</i>	52.9 ± 19.01%	55.2 ± 14.79%	58.6 ± 15.90%	0.14	0.33°	0.22	0.88	0.51	0.79
PSI Total	60.7 ± 11.66%	61.0 ± 8.03%	66.0 ± 11.35%	0.10	0.47°	0.48°	0.99	0.27	0.32
* <i>Achievement motivation</i>	71.5 ± 12.20%	73.9 ± 9.20%	78.7 ± 8.96%	0.15	0.67°°	0.52°	0.73	0.06 ‡	0.29
* <i>Goal directedness</i>	68.2 ± 12.82%	68.5 ± 15.33%	70.8 ± 17.47%	0.01	0.12	0.10	0.99	0.84	0.87
* <i>Activation control</i>	53.0 ± 6.98%	56.2 ± 12.98%	57.1 ± 16.85%	0.15	0.17	0.04	0.78	0.66	0.97
* <i>Maintaining self-confidence</i>	55.0 ± 13.41%	55.5 ± 10.85%	62.1 ± 13.37%	0.03	0.37°	0.38°	0.99	0.16	0.20
* <i>Concentration</i>	55.4 ± 13.35%	57.8 ± 10.00%	62.7 ± 12.89%	0.15	0.39°	0.38°	0.93	0.11	0.22
* <i>Imagery</i>	55.4 ± 13.35%	55.5 ± 16.50%	62.7 ± 14.47%	0.01	0.37°	0.32	0.46	0.93	0.28
IAAF score (Range)	530 – 896	903 – 980	981 – 1099	-	-	-	-	-	-

‡ Borderline statistically significant differences ($p \leq 0.1$)

° Moderate practical significant differences ($d \approx 0.5$)

°° Large practical significant differences ($d \approx 0.8$)

Figures 4.9 and 4.10 illustrate a comparison of the PPP and PSI subscales scores of the three groups of sprinters

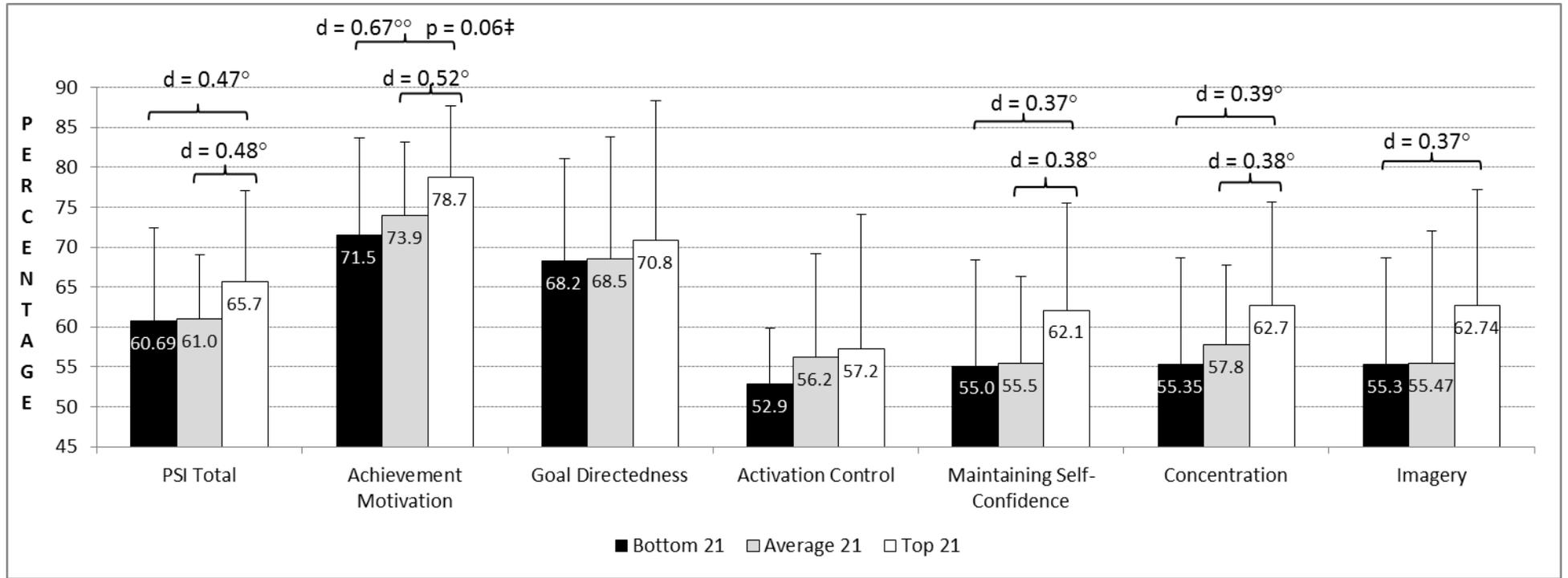


‡ Borderline statistical differences ($p \leq 0.1$)

° Moderate practical significant differences ($d \approx 0.5$)

°° Large practical significant differences ($d \approx 0.8$)

Figure 4.9: Comparison of the PPP subscale scores (mean \pm SD) of the three groups of sprinters



‡ Borderline statistical differences ($p \leq 0.1$)

° Moderate practical significant differences ($d \approx 0.5$)

°° Large practical significant differences ($d \approx 0.8$)

Figure 4.10: Comparison of the PSI subscale scores (mean \pm SD) of the three groups of sprinters

From Table 4.2 and Figures 4.9 and 4.10 it is clear that the PPP subscale levels of the top 21 sprinters were consistently higher than those of the bottom 21 sprinters. The only exception was the concentration levels (measured with the PPP) where the bottom 21 sprinters outscored the average 21 sprinters. The same tendency could be observed with the PSI subscales where the top 21 sprinters outscored the average 21 sprinters. The bottom 21 sprinters scored the lowest on every occasion, except for concentration, where the average 21 sprinters scored the lowest. Practical significant differences were observed between the top and the bottom sprinters for seven of the eleven subscales with the only exclusions being concentration, confidence, goal directedness and activation control. Practical significant differences were observed between the top 21 sprinters and the average 21 sprinters for seven of the eleven subscales: PPP total, concentration, stress control, PSI total, achievement motivation, maintaining self-confidence, and concentration (PSI). The only practical significant differences regarding the psychological skills subscales between the average 21 sprinters and the bottom 21 sprinters were for stress control, and concentration (PSI) where the average group of sprinters showed higher levels. Statistically significant differences occurred between the top 21 sprinters and the bottom 21 sprinters for two subscales: stress control and achievement motivation.

From these results it is evident that the PSI and PPP can distinguish between more successful and less-successful athletes regarding their psychological skills levels, as the more-successful sprinters reported better psychological skills levels than their less-successful counterparts.

Table 4.3 provides the comparison between the top 20 and bottom 21 middle and long-distance athletes.

Table 4.3: Comparison of the PPP, PSI and IAAF scores of the top 20 and bottom 21 middle and long-distance athletes

	TOP 20 (MEAN ± SD)	BOTTOM 21 (MEAN ± SD)	Effect size results (Cohen's <i>d</i>-value) Practical significant difference
PPP Total	59.3 ± 14.99%	57.5 ± 12.41%	0.14
* <i>Concentration</i>	52.8 ± 23.20%	55.0 ± 15.65%	0.11
* <i>Stress control</i>	69.3 ± 17.72%	66.0 ± 14.80%	0.20
* <i>Confidence</i>	56.0 ± 14.47%	51.4 ± 14.07%	0.32
PSI Total	65.4 ± 10.69%	62.8 ± 8.99%	0.27
* <i>Achievement motivation</i>	78.4 ± 11.24%	73.2 ± 8.44%	0.52°
* <i>Goal directedness</i>	75.3 ± 11.77%	72.5 ± 13.48%	0.22
* <i>Activation control</i>	56.5 ± 14.94%	54.4 ± 14.42%	0.14
* <i>Maintaining self-confidence</i>	59.3 ± 10.16%	58.0 ± 10.88%	0.12
* <i>Concentration</i>	58.9 ± 18.14%	58.2 ± 11.24%	0.04
* <i>Imagery</i>	64.4 ± 16.05%	60.4 ± 11.70%	0.29
IAAF score (Range)	896 - 1066	131 - 891	-

° Moderate practical significant differences ($d \approx 0.5$)

Figures 4.11 and 4.12 compare the PPP and PSI subscales scores of the top 20 and bottom 21 middle and long-distance athletes.

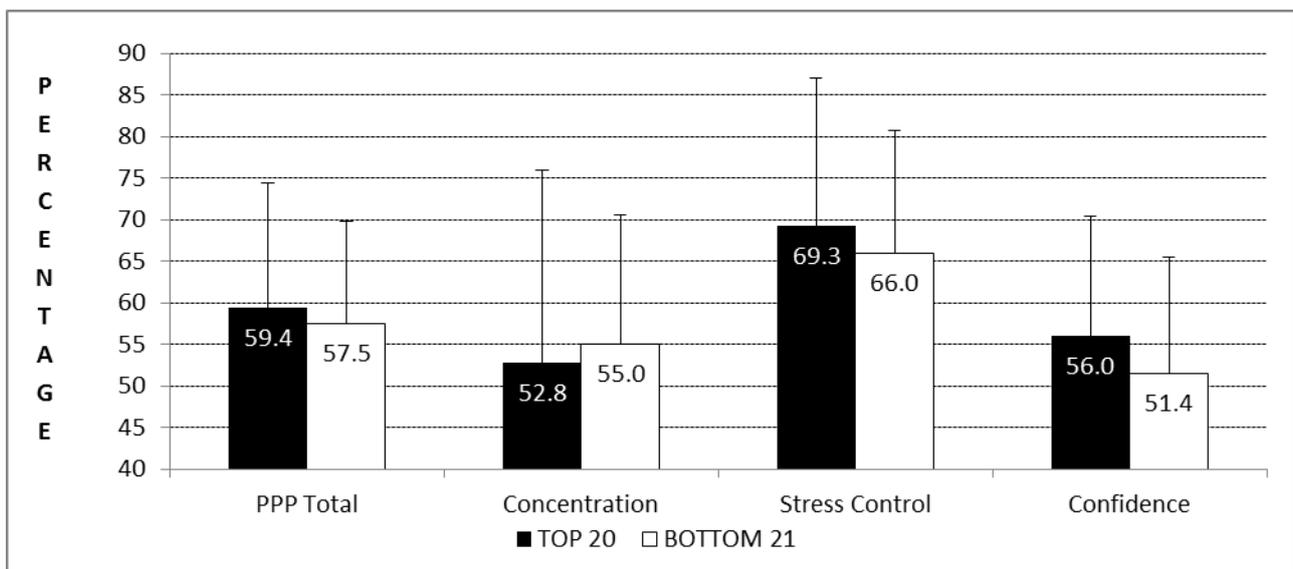
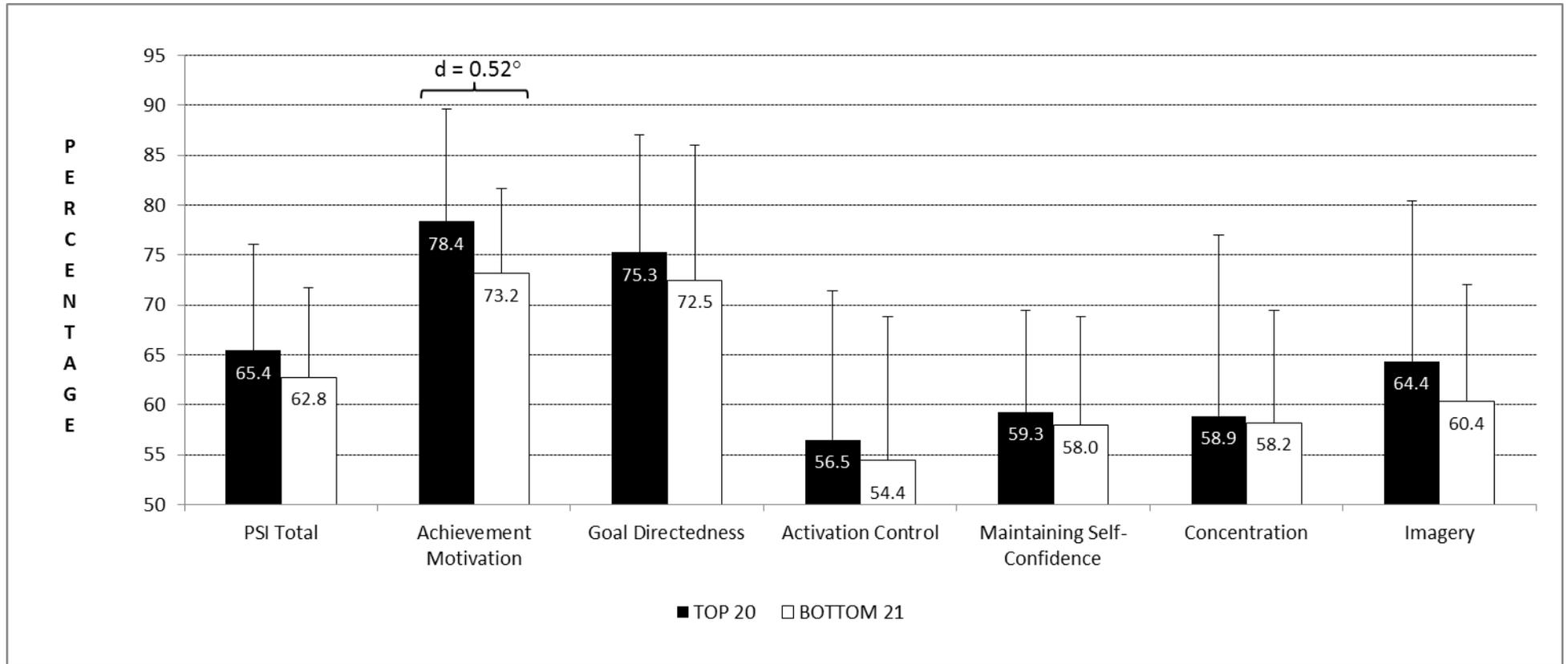


Figure 4.11: Comparison of the PPP subscale scores (mean ± SD) of the two groups of middle and long-distance athletes



° Moderate practical significant differences ($d \approx 0.5$)

Figure 4.12: Comparison of the PSI subscale scores (mean ± SD) of the two groups of middle and long-distance athletes

From Table 4.3 and Figures 4.11 and 4.12 it is evident that the top 20 middle and long-distance athletes produced practical significantly higher achievement motivation scores than the bottom 21 performers (top 20: $78.37 \pm 11.24\%$; bottom 21: $73.21 \pm 8.44\%$). From Figures 4.11 and 4.12 a tendency can be observed where the top 20 middle and long-distance athletes obtained better scores for every psychological skill subscale with concentration (measured with the PPP) as the only exception. However, none of these differences were statistically significant.

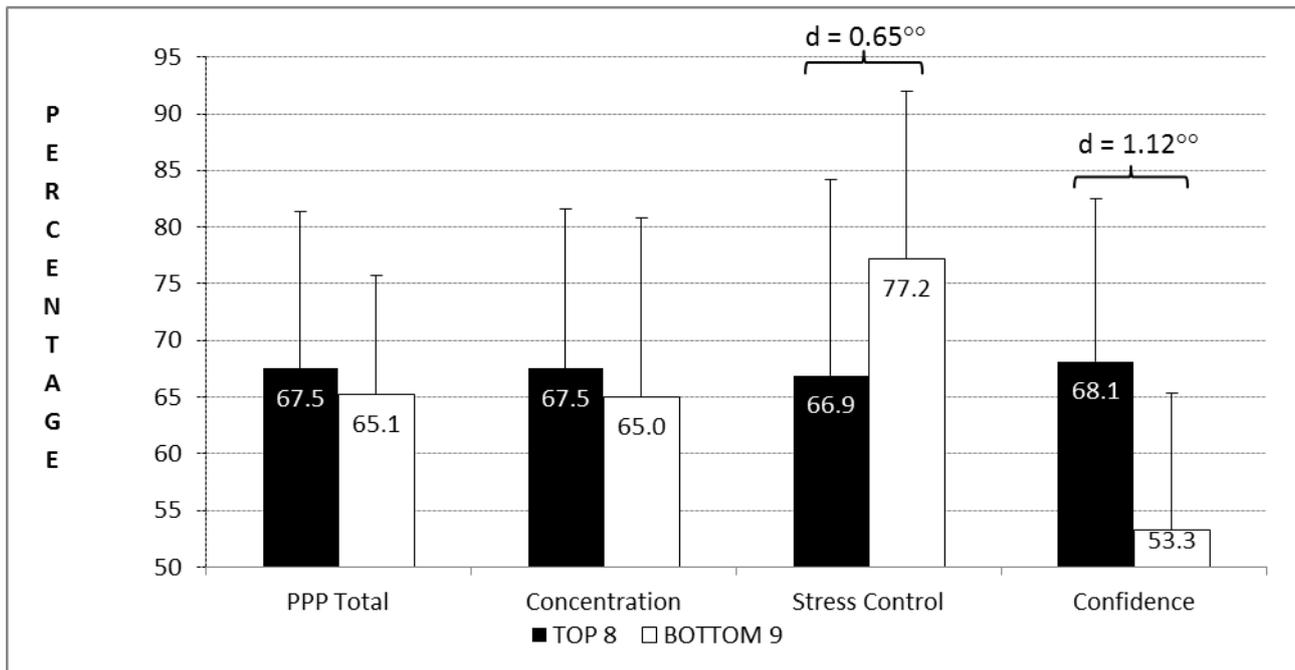
Table 4.4 represents the eleven psychological skills subscales for the participating jumpers (long jump, high jump, triple jump, and pole vault). The jumpers were divided into two groups according to their athletic performances, i.e., the top eight jumpers and the bottom nine jumpers. This table shows that the top eight achievers had a practical significantly better confidence score than the bottom nine, whereas the bottom nine outscored the top eight for stress control. There was also a tendency for the top eight jumpers to record better scores (albeit insignificantly so) for all the psychological skills subscales, except for stress control, goal directedness, and imagery.

Table 4.4: Comparison of the PPP, PSI and IAAF scores of the two groups of jumpers

	TOP 8 (MEAN \pm SD)	BOTTOM 9 (MEAN \pm SD)	Effect size results (Cohen's <i>d</i>-value) Practical significant difference
PPP Total	67.5 \pm 13.89%	65.2 \pm 10.56%	0.19
* <i>Concentration</i>	67.5 \pm 14.14%	65.0 \pm 15.81%	0.17
* <i>Stress control</i>	66.9 \pm 17.31%	77.2 \pm 14.81%	0.65 ^{oo}
* <i>Confidence</i>	68.1 \pm 14.38%	53.3 \pm 11.99%	1.12 ^{oo}
PSI Total	64.3 \pm 14.92%	64.0 \pm 9.82%	0.03
* <i>Achievement motivation</i>	77.2 \pm 17.60%	76.1 \pm 7.82%	0.08
* <i>Goal directedness</i>	59.1 \pm 19.22%	63.9 \pm 20.31%	0.24
* <i>Activation control</i>	63.1 \pm 16.19%	59.2 \pm 13.35%	0.27
* <i>Maintaining self-confidence</i>	65.6 \pm 16.19%	61.9 \pm 9.58%	0.28
* <i>Concentration</i>	66.1 \pm 10.52%	66.1 \pm 15.96%	0.01
* <i>Imagery</i>	54.7 \pm 21.48%	56.9 \pm 18.36%	0.11
IAAF score (Range)	909 - 1083	754 - 901	-

^{oo} Large practical significant differences ($d \approx 0.8$)

Figures 4.13 and 4.14 compare the Peak Performance Profile and Psychological Skills Inventory subscale scores of the top eight and bottom nine jumpers.



^{oo} Large practical significant differences ($d \approx 0.8$)

Figure 4.13: Comparison of the PPP subscale (mean \pm SD) of the two groups of jumpers

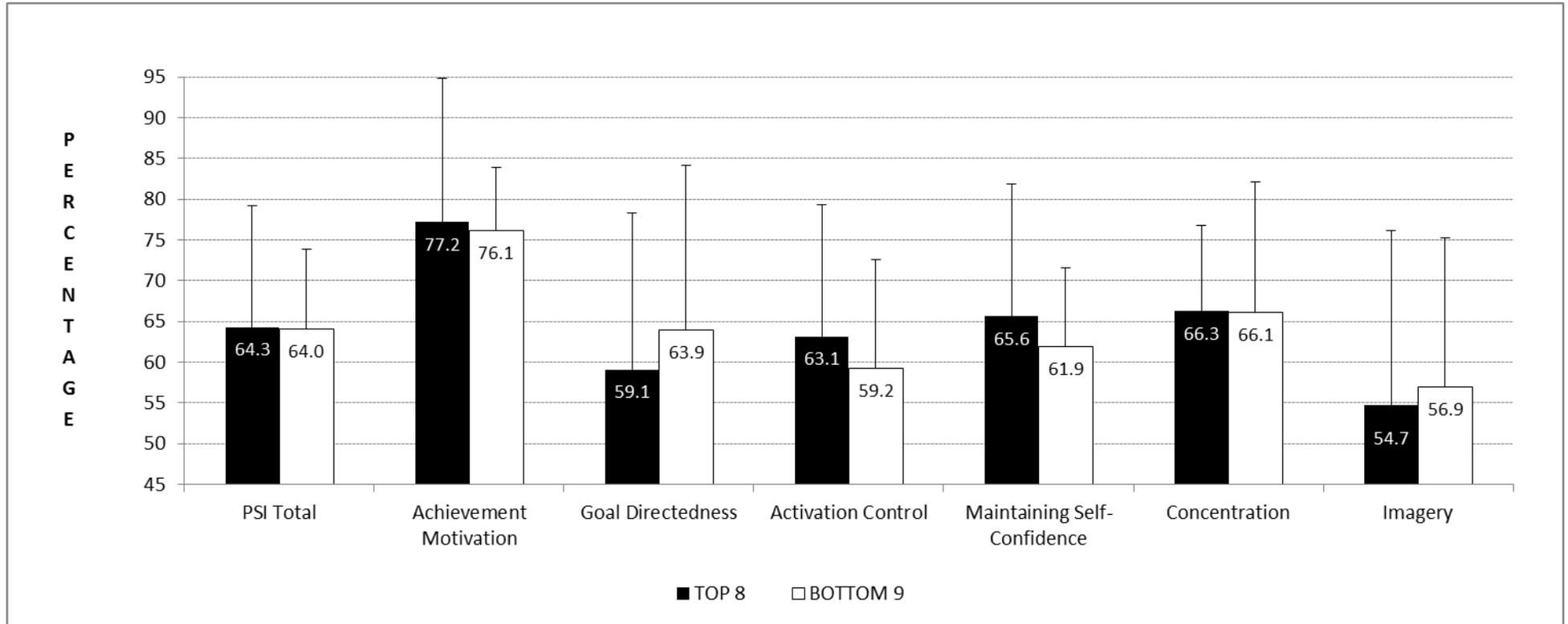


Figure 4.14: Comparison of the PSI subscale scores (mean ± SD) of the two groups of jumpers

Table 4.5 shows the 11 sport psychological skills subscales for the group of throwers (shot put, javelin throw, hammer throw and discus). The throwers were divided into two groups (top eight and bottom eight) according to their athletic performances. A large practical significant difference was observed between the top and bottom throwers for confidence and activation control (with the top eight obtaining lower scores), as well as for imagery, and achievement motivation (with the top eight outscoring the bottom eight).

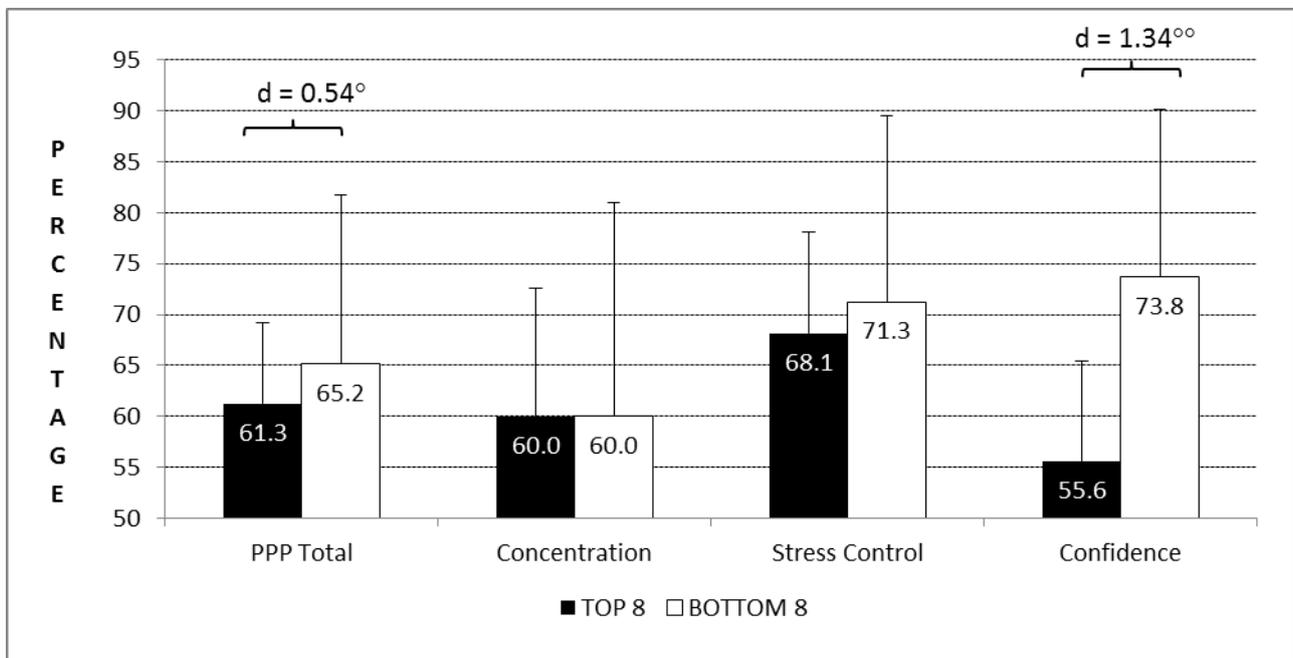
Table 4.5: Comparison of the PPP, PSI and IAAF scores of the two groups of throwers

	TOP 8 (MEAN ± SD)	BOTTOM 8 (MEAN ± SD)	Effect size results (Cohen's d-value) Practical significant difference
PPP Total	61.3 ± 7.91%	68.3 ± 16.60%	0.54°
* Concentration	60.0 ± 12.54%	60.0 ± 21.04%	0.00
* Stress control	68.1 ± 9.98%	71.3 ± 18.27%	0.21
* Confidence	55.6 ± 9.80%	73.8 ± 16.42%	1.34°°
PSI Total	65.5 ± 7.44%	64.3 ± 12.11%	0.12
* Achievement motivation	80.6 ± 10.33%	74.4 ± 8.43%	0.66°°
* Goal directedness	70.6 ± 12.66%	72.2 ± 11.76%	0.13
* Activation control	57.5 ± 6.81%	76.8 ± 16.28%	0.83°°
* Maintaining self-confidence	60.9 ± 8.96%	66.9 ± 11.08%	0.59°
* Concentration	62.5 ± 9.82%	61.9 ± 16.94%	0.05
* Imagery	60.9 ± 19.27%	42.5 ± 24.2%	0.84°°
IAAF score (Range)	828 – 1061%	711 - 824	-

° Moderate practical significant differences (d ≈ 0.5)

°° Large practical significant differences (d ≈ 0.8)

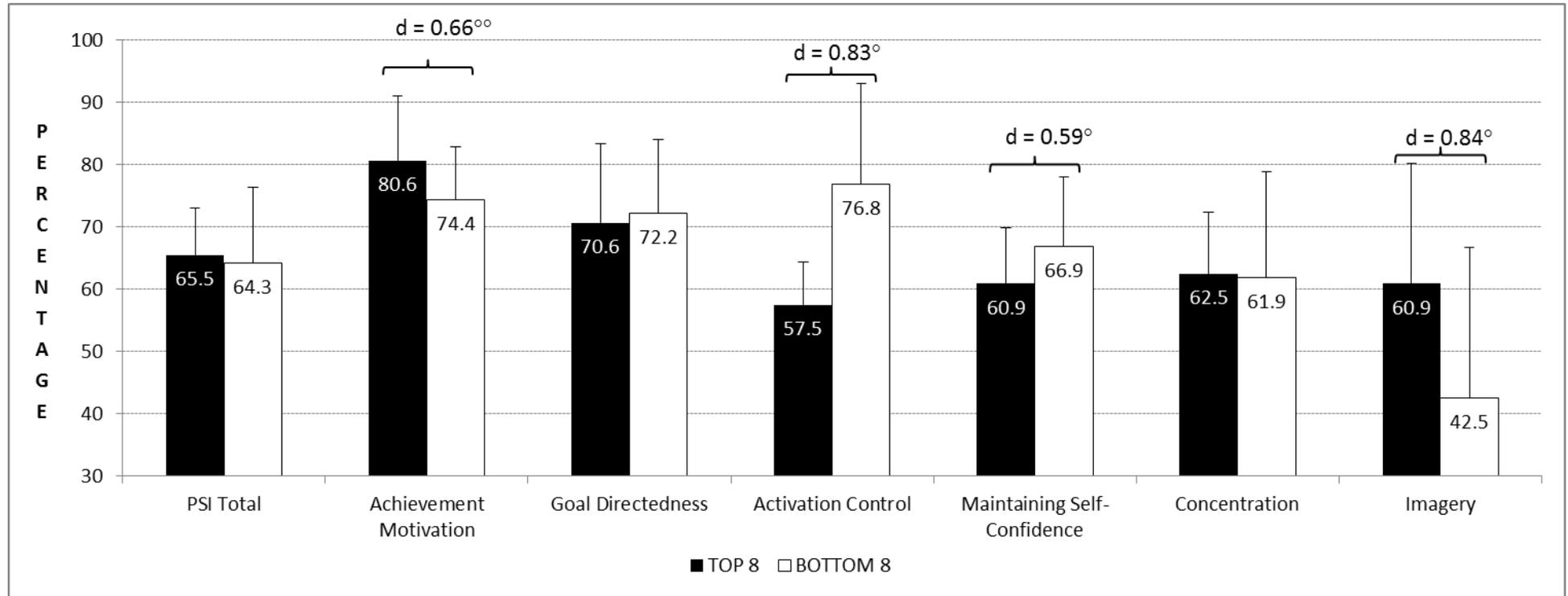
Figures 4.15 and 4.16 compare the Peak Performance Profile and Psychological Skills Inventory subscales of the top eight and bottom eight throwers.



° Moderate practical significant differences (d ≈ 0.5)

°° Large practical significant differences (d ≈ 0.8)

Figure 4.15: Comparison of the PPP subscale scores (mean ± SD) of the two groups of throwers



^o Moderate practical significant differences ($d \approx 0.5$)

^{oo} Large practical significant differences ($d \approx 0.8$)

Figure 4.16: Comparison of the PSI subscale scores (mean ± SD) of the two groups of throwers

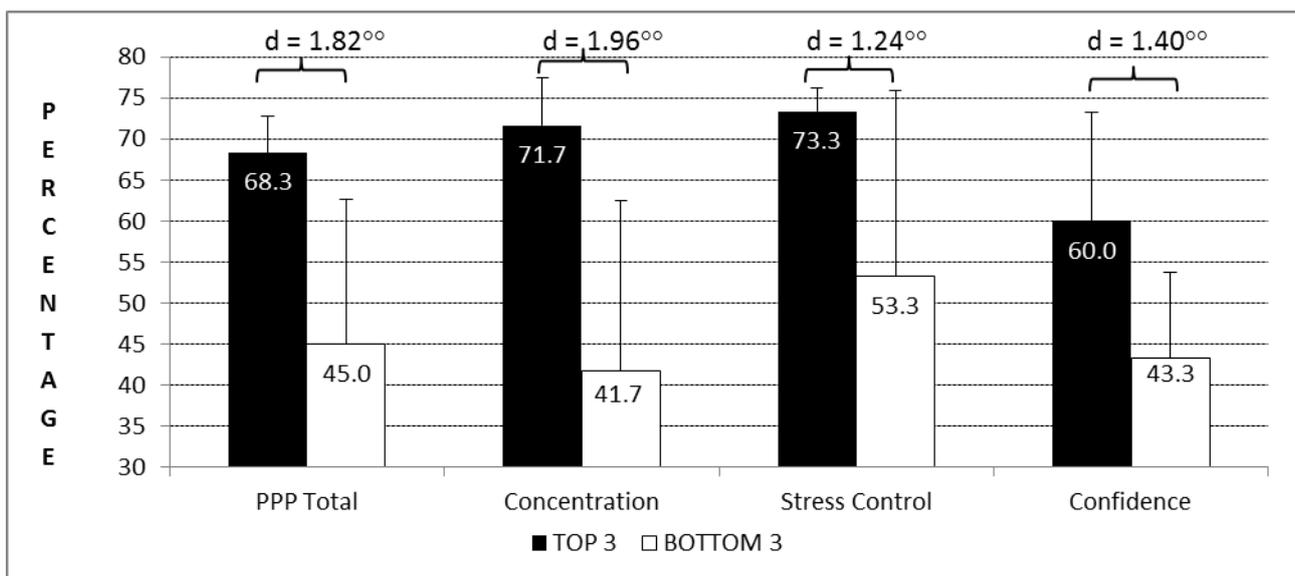
Table 4.6 shows large practical significant differences between the top three and bottom three multi-event athletes for the following psychological skills subscales: PPP total, concentration, stress control, confidence, achievement motivation, activation control, maintaining self-confidence, and concentration. In all of these cases the top three athletes outscored the bottom three athletes. However, the top three scored lower than the bottom three multi-event athletes for imagery.

Table 4.6: Comparison of the PPP, PSI and IAAF scores of the two groups of multi-event athletes

	TOP 3 (MEAN ± SD)	BOTTOM 3 (MEAN ± SD)	Effect size results (Cohen's <i>d</i>-value) Practical significant difference
PPP Total	68.3 ± 4.41%	45.0 ± 17.56%	1.82 ^{oo}
* <i>Concentration</i>	71.7 ± 5.77%	41.7 ± 20.82%	1.96 ^{oo}
* <i>Stress control</i>	73.3 ± 2.89%	53.3 ± 22.55%	1.24 ^{oo}
* <i>Confidence</i>	60.0 ± 13.23%	43.3 ± 10.41%	1.40 ^{oo}
PSI Total	68.6 ± 5.21%	61.4 ± 16.69%	0.58 ^o
* <i>Achievement motivation</i>	80.8 ± 8.78%	73.3 ± 8.08%	0.89 ^{oo}
* <i>Goal directedness</i>	77.5 ± 16.39%	73.3 ± 23.23%	0.21
* <i>Activation control</i>	66.7 ± 8.78%	44.2 ± 22.68%	1.31 ^{oo}
* <i>Maintaining self-confidence</i>	63.3 ± 5.20%	55.0 ± 13.23%	0.83 ^{oo}
* <i>Concentration</i>	71.7 ± 5.77%	45.8 ± 26.96%	1.32 ^{oo}
* <i>Imagery</i>	51.7 ± 17.56%	76.7 ± 11.81%	1.67 ^{oo}
IAAF score (Range)	764 - 877	201 - 759	-

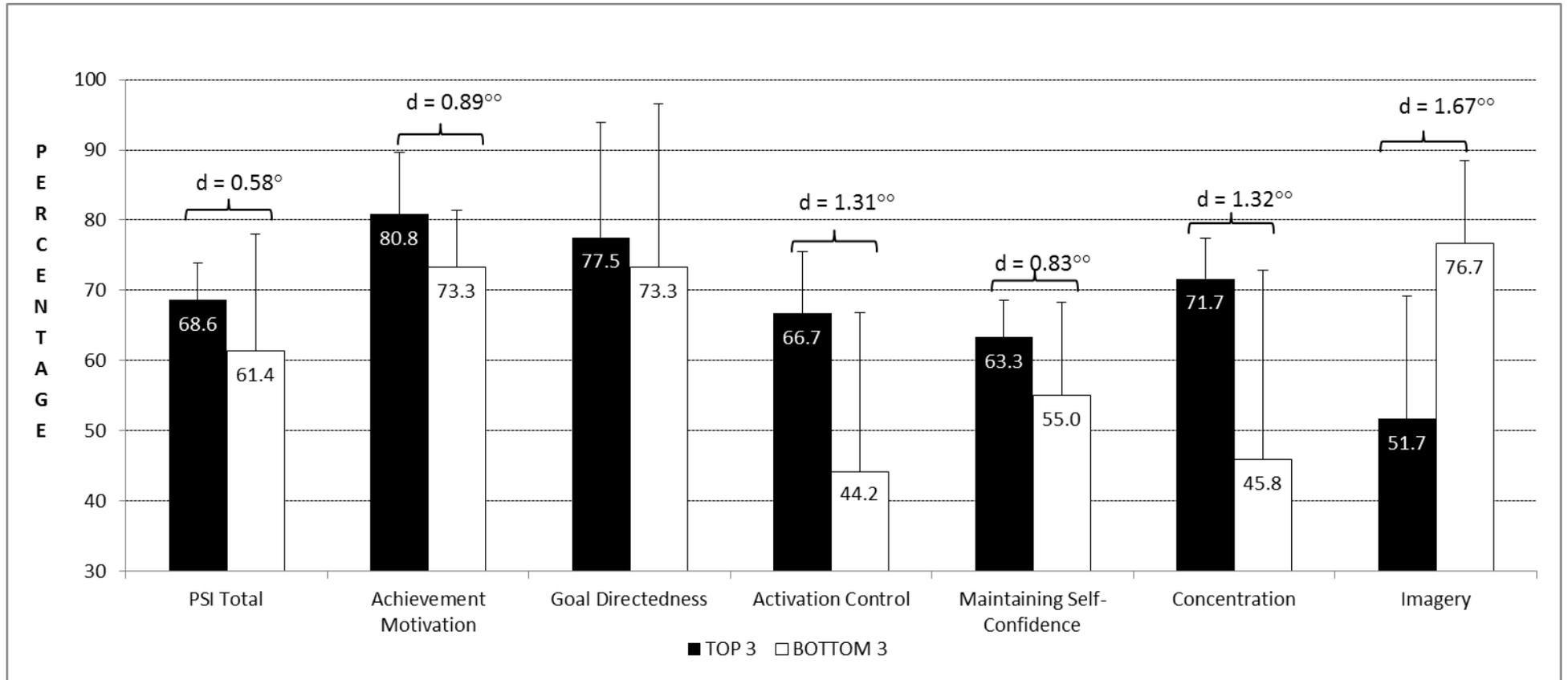
^{oo} Large practical significant differences ($d \approx 0.8$)

Figures 4.17 and 4.18 present a comparison of the Peak Performance Profile (PPP) and Psychological Skills Inventory (PSI) scores of the top three and bottom three multi-event athletes.



^{oo} Large practical significant differences ($d \approx 0.8$)

Figure 4.17: Comparison of the PPP subscale scores (mean ± SD) of the two groups of multi-event athletes



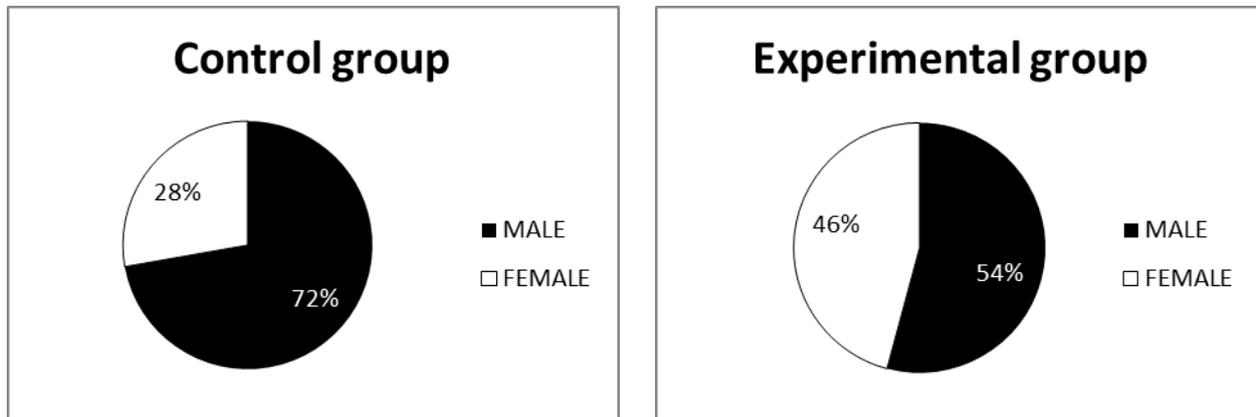
° Moderate practical significant differences ($d \approx 0.5$)

°° Large practical significant differences ($d \approx 0.8$)

Figure 4.18: Comparison of the PSI subscale scores (mean ± SD) of the two groups of multi-event athletes

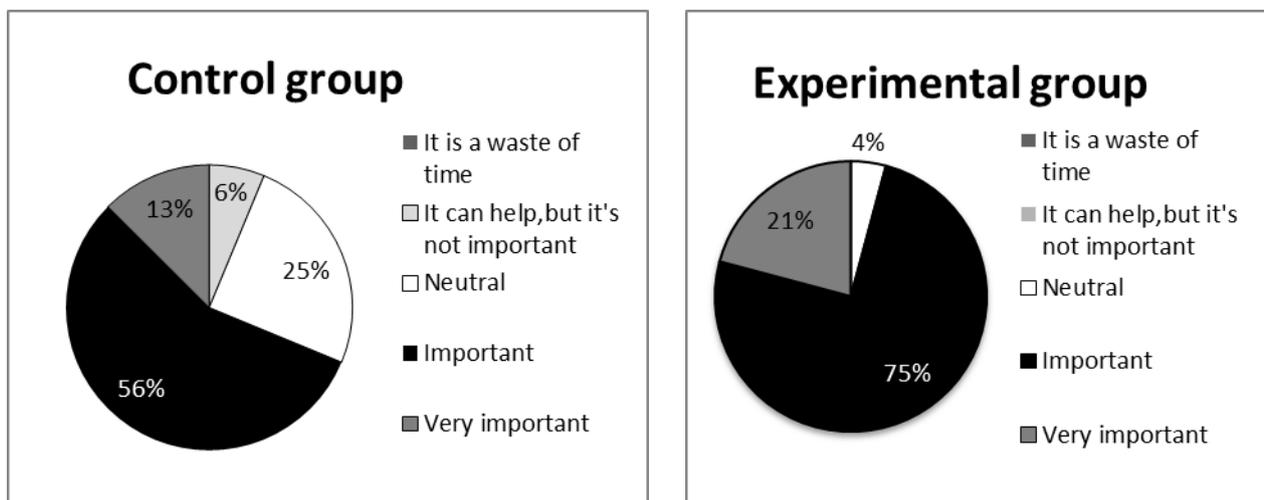
Phase Two

Figures 4.19 to 4.28 report on the gender composition of the athletes, their perceived importance of PST, their perceived ability to be psychologically well prepared for training and competitions and training, and their perceived need of PST programmes. These charts are compiled separately for the experimental and control groups.



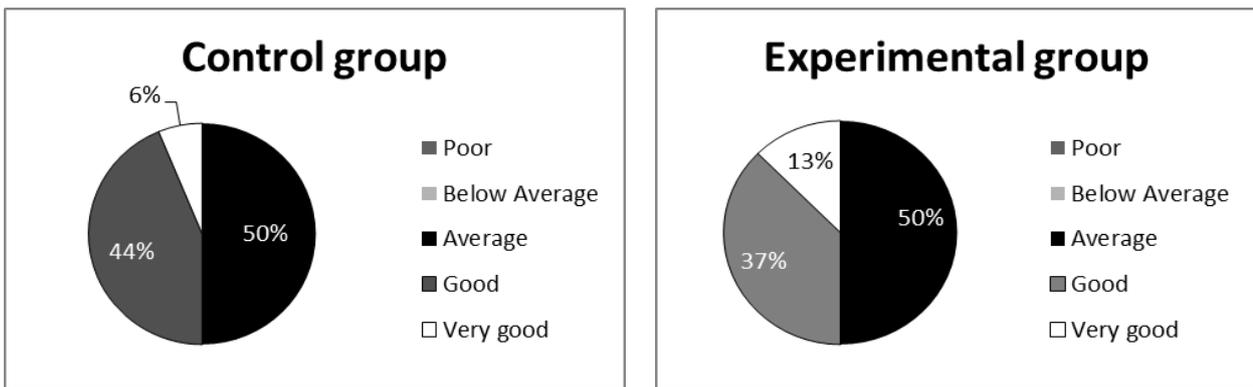
Figures 4.19 & 4.20: Comparison of the gender composition of the control and experimental groups

The experimental group consisted of almost equal numbers of male and female participants, whereas the control group mainly consisted of male participants.



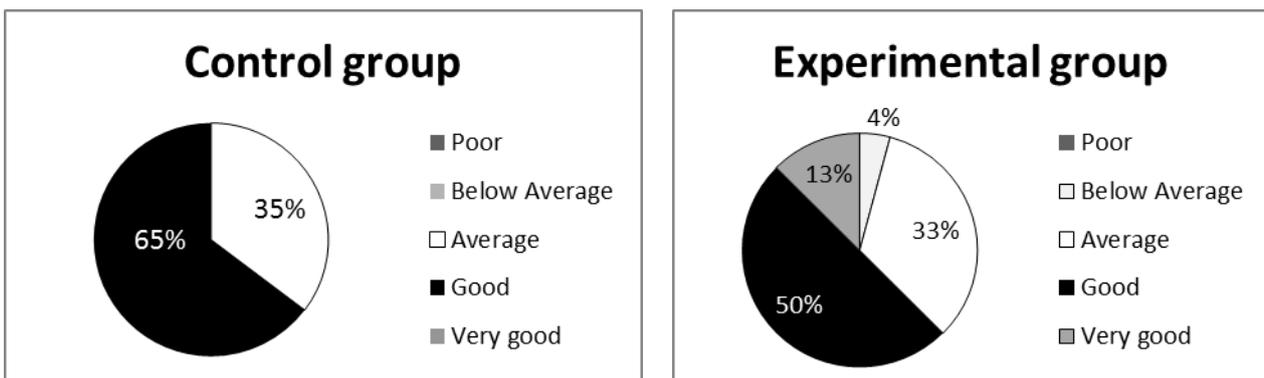
Figures 4.21 & 4.22: Comparison of the perceived importance of PST programmes of the control and experimental groups

A considerable difference existed regarding the athletes' perception of the importance of PST in that 56% of the control group, compared to 75% of the experimental group perceived PST to be important.



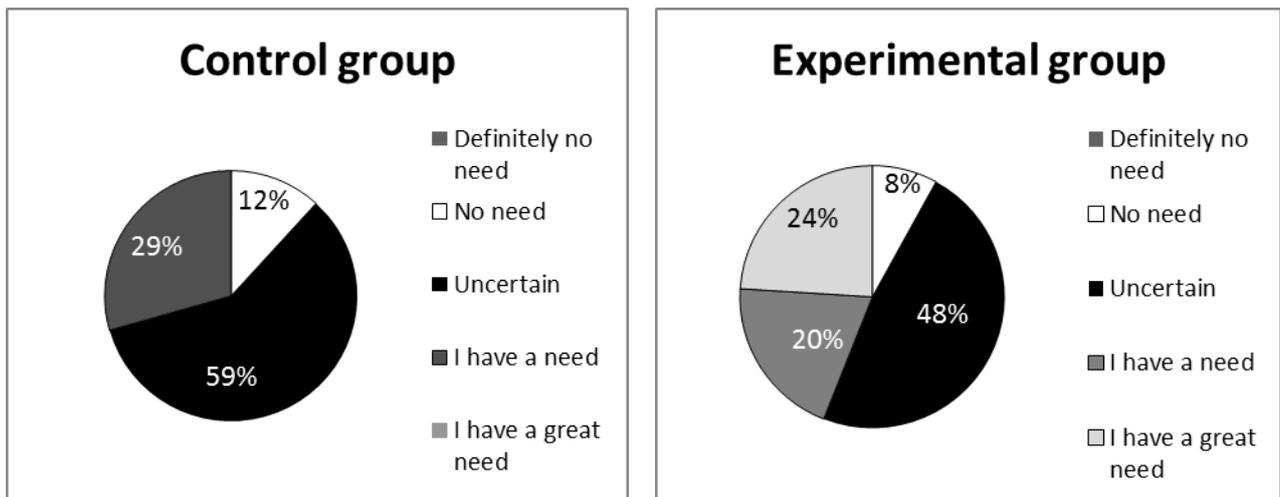
Figures 4.23 & 4.24: Comparison of the control and experimental groups' perceived ability to prepare mentally for training sessions

Figures 4.23 and 4.24 represent the athletes' opinion of their ability to prepare themselves mentally for training. In both groups, 50% of the athletes were of the opinion that their ability to prepare mentally for training was "average". A slight difference is evident with regard to the number of participants who perceive their ability as "very good": control group: (6%); experimental group (13%).



Figures 4.25 & 4.26: Comparison of the control and experimental groups' perceived ability to prepare mentally for competitions

Fairly similar perceptions of their ability to prepare psychologically for competitions were expressed by the athletes from both groups. A slight difference was observed in that more of the athletes in the control group as compared to the experimental group perceived their ability to prepare for competitions as "good" (65% vs. 50%). A low percentage (13%) of the experimental group perceived their ability as "very good" compared to the nil per cent of the control group.



Figures 4.27 & 4.28: Comparison of the control and experimental groups' perceived need for PST programmes

There was a notable difference in the athletes' perceived need for PST: Almost a quarter (24%) of the experimental group, as opposed to none of the control group expressed a "great need" for PST. A further 20% of the experimental group expressed a need for PST. Because participation in the intervention programme of the study was voluntary, the above statistics could explain why the members of the experimental group volunteered to participate in the intervention phase of this study.

Table 4.7: Comparison of the pre and post-test PPP and PSI subscales of the control and experimental groups

	CONTROL GROUP (n = 18)				EXPERIMENTAL (n = 24)			
	PRE-TEST	POST-TEST	DIFFERENCE		PRE-TEST	POST-TEST	DIFFERENCE	
	MEAN ± SD		p-value	d-value	MEAN ± SD		p-value	d-value
Average Age	21.1 ± 2.01 years				20.3 ± 2.27 years			
Years Competing	8.7 ± 4.36 years				7.7 ± 4.51 years			
PPP Total	54.6 ± 12.46%	60.0 ± 15.33%	0.14	0.38°	60.6 ± 4.41%	65.0 ± 10.81	0.16	0.35°
* <i>Concentration</i>	50.6 ± 15.80%	56.4 ± 13.48%	0.14	0.39°	56.9 ± 5.93%	64.0 ± 11.79%	0.04*	0.50°
* <i>Stress control</i>	61.9 ± 13.84%	65.8 ± 18.72%	0.32	0.23	64.2 ± 14.19%	69.4 ± 11.63%	0.13	0.40°
* <i>Confidence</i>	51.4 ± 13.69%	57.8 ± 18.24%	0.13	0.39°	60.6 ± 16.76%	61.7 ± 12.82%	0.77	0.06
PSI Total	61.2 ± 10.55%	64.1 ± 13.07%	0.33	0.24	63.4 ± 11.48%	69.7 ± 10.09%	0.01*	0.58°
* <i>Achievement motivation</i>	70.6 ± 12.44%	73.2 ± 15.50%	0.43	0.18	73.4 ± 12.08%	79.7 ± 9.62%	0.03*	0.57°
* <i>Goal directedness</i>	63.3 ± 13.58%	70.8 ± 14.42%	0.04*	0.53°	68.4 ± 14.70%	75.4 ± 14.68%	0.03*	0.47°
* <i>Activation control</i>	54.9 ± 14.25%	59.9 ± 15.86%	0.18	0.33	54.0 ± 15.16%	63.3 ± 10.75%	0.00*	0.71°°
* <i>Maintaining self-confidence</i>	56.0 ± 13.45%	61.0 ± 15.99%	0.21	0.33	58.5 ± 16.31%	67.3 ± 12.28%	0.01*	0.60°
* <i>Concentration</i>	55.1 ± 15.54%	58.5 ± 12.19%	0.35	0.33	59.5 ± 13.53%	65.2 ± 11.67%	0.04*	0.45°
* <i>Imagery</i>	67.4 ± 18.63%	61.3 ± 18.21%	0.08‡	0.23	66.6 ± 17.59%	67.3 ± 18.13%	0.80	0.04

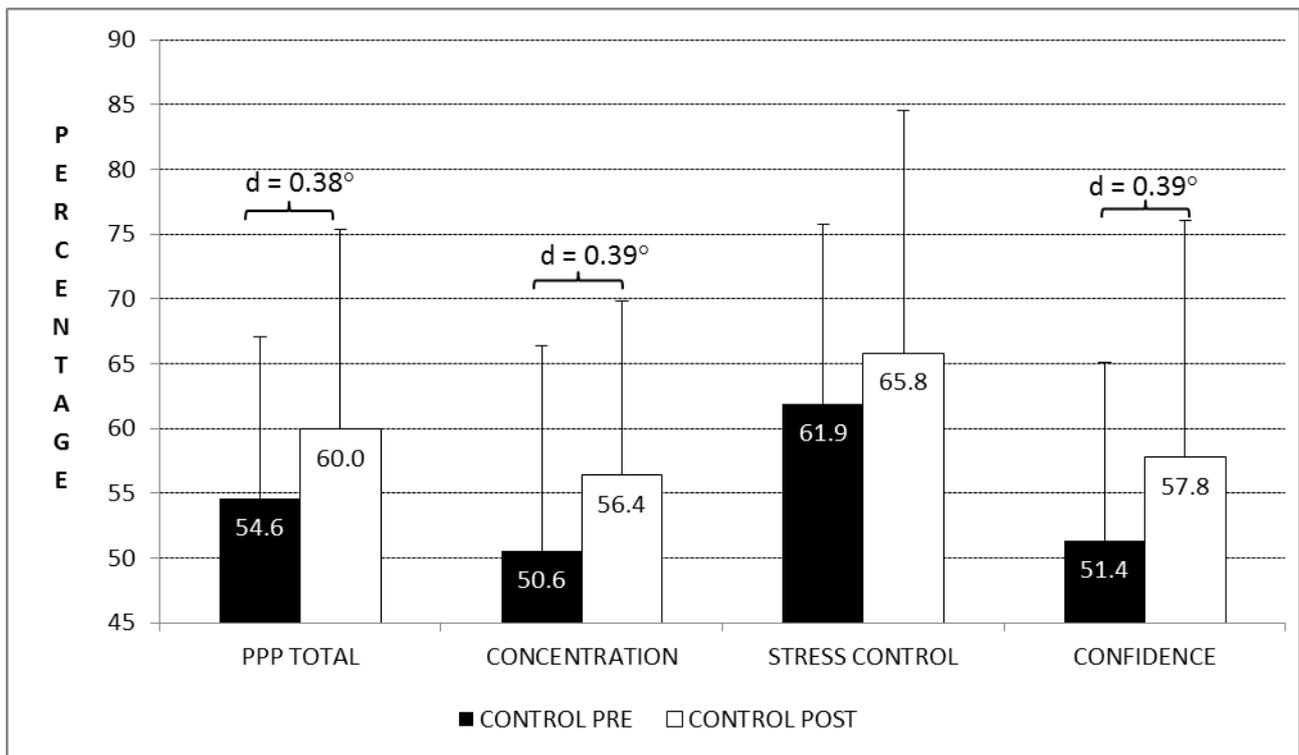
* Statistical significant differences (p ≤ 0.05)

‡ Borderline statistically significant differences (p ≤ 0.1)

° Moderate practical significant differences (d ≈ 0.5)

°° Large practical significant differences (d ≈ 0.8)

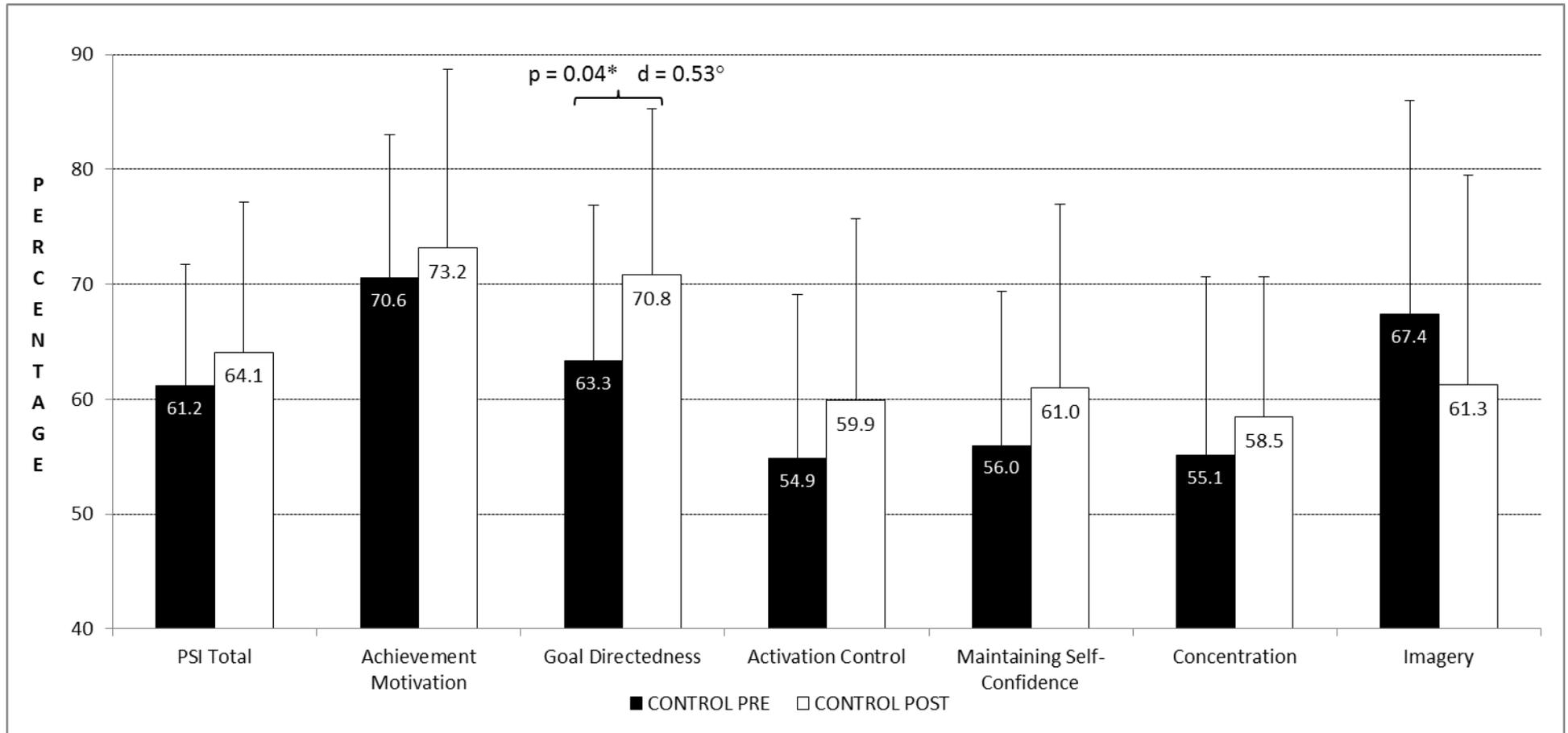
Table 4.7 shows the differences between the pre and post-testing for the PPP and PSI subscales for both the control and experimental groups. Figure 4.29 contains the control group’s pre and post-test results on the PPP subscales, with Figure 4.30 presenting the PSI subscale comparisons.



° Moderate practical significant differences ($d \approx 0.5$)

Figure 4.29: Pre to post-test comparison of the PPP scores (mean \pm SD) of the control group

No statistically significant changes occurred from pre to post-testing, whilst the practical significant improvements were of a moderate magnitude.



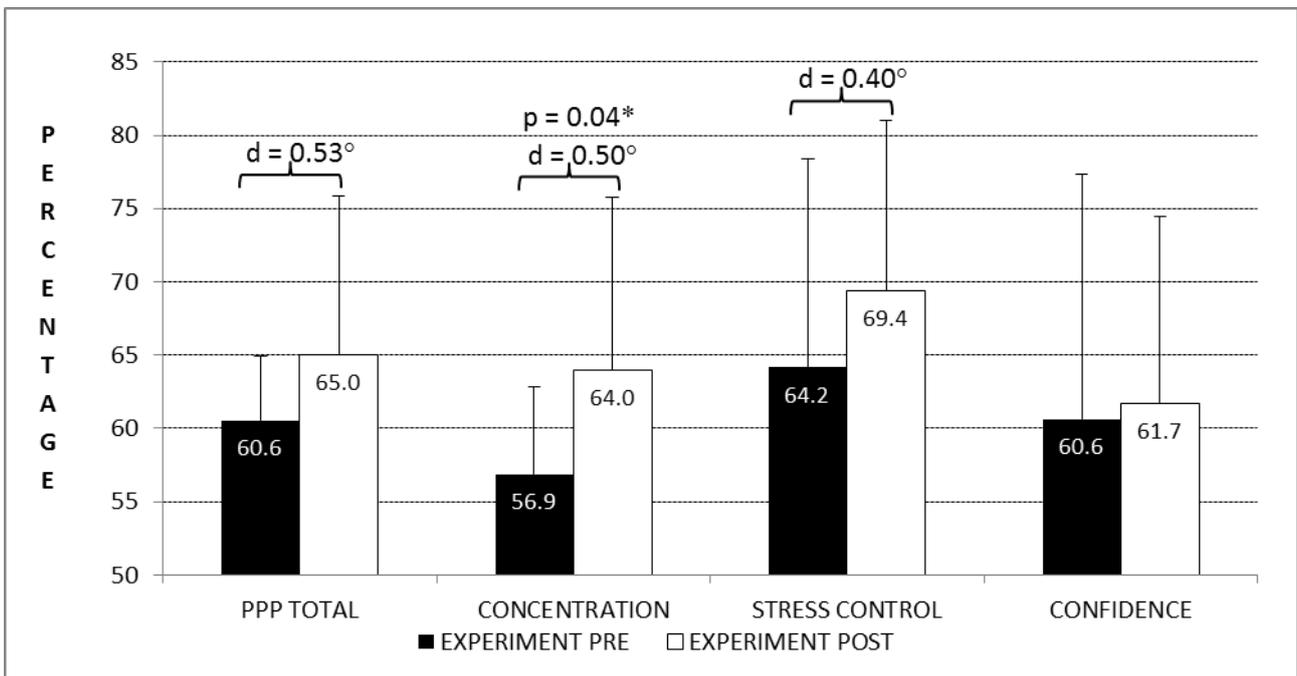
* Statistical significant differences ($p \leq 0.05$)

° Moderate practical significant differences ($d \approx 0.5$)

Figure 4.30: Pre to post-test comparison of the PSI scores (mean \pm SD) of the control group.

The only statistically significant improvement was observed for the control group's goal directedness.

Figure 4.31 shows the experimental group's pre- and post-test results on the PPP subscales, whereas Figure 4.32 compares the pre and post-test results of the experimental group on the PSI subscales.

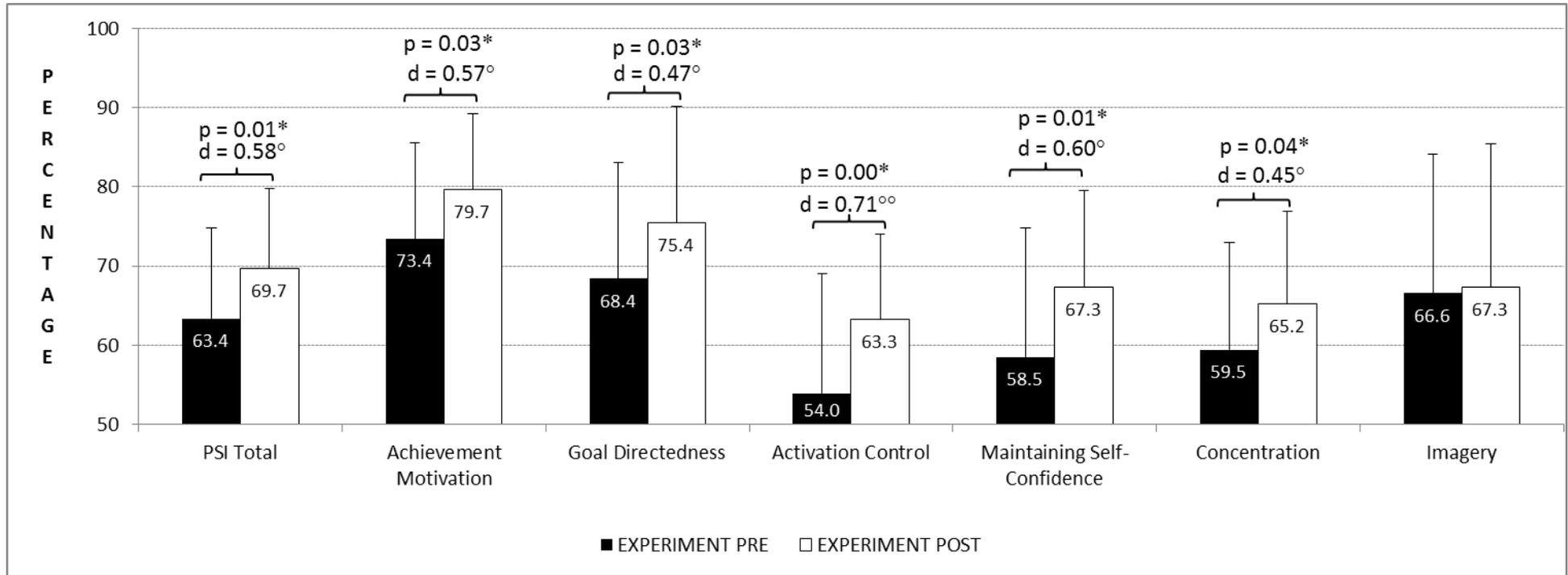


* Statistical significant differences ($p \leq 0.05$)

° Moderate practical significant differences ($d \approx 0.5$)

Figure 4.31: Pre to post-test comparison of the PPP scores (mean \pm SD) of the experimental group.

Figure 4.31 shows a significant improvement in the experimental group's concentration skill, as measured with the PPP. In addition, the PPP total and stress control scores also improved (moderate practical significance). Figure 4.32 contains the experimental group's pre and post-test results on the PSI.



* Statistical significant differences ($p \leq 0.05$)

° Moderate practical significant differences ($d \approx 0.5$)

°° Large practical significant differences ($d \approx 0.8$)

Figure 4.32: Pre to post-test comparison of the PSI scores (mean ± SD) of the experimental group

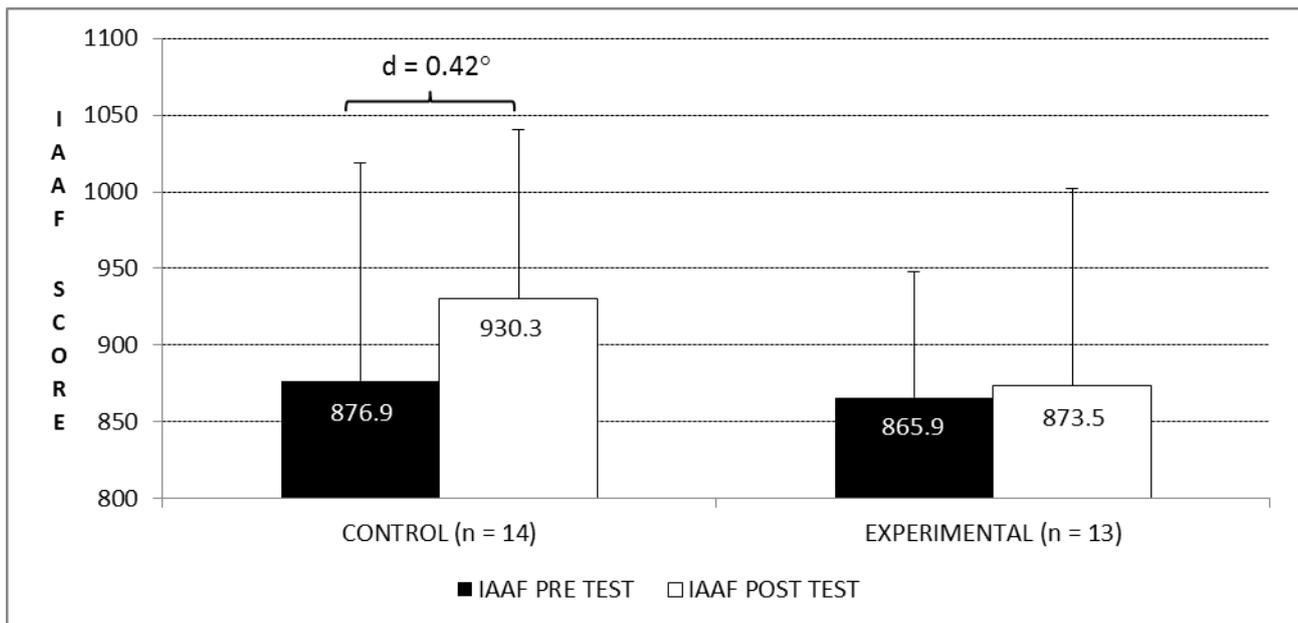
From Figure 4.32 it is clear that the intervention programme brought about statistically significant improvements among the experimental group in five of the six PSI subscales and the PSI total score. Imagery was the only subscale that did not show an improvement.

Table 4.8 and Figure 4.33 compare the experimental and control group's pre and post-test athletic performance as expressed by their IAAF scores. From this table and figure it is evident that the control group's athletic performance (IAAF scores) on average improved by 6.1%, whilst the experimental group's performance on average improved by 0.9%.

Table 4.8: Comparison of the pre and post-test IAAF scores of the control and experimental groups

	CONTROL GROUP (n = 14)			EXPERIMENTAL GROUP (n = 13)		
	PRE-TEST	POST-TEST	DIFFERENCE	PRE-TEST	POST-TEST	DIFFERENCE
	MEAN ± SD		d-value	MEAN ± SD		d-value
Age	21.4 ± 2.21 years			20.2 ± 1.30 years		
IAAF scores	876.9 ± 142.17	930.3 ± 110.20	0.42 °	865.9 ± 82.22	873.5 ± 128.68	0.05

° Moderate practical significant differences (d ≈ 0.5)



Moderate practical significant differences (d ≈ 0.5)

Figure 4.33: Pre to post-test comparison of the IAAF scores (mean ± SD) of the control and experimental groups

Chapter Five

Discussion

The purpose of this study was two-fold: firstly, to compile a sport psychological skills profile for track and field athletes, and secondly, to develop and implement a sport PST programme aimed at enhancing athletes' sport psychological skills levels and improving their athletic performance.

Phase One

Perceived importance and use of the services of sport psychologists

Seventy-five per cent of the total sample perceived PST as important or very important. Researchers (e.g., Wann & Church, 1998; Jones *et al.*, 2002; Pieterse & Potgieter, 2006) have noted the importance of PST to enhance athletic performance. Weinberg and Gould (2007) emphasise that athletes should value the importance of PST before participating in such programmes.

Despite their awareness of the importance of PST in enhancing performance, the majority of the participants under-utilise these services. Only 24% of the athletes reported any exposure to PST. An important question arises from these results: why do athletes resist sport PST? Research on the resistance of sport psychology by athletes has been done to investigate this tendency. Possible reasons for resistance to PST emerged after sportsmen and women had filled out a questionnaire. The reports suggested that many felt that they were not serious enough about their sport to invest in sport psychology and that it would be a waste of time and money (Ferraro & Rush, 2000). The findings of the current study underline the importance of future investigations of the reluctance of athletes to use the services of sport psychology consultants.

Perceived ability to prepare psychologically for training and competitions

Sixty per cent of the current sample believed that they were able to prepare themselves well or "very well" for training and competition. The remaining 40% rated their ability to be psychologically prepared as "average" or "below average". The above-mentioned lack of previous exposure and the self-reported average to below-average ability of athletes to prepare themselves indicate that sport psychologists and coaches should play a more active role in this regard because the benefits of mental preparation before training and competition are well documented.

Need for PST

Encouragingly, 44% of the total sample expressed a “need” or a “great need” for sport PST programmes. Despite evidence that suggests that the majority of professional and amateur athletes believe they could benefit from sport psychological services (Ferraro & Rush, 2000), an alarming 44% of the athletes were uncertain of whether they needed PST, with a further 12% stating that they had no need for PST.

Sport psychological skills

Overall, the results of Phase One revealed poor sport psychological skills levels, except for achievement motivation and goal directedness – which showed satisfactory results. The subscales that produced the poorest results were confidence, and concentration. The findings are similar to those of Eloff *et al.* (2011), namely that tertiary institution field hockey players scored relatively poorly on all of the variables of the PSI questionnaire, except for achievement motivation – which yielded average scores. This implies that there is a similar profile regarding the achievement motivation and goal directedness levels of student track and field athletes to that of other tertiary sportsmen/women.

In the current study, achievement motivation and stress control repeatedly outscored the other variables in all the groups as a distinctive factor between more-successful and less-successful track and field events. Achievement motivation’s prevalence as a distinctive variable was evident in four out of the five track and field groups, except for the jumpers. Stress control featured strongly among the sprinters, jumpers and multi-event athletes as a distinguishing factor between more successful and less-successful performers.

Within-group comparisons

In order to determine whether the psychological skills levels had an influence on the performance of these athletes, the sprinters, middle and long-distance, jumpers, throwers and multi-event athletes were split into separate groups based on their best performances at the 2011 USSA Athletics Championships. A separate discussion regarding the within-group comparisons for each of these groups follows.

Sprinters

The top sprinters repeatedly scored the highest in each of the sport psychological skills. Large practical significant differences exist between the top and bottom sprinters for stress control and achievement motivation. These differences bordered on being statistically significant ($p \leq 0.1$). Moderate practical significant differences between the top and the bottom sprinters were found in five of the eleven subscales, with the top sprinters

outperforming the bottom sprinters. Similarly, moderate practical significant differences were found in seven of the eleven subscales, where the top sprinters produced higher scores than the average sprinters. Practical significant differences between the bottom 21 and average 21 sprinters were also evident for stress control.

These results emphasise the importance of achievement motivation and stress control in order to attain top results in sprinting. The more successful sprinters were able to cope and control their anxiety more effectively and were more likely to reach an optimal arousal level for peak performance. A study of track and field athletes shows that elite athletes are highly driven by personal goals, that they are task and ego-orientated and believe in themselves (Mallet & Hanrahan, 2004). This is in line with findings of the current study with regard to the achievement motivation of the sprinters.

Collectively, these results confirm the importance of sound sport psychological skills and specifically the ability to control stress levels and possess strong motivation to achieve. These attributes are required to excel, especially at elite level and can distinguish between successful and less-successful tertiary sprinters.

A study by Gould *et al.* (2002) highlighted the following characteristics among Olympic athletes: ability to cope and control anxiety, confidence, mental toughness, sport intelligence, ability to focus and block out distractions, competitiveness, strong work ethic, ability to set and achieve goals, coachability, high levels of dispositional hope, optimism, and adaptive perfectionism. This indicates that top-performing international athletes exhibit certain psychological skills. Results from the current study affirm this: psychological skills levels can distinguish between more and less-successful tertiary sprinters.

Middle and long-distance athletes

The only practical significant difference between the top and the bottom athletes in this group was in their achievement motivation. Here the top athletes ($78.4 \pm 11.24\%$) outperformed the bottom athletes ($73.2 \pm 8.44\%$), emphasising the importance of being highly motivated in order to achieve success in these endurance events. A plausible reason for achievement motivation being the only distinguishing factor, may lie in the diversity of the middle and long-distance group, which comprised the following events: 800m, 1500m, 3000m, 3000m steeple chase, 5000m, 10km and 21km. The group might present different psychological skills profiles and different psychological skill demands due to the diversity of each event.

Jumpers

A comparison of the top eight and bottom nine jumpers, found a large practical significant difference for confidence (top eight: $68.1 \pm 14.38\%$; bottom nine: $53.3 \pm 11.99\%$). There is ample literature that emphasises the importance of self-confidence in achieving sporting success (e.g., Vealey, 2001; Zinsser *et al.*, 2006).

However, the bottom nine jumpers outscored the top eight jumpers with regard to stress control (top eight: $66.9 \pm 17.31\%$; bottom nine: $77.2 \pm 14.81\%$). Eubank and Collins (2000) found that athletes who perceived their anxiety as facilitative coped more effectively with their anxiety and also performed better. This implies that it is not only the athletes' ability to control their stress levels, but also their perceptions about the effect of their actual stress levels on their performance that ultimately influence their performance. Unfortunately, the measurement instrument used in this study does not contain a directional scale. Therefore, we are left to speculate about the reasons why the bottom nine jumpers performed better in terms of stress control scores than their more-successful peers. When interpreting data from small groups the presence of outliers (exceptional performers) may distort the data. Caution should therefore be exercised with the interpretation of these results.

Interestingly, the jumpers' concentration score ($66.2 \pm 13.26\%$) was the highest of all the groups (throwers: $62.2 \pm 13.38\%$; multi-event athletes: $58.8 \pm 22.46\%$; middle and long-distance athletes: $58.5 \pm 14.82\%$; sprinters: $58.3 \pm 12.05\%$). Overall, the track athletes scored considerably lower than those competing in the more technical field events. These results may be due to the degree of complexity of the different events. It could be argued that the more technical events (jumps and throws) require greater concentration than the track events. The athletes participating in these items may subsequently have developed the required concentration skills more than their counterparts whose items are less demanding with regard to concentration.

Throwers

The direction of the results for the throwers contradicts the findings mentioned thus far, namely that the top performers have psychological skills that are superior to those of the less-successful performers. The bottom eight throwers scored higher than the top performers in the PPP total score, confidence (PPP), activation control and maintaining self-confidence (PSI). A plausible explanation regarding self-confidence can be found in the literature where Weinberg and Gould (2007) warn athletes against being too confident or over-confident as it could influence their performance negatively. Weinberg and Gould

(2007) recommend that athletes should refrain from believing that they can be successful without proper preparation. This creates a false confidence and is deemed to be a recipe for failure. Another plausible explanation may be found in the small sample size ($n = 16$), where outliers may distort results.

Achievement motivation and imagery were the only skills that showed practically significant differences ($d \approx 0.5$) where the top throwers outperformed the bottom throwers. Apart from its direct role in enhancing performance, research has supported the effectiveness of imagery in improving attentional control and decreasing precompetitive anxiety (Vealey & Greenleaf, 2006). Harter's (1978) competence motivational theory of achievement motivation stated that feelings of personal competence foster high competence motivation and that this increase, encourages athletes to master further challenges. Cox (2007) concurs that strong competence motivation is associated with optimal performance.

As mentioned elsewhere: the throwers recorded the second-highest PPP concentration score ($60.0 \pm 16.73\%$) after the jumpers ($66.2 \pm 14.63\%$) – both technical events.

Multi-event athletes

The data of the multi-event athletes produced practical significant differences for nine out of the eleven psychological skill subscales: PPP total, concentration (PPP), stress control, confidence (PPP), PSI Total, achievement motivation, activation control, maintaining self-confidence (PSI), where the top three athletes outscored the bottom three athletes. Large practical significant differences were also noted for imagery, although the top athletes ($51.7 \pm 17.56\%$) scored considerably lower than the bottom athletes ($76.7\% \pm 11.81\%$).

One of the most important factors for multi-event athletes to perform optimally is their ability to stay focused. Multi-event athletes compete in seven (women) or 10 (men) events over a period of two consecutive days. They need to maintain focus on relevant factors and block out the effects of future events, a noisy crowd, the presence of officials, and the behaviour of opponents. Interestingly, the top three multi-event athletes scored on average 30% higher in their PPP concentration levels than the bottom three athletes. The PSI measurement of concentration confirmed the above with a difference of 25.8%, where the top three athletes also outscored the bottom three athletes.

Summary

The results of this study cannot be generalised to all athletes due to the fact that the study was limited to tertiary student track and field athletes. In addition, the small number of participants in some of the groups might have affected the results, which necessitates caution when interpreting the results. Despite these limitations, the first phase of the study provides useful information regarding the sport psychological skills profile of South African tertiary track and field athletes and contributes to the body of knowledge about the importance and current status of psychological skills in this sport.

Phase Two

Phase Two entailed an intervention programme involving an experimental and a control group. The pre and post-test data of both the experimental and control groups were compared.

Perceived importance of PST

There was a considerable difference of opinion about the importance of PST. Sixty-nine per cent of the control group viewed PST as “important” or “very important”, as opposed to 96% of the experimental group. A further 25% of the control group held a neutral view, with the remaining six per cent indicating that PST might help, but that it is unimportant. These findings probably explain why the experimental group members volunteered to take part in the intervention programme. As stated earlier, researchers, such as Weinberg and Gould (2007) emphasise the need of an awareness of the importance PST before commencing a PST programme.

Perceived ability to prepare psychologically for training and competitions

The data indicated a difference in the perceived ability to mentally prepare for training and competitions. The experimental group was more confident in their ability than the members of the control group.

Need for PST

A larger percentage (44%) of the experimental group indicated that they have a “need” or “great need” for PST. Only 29% of the control group indicated a need for such a programme. A considerable percentage of both groups was uncertain or of the opinion that they do not need PST.

When interpreting this information it is clear that athletes from the experimental group believed that they need PST. This could account for their willingness to participate in the

intervention. A troubling finding, however, is the percentage of athletes who were uncertain about their need for PST or felt that they have no need for PST. As mentioned before, this might indicate a resistance to PST.

Pre to post-test comparisons of the control group

Moderate practical significant differences ($d \approx 0.5$) between the pre- and post-test scores were found for four of the eleven subscales: PPP Total, concentration, and confidence (measured with the PPP) and goal directedness (measured with the PSI). The only statistically significant difference ($p \leq 0.05$) was observed for the goal directedness subscale. In all cases the scores improved from the pre to the post-test. This suggests an improvement in certain sport psychological skills over the course of the competitive season. Surprisingly, the control group's mean IAAF score on average improved by 6.1% and this improvement was significant. The control group consisted of senior students only, all of whom had previously participated in at least one USSA Athletics Championships, as opposed to the 28% of the experimental group who have never competed at this particular level. Therefore a possible reason for the increase in the control group's IAAF score could be the result of the stronger presence of more-experienced athletes in the control group. This could possibly explain why the older athletes from the control group performed better before and after the PST intervention.

Pre to post-test comparisons of the experimental group

The pre and post-test data of the experimental group yielded statistically significant differences for nine of the eleven psychological skills subscales. These results support the findings of Wann and Church (1998) that showed that PST improves track and field athletes' mental preparation. Their programme included five mental skills: anxiety control, mental imagery, attentional focus and control, self-confidence and the ability to handle adversity. Similar to Sheard and Golby's (2006) study which consisted of 45 minute PST sessions over a seven week period, the current results underline that PST programmes are effective in enhancing the sport psychological skills profile of athletes.

The experimental group's IAAF score on average improved by 0.9%. This is in contrast to the findings of Pieterse and Potgieter (2006) that showed that the implementation of an intervention programme, comprising of relaxation, self-talk, goal setting, imagery, and concentration skills, improved the performance of 1500m athletes.

Various factors could have contributed to this result: A plausible explanation may be the level of experience of the members of the group, as discussed earlier. Furthermore, the

experimental group included three first-year students, whilst the control group consisted of senior students only. Research findings indicate that attending university for the first time can be a stressful experience; as such students are beginning their transition from adolescence to adulthood (Dyson & Renk, 2006). Pritchard *et al.* (2007) found that the college (university) experience may actually cause first-year students physical and psychological distress, which is evident in the amount of alcohol consumed over weekends and the frequency of drinking that increased as the first year at university progressed. The above-mentioned factors may have had an influence on the experimental group's athletic overall wellbeing and could account for their marginal increase in athletic performance as opposed to the large improvement of the control group's IAAF score over the course of the competitive season.

Summary

The results from Phase Two show that both the control and the experimental groups' sport psychological skill levels improved from pre to post-testing. However, the improvement was greater among the members of the experimental group, indicating that the specifically-developed PST programme for track and field were beneficial for the athletes with regard to their psychological preparation for training and competitions.

Chapter Six

Conclusions and Recommendations

Conclusions

The conclusions from this study will be made against the aims set at the outset of the research.

The first aim of the study was to compile a sport psychological skills profile of track and field athletes.

The data provided a typical profile of the sample of athletes. It concluded that the majority of the athletes perceive psychological skills training (PST) as important, although they were uncertain about their personal need for PST. It is concluded that there is a possible resistance to PST, hence the athletes' under-utilisation of the services of sport psychology consultants.

With the exception of achievement motivation and goal-directedness, it was concluded that the results revealed poor psychological skills levels.

The second aim of the study was to compare the sport psychological skills levels of successful and less-successful athletes. With the exception of the throwers it was concluded that successful athletes scored better than less-successful athletes in various psychological dimensions – of which achievement motivation, stress control, and confidence were the most prominent.

The next two aims of the study were to develop and implement a PST programme aimed at improving the athlete's sport psychological skills levels and athletic performance; and to determine its effectiveness.

It was concluded that the intervention programme was effective. Significant improvements for the experimental group were evident in nine of the eleven sport psychological skills as well as an improvement (albeit marginal) in their athletic performance.

Limitations of the study

The following are possible limitations of the study:

- The current investigation comprised student track and field athletes only. The findings of this study can, therefore, not be generalised to all track and field athletes.

- Some of the sub-groups (phase 1) and the number of participants for whom performance data was captured at two time points (phase 2) were small. Therefore, the data could have been affected by outliers and created a skewed picture of the situation.
- Athletic performance was measured at two time points (pre and post-test 12 weeks apart). It, therefore, does not reflect consistent performance over the course of the season.
- Insufficient control of the various confounding variables (such as gender, years of experience, training programmes and specific events) could have affected the homogenous nature of the experimental and control groups and thereby the results of Phase 2.

Recommendation for further research

A generic PST programme for track and field athletes was developed and implemented. The contradicting results with regard to the effectiveness of this programme in enhancing psychological skills and improving performance necessitate the development of event-specific PST programmes because of the differences of the various track and field disciplines. This implies that the current programme needs to be refined into an item-specific PST programme, similar to the one developed by Pieterse (2004) who focussed on middle distance athletes. The effectiveness of such a programme in enhancing psychological skills and performance should be subjected to further research.

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APPENDIX (ETHICAL APPLICATION AND QUESTIONNAIRES)



A profile and training programme of psychological skills for track and field athletes

Information Sheet

Purpose of the study: The purpose of the study is to develop a sport psychological skills profile for track and field athletes and to determine whether a correlation exists between these athletes' sport psychological skill levels and their athletic performance.

Procedure: Athletes forming part of the University teams participating in the A-division of the 2011 USSA Athletics Championships at Coetzenburg, Stellenbosch, are invited to participate in a research project. Upon receiving your consent to participate in the study, all of the subjects will be given a brief overview of the study in which the nature and purpose as well as its potential benefits will be explained. Thereafter the athletes' psychological skill levels will be assessed by means of the Psychological Skills Inventory (Wheaton, 1998).

Benefits: The compilation of a sport psychological skills profile of youth and junior track and field athletes should contribute to a better understanding of the psychological demands on these athletes and increase awareness about the performance benefits of being mentally tough.

Rights of Research Subjects: You have the right to choose whether to participate in this study or not. You may withdraw your participation at any time without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, please contact Ms. Maléne Fouché at the Division for Research Development (**contact number: (021) 808 4622 or mfouche@sun.ac.za**).

Rights of the Researcher: The researcher has the right to remove the subject from the research project should the subject fail to adhere to the instructions given during data collection.

Confidentiality: Any information obtained during this study will remain confidential and will be disclosed only with your written permission. However, the results of the study may be published or disclosed to other people in a way that will not identify your identity. All questions and data sheets will be numerically coded and no names will be included in the data collection or analysis. All questionnaire-based information will be used for data analysis then safely and securely stored in the Department of Sport Science building in Stellenbosch. No one, except the researcher and project supervisor will be able to access these raw data.

Consent: The researcher's intent is to only include subjects who freely choose to participate in this study. Your participation is voluntary and you are free to withdraw your consent and participation at any time for any reason and you do not need to justify your decision. If you do withdraw we would like to retain the data that we have recorded from you but only if you agree, otherwise your records will be destroyed. Your participation in the study is voluntary and does not prejudice any right to compensation, which you may have under statute law.

Further Information: If you have any questions regarding this study you can contact any of the researchers detailed below. You will be given a copy of this information sheet and a consent form to read and keep prior to indicating your consent to participate by signing the consent form.

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The Human Research Ethics Committee at the Stellenbosch University requires that all participants are informed that, if they have any complaint regarding the manner, in which a research project is conducted, it may be given to the researcher or, alternatively to the Administrative Officer, Human Research Ethics Committee, Division of Research Development, Stellenbosch University, Private Bag X1, Matieland, 7602.



'n Profiel en oefenprogram vir sielkundige vaardighede vir baan- en veldatlete

Inligtingsvorm

Doel van die studie: Die doel van die studie is om 'n sportsielkundige vaardigheidsprofiel vir atlete te ontwikkel. 'n Verdere doel is om te bepaal of daar 'n korrelasie bestaan tussen die atlete se sportsielkundige vaardigheidsvlakke en hul atletiek prestasie.

Prosedure: Alle atlete wat deel is van die universiteitspanne in die A-afdeling van die 2011 USSA Atletiek Kampioenskappe te Coetzenburg Stellenbosch word uitgenooi om deel te neem aan hierdie navorsingsprojek. Nadat ons u toestemming ontvang het om aan die studie deel te neem, sal die studie kortliks aan al die deelnemers verduidelik word waartydens die doel asook die voordele van die studie verstrekkend sal word. Elke deelnemer se sportsielkundige vaardigheidsvlakke sal hierna getoets word deur die voltooiing van die Sportsielkundige Vaardighede Inventaris (Wheaton, 1998).

Voordele: Die samestelling van 'n sportsielkundige vaardigheidsprofiel vir atlete sal bydra tot 'n groter bewusmaking van die sielkundige eise wat aan atlete gestel word.

Regte van die navorsingspopulasie: Die deelnemers kan kies of hulle aan die studie wil deelneem of nie. U kan u deelname op enige stadium onttrek en deelname staak sonder om geenaliseer te word of om redes vir die staking te verskaf. Kontak gerus vir Me. Maléne Fouché by die Afdeling vir Navorsingsontwikkeling (**kontak nommer (021) 808 4622 of mfouche@sun.ac.za**) indien u enige vrae in verband met u regte as 'n deelnemer van hierdie studie het.

Regte van die navorser: Die navorsers het die reg om die deelnemer van die ondersoekgroep te verwyder indien die deelnemer nie die instruksies tydens die insameling van die data volg nie.

Vertroulikheid: Enige inligting van deelnemers wat ingesamel word in verband met hierdie studie sal vertroulik bly en slegs met u skriftelike toestemming openbaar gemaak word. Die resultate van hierdie studie mag egter gepubliseer of bekend gemaak word op so 'n manier dat u identiteit onbekend sal bly. Alle vrae- en datalyste sal genommer word en geen name sal in die data versameling of analyses verskyn nie. Alle inligting wat deur vraelyste versamel word, sal gebruik word vir data analyses waarna dit veilig in die Departement Sportwetenskap in Stellenbosch gestoor sal word. Die data sal slegs toeganklik wees vir die navorser en die projekteier.

Toestemming: Die navorser wil slegs individue by die studie insluit wat vrywillig aan die projek deelneem. Deelname is vrywillig en u kan op enige stadium aan die studie onttrek en deelname staak sonder om enige redes te verskaf. Ons sal graag die data wat ons reeds ingesamel het, indien u daartoe instem, wil hou, sou u besluit om aan die studie te onttrek. Die data sal vernietig word indien u nie daartoe instem nie.

Verdere inligting: Indien u enige vrae in verband met hierdie studie het, kan u enige van die betrokke persone kontak. U sal 'n afskrif van die inligtingsvorm ontvang en 'n toestemmingsvorm om te lees voordat u toestemming verleen vir deelname aan die studie.

Meestersgraadstudent: Janet Wienand (Lawless)
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Die Menslike Navorsing Etekkomitee van die Stellenbosch Universiteit vereis dat alle deelnemers ingelig word, dat indien hulle enige klagtes het in verband met die wyse waarop die navorsing projek uitgevoer is, hulle die navorser in kennis moet stel of alternatiewelik vir die Administratiewe Beampte, Menslike Navorsing Etekkomitee, Afdeling vir Navorsingsontwikkeling, Stellenbosch Universiteit, Privaatsak X1, Matieland, 7602.



A profile and training programme of psychological skills for track and field athletes

Assent Form (Participant)

I _____ have read the information provided and any questions I have asked have been answered to my satisfaction. I agree to participate in this project, realising that I may withdraw at any time without reason and without prejudice and that any record of my participation will be destroyed. The information was explained to me by Janet Wienand (Lawless) in Afrikaans and/ or English and I am in command of this language.

1. I understand that all information provided is treated as strictly confidential and will not be released by the investigator unless required to by law. I have been advised as to what data is being collected, what the purpose is, and what will be done with the data upon completion of the research.
2. I understand that my participation is entirely voluntary and that I may withdraw my participation at any time and without prejudice.
3. The raw data on which the results of the project depend will be retained in secure storage for five years, after which it will be destroyed.
4. I understand that, at my request, I can receive additional explanation of the study at any time.
5. I was informed that there are no costs involved for my participation in this project.
6. I am aware that the assessments include the completion of a psychological skills inventory.
7. I am aware that if I have any complaints or if I am not treated with respect, I may phone the human research committee contact person at the University, Ms. Maléne Fouché at (021) 808 46 22; mfouche@sun.ac.za
8. I may keep a copy of the participant information sheet for my own records.
9. I agree that research data gathered for the study may be published provided that my name or other identifying information is not used.

Participant _____

Masters Student: Janet Wienand (Lawless)
Email: Janetwienand7@gmail.com
Fax Number: 086 729 9958
Tel. Number: +27 (0)71 682 6512
P.O. Box 6041, Uniedal, Stellenbosch, 7612

Date _____

Study leader: Dr. H.W. Grobbelaar
Email: HGrobbelaar@sun.ac.za
Tel. Number: +27 (0)21 808 4771

Research will be conducted according to the declaration of Helsinki, Medical Research Council (MRC) guidelines and SA Good Clinical Practice (GCP). The researcher conducting this study support the principles governing both ethical conduct of research and the protection at all times of the interest, comfort and safety of the participants. The form and the accompanying information sheet are given to you for your own protection. They contain a detailed outline of the project procedures.



'n Profiel en oefenprogram virsielkundige vaardighede vir baan- en veldatlete

Instemmingsvorm (Deelnemer)

Ek _____ het die inligting verskaf gelees en enige vrae wat ek gehad het is beantwoord. Ek stem in om aan die navorsingsprojek deel te neem, wetende dat ek te enige tyd mag onttrek, sonder rede en sonder enige diskriminasie en dat enige record van my deelname vernietig sal word. Die inligting is aan my verduidelik deur Janet Wienand in Afrikaans en/ of Engels en dat ek hierdie taal magtig is.

1. Ek begryp dat alle inligting deur my verskaf as streng konfidensieel hanteer sal word en dat die nie deur die ondersoeker beskikbaar gestel sal word tensy dit wetlik vereis word nie. Ek is ingelig watter data ingesamel word, wat die doel is, asook wat met die data gedoen sal word aan die einde van die navorsing.
2. Ek begryp dat my deelname total vrywillig is en dat ek te enige tyd mag onttrek sonder enige diskriminasie.
3. Die rou data wat die resultate van die projek bevat vir 'n periode van vyf jaar veilig bewaar sal word, waarna dit vernietig sal word.
4. Ek begryp dat ek te enige tyd addisionele verduideliking van die studie mag vra.
5. Ek was ingelig dat my deelname aan die studie geen kostes vir my sal inhou nie.
6. Ek is bewus dat die toetsing die invul van 'n sportsielkundige vaardigheds inventaris insluit.
7. Ek is bewus dat indien ek enige klagtes het, of nie met respek behandel word nie, ek die menslike navorsings komitee kontak persoon by die Universiteit, Me. Maléne Fouché mag skakel by (021) 808 46 22; mfouche@sun.ac.za.
8. Ek 'n afskrif van die deelnemer inligtingsvorm mag hou vir my eie rekord doeleindes.
9. Ek verleen toestemming dat die data wat vir die navorsing ingesamel word gepubliseer mag word, solank my naam nie bekend gemaak word nie.

Deelnemer

Meestersgraadstudent: Janet Wienand (Lawless)
Epos: Janetwienand7@gmail.com
Tel. Nommer: +27 (0)71 682 6512
Faks Nommer: 086 729 9958
Posbus 6041, Uniedal, Stellenbosch, 7612

Datum

Studieleier: Dr. H.W. Grobbelaar
Epos: HGrobbelaar@sun.ac.za
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Navorsing sal uitgevoer word aan die hand van die Helsinki verklaring, Mediese Navorsings Raad (MNR) riglyne en SA Goeie Kliniese Praktyk (GKP). Die navorser wat hierdie studie uitvoer ondersteun die beginsels wat etiese navorsingsoptrede, sowel as die beskerming van die belange, gemak en veiligheid van die deelnemers onderlê. Die vorm en die meegaande inligtingsblad word vir jou gegee vir jou eie beskerming. Dit bevat 'n gedetailleerde uitleg van die navorsingsprosedures.



STELLENBOSCH UNIVERSITY
DEPARTMENT OF SPORT SCIENCE
SPORT PSYCHOLOGICAL SKILLS PROJECT (TRACK & FIELD)
(PHASE ONE – USSA ATHLETICS CHAMPIONSHIPS 2011)
ATHLETE QUESTIONNAIRE.

Section A: Demographic information										
1	Record number (for office use)									
2	Name:									
	Surname:									
3	Birth date:	19	y	y	m	m	d	d		
4	Current age:							Years		
								Months		
5	Race (for statistical purposes)							Asian	1	
								Black	2	
								Coloured	3	
								White	4	
6	Which Tertiary Institution team are you representing?									
Postal Address										
Postal Code										
Contact Details	Home telephone									
	Cell phone									
	E-mail address									

Section B: Track and field history					
7	For how many years have you been competing in track and field?				yrs
8	How many USSA Championships have you participated in (including this one)?				
9	Specify your current event(s), your personal best times, heights or distances and rank each specific event in your order of preference (i.e. 1, 2, 3...).				
	Events	Indicate the specific event/ items	Personal best times, heights, distances for each	Preferred event/item (Rank 1,2,3...)	
	Sprints	1.			
		2.			
		3.			
		4.			
	Middle/ long distance	1.			
		2.			
		3.			
		4.			
	Jumps	1.			
		2.			
		3.			
		4.			
	Throws	1.			
		2.			
		3.			
		4.			

Section C: Sport psychology background and perceptions			
10	Have you ever visited a sport psychologist/ sport psychological skills trainer individually?	Yes	
		No	
11	If you answered yes to question 10, how many sessions did you have?		
12	Have you ever been part of a team (even in another sport) that was exposed to a Sport Psychological Skills Training Programme?	Yes	
		No	
13	If you answered yes to question 12, how many sessions did the team have?		
14	If you answered yes to question 12, how often did these Sport Psychological Skills Training sessions take place?	Once-of	
		Weekly	
		Monthly	
		6-monthly	
		Yearly	
		No fixed pattern	

Section C: Sport psychology background and perceptions (continued)			
15	In your opinion, how important are the Development of Sport Psychological Skills in order to achieve optimal performances in track and field?	It is a waste of time	1
		It can help, but it is not important	2
		Neutral	3
		Important	4
		Very important	5
16	To what extent are you able to prepare yourself psychologically for training sessions?	Poor	1
		Below average	2
		Average	3
		Good	4
		Very good	5
17	To what extent are you able to prepare yourself psychologically for competitions?	Poor	1
		Below average	2
		Average	3
		Good	4
		Very good	5
18	To what extent do you have a need for Sport Psychological Skills Training Programmes in order to enhance your Track and Field performance?	Definitely no need	1
		No need	2
		Uncertain	3
		I have a need	4
		I have a great need	5
19	Complete the following sentence: In order to achieve better and more consistent results, psychologically I need help with...		

PSYCHOLOGICAL SKILLS INVENTORY (PSI) WHEATON (1998)

In order for you to get some use from this inventory it is important that you respond to the statements as honestly as possible. Information provided by you is confidential and will not be available to any person other than yourself and the person taking the tests.

- This inventory consists of a number of statements about competitive sport.
- Read each statement carefully then indicate how it applies to you when you compete in important competitions.
- There are no correct or incorrect answers. All you are required to do is to consider each statement in terms of your own sporting experience.

1.	I can persevere at my sport, even when I am very tired.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan volhou met my sport selfs as ek baie moeg is.</i>				
2.	I set goals for my sport.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek stel mikpunte vir my sport.</i>				
3.	Before I compete in important competitions I worry about not performing well.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Voor ek deelneem aan belangrike kompetisies, is ek bekommerd dat ek nie goed sal vaar nie.</i>				
4.	If I lose confidence during a competition I know how to recover it.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>As ek vertrouwe verloor tydens 'n kompetisie weet ek hoe om dit te herwin.</i>				
5.	I use fixed routines of rituals before competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek volg vaste roetines of rituele voor kompetisies.</i>				
6.	I set aside specific times to practise my sport in my imagination (visualisation/imagery).				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek reserveer spesifieke tye om my sport in my verbeelding te beoefen (visualisering/beelding).</i>				
7.	If the odds are against winning, I am still able to produce my best effort.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>As die kansse vir 'n oorwinning onwaarskynlik is, kan ek nog steeds my beste lewer.</i>				
8.	On a daily or weekly basis I set very specific goals for myself that guide what I do.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Op 'n daaglikse of weeklikse basis stel ek vir myself baie spesifieke mikpunte om my te lei in wat ek doen.</i>				
9.	I worry about making mistakes in important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek bekommer my dat ek foute sal maak tydens belangrike kompetisies.</i>				
10.	I feel threatened by important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek ervaar belangrike kompetisies as bedreigend.</i>				

11.	During a competition I continue to concentrate well even after making a mistake.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek hou aan om goed te konsentreer selfs as ek 'n fout maak tydens kompetisies.</i>				
12.	I can clearly visualise my future sport performances in my imagination.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan duidelik my toekomstige sportvertoning in my verbeelding visualiseer.</i>				
13.	If I get behind in a competition, I feel that winning is impossible.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>As ek agter raak in 'n kompetisie, voel ek dat oorwinning onmoontlik is.</i>				
14.	I set realistic, but challenging goals for my sport.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek stel realistiese, maar uitdagende mikpunte vir my sport.</i>				
15.	The more important the competition, the more enjoyable it is for me.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Hoe belangriker die kompetisie, hoe meer geniet ek dit.</i>				
16.	Before important competitions I am confident that I can handle the pressure.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Voor belangrike kompetisies het ek die vertroue dat ek die druk kan hanteer.</i>				
17.	I have trouble concentrating during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek het probleme om te konsentreer tydens belangrike kompetisies.</i>				
18.	I find it difficult to visualise clear mental pictures of my sport in my imagination.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek vind dit moeilik om 'n duidelike prentjie van my sport in my verbeelding te visualiseer.</i>				
19.	I am able to bounce back quickly after a disappointing performance.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan vinnig herstel na 'n teleurstellende vertoning.</i>				
20.	I write down my goals for my sport.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek skryf my mikpunte vir my sport neer.</i>				
21.	I enjoy the challenges of important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek geniet die uitdagings van belangrike kompetisies.</i>				
22.	I experience thoughts of failure during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek ervaar gedagtes van mislukking tydens belangrike kompetisies.</i>				
23.	When unexpected things happen during important competitions it disrupts my concentration.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Wanneer onverwagte gebeure plaasvind tydens belangrike kompetisies ontwrig dit my konsentrasie.</i>				

24.	I visualise my sport in my imagination during practice sessions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek visualiseer my sport in my verbeelding tydens oefensessies.</i>				
25.	I strive for better performances.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek streef na beter prestasies.</i>				
26.	I monitor the progress towards my goals.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek monitor my vordering op pad na my mikpunte.</i>				
27.	I can control my nervousness before important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan my senuagtigheid beheer tydens belangrike kompetisies.</i>				
28.	Before important competitions I am confident that I can meet the challenges.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Voor belangrike kompetisies is ek vol selfvertroue dat ek die uitdagings kan hanteer.</i>				
29.	My concentration lets me down during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>My konsentrasie laat my in die steek tydens belangrike kompetisies.</i>				
30.	I visualise my sport in my imagination during competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek visualiseer my sport in my verbeelding tydens kompetisies.</i>				
31.	I am good at motivating myself.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek slaag goed daarin om myself te motiveer.</i>				
32.	I set specific goals for each practice session.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek stel spesifieke mikpunte vir elke oefensessie.</i>				
33.	I can handle the unexpected stress during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan onverwagte stres tydens belangrike kompetisies beheer.</i>				
34.	I have doubts about my ability in sport.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek twyfel oor my sportvermoë.</i>				
35.	My thoughts interfere with my performance during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>My gedagtes meng in met my prestasie tydens belangrike kompetisies.</i>				
36.	I visualise my sport in my imagination just before going into important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek visualiseer my sport in my verbeelding net voordat 'n belangrike kompetisie begin.</i>				

37.	I am motivated to excel in my sport.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is gemotiveerd om te presteer in my sport.</i>				
38.	I set specific goals for every competition.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek stel spesifieke mikpunte vir elke kompetisie.</i>				
39.	I worry about failing in important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is bekommerd dat ek sal misluk tydens belangrike kompetisies.</i>				
40.	My confidence tends to drop as an important competition draws nearer.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>My selfvertroue neig om te verswak namate 'n belangrike kompetisie nader kom.</i>				
41.	I can effectively block out negative thoughts during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan negatiewe gedagtes effektief blokkeer tydens belangrike kompetisies.</i>				
42.	I visualise dealing with setbacks and coping with difficult situations in my sport.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek visualiseer die hantering van terugslae of die hantering van moeilike situasies in my sport.</i>				
43.	I look forward to important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek sien uit na belangrike kompetisies.</i>				
44.	My specific goals are structured to lead me to my eventual long-term goal.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>My spesifieke mikpunte is so opgestel dat dit my lei na my uiteindelijke langtermyn doel.</i>				
45.	I know how to make myself relax in difficult situations.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek weet hoe om myself te laat ontspan in moeilike situasies.</i>				
46.	When I begin to perform poorly, my confidence drops quickly.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Wanneer ek begin om swak te presteer, verswak my selfvertroue vinnig.</i>				
47.	Negative remarks by other people (such as spectators or opponents) upset me during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Negatiewe opmerkings deur ander mense (bv. toeskouers of opponente) ontstel my tydens belangrike kompetisies.</i>				
48.	I use visualisation in the period just before the beginning of a competition.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek maak gebruik van visualisering in die periode net voor die begin van 'n kompetisie.</i>				
49.	I am a tough competitor.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is 'n taai mededinger.</i>				

50.	My goals all have deadlines attached to them.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Al my mikpunte het teikendatums.</i>				
51.	When I make a mistake during important competitions I become nervous.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Wanneer ek 'n fout tydens belangrike kompetisies maak, raak ek senuagtig.</i>				
52.	Before an important competition I am concerned that I may not do as well as I could.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Voor 'n belangrike kompetisie is ek bekommerd dat ek nie so goed sal wees as wat ek kan nie.</i>				
53.	I can quickly refocus my concentration after becoming distracted during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan vinnig my konsentrasie herfokus wanneer my aandag afgetrek word tydens belangrike kompetisies.</i>				
54.	When I mentally practise my performance, I try to imagine what it will feel like in my muscles.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Wanneer ek my sport in my verbeelding oefen, probeer ek my verbeel hoe dit in my spiere sal voel.</i>				
55.	I am enthusiastic at practise sessions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is entoesiasies by oefensessies.</i>				
56.	I, myself, set my goals for my sport.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek stel self my mikpunte vir my sport.</i>				
57.	I am concerned that others will be disappointed with my performance in important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is bekommerd dat ander mense teleurgesteld sal wees met my vertoning tydens belangrike kompetisies.</i>				
58.	Before important competitions I am confident that I will perform well.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Voor belangrike kompetisies is ek vol vertroue dat ek goed sal presteer.</i>				
59.	When a competition is not going well, my concentration is easily distracted.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Wanneer 'n kompetisie nie so goed gaan nie word my konsentrasie maklik ontwig.</i>				
60.	I can clearly visualise my previous sport performances in my imagination.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan my vorige sportvertonings duidelik in my verbeelding visualiseer.</i>				
61.	I enjoy training with others.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek geniet dit om saam met ander mense te oefen.</i>				
62.	I worry about the rest of the team to such an extent that it affects my performance.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek bekommer my oor die res van die span tot so 'n mate dat dit my eie prestasie beïnvloed.</i>				

63.	I have enough time to function efficiently in all areas of my life (sport, studies, work, social life, etc.).				
	Never / <i>Nooit</i>	Rarely / <i>Selde</i>	Sometimes / <i>Soms</i>	Often / <i>Gereeld</i>	Always / <i>Altyd</i>
	<i>Ek het genoeg tyd om effektief te funksioneer in alle aspekte van my lewe (sport, studie, werk, sosiale lewe, ens.).</i>				
64.	My family and friends support me in my sport.				
	Never / <i>Nooit</i>	Rarely / <i>Selde</i>	Sometimes / <i>Soms</i>	Often / <i>Gereeld</i>	Always / <i>Altyd</i>
	<i>My familie en vriende ondersteun my in my sport.</i>				

PEAK PERFORMANCE PROFILE (PPP) POTGIETER & KIDD (2011)

In order for you to get some use from this inventory it is important that you respond to the statements as honestly as possible. Information provided by you is confidential and will not be available to any person other than yourself and the person taking the tests.

- This inventory consists of a number of statements about competitive sport.
- Read each statement carefully then indicate how it applies to you when you compete in important competitions.
- There are no correct or incorrect answers. All you are required to do is to consider each statement in terms of your own sporting experience.

1.	Ifind it difficult to concentrate during important competitions..				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek vind dit moeilik om tydens belangrike kompetisies te konsentreer..</i>				
2.	Before important competitions I'm confident that I can handle the pressure.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek het vertroue dat ek die druk tydens kompetisies kan hanteer..</i>				
3.	I worry about making mistakes during important competitions..				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is bekommerd dat ek foute tydens belangrike kompetisies sal maak.</i>				
4.	When something unexpected happens at important competitions it disrupts my concentration.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Wanneer iets onverwags gebeur tydens belangrike kompetisies word my aandag af getrek.</i>				
5.	I can control my nerves before important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan my senuwees beheer voor belangrike kompetisies..</i>				
6.	Before important competitions I'm worries that I will not perform well..				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Voor belangrike kompetisies is ek bekommerd dat ek nie goed sal presteer nie.</i>				
7.	My thoughts interfere with my performance in important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>My gedagtes meng met my deelname in tydens belangrike kompetisies.</i>				
8.	Before important competitions I'm confident that I can meet the challenges..				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Voor belangrike kompetisies is ek selfversekerd dat ek die uitdaging sal kan oorkom..</i>				
9.	I am concerned that other people may be disappointed with my performance in important competitions..				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is bekommerd dat mense teleurgesteld in my prestasie sal wees tydens belangrike kompetisies.</i>				

10.	Negative remarks by other people (such as spectators or opponents) upset me during important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Negatiewe opmerkings deur ander mense (bv. toeskouers of opponente) ontstel my tydens belangrike kompetisies.</i>				
11.	I can handle unexpected stress at important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan onverwagte spanning gedurende belangrike kompetisies hanteer.</i>				
12.	I'm confident that I can remain in control in important competitions..				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is verseker dat ek in beheer kan bly tydens belangrike kompetisies..</i>				
13.	When an important competition is not going well, my concentration is easily disrupted.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Wanneer 'n kompetisie nie goed verloop nie, word my konsentrasie maklik gebreek.</i>				
14.	I can effectively block out negative thoughts at important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek kan negatiewe gedagtes effektief blok gedurende belangrike kompetisies.</i>				
15.	I'm confident that I will perform well in important competitions.				
	Never / Nooit	Rarely / Selde	Sometimes / Soms	Often / Gereeld	Always / Altyd
	<i>Ek is oortuig daarvan dat ek tydens belangrike kompetisies goed sal deelneem.</i>				



MATIES ATHLETICS CLUB "Mental Skills Training Programme" for Peak Performance



Compiled by:

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Department of Sport Science.
Faculty of Education.
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Programme outline

Week 1:	Introduction and pre-testing	
Week 2:	Feedback session and divide into groups	
Session 1:	Goal setting	3-11
Session 2:	Achievement motivation	12-16
Session 3:	Imagery	17-21
Session 4:	Managing Somatic Anxiety	22-28
Session 5:	Managing Cognitive Anxiety	29-33
Session 6:	Concentration	34-42
Session 7:	Self-Confidence	43-49
Session 8:	Post-testing	
USSA Athletics Championships		27-28 April

SESSION 1: GOAL SETTING

Sport Scientists have found that goal setting helps athletes to develop both physical and psychological skills.

Benefits of effective goal setting:

- Goals improve performance by improving the quality of practices and by making training more challenging, thereby relieving boredom.
- Setting goals is not only an effective way to motivate athletes, but improves dedication, productivity and performance.
- Goals clarify expectations and increase pride, satisfaction and self confidence.
- By including the athlete in the goal setting process, it creates a feeling of responsibility and self-belief.
- Goal setting could lead to better communication between the athlete and coach by preventing potential misunderstandings.
- Goal setting can improve performance by facilitating the athlete's concentration.

So, how does goal setting improve performance?

1. Goals direct the athletes' attention and action to the necessary tasks.
2. Goals mobilize the athlete's energy and effort.
3. Goals increase the persistence of athletes when progress is painfully slow and
4. Goals motivate athletes to search for the most appropriate strategies to achieve them.

Activity 1

MATIES ATHLETES' 2012 GOALS:

Formulate your individual goals for 2012:

Formulate your long-term individual goals:

Different Types of Goals

In sport we can distinguish between **outcome goals**, **performance goals**, and **process goal**.

OUTCOME GOALS	PERFORMANCE GOALS	PROCESS GOALS
 <p data-bbox="164 808 528 981">Focus on the result of the competition. This takes into consideration your opponents' ability.</p>	 <p data-bbox="582 815 991 1070">Focus on achieving standards independent of other competitors. These goals are based on comparisons with one's own previous performances.</p>	 <p data-bbox="1018 815 1385 943">Focus on actions to be completed successfully during the performance.</p>

POSSIBLE ADVANTAGES OF EACH GOAL TYPE		
POSSIBLE DISADVANTAGES OF EACH GOAL TYPE		

ASSESSING PERSONAL ATTRIBUTES:

PHYSICAL PROFILE	IMP	IS	CS	IS-CS	(IS-CS) X IMP	RANKING
Endurance		10				
Speed		10				
Explosiveness		10				
Body Composition		10				
Strength		10				
Flexibility		10				
Core strength		10				
Rehabilitation		10				

Priority areas:

1. _____ 2. _____ 3. _____

TECHNICAL PROFILE	IMP	IS	CS	IS-CS	(IS-CS) X IMP	RANKING
		10				
		10				
		10				
		10				
		10				
		10				
		10				
		10				

Priority areas:

1. _____ 2. _____ 3. _____

PSYCHOLOGICAL PROFILE	IMP	IS	CS	IS-CS	(IS-CS) X IMP	RANKING
Achievement motivation		10				
Arousal control		10				
Concentration		10				
Visualization		10				
Self-confidence		10				
Goal-directedness		10				

Priority areas:

1. _____ 2. _____ 3. _____

S.M.A.R.T. Principles for effective goal setting:	
S	
M	
A	
R	
T	

Activity 2

Contract

Write down a contract with your goals and actions plans and ask your coach, friend or parent (someone to hold you accountable) to sign the contract.

My individual goals for the 2012 season

PROCESS GOALS			
	SMART GOAL	ACTION PLAN	DATE
1. Physical attributes			
2. Technical skills			
3. Psychological skills			
4. Academics			
5. Spiritual life			

Name: _____

Parent/friend/coach: _____

(Signature)

(Signature)

Homework

Activity 1

Make an appointment with your coach. Discuss your outcome goals with him/her and work on your process goals together. Find out if the goals are S.M.A.R.T. in his/her opinion. Let him/her sign the contract.

Activity 2

Read through your contract and start to work on a plan on how to implement your goals into your daily schedule. Use your "daily goal implementation action work sheet" to assist you.

My daily goal-implementation action workbook

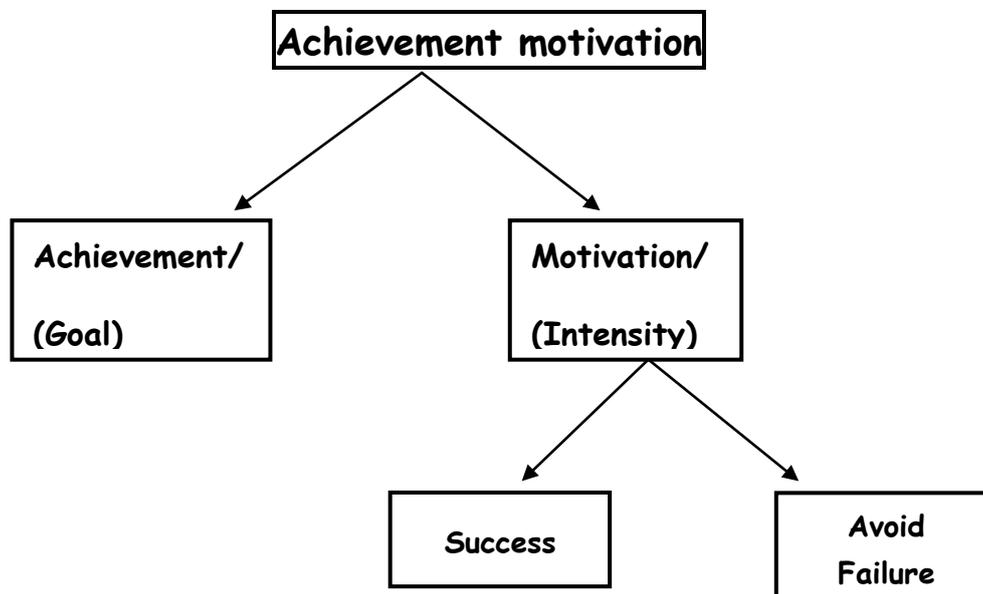
Date/ Day	Goal	Action Plan	Comments
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

SESSION 2

ACHIEVEMENT MOTIVATION

Sport scientists argue that task orientation (focus on improving relative to your own past performances) more often than an outcome orientation (the outcome and comparisons to others) will lead to a strong work ethic, persistence in the face of failure and optimal performance.

Motivation consists of two dimensions: direction and intensity. Direction is concerned with choosing a goal. Intensity is concerned with how activated or energized a person is, that is how much effort is being given to reach a certain goal.



High achievers demonstrate high motivation to achieve success and low motivation to avoid failure. In contrast, low achievers generally demonstrate low motivation to achieve success and high motivation to avoid failure.

Activity 1

Who/what motivates you?

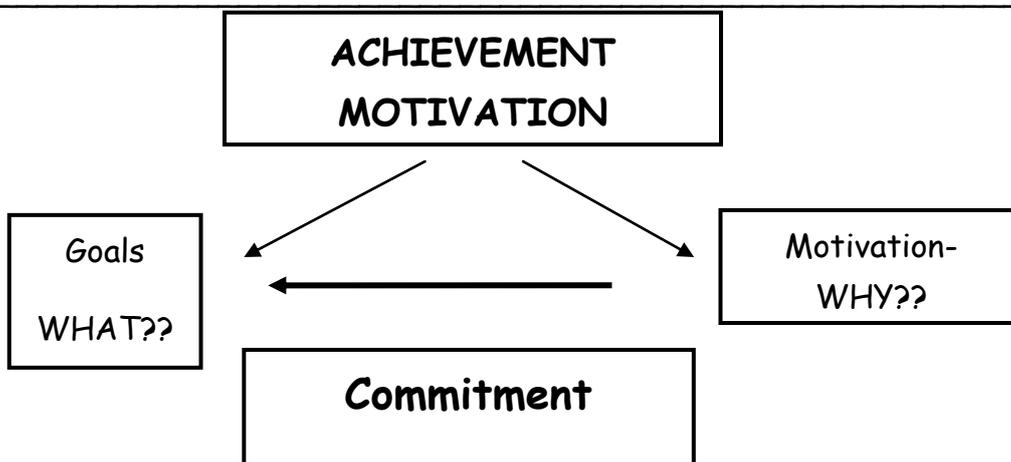
"Champions are not made in gyms. Champions are made from something that they have deep inside of them: a desire, a dream a vision. They have to have the skill and the will. But the will must be stronger than the skill"- Muhammad Ali

My Sources of Motivation

List at least 7 characteristics of a champion athlete

List at least 5 positive characteristics about yourself

How can I improve?



Activity 2

Commitment motivational chats

Goal: To develop and sustain commitment towards goals.

Remind yourself about your commitment towards your goals as this increases motivation. A method for increasing your commitment is to engage in self-commitment chats.

Step 1: Choose a quiet, peaceful environment.

Step 2: Complete the Worksheet on commitment characteristics:

1. Contemplate over your motivation for competing and decide on positive reasons for participation.

2. List reason why you can attain the above. Reasons like: previous performances, personal abilities, current form, desire etc.

3. Contemplate and meditate over every aspect mentioned on your worksheet by saying it out loud, thinking about it and imagining it.

How and when to use motivational self-chats:

- Start using it twice a week (every third day.)
- You can decrease the sessions to once a week as soon as you are comfortable with the session.
- Increase the frequency of the sessions before important competitions to three times a week (every second day.)

Homework

1. Read through the material on Achievement Motivation again.
2. Repeat Activity 2: "commitment motivational chats" twice this week.

Step 1: Isolate yourself from other people and choose a peaceful spot- preferably not in your room. Choose a location in the mountain, next to a river or in a beautiful garden.

Step 2: Think about your commitment towards your goal(s) and the reasons you want to achieve them as well as why you have the ability to do so, meditate on it and say it out loudly to yourself.

My daily goal-implementation action workbook

Date/ Day	Goal	Action Plan	Comments
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

SESSION 3

IMAGERY

What is your understanding of imagery/visualisation?

Have you previously used it? How? When? Was it effective?

What imagery entails

- Imagery can be internal or external.
- Imagery, visualisation, and mental rehearsal, are different terms that refer to an athlete's mental preparation for training and competition.
- These terms refer to creating or recreating an experience in the mind.
- Visualisation or imagery is explained as a similar experience to a sensory experience, but arising in the absence of the usual external stimuli.
- Imagery is a form of simulation.
- Although visualizing is usually the dominant sense, imagery can also involve any of the other senses.
- In other words, imagery is an experience involving not only the visual sense, but also the auditory, olfactory, tactile, and kinaesthetic senses.
- Imagery training can help athletes acquire or practice complex motor skills, rehearse strategies to be followed in a particular contest and to acquire psychological skills.
- Good imagers use all their senses to make their images as clear as possible and as closely related to the actual experience in their minds.
- Particular attention to detail must be paid such as the layout of the facilities, your emotions, thoughts and feelings such as anxiety, concentration, frustration or anger associated with your performance

Benefits of effective imagery

- Imagery can help an athlete to acquire a new skill/technique
- Imagery can be used to practise a technique
- Imagery can be used to "energize" yourself.
- Imagery can be used either to relax or to psych yourself up.
- Imagery can be used to prepare you for expected and unexpected situations before/during competition.

Activity 1

How to use imagery

Step 1



Smell the track/
deep-heat/
barbeque

Breathing exercises: Inhale deep through the nose and exhale through your mouth. (smell and taste)

Step 2



Feel the heat,
wind or rain

Image of environment: Calm wind, warm sun, light rain, coldness etc.

Step 3

Image of surroundings: Crowd, officials, opponents.



Hear the music,
crowd comments?



Experience power,
speed fatigue

Step 4

Contracting and relaxing of muscles: Feel how your muscles work during the execution of your skill/competition. Feel the power, speed and even fatigue.

Step 5

Imaging for psyching up: recall energetic images of past performances.

Imaging for psyching down: recall calm images: a river, the beach etc.

When to use imagery

Goal: To make use of all your senses to gain a vivid imagery experience.

Imagery can be used weeks/even months before an important competition.

On the day of the competition

- Relaxation exercises.
- Repeat important event-related technical or tactical aspects.
- Imagine successful completion of your event/execution of these technical/tactical aspects.

Just before competing...

- Begin to focus your attention on the task at hand.
- No place for anxiety, do relaxation exercises.
- Go through your race strategy.

While you're warming up...

- Go through your warm up routine as you have imagined it.
- Imagine strong, successful images.
- Perfect results = without mistakes? No, quality of skills and quick reaction to mistakes.

Whilst you are competing...

- Use imagery whilst waiting for your turn (jumps, throws)

After the competition...

- Create a "video" of your greatest accomplishments during your event
- Analyse mistakes- facilitates learning

Homework

Read through the material on Imagery.

Complete Activity 1 and 2 every night before you go to bed and before training.

Activity 1

Developing clear images

Step 1

Close your eyes. Imagine yourself at the track or a training facility that you are familiar with (gym or track). Imagine that you are completely alone there. Focus on as much detail possible. How does the area smell? What sounds do you hear? What colours do you observe?

Step 2

Now imagine that you are at the exact same location, but this time there is a big crowd. Look at the spectators, your competitors, your coach and listen to the noise from the crowd, the comments of your competitors and your coach's motivation. Create feelings associated with your event: excitement, self-confidence, pumped-up etc.

Activity 2

Correcting technique

Use imagery to recall a specific aspect in your technique that caused a problem in the past. Recall the specific movement in detail that caused the problem for example your trail leg's knee dropping when clearing hurdles. Visualize how you perform the correct technique this time, without dropping your knee. Feel the correct movement and see how your knee stays high throughout the hurdle clearance. If you include faulty technique whilst imagining the movement, STOP immediately and visualize the correct technique again. Become aware of your self-confidence increasing as you complete the drill over and over again.

My daily goal-implementation action worksheet

Date/ Day	Goal	Action Plan	Comments
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

SESSION 4
MANAGING SOMATIC ANXIETY

Activity 1

Identify your best and worst performances

1. Indicate your BEST EVER performance (date, place, opponents, atmosphere, end result, time/distance, weather conditions, your shape).

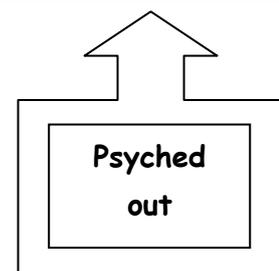
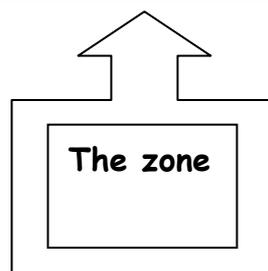
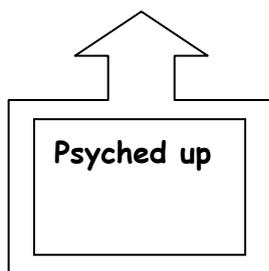
Write down any important THOUGHTS and ACTIONS experienced prior to/during this performance.

2. Indicate your WORST EVER performance (date, place, opponents, atmosphere, end result, time/distance, weather conditions, your shape).

Write down any important THOUGHTS and ACTIONS experienced prior to/during this performance.

Identify aspects that you experience prior/during performances by underlining the most applicable symptoms

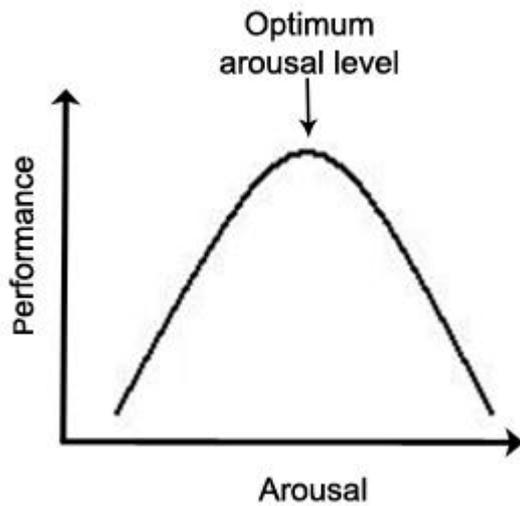
PHYSICAL SYMPTOMS	PHYSICAL SYMPTOMS	PHYSICAL SYMPTOMS
Relaxed muscles, for a broad attention focus, calm thoughts, feeling passive	Relaxed muscles, attention focused, calm thoughts, pumped up	Relaxed muscles, tunnel vision, restless thoughts, don't feel in control
THOUGHTS	THOUGHTS	THOUGHTS
"I do it because I have to", "It's just a formality", "This is no challenge."	"I really want to do this!" "This is a challenge", "I can do this"	"I don't really want to do this", "I don't feel competent", "What if I fail?"
PERFORMANCE	PERFORMANCE	PERFORMANCE
Perform under average	Consistent, optimal performance	Perform poor



"Courage is not the absence of fear. It's being afraid, but being able to control that fear so you are able to perform at your highest ability. That's what makes a champion"- Cory Lester

"My thoughts before a big race are usually pretty simple. I tell myself: "Get out of the blocks, run your race, stay relaxed. If you run your race, you'll win. Channel your energy. Focus"- Carl Lewis

Inverted-U hypothesis



Pre-race symptoms that I experience (Somatic anxiety)

- Somatic state anxiety can be represented in an inverted U form, where an increase in anxiety facilitates performance up to an optimal level, but further increases in anxiety causes performance to decline.
- An increased arousal and state anxiety level can cause increased muscle tension, fatigue and interference with coordination which will result in inferior performances.
- An increase in arousal also narrow's one's attentional focus and decreases the ability to scan the environment for relevant cues.

Activity 2

Guidelines to increase/decrease your physical activation

"PSYCHING UP"	"PSYCHING DOWN"
<ul style="list-style-type: none"> ➤ Controlled breathing: breathe faster and feel in control. ➤ Increase your heart rate by jumping up and down ➤ Visualise inspiring moments in your career. Experience all the emotions and feelings again. ➤ "Energize" yourself by saying positive words - "self talk" ➤ Use music to "pump" yourself up. 	<ul style="list-style-type: none"> ➤ Breathe slowly and deeply. ➤ Decrease your heart rate by taking longer to do things. Slow down. ➤ Visualise situations that you associate with calmness and peace (e.g. a river, the ocean) ➤ Focus your attention on the here-and-now and not on the past or future. ➤ Relax your muscles by contracting them for 10 seconds at a time and immediately relaxing them. Start with your head, shoulders, arms, abs, legs, etc. ➤ "Self-talk": Use words to calm yourself down ("relax", "enjoy it" etc.). ➤ Use music to calm yourself down.

Activity 3

Progressive muscle relaxation

Progressive muscle relaxation is the systematic contraction and relaxation of muscles.

Sit relaxed with your feet on the ground, hands on your thighs and close your eyes. Inhale whilst you are contracting the relevant muscle groups (5sec). Exhale whilst you are relaxing the muscles (5sec).

Muscle group 1: Right and left forearm and hand

Muscle group 2: Right and left upper arm

Muscle group 3: Abdominals

Muscle group 4: Glutes and hamstrings

Muscle group 5: Right and left quadriceps

Muscle group 6: Right and left calf

Music and Controlled Breathing to psych up/ psych down

Psyching up



Resting heart rate: _____bpm

Close your eyes and listen to the music.

Breathe fast and shallow for the duration of the music.

Heart rate immediately after listening to the music?



_____ bpm

Psyching down



Resting heart rate: _____bpm

Close your eyes and listen to the music.

Breathe slower and deeper for the duration of the music.

Heart rate immediately after listening to the music?



_____ bpm

Homework:

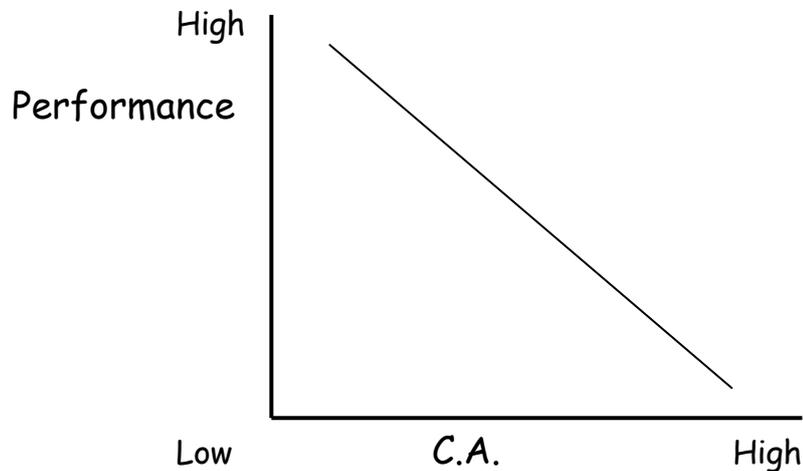
1. Repeat Activity 1: Progressive Muscle Relaxation every night before you go to sleep.
2. Read through the "guideline to increase/decrease your physiological activation".

My daily goal-implementation action workbook

Date/ Day	Goal	Action Plan	Comments
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

SESSION 5

MANAGING COGNITIVE ANXIETY



- This figure illustrates the relationship between C.A. (Cognitive anxiety) and your performance.
- With an increase in your cognitive anxiety, a decrease in performance occurs.
- A decrease in cognitive anxiety will have a positive effect on your performance.

Activity 1

"Scientists have determined that it is impossible to jump 30-feet. But I don't listen to that kind of talk. Thoughts like that have a way of sinking into your feet" - Carl Lewis

How to stop problem thoughts

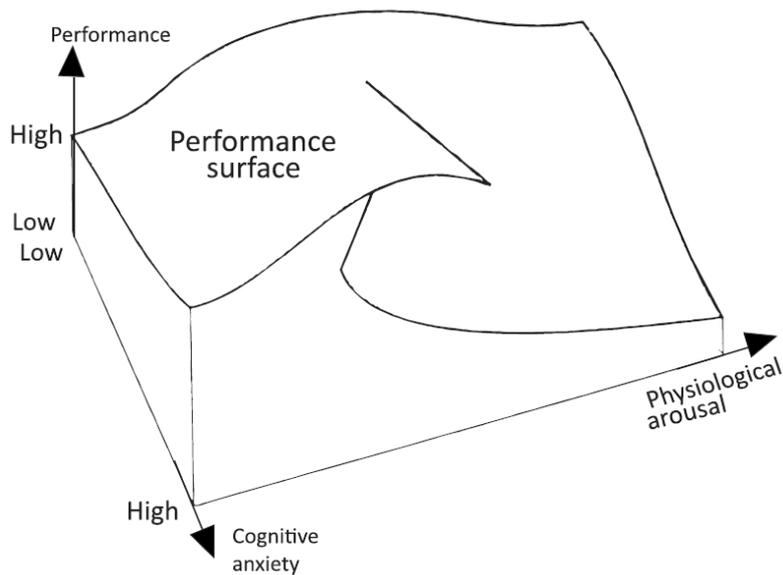
1. Write down typical negative/problematic thoughts and their effects.

-
-
2. Become aware of negative thoughts. Use an elastic band.
 3. Tell yourself to STOP! And then REPLACE disruptive thoughts with positive ones.

	Think of the RED LIGHT as a "WARNING SIGN" every time you have negative thoughts.
	Quickly REPLACE the problem thoughts with constructive thoughts - GREEN LIGHT...GO!

Problem Thoughts	→	Constructive thoughts

THE CATASTROPHE THEORY



- Performance depends on the interaction of somatic and cognitive anxiety.
- Somatic arousal is related to performance in an inverted-U fashion, but only when an athlete is not worried or has low cognitive anxiety.
- The catastrophe model predicts that with low worry, increases in arousal or somatic anxiety are related to performance in an inverted U manner.
- With increased cognitive anxiety, performance improves to an optimal threshold, beyond which additional arousal causes a "catastrophic" decline in performance. This should be prevented at all cost.

Homework

Using self-talk to deal with negative thoughts

Goal:

Create confirming words from your own experiences to use when the situation calls for it.

Learn to use your key words by practising them once a day until it becomes second nature.

Situation (competitions/training)	Confirmation	Key Words
Hard training session	"I'm going to complete the session"	"JUST DO IT!"
	"What doesn't kill me, makes me stronger"	"BE STRONG!"
1.		
2.		
3.		
4.		

My daily goal-implementation action worksheet

Date/ Day	Goal	Action Plan	Comments
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

SESSION 6

CONCENTRATION

Superior performance occurs when athletes are in the optimal energy zone. The energy zone is characterized by attention being directed totally at the process of performing the skill and nothing else.

- Attention is the process that directs our awareness as information becomes available to the senses.
- We receive information from the environment through our senses and when you become aware of what your senses are experiencing, you perceive it.
- The process of knowing objects and objective events is called perception. Perception occurs only when you attend your senses. Once you have perceived the objects or objective events, then you must make a decision about whether or not you will continue to remain aware of them. The process of making this decision requires focused attention to what you are perceiving.
- Thus attention is a cognitive process whereby a person directs and maintains awareness of stimuli detected by the senses.

Attention consists of three different dimensions

1. First, width of attentional focus: Certain sports, such as rugby or hockey requires a broad focus of attention where sport such as sprints and golf, require a narrow focus of attention.
2. Secondly, the direction of an athlete's attention: Attention can be directed internally e.g. problem solving strategies or becoming aware of muscle tension and/or other thoughts. Attention can also be focus externally on the opponent or the flash of the starting gun.
3. The third dimension is the ability to shift the focus from one style to another depending on the changing situation.

Athletes have dominant attentional styles:

<p style="text-align: center;">BROAD EXTERNAL</p>  <p>Takes in a lot of information. These athletes are susceptible to information overload, which can result in their not being able to decide how to respond to decide how to respond.</p>	<p style="text-align: center;">BROAD INTERNAL</p>  <p>Thinking athletes; they're quick to make tactical adjustments and are skilful analyzers of their opponents. Can get caught up in analyzing and outguessing themselves and then missing important cues.</p>
<p style="text-align: center;">NARROW EXTERNAL</p>  <p>Perform well in tasks in which the focus must be pinpointed. They struggle to respond to changes in the environment</p>	<p style="text-align: center;">NARROW INTERNAL</p>  <p>Critical self-analyzers. Athletes with a narrow internal style perform better in sports in which change takes place slowly.</p>

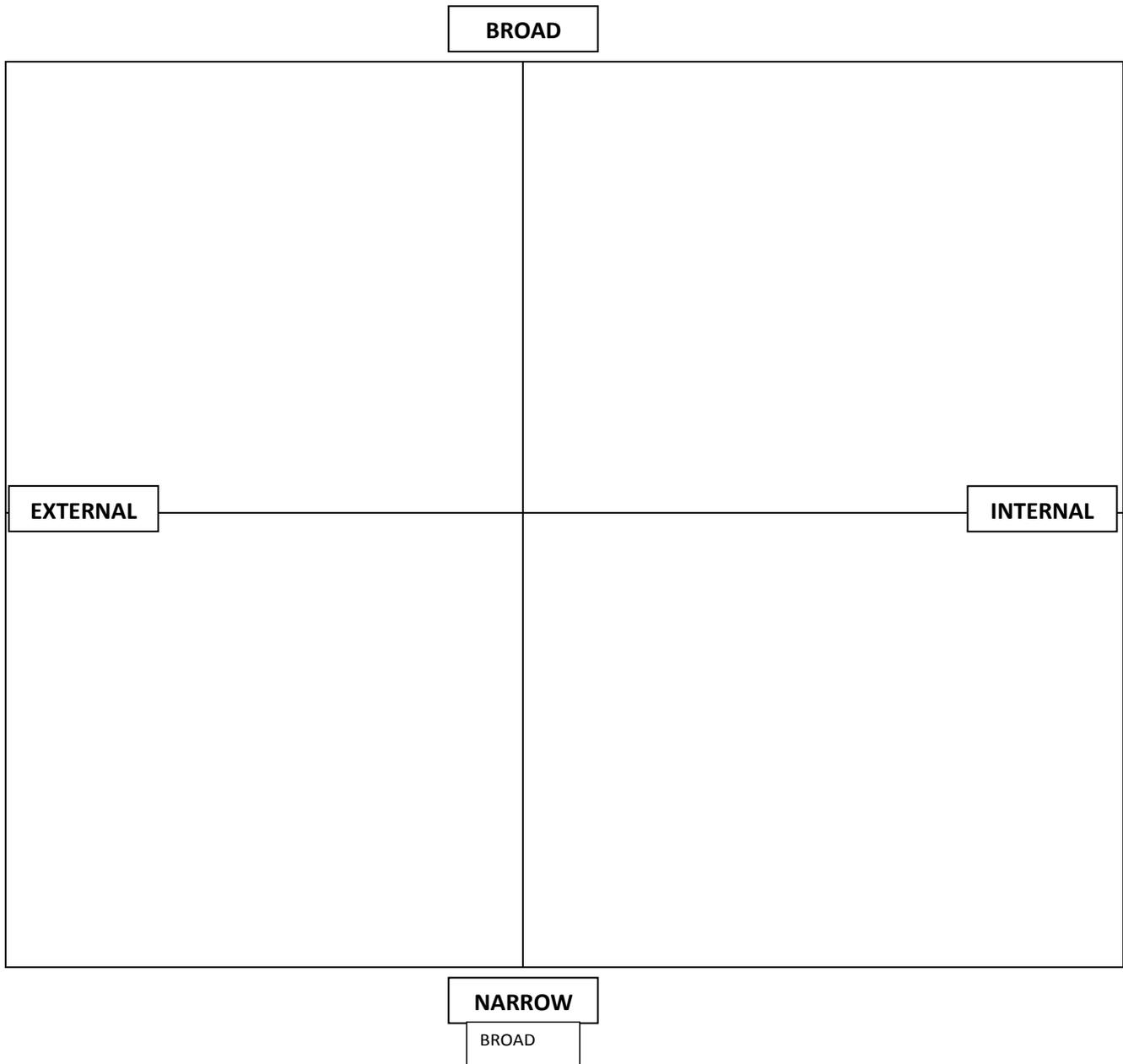
A broad external focus is necessary to assess situational factors such as wind direction, rain or a big crowd. Just before the start of a race your focus should be narrow internal where your attention is directed towards a specific action or feeling. Whilst running for example a 1500m, your attention must be to run as relaxed and sufficient/economical as possible. You will again use a narrow internal attention style. However, you must not be so focused on running technique that you don't realise that the athlete's in front are picking up pace and kicking in the last 400m, leaving you behind. You will have to shift attention from narrow internal, to broad internal.

In practice it means that you have to learn how to direct your attention when the situation acquires it.

Activity 1

Shifting awareness

Use the table to indicate how you shift between attentional styles as your event continues.



Activity 2

Simulation practice

Goal:

Preparing for unexpected situations:

Staying focused under stress.

Expect the unexpected.

- Loud music: Training with music. (simulating competition situations, training with your i-pod/ mp3 player)
- A crowd's noise and comments (Your coach can help: make comments)
- Training in bad weather if bad weather is expected: Visualising to stay focused and completing the event successfully in a strong wind and even rain.

Step 1

Think of any situation that can potentially interrupt your attention: weather circumstances, intimidating athletes, friends' or family's presence at the competition.

Step 2

Communicate to the others thoughts and events you have encountered that could disrupt/have disrupted your attention.

Step 3

Visualise how you would control the situation and how you refocus on the relevant cues so that you stay task focused.

Activity 3

Create a routine

Goal:

To enhance attention by doing the same acts in the same sequence before or during competition.

- Creating a routine helps athletes to prevent interruptions in your concentration by focussing on your routine.
- By establishing a pre-competition routine your self-confidence increases because you will approach an important competition in exactly the same way as an un-important competition.
- That way you train your body and your thoughts to act in the same pattern independent of the importance of the competition. It sets the base for optimal performance.
- It is important to keep routines simple and flexible.

Example of a pre-competition routine:

The day/night before routine	At the competition routine	Routine just before competing
Not on my legs too much	Walk to the competing area, familiarising myself with the competition area	Use techniques to psych me up: listen to i-pod
Eat the same supper as I do before every competition	Visualising competing	Visualising successful completion of event
Organise my sport bag	Sit with my coach, discussing strategies and goals for the meeting	Just before starting remind myself that I'm ready and prepared. "self-talk"
Mental rehearsal of my race-plan when I'm in bed	Isolate myself from other people to get in the right state of mind	Take a few short breaths and jump up and down
Doing progressive relaxation exercises	Check my sport bag	Switch to: "auto pilot"
Looking at video where I competed successfully		
Sleeping at a normal time		

Customized Pre-competition Routine		
<p>Make a list of pre-competition activities to form part of your routine to help insure optimal performance. Think specifically on preparing on a physical as well as a psychological level.</p>		
The day/night before routine	At the competition routine	Routine just before competing

Homework

Activity 1

Using Imagery to prepare for unexpected situations

Step 1:

Think about any potential situation that can interrupt your focus. Think about aspects such as bad weather conditions, intimidating opponents or the influence of family members or friends.

Step 2: Visualize how you successfully manage the situation and how you stay focused on your specific task.

Activity 2

Shifting your attention

Visualise your pre-competition circumstances. There is cloud formation with a light breeze blowing from the side with a big crowd and loud music.

In order to focus on your event, you need to focus your attention internally on a specific task/tasks that needs to be done.

However, you must still be aware of what is happening around you. For example: 1500m athletes need to stay relaxed whilst running, but also needs to be aware of what other athletes are doing (unexpected acceleration of pace, athletes falling in front of you, a sudden change in wind direction etc)

You can again shift your attention to gain motivation by focussing on the up-lifting music being played or a team mate urging you on.

Use the worksheet to write down your own case study in order to practice shifting your attention. Create/Imagine at least 3 different case studies.

Case study 1

My daily goal-implementation action worksheet

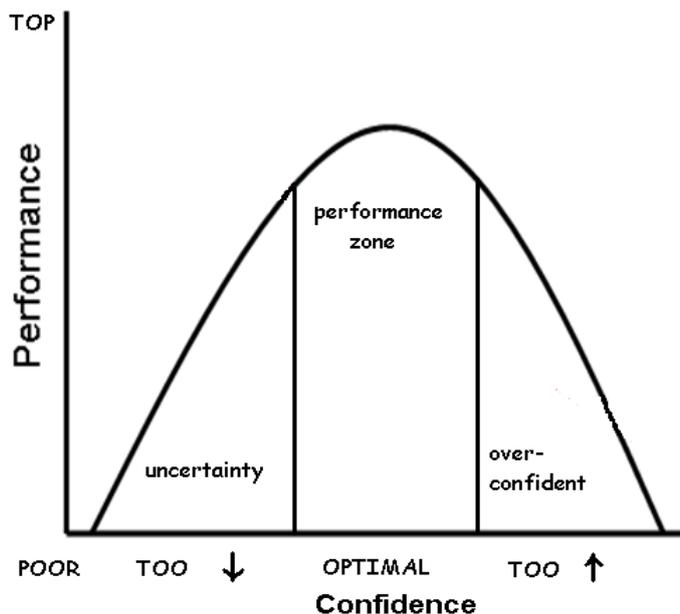
Date/ Day	Goal	Action Plan	Comments
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

SESSION 7 SELF-CONFIDENCE

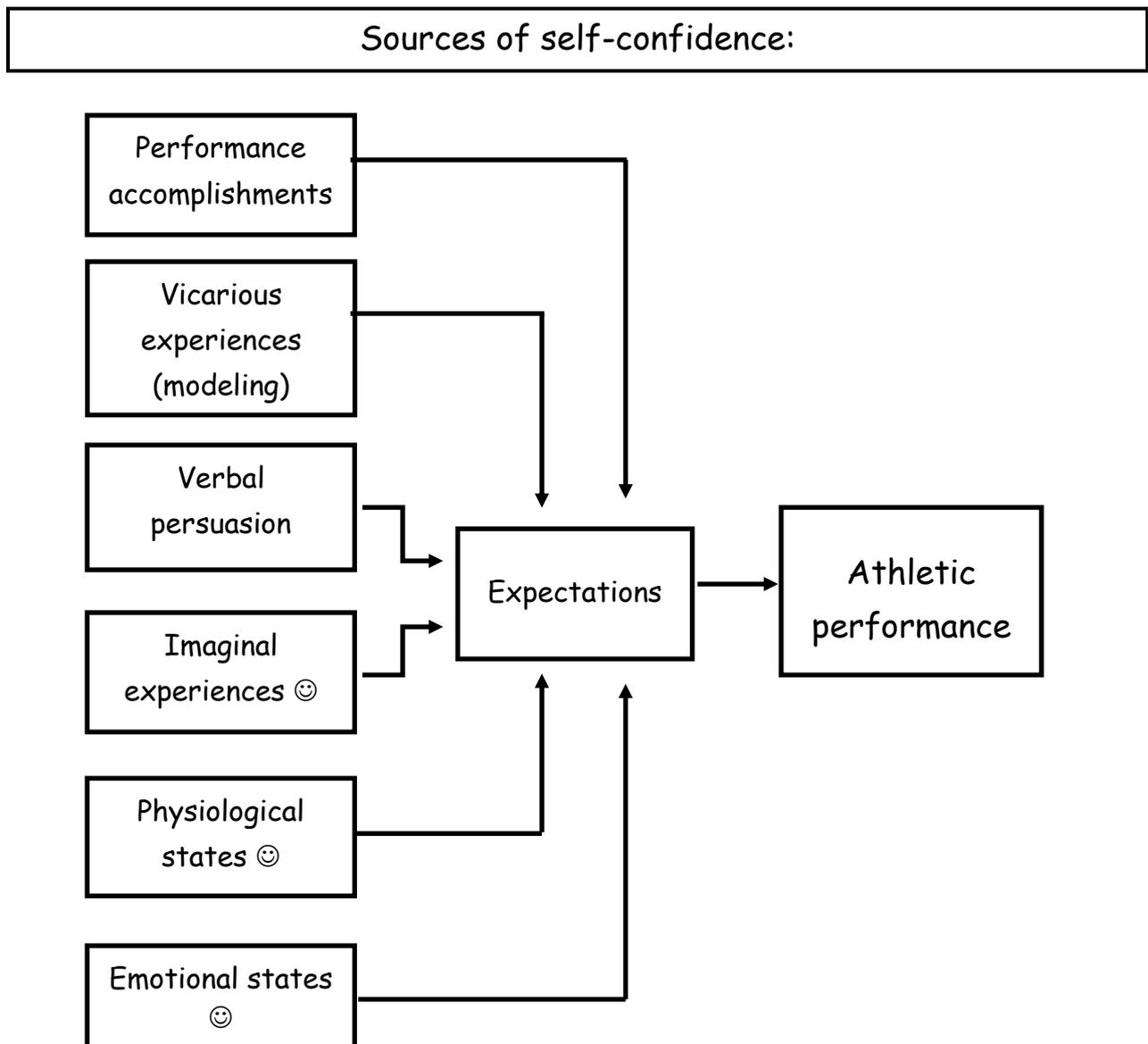
What self-confidence is NOT

- It's not a guarantee for success but a prerequisite.
- It doesn't prevent you from making mistakes.
- It doesn't imply that you'll always believe you'll win.
- It is not a substitute for physical, technical, psychological abilities.
- It is not what you hope to achieve, but what you realistically believe you can achieve.

Self-Confidence Illustrated:



- Self-confidence is the most consistent factor in distinguishing successful athletes from less successful athletes.
- Confident athletes think about themselves and their actions in a different way than less confident athletes. They've discover that their thoughts and what they say to themselves has an influence on their performance.
- Just as you train your body to perform, you must train your mind as well to think effectively. Inappropriate thinking usually leads to negative thinking and poor performance. Thoughts affect feelings and ultimately your actions



Activity 1

Compliments

Group activity: Group interact whilst the first person states 2 positive characteristics about the other person. The other group members then say one positive compliment regarding his/her skills. Continue until you have at least 5 character compliments and 5 skill-related compliments.

Activity 2

List at least 5 positive characteristics/words about yourself:

List at least 5 positive words about your technical ability or physical form:

Activity 3

Rewarding words:

Circle at least 5 words to use for rewarding yourself after a good performance/ achievement of skill.

Excellent	Outstanding	Beautiful	Wonderful	Great
Awesome	Fantastic	Amazing	World Class	First
Class	A-1	Unbelievable	Perfect	

Other words:

Homework

Activity 1

Stop negative thoughts

Step 1: Become more aware of your thoughts by wearing the elastic band for one week during the day. As you become aware of any negative thoughts, shoot yourself by pulling the elastic band on your wrist and replace the negative with a positive thought.

Step 2: Write the negative thoughts and your positive replacements for them.



THOUGHT STOPPING

REPLACE WITH POSITIVE

INCREASE IN SELF-CONFIDENCE

INCREASE IN PERFORMANCE

NEGATIVE THOUGHTS VS POSITIVE THOUGHTS

I can not beat him, he is better than me	Im not measuring myself again others, but against myself

Activity 2

Positive Imagery

List at least 4 successful meetings:

1. _____
2. _____
3. _____
4. _____

List three situations where you used your skills (physical, technical or psychological) successfully:

1. _____

2. _____

3. _____

Write down three of your favourite comments of other persons towards your athletic abilities:

1. _____
2. _____
3. _____

Write down the reasons for competing in athletics:

1. _____
2. _____
3. _____
4. _____

Write down the reason why you should perform very well in the upcoming season:

1. _____

2. _____

3. _____

Isolate yourself for a few minutes:

- Read through every point on the work sheets.
- Meditate on every statement you made until you believe it completely.
- Repeat this process during the week in order to establish a positive attitude.
- Add new positive experiences to the list.

My daily goal-implementation action worksheet

Date/ Day	Goal	Action Plan	Comments
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

Congratulations on completing the psychological skills training programme!

"Don't accept that others know you better than yourself. Work joyfully and peacefully, knowing that the right thoughts and the right efforts will inevitably bring about the right results." - James Allen