The development of an arousal and anxiety control mental skills training programme for the Rhodes University archery club

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ABSTRACT

Research on the development of Mental Skills Training (MST) programmes in sport psychology has largely increased as sport has become more competitive. MST programmes have been seen to improve the performance of athletes. This particular research study focuses on the development of an anxiety and arousal control MST programme designed specifically for, and tailored exclusively to, the needs of four archers from the Rhodes Archery Club in Grahamstown, Eastern Cape, South Africa. The development of the programme was guided by the Organisational Development Process model as the research methodology design. Data from two quantitative measures (CSAI-2 and Sport Grid-R), a focus group, and an individual interview were integrated with currently existing mental skills literature and theory to devise this particular MST programme. The results of the assessment phase showed that individual archers have different experiences in how anxiety and arousal affect their performances. The results also showed that archers have different zones in which they feel their performance is good. These zones depend on their subjective interpretations of anxiety and arousal. The results also showed that other factors that include personality differences, level of experience and level of expertise also influence how anxiety and arousal affect performance. The archers had previous exposure to MST programmes although they had not received systematic training in mental skills training. The programme was developed in the form of MST workshops that would run over a three week period. As part of the programme the archers would be given a mental skills manual to aid in the mental skills training. It is recommended in future that more research in MST programmes be done as a way of improving the performance of athletes in South Africa.

ACKNOWLEDGEMENTS

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CHAPTER 1: INTRODUCTION

1.1 Rationale of the study

Anxiety and arousal are important components in life especially when playing sports as they influence performance (Gould, Greenleaf, & Krane, 2002). In a sporting environment it can often mean the difference between losing and winning, especially in a cognitive sport such as archery. Archery is a cognitive sport that entails the use of physical as well as psychological skills (Ruis & Stevenson, 2004). Competitive archery involves shooting arrows at a target for accuracy from a set distance or distances and archers require focus as they have to discriminate between external and internal stimuli (Haywood & Lewis, 1989). In archery shooting there is a fixed sequence of very accurate movements that the shooter performs namely, bow holding, drawing, full draw, aiming, release and follow through stage (Haywood & Lewis, 1989). Due to the nature of archery as a sport, archers who are able to control anxiety and arousal perform better than those who cannot (Robazza & Bortoli, 1998). Research has shown that archers employ some form of psychological skills such as arousal control and focusing attention before, during and after competitions (Lee, 2009; Robazza & Bortoli, 1998).

Despite the fact that research has shown that archers employ mental skills, training in these skills has been minimal. Mental Skills Training or Psychological Skills Training refers to the systematic and consistent practice of mental or psychological skills, for example focusing attention, regulating arousal and maintaining motivation (Vealey, 1988). Murphy and Tammen (1998) define psychological skills as learned behaviours that are used by athletes to regulate their athletic performances. Psychological skills include self-confidence, arousal control, motivation, interpersonal skills, and coping with injury (Thomas, 1990). Research has shown that elite athletes appear to have superior psychological skills and recent research has focused on developing these techniques to improve these skills for all athletes (Morris & Thomas, 1995; Orlick & Partington, 1988). From the definition above it can be seen that psychological skills are naturally occurring, daily abilities and skills that can be improved by practice (Balague, 2000). For the purpose of this research the term Mental Skills Training (MST) was used.

Some of the MST programmes developed for archery have looked at a range of psychological skills to help in the control of arousal and anxiety that include, goal setting, positive self-talk, imagery, establishing of routines, relaxation, cognitive restructuring, breathing exercises and concentration training (Hung, Lin, Lee, & Chen, 2008; Matthews; 2003; Robazza & Bortoli, 1998). In a study of Italian archers, Robazza and Bortoli (1998) found that archers employed autonomic control, imagery, task-focused concentration and reaction to mistake strategies before and during

competition. International research has shown that archers are largely concerned with controlling arousal and anxiety while shooting and systematic training in controlling these have been linked to increased performance (Hung, Tang, & Shiang, 2009; Kee & Wang, 2007; Whitney & Karmakar, 1992).

Research in archery and MST programmes have largely dealt with professional elite archers and few research exists that focuses on elite archers who are also university students (Hung et al., 2008; Hung et al., 2009). Although MST programmes have been developed or implemented in South Africa these have mainly focused on other sports like netball (Grobbelaar & Eloff, 2011), rugby (Kruger, 2005), athletics (Dockrat, 2003), and hockey (Eloff, Grobbelaar, & Monyeki, 2010). Sport research on archery in South Africa is none existent and a literature search on Google scholar, Ebscohost, PubMed showed no results.

From the above mentioned statements it is clear that performance in archery is not only dependent on physical and tactical skills only but also psychological skills. Due to the none existence of research on MST programmes on archery in South Africa, research from other sporting disciplines was utilised. It is in light of the above-mentioned research findings that the following research questions are posed: (1) What are the archers' opinions regarding anxiety, arousal, performance, MST and their need for such programmes? (2) How do the archers perceive their own ability to psychologically prepare for tournaments? (3) What are the current mental skill levels of these archers? (4) Do archers differ in their levels of mental skills use? Answers to these research questions would provide valuable information for the development of an MST programme that takes into account the specific demands of archery and the individual differences of the archers.

1.2 Contextualising the study

Sport psychology has been focused on trying to improve the performance of athletes (Silva, 2010). Jones (1995) claims that sport has become more than a game because of the investment and profits, and as more sports have turned professional the need for psychology to help in enhancing performance has grown. The development of MST programmes has grown over the past decade (Weinberg & Gould, 2010). Fallby, Hassmen, Kentta, and Durand-Bush (2006) state that a combination of MST programmes and regular physical training enables athletes to cope effectively with performance demands and ultimately leads to performance enhancement. Since archery involves a lot of cognitive skills, MST programmes have been developed mostly in Europe, Asia and North America to help archers become more competent in developing psychological skills (Hung et al., 2008; Robazza & Bortoli, 1998).

Most of the international literature has focused on elite archers in countries, where archery is seen as an important sport, like Taiwan, South Korea, USA and Italy (Hung et al., 2008; Robazza & Bortoli, 1998).In South Africa target archery is the most practised form of archery (South African National Archery Association [SANAA], 2007). The sport has been gaining recognition in the country, as seen with the bidding for the 2011 world finals. At Rhodes University the archery club is made up of different divisions namely compound bow archery, recurve bow archery and traditional bow archery. The University hosted the 2011 and 2012 National Championship with 10 members of the archery club participating. The Archery Club has a part time coach and members usually practice together. Coaches have been seen as useful in helping in the implementation of MST programmes (Blackwell, Tresniewski, & Dweck, 2007). Despite the rise in MST programmes some misconceptions are still held and one of these is that one needs to master the physical and technical parts of their sport before they can embark on MST training (Weinberg & Gould, 2007). As the popularity of archery has increased the need for using psychological skills to help archers in performance enhancement has become great.

1.3 Research Aims

The research aimed to develop an MST programme which focuses on arousal and anxiety for competitive archers at Rhodes University Archery Club. The programme had the following aims;

1. Assess the current mental skills employed by individual archers of the Rhodes University archery Club that they use in controlling arousal and anxiety.
2. Use existing theory and the results of the assessment to develop a MST programme that focuses on arousal and anxiety.

1.4 Structure of the Dissertation

This dissertation is organized in the following way;

- Chapter 1 consists of the rationale for the study, the context of the study and the research aims.
- Chapter 2 consists of the literature review which looks at international and local literature on sport psychology, arousal, anxiety and performance, MST programs and archery.
- Chapter 3 consists of the research methodology of action research in particular the particular phases used in this research, the sampling procedures used, the research techniques used, trustworthiness, reflectivity and representation of the study.
- Chapter 4 consists of the results of the research that is the results of the assessment of the current mental skills archers employ to control anxiety and arousal; and the development of an MST programme that focuses on arousal and anxiety. The first section has the results of

the quantitative measures and is presented in graphs. The second section of the results contains the results from the qualitative measures used in the research. The chapter also contains the action plan which involved the development of the MST programme. The chapter also has the implementation plan and the separation and adoption phase.

- Chapter 5 provides a discussion of the results and the development of the MST programme.
- Chapter 6 consists of a summary, strengths, shortcomings and recommendations of the study. The chapter ends by providing a conclusion for the research study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter reviews international and South African literature on sport psychology in particular reference to research on the history of sport psychology, the relationship between arousal and anxiety to performance, MST programmes and archery. The literature on sport psychology traces the history and growth of the discipline and looks at current trends. Anxiety and arousal are two constructs that have been shown to affect archers and their definitions, theories and measurement provides an insight on how they affect performance. The MST programmes section provides the information on what has been done to help athletes learn mental skills as a way to improve performance in general and then with a focus on MST programmes on archery.

2.2 Sport Psychology in context

Gill (2000) defines sport psychology as the application of scientific knowledge of psychology in sport settings as a way of improving performance, enjoyment and the health and fitness of athletes. Lavalle, Kremer, Moran, and Williams (2004) however argue that the definition of sport psychology depends on the person who is defining it as coaches and athletes might define it differently. Sport psychologists may utilize various approaches to working with athletes, coaches and other interested parties in athletic situations and with patients in clinical settings (Silva & Weinberg, 1984). Lavalle et al. (2004) state that sport psychology has borrowed and applied theories from mainstream psychology and this has led to a growing number of differences in interpretation.

There has also been on-going debates focusing on the question, under what category does the discipline of sport psychology fall and who governs the accepted practices for sport psychology? (Silva, 2010). Questions have been asked on whether sport psychology is a branch of kinesiology or sport and exercise science such as exercise physiology and athletic training, or it is a branch of psychology or counselling or it is an independent discipline (Weinberg & Gould, 2010). The question of which discipline sport psychology is placed under has implications on the methods and interpretations that are done in research. Kinesiology and sport sciences are concerned with objectifiable data whereas psychology brings a human or qualitative element to research (Lavalle et al., 2004). Current trends are pointing to sport psychology being an independent field of psychology as seen by the growing amount of psychology departments partaking in sport psychological research. This is helpful in that sport psychology can grow on its own and discover its own identity.

The history of sport psychology is linked to the need to improve performance by controlling psychological variables such as anxiety, arousal, stress and concentration (Martin & Gill, 1991). The relationship between sport and psychology has always been there ever since the beginning of sport. Lavalle et al. (2004) highlight how ancient Greek writers outlined the relationship between the physical and psychological aspects of sport. Despite the link of sport and psychology dating back to ancient times the growth of sport psychology as a discipline has been complex and inconsistent. The history of sport psychology is hazy and this is attributed to the fact that in its early years it was the domain of physical educators and not researchers (Silva, 2010). In the Western world sport psychology can be traced to the late 19th Century when American psychologist Norman Triplett conducted research on cyclists at the University of Indiana (Galluci, 2008). Triplet was interested in the co-action effects of racing cyclists and his study is seen as the first sport psychological experiment (Williams, 2001). In Asia, Europe and America sport psychology has grown as a discipline over the past 50 years (Silva, 2010).

In Africa the field has developed slowly with countries such as South Africa and Nigeria predominant in sport psychology (Witton, 2004). Sport psychology research in Africa lags behind in comparison to other parts of the world. South African sport psychology has grown alongside sports sciences as a whole with fields like kinesiology more prominent than psychology (Edwards, 2006). Universities across South Africa have begun to offer courses in sport psychology although there is still no registration of sport psychologists with the Health Professions Council of South Africa (Edwards, 2006). Research has generally been done on a part time basis but in the past two years interest in the discipline has increased as witnessed by the amount of research that has been produced (Edwards & Steyn, 2011; Eloff, Grobbelaar, & Monyeki, 2011; Grobbelaar, Malan, Steyn, & Ellis, 2011; Kruger, 2010). Edwards (2006) attributes this lagging behind of South African sport psychology to apartheid which saw South Africa being banned from international sport. Edwards (2006) argues that the ban, coupled with the lack of resources in many black areas meant that sport was not well developed and little attention was given to sport psychology. When the International Society of Sport Psychology (ISSP) was formed in 1965, South Africa was under apartheid and therefore isolated from the rest of the world and no South African attended the conference.

2.3 Definitions of anxiety and arousal

Anxiety is a well-studied construct and has been a contentious construct since it was first studied (Lundqvist, Kenta, Durand-Bush, & Gustafsson, 2006). It is multi-dimensional involving cognitive and somatic factors (Weinberg & Gould, 2007). Anxiety can be divided into two constructs that is,

state anxiety which is defined as a transitory emotional state and trait anxiety which is defined as, individual differences in anxiety proneness which are relatively stable over time (Silva & Weinberg, 1984). State anxiety therefore refers to the thoughts and feelings that are specific to that moment in time and are subject to fluctuation, essentially more of a feeling of tension and apprehension in a specific situation (Gould, Greenleaf, & Krane, 2002). In contrast, trait anxiety refers to a predisposition to view and interpret situations to be threatening that is more general and not situation specific (Hardy, Jones, & Gould, 1996). Research has shown that anxiety can either be negative or positive; positive in that it aids an individual to prepare and plan making them more vigilant about possible negative consequences in the future and negative in that it hinders the person from reaching their peak performance (Murphy, 2005). There are two types of anxiety identified that is cognitive anxiety and somatic anxiety. Cognitive anxiety has been defined as the degree to which one worries or has negative thoughts and somatic anxiety is the perception of one's fluctuation in physical activation (Lavelle et al., 2004).

Arousal has been defined as the physical level of activation of the person and the intensity of behaviour (Weinberg & Gould, 2003). It reflects the level of activity of physiological indicators such as heart rate, respiration rate, galvanic skin response and brain wave activity (Marchant & Morris, 2004). Weinberg and Gould (2007, p. 78) add that, "arousal is a general physiological and psychological activation, varying on a continuum from deep sleep to intense excitement." Research suggests that arousal can have either a debilitative or a facilitative effect on performance depending on how it is perceived by athlete (Jones & Swain, 1992). The definitions of arousal point to a similarity between arousal and somatic anxiety leading to researchers questioning if anxiety and arousal are not in fact one construct (LeUnes & Nation, 2002).

The debates on how to differentiate between anxiety and arousal have been pervasive. Gill (2000) differentiates arousal and anxiety by stating that arousal is a general state of activation ranging on a continuum from deep sleep to extreme excitement and anxiety as arousal with a negative or avoidance direction. Marchant and Morris (2004) add that anxiety is different to arousal as it refers to unpleasant emotional states consisting of apprehension, tension, worry and nervousness. In practice it is difficult to distinguish anxiety and arousal as is seen by the use of the two terms interchangeably by different researchers (Gill, 2000; LeUnes & Nation, 2002; Marchant & Morris, 2004).

Other scholars (Landers & Arent, 2006; Lavelle et al., 2004) argue that despite anxiety and arousal being used interchangeably the two are separate variables and should be viewed as such. Lavelle et

al. (2004) state that arousal is a form of undifferentiated bodily energy or alertness which ranges on a continuum from low, that is sleep, to high and intense excitement, whereas anxiety is an emotional label for a negatively interpreted arousal experience. Jarvis (1999) states that anxiety isthe emotional response to a perceived threat and arousal is the emotional, mental or physiological activation required to produce a response. The use of anxiety and arousal interchangeably in the literature has created a lot of confusion but for the purposes of this research study they are viewed as two separate constructs.

2.4 Measuring anxiety in sport psychology

Anxiety has been subjected to many attempts to try and measure the construct. Researchers in sport psychology have developed self-report questionnaires to try to measure anxiety (Krane, 1994; Martens, Burton, Vealey, Bump, and Smith (1990); Spielberger, Gorsuch, & Lushene, 1970). Some of the inventories that were developed to measure anxiety in sport include Competitive State Anxiety Inventory-2 (CSAI-2) by Martens et al. (1990), Mental Readiness Form (MRF) by Krane (1994), Sport Competition Anxiety Test (SCAT) by Martens (1977) and Sport Anxiety Questionnaire (SAS) by Smith, Smoll, and Schutz (1990). Most of these questionnaires focus on both cognitive and physiological manifestations of anxiety (Landers & Arent, 2006). The trend is now to include multi-dimensional instruments that have separate dimensions to measure trait and state anxiety (Landers & Arent, 2006). Spielberger (1966) argues that physiological measures should be used for anxiety since it involves physiological arousal. However it has been difficult to do as anxiety is difficult to measure and thus self-report questionnaires are used (Landers & Arent, 2006).

2.5 Measuring arousal in sport psychology

Arousal is usually measured using physiological measures, biochemical measures and questionnaires (Landers & Arent, 2006). Physiological measures include heart rate, blood pressure, galvanic skin response and brain electrical waves. Landers and Arent (2006) argue that there is low correlation among physiological measures because the measures neglect subjective interpretations of the athletes. However one can use multiple physiological measures to see the arousal response as suggested by Duffy (1962). Lavelle et al. (2004) argue that physiological measures are hard to use as athletes differ in their interpretation of arousal and there is also no single agreed physiological index of arousal. Biochemical measures include blood analysis, urine analysis and serum measures to see the chemical reactions in athletes (Landers & Arent, 2006). Chemicals like epinephrine, norepinephrine and cortisol are seen to increase if an organism is under stress (Voet & Voet, 2004).

Biochemical measures are very costly as they require sophisticated equipment and also take longer to measure (Landers & Arent, 2006).

Self-report questionnaires have also been used to measure arousal but only in a few studies. Anshel (2003) attributes the scarcity of self-report questionnaires in measuring arousal to the fact that arousal has traditionally been measured using physiological measures. The Activation-Deactivation Adjective Checklist (AD-ACL) by Thayer (1986), the Somatic Perception Questionnaire (SPQ) by Landy and Stern (1971), Sport Grid by Raedeke and Stein (1994), and the Sport Grid Revised (Ward & Cox, 2004) are some of the questionnaires used to measure arousal. The questionnaires are easy to use and less cumbersome and intrusive than physiological measures (Landers & Arent, 2006).

2.6 Relationship between anxiety, arousal and performance

Sport psychology literature has vast research that attempts to show a predictive relationship between psychological variables and athletic performance (Cox, 2007). According to Beedie, Terry, and Lane (2000) there is controversy on whether a relationship exists between anxiety and arousal, which are mood states to performance. Beedie et al. (2000) found a weak but consistent positive association between mood states and positive athletic performance. The predictive relationship between mood and performance appears to be moderated by the type of sport, for example the relationship is stronger for open skills, individual sports, and short duration sports like archery (Beedie et al., 2000; Cox, 2007). The way in which performance is conceptualized also makes a difference in the predictive relationship and the relationship is stronger when performance is measured subjectively as opposed to objectively (Cox, 2007). Athletes' subjective interpretation of situations is also important as some individuals might interpret a situation as anxiety provoking in contrast to others (Cox, 2007). Therefore the importance of an individual's own perceptions are very important.

Researchers have argued that there is no conclusive evidence to show whether the levels of pre-competitive anxiety can predict performance (Gould, Petlichkoff, & Weinberg, 1984). Burton (1988) however found a significant curvilinear relationship between somatic state anxiety and performance. Anshel (2003) states that if anxiety is high the arousal levels will be affected and this will mean performance will be poor. The inconsistencies found in the research on the relationship of arousal and anxiety to performance may be attributed to the differences in sports studied for example more complex sports with higher decisional demands such as tennis require lower levels of arousal than less complex sports such as sprinting. Another reason is different levels of expertise as

elite athletes control anxiety and arousal better than novices (Anshel, 2003). Humara (2002) argues that past research conducted relating to arousal and anxiety to performance has been difficult to synthesize due to methodological flaws such as a lack of clear operational definitions and clear theoretical constructs. Researchers have argued that it is important to also measure individual differences as people appraise anxiety and arousal differently (Jones, Swain, & Hardy, 1993).

2.7 Conceptual framework for the relationship between arousal and anxiety to performance

A number of theories have been put forward to explain the relationships between arousal and anxiety to performance. Some of the prominent theories of the relationship between arousal, anxiety and performance include the drive theory of Hull (1943), the inverted U hypothesis by Yerkes and Dodson (1908), Cue utilisation theory (Easterbrook, 1959), individual zone of optimal performance Hanin (1980), the cusp catastrophe model by Fazey and Hardy (1990) and the multi-dimensional theory by Martens et al., (1990). Marchant and Morris (2004) state researchers are not united in subscribing to any one of these theories as an adequate explanation of how arousal and anxiety influences performance. Some of the theories have been discredited for being nomothetic and these include the inverted U hypothesis and the drive theory. Two of the most used and validated theories are discussed below.

2.8 The multidimensional theory of anxiety

Martens et al. (1990) proposed a multidimensional theory of anxiety which states that competitive anxiety is comprised of two distinct parts; a cognitive component and a somatic component, both having different effects on pe rformance. This means theoretically the components can be manipulated independently of one another (Hardy, Jones, & Gould, 1996). The cognitive component is the negative expectations and concerns about one's ability to perform and the possible consequences of failure. The somatic component is the physiological effects of the anxiety experience, such as an increase in autonomic arousal with negative physiological effects, like palpitations, tense muscles, shortness of breath, clammy hands (Martens et al., 1990).
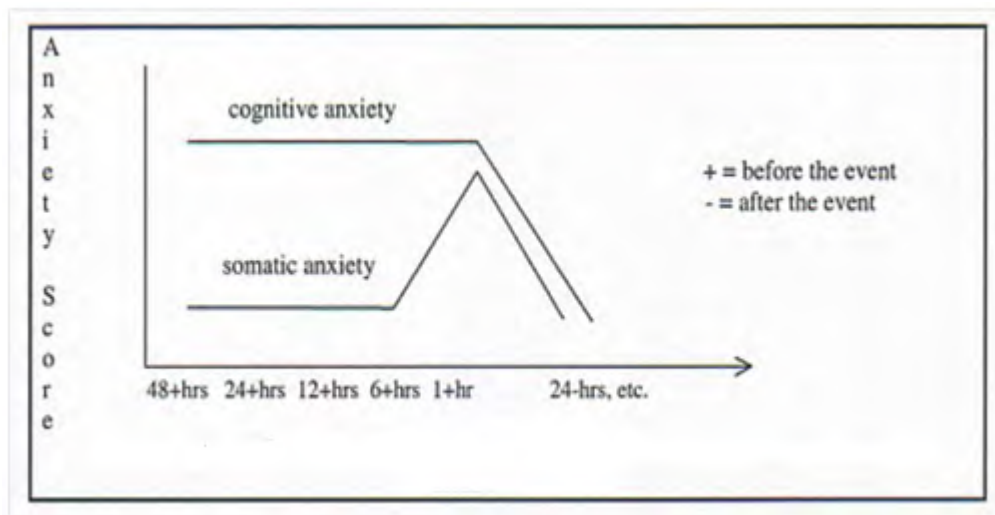
Figure 1: Martens et al. (1990) Effects of time on cognitive and somatic anxiety

The Competitive State Anxiety Inventory-2 (CSAI-2) was developed by Martens et al. (1990) as a multidimensional state-anxiety measure specific to sport and proposed that somatic anxiety had an Inverted-U shaped relationship with performance, whilst cognitive anxiety had a negative linear relationship with performance. They utilised a time to event paradigm to assist in the demonstration of the dissociation of somatic and cognitive anxiety. Martens et al. (1990) administered the CSAI-2 to a selection of athletes, forty-eight hours, twenty-four hours, two hours and five minutes before an event. The findings affirmed that the cognitive component stayed stable before the start, but the somatic component begins to increase prior to the onset of the event. Figure 1 above shows how cognitive and somatic anxiety is affected by the time before the event. Somatic anxiety goes up as the event approaches and then goes down after the event. Cognitive anxiety stays stable before the event and then dips after the event.

The Multidimensional Theory of Anxiety was useful in giving an explanation on how different anxiety components influence performance, that is physiological (somatic state anxiety) arousal and worry (cognitive state anxiety) affect performance differently (Weinberg & Gould, 2010). The support of The Multidimensional Theory of Anxiety comes from the extensive use of the CSAI-2 (Craft, Magyar, Becker, & Feltz, 2003; Woodman & Hardy, 2003). Meta analytical studies in the efficacy of Multidimensional Theory of Anxiety have produced contradictory results (Craft et al., 2003; Lundqvist, 2006; Woodman & Hardy, 2003). In a meta-analysis of 29 studies on the multidimensional theory of anxiety Craft et al. (2003) found a weak relationship between somatic anxiety, cognitive anxiety with performance and a moderate relationship between self-confidence and performance. In contrast Woodman and Hardy (2003) found a predictive relationship between cognitive anxiety and self-confidence with performance in a meta-analytic study of 48 studies. Despite these contradictory results the CSAI-2 and multi-dimensional theory of anxiety have

continued being the most used explanations in the anxiety-performance relationship (Craft et al., 2003).

2.9 Individual zone of optimal functioning

Hanin's (2000) individual zone of optimal functioning (IZOF) came as an alternative to nomothetic approaches such as inverted U hypothesis (Yerkes and Dodson, 1908) and the catastrophe model (Fazey & Hardy, 1990) to understanding the relationship between subjective experiences and athletic performance.
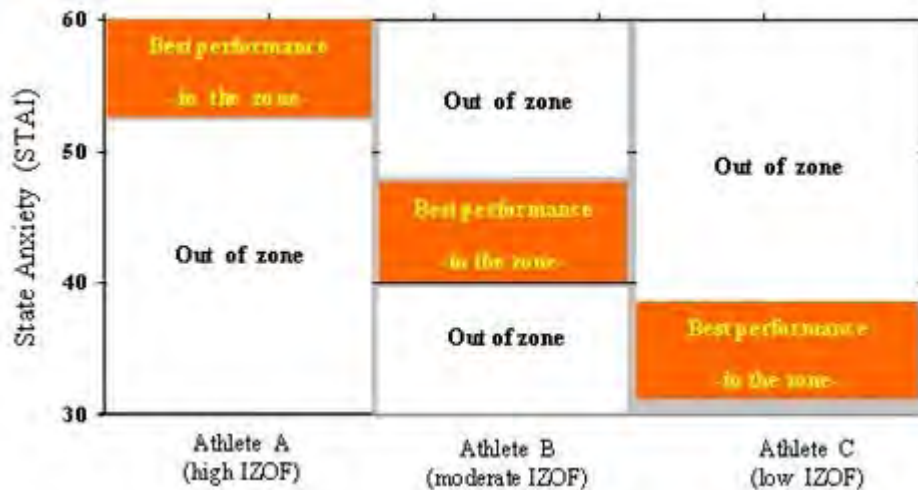
Figure 2: Hanin's (2000) Individual zone of optimal functioning

The IZOF is a theory on the relationship between anxiety, arousal and performance that states that optimal performance occurs when individually meaningful emotional states are in specific zones (Hanin, 2000). Figure 2 demonstrates the IZOF and shows how three athletes have different levels of anxiety and how zones of optimal functioning are different. Athlete "A" performs better with high anxiety as compared to Athlete "C" whose zone of optimal functioning is when the athlete has low levels of state anxiety. It was developed to identify emotional states that affect successful and less successful performances of athletes (Kouli, Bebetsos, Kamperis, & Papaioannou, 2010). The IZOF explains the dynamics of emotion-performance relationships based on the athlete's self-description of their experiences. It has been shown to apply to individual cognitive sports like archery because of its focus on individual zones (Cohen, Tenenbaum, & English, 2006; Golden, Tenenbaum, & Kamata, 2004).

Hanin (2000) suggested five basic dimensions to explain the link between idiosyncratic psychological states and athletic optimal and non-optimal performances. The five dimensions are summarised below;

- Intensity dimension involves the affective level when attaining peak performance

- Content dimension refers to idiosyncratic affective states that positively or negatively affect athletes' performances
- Time dimension refers to the dynamics of affective experiences pre-, during and post-short- or long-duration sports, and comprises the frequency with which athletes performing their optimal and non-optimal zones during a specific period of time
- Context dimension refers to the environmental factors affecting athletes' affective patterns associated with optimal and non-optimal performances
- Form dimension pertains to the fact that athletes manifest their perceived psychological states through different channels, such as cognitive, affective and somatic.

The IZOF has been criticised as being essentially an individual difference theory without individual difference variables. Despite the criticisms the IZOF is widely used because it can be empirically proven and it is able to describe, predict and explain emotion-performance relationships (Hagtvet & Hanin, 2007; Robazza, Bortoli, & Nougier, 2000). The IZOF explains the dynamics of emotion-performance relationships based on the athletes' self-description of their experiences. It has been shown to apply to individual cognitive sports like archery because of its focus on individual zones (Cohen et al., 2006; Golden et al., 2004). In a meta-analysis of 19 studies from 1978 to 1997, Jokela and Hanin (1999) found that there is fairly good empirical support for the IZOF anxiety and arousal model.

2.10 Development of mental skills training programmes

Applied sport psychology has made a distinction between techniques and skills in the development of MST programmes (Theodorakis & Goudas, 2006). Vealey and Garner-Holman (1998) states that skills are qualities to be attained, as opposed to methods which are procedures or techniques athletes engage in to develop skills. An example is that optimal mental arousal and optimal attention during competition can be considered as skills whereas goal setting, physical relaxation and self-talk are seen as techniques that can be used to enhance the skills (Theodorakis & Goudas, 2006). Vealey (1988) states that there are three groups of skills, namely: 1) Foundation skills, which would include volition, self-awareness, self-esteem and self-confidence; 2) Performance skills, including optimal physical arousal, optimal mental arousal and optimal attention, and 3) Facilitative skills that is interpersonal skills and lifestyle management. This classification is helpful as it d istinguishes among basic skills used for all tasks, skills linked to optimization of performance and finally skills that make the process easier. Balague (2000) argues that different sports require different psychological skills. For example, archery, an individual sport, will require different mental skills when contrasted to basketball a t eam sport. Gill (2000) argues that MST programmes should be individually designed in terms of the psychological state of the individual and the sport. Brookfield

(2009) states that for a MST programme to be successful a distinction should be made between MST skills and MST methods. Calmels, d'Arripe-Longueville, Fournier, and Soulard (2003) define MST skills as the psychological qualities or attributes that need to be developed for example confidence and concentration and the MST method as the tool that is used to help improve the MST skill for example goal setting, routine training and imagery.

In line with Balague's (2000) suggestion, Matthews (2003) gave a basis of mental skills that are needed in archery. Matthews (2003), using the 4 C's model of mental toughness by Clough, Earle and Sewell (2002) come up with the mental skills. Clough, Earle, and Sewell (2002) expanded on Kobassa's (1979) theory on hardness which had proposed three components that are important for mental toughness that is control, challenge and commitment. Clough et al., (2002) identified confidence as a fourth component. The four components are defined as follows:

- control – This is when an individual is in control of their life and of the environment which they work. The subscale involves control of emotions. The second subscale is Life Control which is an individual feeling that they control their lives.
- commitment – This is the ability to carry out tasks successfully despite any problems or obstacles that arise whilst achieving the goal.
- challenge – This is the ability to thrive in a constantly changing environment and a tendency to seek out opportunities for challenge or change.
- confidence – This is having the self-belief to successfully complete tasks, which may be considered too difficult by individuals with similar abilities but lower confidence. Two subscales were identified that is, Confidence in Abilities which is belief that one is a worthwhile person and is more optimistic about life and Interpersonal Confidence which is assertiveness with others and the ability not to be intimidated by difficult or awkward people (Clough, Earle, & Sewell, 2002).

Matthews (2003) used to the 4 C's to come up with mental skills specific to archery that goes under each of the C's. The mental skills are presented in Table 1 below.

Table 1: Matthew (2003) adaption of the 4 C's theory to provide the mental skills needed in archery

Commitment	Concentration	Confidence	Control
Goal Setting	Imagery	Positive Self-talk	Relaxation Training
Refocusing	Distraction Training	Imagery	Breathing exercises
Positive Thinking	Routines	Goal Setting	Routines
	Simulated Competition Training	Cognitive restructuring	Cognitive restructuring
		Routines	Attitude Management
		Simulated Competition Training	Simulated Competition Training
			Contingency Planning
			Mental and Physical activation training

Balague (2000) argues that the purpose of MST programmes in sport is to assist athletes in maximising their potential through learning and performance. The objective is to increase the athlete's consistency by increasing control over the performance (Balague, 2000). Mental skills can also be improved just in the same way as physical skills (Balague, 2000). MST interventions range from as long as 1 year or more, where different mental techniques are studied over time, to as short as several minutes where the importance shifts towards the immediate effectiveness of mental techniques (Savoy, 1993; Theodorakis, 1996).

Many studies have been done in different sporting disciplines dealing with both amateur and competitive athletes (Blackwell, Tresniewski, & Dweck, 2007; Lesyk, 1998). Most of the studies have shown a direct relationship between the use of one or a set of psychological techniques and improvement in performance (Orlick, 1986; Wanlin, Hrycaiko, Martin, & Mahon, 1997). The main premise of MST is that key psychological skills are learnable and, as with physical skills, these skills are therefore improvable through consistent training (Balague, 2000). Balague (2000) states that research into the effectiveness of psychological interventions in sport have been positive, indicating their ability to enhance performance.

Robazza and Bortoli (1998) indicate that there is a great deal of research on mental training procedures applied to the athletic setting and as a consequence, considerable scientific and experiential knowledge has been gained. The information gained from research has led to the development of strategies that help athletes learn how to control arousal and concentration, cope with competitive stress and ultimately achieve peak performance (Hardy, 1996). Taylor (1995) provided a conceptual model that describes some critical aspects in the development of competitive

mental preparation strategies. Taylor's model emphasised the importance of gaining full understanding of athlete's individual needs as well as the physical, technical and psychological demands of the particular sport (Robazza & Bortolia, 1998). Robazza and Bortolia (1998) go on to say that comprehensive and specific knowledge can be attained through a qualitative research methodology, such as in-depth interviewing of athletes practising a particular sport and observing them while performing. Qualitative research has been able to show the performance requirements of each athlete (Gould, Ecklund, & Jackson, 1992; Orlick & Partington, 1988).

MST programmes have largely been implemented during pre-season where there are less competing demands or on an emergency basis when a problem is detected (Gordon, 1995). This has largely been done in the MST programmes developed for archery (Hung et al., 2008; Matthews; 2003; Robazza & Bortoli, 1998). Bompa (1999) suggests that the concept of periodization, which is structuring training phases by dividing them into an annual plan to ensure an optimal performance, should be used when designing MST programmes. Traditionally MST programmes have be done through three phases which are; 1) Educational Phase**:** This phase consists of educating the athletes on mental skills and MST programmes so that they develop an understanding on the importance of MST and how it can affect performance; 2) Acquisition Phase: This phase involve the athletes learn how to use MST methods and how best to implement them; 3) Practice Phase: This phase consists of the transferring of psychological skill from practice and simulated situations to actual competitions with a focus on making the psychological skills automatic (Brookfield, 2009). The phases are important but Crust (2007) also points out that it is important to have a motivational climate so that the athletes can engage with the MST programme.

In South Africa MST programmes have been developed the same way as the international MST programmes and they have been generally shown to improve psychological skills and psychological well-being at individual, group and community levels (Edwards & Steyn, 2008). Studies on MST programmes in South Africa usually focus on sports like rugby, netball, hockey and athletics (Edwards & Steyn, 2008; Kruger, 2003; Pieterse & Potgieter, 2006; Potgieter, Grobbelaar, & Andrew, 2008). Potgieter et al. (2008) found that mental skills are important when comparing top ranked and lower ranked rugby players. Kruger (2003) in a study involving 340 super 12, provincial and club rugby players found that South Africa rugby players had some exposure to mental skills and employed them to help in their performance. Eloff et al., (2010) implemented a MST programme for field hockey players that included goal setting, relaxation training and performance routine training. The recent surge in local research on mental skills training has been encouraging

more still needs to be done. Local sport psychological research in archery has been scarce despite the growth of the sport in South Africa.

2.11   MST programmes for archery

MST programmes in archery have been developed using the same techniques that are used in other sporting disciplines. Before the turn of the century the development and implementation of MST programmes in archery were non-existent and a search on PubMed, Ebscohost and Google scholar produced no r esults. Robazza and Bortoli (1998) did an exploratory study to determine the psychological preparatory mechanisms used by Italian archers. They conducted extensive interviews with eight members of the 1996 Italian Olympic archery team and using hierarchical inductive analysis they revealed that positive expectations, concentration, facilitating emotions, body awareness and technical preparation were the mental aspects described by archers necessary for effective performance. The results also revealed that the archers used a variety of mental preparation strategies that included (a) autonomic control (emotion control, somatic control, internal dialogue, and focus on shooting), (b) imagery (visualization, self-talk), (c) task-focused concentration (body and action control, thought control) and (d) reaction to mistake (focus on correct execution, mistake disregard, shooting analysis).

Hung et al., (2004) provided sport psychological services to the Taiwanese archery team before the 2004 Greek Olympics. In their assessment they used the following psychological scales; the Athletic Psychological Skills Inventory (APSI; Chiu & Chi, 2001), the Chinese version of the Task and Ego Orientation in Sport Questionnaire (TEPSQ; Chi, 1993), and the Chinese version of the Sport Competition Anxiety Test (SCAT; Lu, 1990). Hung et al., (2004) also conducted individual interviews with the archers that were designed using the questions in the scales as topics to further explore the athletes' psychological conditions. They argued that using quantitative and qualitative approaches together gave more reliable and detailed information that is more individualized and contextually meaningful. They also created participant profiles before designing the intervention programmes. Hung et al developed an MST programme that consisted mainly of breathing exercise and mental imagery, competition simulation, sleep deprivation, and project adventure. The programme they developed had problems as their participants kept changing because the team was not finalised during the development. They ended up i mplementing a shorter version of the programme. The conclusions of their programme emphasized the importance of individual differences in developing and implementing MST programmes. Other MST programmes have been developed and are available on the internet. A search on the internet revealed that all websites offer some   form   of   MST   programmes.   The   websites   include   the   www.wsmrcyss.com,

www.newmexicoarchery.com, www.washingtonarchery.org and www.nfaa-archery.org. The problem with these programmes is that they are not done in the proper order of assessment, designing, implementation and evaluation.

2.12   Group and team dynamics in implementation of MST programmes

Although archery is effectively an individual sport it was seen as important to include group and team dynamics in the designing of this MST programme. The Rhodes Archery Club is a closed group and having a programme designed together adds to team building. It also helps in the implementation as archers can encourage each other. The Rhodes University Archery Club also takes part in team competitions. Team-building is a deliberate process of facilitating the development of an effective and close group and is conducted using either an indirect or a direct approach (Bloom & Stevens, 2002). The indirect approach is a four-stage process in which coaches and the sport psychologist work together to design team specific strategies to improve cohesion and coaches then are the agents that implement team-building strategies. (Carron, Spink, & Prapavessis, 1997). The direct approach to team building on the other hand is based on the action research model used largely in organizational settings (Beckhard, 1972; Beer, 1980) and differs from the indirect approach in that athlete empowerment is a very important element of team functioning (Bloom, 1996). The direct approach is based on the belief that athletes should be empowered by becoming active agents in the team-building process.

2.13   Summary

This chapter looked at the development of sport psychology as a discipline and how it has seen rapid growth in the Europe, Asia and America. It was shown how the field is relatively new in Africa with only Nigeria and South Africa at the forefront of its development. The chapter then focused on the definitions and measurement of the concepts of arousal and anxiety and how they related to performance. A conceptual framework of these two concepts was given with the multidimensional theory of anxiety and the IZOF being reviewed. The chapter ended up by looking at the development of MST programmes with a particular interest in archery. The chapter ended by looking at group and team dynamics in the development of MST programmes.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter will look at the methods used in this research. It will give a background on Action Research going through the different phases of action research used in this study. It will also focus on the research techniques used in the study, sampling procedures used in the study, the role of the researcher, trustworthiness, reflexivity, and representation of the study. The section ends by looking at the validity and reliability of the study and the ethical issues surrounding the study.

3.2 Action Research

The research study will use the Organisational Development Process Model (ODPM), a form of Action Research, which involves integrating theory and practice through systematic self-reflective scientific inquiry by practitioners to improve practice (McKernan, 1996). The ODPM consists of eight phases namely entry, start up, assessment and feedback, action plan, implementation, evaluation, adoption and separation (McLean, 2005) and is largely used in organizational development. Mclean (2005) states that ODPM is a way of improving organizational functioning through development of individual's knowledge and skills to help organizations or a unit within an organization become more vital and sustainable.

For the purposes of this research only six phases were used and these are entry, start up, assessment and feedback, action plan, adoption and separation. The reason for this was that the aim of this research was only to develop a MST programme. This however created problems in the adoption and separation phases because the participants had not been taught the skills and they had not evaluated the MST programme. To counter these problems the participants were given a manual at the end of the programme which included material they could use.

The ODPM is appropriate for the development of a MST programme in a number of ways. Firstly, the development of an MST programme requires collaboration between the researcher and the participants, which the ODPM as a form of action research gives room for. Secondly, the ODPM provides a circular model that will make the MST programme part of the Rhodes Archery Club. Thirdly the MST programme looks to empower the archers by making them aware of their current mental skills and providing a way to improve on these mental skills and OPDM also provides room for this as part of action research.

Action research entails that involvement is of a knowing nature, with no hidden controls or pre-emption of direction by the researcher and all participants negotiate meaning from the data and

contribute to the selection of intervention strategies (McCutcheon & Jung, 1990). De Zeeuw (2003) states that action research as a methodology surfaced in response to the growing need for more relevant and practical knowledge in the social sciences by bridging the gap between academic research and day-to-day applications. Esternburg (2002) adds that the practitioner in action research will be acting as the collector of data, the analyst, and the interpreter of the results. Action research is therefore appropriate for the development of a MST programme for the Rhodes Archery Club.

3.3 Research techniques used in the project

Data was collected using triangulation of qualitative and quantitative research methods. Triangulation involves data collection using different data gathering techniques and methods to investigate the same phenomenon (Kelly, 2006). The Competitive State Anxiety Inventory-2 (CSAI-2) and the Sport Grid-Revised (Sport Grid-R) were the quantitative research method tools, while a focus group discussion was held with three of the participants and an in-depth interview was carried out with one participant as the qualitative measures. Triangulation was appropriate for this type of project in that it allowed the researcher to get the objective data from the CSAI-2 and the Sport-Grid Revised and then gain greater meanings from the focus group and interview. The CSAI-2 and the Sport Grid-R were done first and the data collected was analysed and used together with existing literature to create the focus group and in-depth interview schedules. Methodological triangulation provides a multidimensional perspective of the phenomenon being studied, that is mental skills, and also provided rich, unbiased data that can be interpreted with a comfortable degree of assurance (Breitmayer, Ayres, & Knafl, 1993; Jick, 1979). It is important to note that the quantitative and qualitative measures perform different functions in the research, however they complement each other. This aids in having the phenomena of anxiety, arousal, performance and mental skills being investigated in depth.

3.3.1 CSAI-2

The CSAI-2 developed by Martens et al., (1990), is a 27-item measure which has three subscales, cognitive anxiety, somatic anxiety, and self-confidence. The CSAI-2 has been found to be reliable and valid in many studies, (Morrow, Jackson, Disch, & Mood, 2011). Various studies have confirmed high internal consistency of the questionnaire with alpha values varying between .74 and .91 (Coelho, Vasconcelos-Raposo, & Fernandes, 2007; Iosifidou & Doganis, 2001; Lane, Sewell, Terry, Bartram, & Nesti, 1999; Tsorbatzoudis, Barkoukis, Sideridis, & Grouios, 2002). Other researchers have questioned the validity of the CSAI-2 leading to a revised version, the Competitive State Anxiety Inventory 2 revised (CSAI-2R) which was developed by Cox, Martens, and Russell (2003). Despite this, debate has been on-going to determine which of the two scales is the most effective measure of anxiety (Faull, 2009). The decision to use the CSAI-2 instead of the CSAI-2R

in this research was made because of the continued use of the CSAI-2 in most of the current research (Mamassis & Doganis, 2004). The continual use of the CSAI-2 in this research will allow for comparisons to be made with previous research.

The CSAI-2 is a questionnaire consisting of 27 sport related, multidimensional items. Each item is rated on a 4-point scale ranging from one ('not at all') to four ('very much so'). The CSAI- 2 was scored by computing a separate total for each of the three subscales, with scores that ranged from nine to a high of thirty six. The higher the score, the greater the cognitive or somatic anxiety state, or the greater the state self-confidence. No total score for the inventory was computed. The CSAI-2 however fails to measure the individual's interpretation of their condition, in regard to whether they are perceived to be positive or negative in relation to the upcoming athletic event and because of this a direction scale was added as proposed by Jones and Swain (1992). Each athlete would rate the degree to which the experienced intensity of each symptom was either facilitative or debilitative to subsequent performance on a scale ranging from −1 (debilitative) to +1 (facilitative) with "0" being totally unimportant. However the modified version developed by Jones and Swain (1992) and includes the directional scale could not be accessed for this research study and therefore the older version was used. As a way of assessing the athlete's interpretations of their arousal and anxiety a 5-point scale was introduced after the competition with 1 being "not good at all" and 5 being "very good" on the following aspects: 1) his or her physical feelings; 2) quality of technique; 3) timing and rhythm; 4) concentration; 5) amount of effort exerted; 6) mental attitude and thoughts; 7) level of self-confidence during the match; and 8) comparison of his or her performance with what he or she was expected to play, given the opponent. This technique was adopted as it gave a way of assessing the athletes own perceptions of their arousal and anxiety.

The timing for administering the CSAI-2 is also very important, with research showing that anytime within an hour before competition is optimal. As shown before anxiety and arousal tend to increase as the time for the event approaches. For this study it was administered 15 minutes before the competition as it was close enough to the competition and also it did not interfere with any of the participants pre-shooting routines. The participants took 5-7 minutes to finish the CSAI-2.

Edwards (2007) used the CSAI-2 in South Africa with youth athletes when designing a sport psychological skills and psychological well-being programme. Edwards (2007) obtained a physiological, cognitive arousal and self-confidence score using the CSAI-2. Van den Reever (2006) had used the CSAI-2 earlier with provincial netball players in South Africa and showed that it was reliable and valid in local settings. Other researchers in South Africa have also employed the

CSAI-2 and shown it to be a reliable measure of physiological and cognitive arousal (Andrew, Grobbelaar & Potgieter, 2007; Kruger, 2003, 2005)

3.3.2 Sport Grid-Revised

The Sport Grid-Revised is a self-report 9 x 9 grid that was developed by Ward and Cox (2001). The Sport Grid Revised is a revision of the Sport Grid (Raedeke & Stein, 1994) which was developed to address the perceived shortcoming in the Sport Grid. It has two dimensions; a vertical dimension which measures felt arousal and a horizontal dimension which measures cognitive anxiety. Research on the validity and reliability has been scarce. This can be attributed to the fact that extensive research has been done on the original Sport Grid. Ward and Cox (2004) reported that the Sport Grid had acceptable construct validity. Ward and Cox (2004) also state that the Sport Grid's felt arousal and thoughts/feelings ranges were observed to be independent (r = .11). It was difficult to measure internal item consistency due to it being a single-item instrument. It is reasonably assumed that since the Sport Grid-R is a revision of the Sport Grid it has better psychometric properties. The Sport Grid-R was used for this study to provide a measure of arousal. The Sport Grid-R was developed to measure felt arousal which has been found to be an indication of physiological arousal (Coventry & Hudson, 2001; Logan et al., 2001).

The Sport Grid-R requires the athletes to put an X in a box that indicates both the degree to which the athletes' body feels activated and the extent to which they are worried about their individual performance. On the vertical dimension, from the top to bottom, the grid measures how activated or "pumped-up" one's body feels regardless of whether the feeling is positive or negative. The higher the person goes on the grid, the more activated their body feels. On the horizontal dimension, from left to right, the grid measures how worried the person is about their performance in the upcoming event. The further right they go, the more worried about their individual performance they are. Participants were also asked at the end of the competition to rate their performance on a scale of one to nine with one being the lowest satisfaction and nine the highest satisfaction. The Sport Grid-R was interpreted using the instructions given by Raedeke and Stein (1994). The instructions provide that a participant can have two scores which are both between one and nine. On the vertical dimension one means low activation pointing to some sluggishness and nine points to high activation or feeling very pumped up. On the horizontal dimension one point indicates not being worried about the performance and nine to being very worried about the performance. The Sport Grid was administered at the same time as the CSAI-2 and the archers took between 4-6 minutes to finish the Sport Grid-R. As with the CSAI-2 it is encouraged to administer the Sport Grid-R within an hour before competition so as to get a more accurate measure of felt arousal (Ward & Cox,

2004). A search on Pubmed, Ebscohost and Google scholar has no results for the Sport Grid-R being used in South Africa.

3.3.3 Focus group and interview

A focus group was conducted as a way of eliciting the opinions, experiences and attitudes of the whole group and to deepen the findings of the CSAI-2 and the Sport Grid-R. The focus group was conducted one week after the administration of the quantitative measures. It was held at the Rhodes Psychology Clinic were the researcher worked and took one hour. Three participants took part. The focus group schedule had questions that were divided into three parts namely; questions on mental skills, questions on team and performance issues and questions on being in the zone (See Appendix D for the full focus group schedule).

Focus groups are small group discussions conducted with normally seven to twelve people that concentrate on specific topics (Arhar, Holly, & Kasten, 2001). However, they have also been shown to be conducted with groups as small as three people (Kitzinger, 1994). Small groups encourage collaboration among individuals, create memorable learning experiences, increase learner participation, and limit anxiety. Since the participants are members of the Rhodes Archery Club, they were familiar with each other. A focus group was chosen as it is in line with action research, which entails using group processes as part of change and therefore a focus group here meant not only data collection but was used to foster co-operation between the archers. After the focus group recording was transcribed it was analysed using thematic analysis as outlined by Braun and Clarke (2006). Thematic analysis was used because of its flexibility and works well within a participatory research paradigm as the participants can be used as collaborators (Braun & Clarke 2006).

An in depth interview was also conducted with one of the participants who did not take part in the focus group discussion. The participant was unavailable due to an emergency and the in-depth interview was done two days after the focus group as a way of assessing her subjective experiences. Instead of this detracting from the focus group it provided an opportunity to compare the data from the focus group and in-depth interview to see if the people in the focus group had been holding back on some information. In-depth interviewing is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation (Boyce & Neale, 2006). In this instance the in-depth interview provides detailed information about the archer's thoughts and behaviours in regard to anxiety, arousal, performance and mental skills training in archery.

The data from the focus group and in-depth interview was analysed using thematic analysis given by Braun and Clarke (2006). The following phases were followed in the thematic analysis:

- familiarizing with the data by transcribing data, reading and re-reading the data and noting down initial ideas,
- generating initial codes: coding interesting features of the data in a systematic fashion across the entire data set and collating data relevant to each code,
- searching for themes: collating codes into potential themes and gathering all data relevant to each potential theme,
- reviewing themes: checking if the themes work in relation to the coded extracts and the entire data set thus generating a thematic 'map' of the analysis,
- defining and naming themes: on-going analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme,
- producing the report: this is the final opportunity for analysis. A selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature are used thus producing a scholarly report of the analysis (Braune & Clarke, 2006, p. 87).

3.4 Sampling and participants

The participants are specific members of the Rhodes Archery Club selected by judgement or purposeful sampling. The Rhodes Archery Club has over 20 members. The sampling procedure involves the researcher actively selecting the most appropriate sample to answer the research question. In this case the researcher purposely chose the Rhodes Archery Club from the archery clubs available in the region. After this the researcher purposely chose specific members of the archery team. The members were chosen in terms of their experience, gender, shooting level and interest in regards to the MST programme. Purposeful sampling was appropriate as the researcher's practical knowledge of the research area and the available literature could be used. The researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience (Bernard, 2002; Lewis & Sheppard, 2006). In this case the Rhodes Archery club was chosen as the researcher was interested in developing a MST programme to help in the control of anxiety and arousal among archers. Archers are faced with a high need to control anxiety and arousal during performance. The Rhodes Archery Club was appropriate as it had competitors who performed in national and international competitions thereby meaning the research was carried out with archers involved in competitive competitions.

Four participants from the archery club took part, aged between 19 – 23 years old. Of these two were male (23 and 21 years old) and two female (21 and 19 years old). Three of the participants were South African white English speaking and one of the participants was a white speaking South African of Korean descent. Three participants were in the compound bow category which uses the compound bows. Compound bows are more advanced and are renowned for their accuracy. One participant was in the Standard bow category which uses a recurve bow. This category is the first level as the recurve bow is not complicated and does not have accessories. Two of the participants have been shooting professionally for over 5 years; the other two have been shooting professionally for 2 and 3 years respectively.

3.5 Role of researcher

The role of the researcher in action research is very important. The researcher works in collaboration with the participants in the research and does not do t hings on hi s own. In this research the researcher attended training sessions held by the participants before data collection to familiarise himself with the participants. Throughout the development of the programme the researcher maintained contact with the participants and held meetings to discuss the process as it happened. At all times the participants were aware of what was happening in the designing of the MST programme.

3.6 Research process

The major steps of this research are informed by Mclean's (2005) ODPM which consists of eight phases namely entry, start up, a ssessment and feedback, action plan, implementation, evaluation, adoption and separation. Since the research aims were to develop a MST programme only the first four phases (entry, start up, assessment and feedback, action plan) and the last phase (separation) were used.

3.7 Entry and start up

The entry and start-up phase will be looked at under one section. These phases in the ODPM involve the OD professional or consultant, after having done the requisite marketing, and a person representing the client organization, meeting to decide whether they will work together, assess the readiness of the organization to change, agree on the conditions under which they will work together and then put down the basic plan which they will use (Mclean, 2005). The researcher approached the archery team through the club president and captain. After consent was sought, purposive sampling was used to target the archers that were required to participate in the research. The researcher approached four archers two males and two females who agreed to participate after the

research objectives were explained to them. The researcher approached these four archers because of their different levels of experience as seen by their shooting levels. The four archers' years of experience and gender also had an influence on why they were chosen (See Section 3.4 Sampling and Participants for description of the archer's characteristics). Archers were given hand-outs that defined mental skills (See Appendix C) and room was given for discussions. After these discussions voluntary informed consent was sought from the four archers. Ethical issues were then discussed and the relevant consent forms were signed.

The first form was the informed consent form (Appendix A) which was signed by the participants and the researcher. The tape recording consent form (Appendix B) was also signed. Participants were made aware of the steps that were to be taken to ensure that information gathered was to be confidential. No individual's information was disclosed and individual archers were protected as pseudonyms were used in the results, designing and discussion sections the research study. Room was left for contact between archers and the researcher to discuss possible negative incidents that might have been caused by the research. The approach was a collaborative one between the researcher and participants. Participants were left with room to withdraw from the research if they saw it fit. After consent was granted the research progressed to the next stage which is assessment and feedback.

3.8 Assessment and feedback

The assessment tools both took between 9-13 minutes to administer together. The CSAI-2 and the Sport Grid-R were scored using their different scoring manuals. In the CSAI-2 a 5 point scale was administered after the competition and it provided a performance score that measures the participants' appraisal of pre-competition anxiety. The two quantitative measures provided the levels of anxiety and arousal as determined by each individual archer. The results of the two inventories informed the development of the interview schedule of the focus group and in-depth interview. A focus group was conducted a week after administering the CSAI-2 and Sport Grid-Revised. An in-depth interview was carried out with one of the participants who could not make the focus group, two days after the focus group. The information obtained from the quantitative measures, which showed the levels of anxiety and arousal of participants together with the focus group data which looked at the participant's different experiences with arousal and anxiety during competitions, and the data from the in-depth interview was used together with the literature on mental skills (Matthews, 2003; Vealey, 2007) to develop a four week MST programme.

3.9 Action plan and separation

The action plan and separation sections are in the Results chapter.

3.10   Trustworthiness, reflexivity and representation

Trustworthiness has been put forward as a primary criterion for evaluation of quality in research (Kopala & Suzuki, 1999). It has been defined as the element of good practice that are present throughout the research process (Stiles, 1993). Elements of trustworthiness used in this research include a) disclosure of the researcher's orientation (the researcher disclosed this to the participants at the start of the research) b) intensive and prolonged engagement with the material, c) persistent observation of the participants, d) triangulation of the research methods (qualitative and quantitative methods). Trustworthiness was also determined by grounding interpretations by using individual examples in the data to support abstractions (Kopala & Suzuki, 1999).

In Action research the researcher is central to the research process. Kopala and Suzuki (1999) have emphasised the need for reflexive aspects of the research process since it is acknowledged that the researcher is central in the construction of knowledge. Altheide and Johnson (1994) stated that one meaning of reflexivity is that the researcher is part and parcel of the setting, context and culture that he or she is trying to understand. Wilkinson (1988) described reflexivity as a form of disciplined self-reflection. Reflexivity means that the research topic, design, and process, together with the personal experience of doing the research are reflected upon and critically evaluated throughout (Merrick, 1999). In this research project, reflexivity was guaranteed by constantly reflecting on and critically evaluating the issue of anxiety, arousal, performance and mental skills training. The researcher's experiences whilst doing the research were also incorporated into the research. The researcher also acknowledged individuality and how personal interests and values influence the research process. This was done through regular discussions with the research supervisor and regular meetings with the participants during the research process.

Fine (1992) states that the ways researchers represent their data has much to do with who they are and says as much about them as it does about their participants and findings. This brings to the fore the issue of representation which has been defined as not just writing up the findings after concluding a study but also an integral part of the research process (Denzin and Lincoln, 1994). In this research the researcher did not just present the participant's voices but also brought their own voice into the project.

3.11   Validity and Reliability

Validity relates to the truthfulness of the data and reliability relates to extent to which results are consistent over time and an accurate representation of the total population under study (Stringer, Ernest, & Genat, 2004.). Altrichter, Posch, and Somekh (1993) argue that judging reliability in action research can only be carried out on a restricted basis as a result of the unique nature of any individual project. Shenton (2004) advocates for the use of dependability in place of reliability when it comes to qualitative research and defines it as showing that findings are consistent and could be repeated. Shenton argues that dependability can be achieved through including details of the research design and its implementation and thoroughly describing what was planned and executed on a strategic level and addressing the particulars of what was done in the field which this research did in the methodology section.

 Chein, Cook, and Harding (1948) came up with the idea that the job description of action researchers requires that they not only make discoveries, but also see that these discoveries are applied. In line with this view, this research looked at the problem of regulating anxiety and arousal and thus designed a mental skills training programme that the archers will be encouraged to use in future. The archers were given each a copy of the programme as a way of encouraging them to use it. Another source of validity in action research is the utility of the outcomes of research (Stringer, Ernest, & Genat, 2004). In this research the participants were able to take effective action on the issue being investigated therefore they demonstrated the validity of the research. The use of triangulation in this research also improved the validity and reliability of research or evaluation of findings (Golafshani, 2003). Patton (2001) advocates the use of triangulation by stating triangulation strengthens a study by combining methods. This research used several kinds of methods or data, including using both quantitative and qualitative approaches. Shenton (2004) argues that since qualitative project are specific to a small number of particular environments and individuals, it is impossible to comment on external validity. However it has been argued by others that researchers can use transferability instead of external validity were the unique case being investigated serves as a broader example to other cases. According to Shenton (2004) this can only be done carefully due to issues surrounding the differences in context. Therefore in this research it is hoped that other researchers in similar contexts university elite archers can use this unique case as an example.

3.12   Ethical issues surrounding the project

Ethical issues are present in any kind of research as the research process creates tension between the aims of research to make generalizations for the good of others, and the rights of participants to

maintain privacy (Orb, Eisenhauer, & Wynaden, 2001). Ethics have been defined simply as norms for conduct that distinguishes between acceptable and unacceptable behaviour (Beauchamp & Childress, 2001). In action research the protection of participants is imperative due to the co-participation of the researcher and the participants. Ethical issues concerning informed consent that is informing participants, right to withdraw, giving of consent in the research as well as free choice about participation is based on accurate information were looked at in this research.

Protection of the identity of all participants and confidentiality of interviews was taken into account as well. Ensuring the confidentiality of participants was enforced as participants were able to check the research findings. Lofman, Pelkonen, & Pietila (2004) argue that it is easier to protect the identity of an individual practitioner in traditional research than in action research, where the recognition of the views of individual participants may be possible owing to the small number of research participants. This was dealt with in that the participants were given pseudonyms.

3.13   Summary

This section focused on the methods used in the research. The ODPM which a type of action was described and the stages that were used in this research were explained. Action research as a research method was explained and justifications of using it in this research were given. The triangulation of quantitative and qualitative research methods with were used in this research were explained and justifications for their use given. The section also looked at the selection of the participants and the role the researcher played in the study. The section ended up looking at the trustworthiness, reflexivity, and representation of the study; validity and reliability of the study and lastly the ethical issues surrounding the study.

CHAPTER 4: RESULTS

4.1 Introduction

The aims of the research were to assess the current mental skills employed by individual archers of the Rhodes University archery Club that they use in controlling arousal and anxiety and then use existing theory and the results of the assessment to develop a MST programme that focuses on arousal and anxiety. The next section is a p resentation of the results of the assessment phase mentioned in the Methodology Section. The section is divided into two with the results of the CSAI-2 and Sport- Grid Revised presented in graphic form with explanations underneath and then the qualitative results (focus group and in-depth interview) are presented together. The results from the CSAI-2 and Sport Grid-R showed that different participants had different zones of optimal performance.

4.2 Results of the CSAI 2

The CSAI-2 was administered to the participants 15 minutes before their competitions. It was explained to the participants two weeks beforehand. The instructions for filling in the inventory were also provided. The results of the CSAI 2 for each participant are shown graphically below.
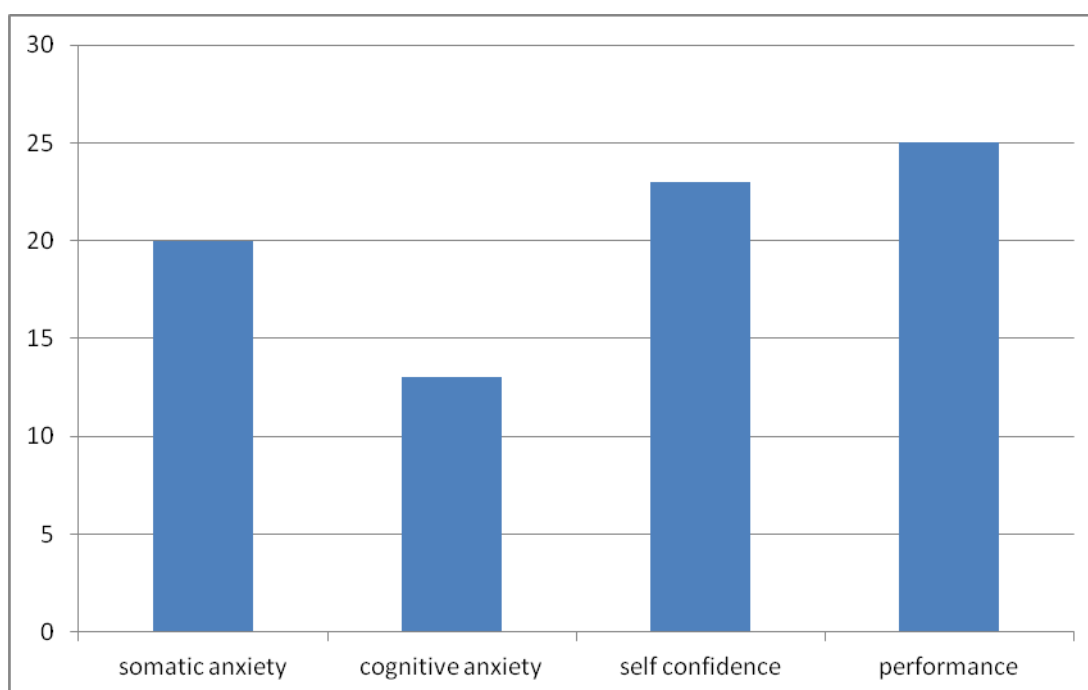
Figure 3: Joy's CSAI-2 score and the performance score

The scores for Joy show relatively low cognitive anxiety, high somatic anxiety with scores of 12 and 20 respectively. Self-confidence was high with a score of 23. Despite the high somatic anxiety scores, Joy's performance score of 25 which was obtained after her shooting shows that she was

happy with the performance afterwards. This means that Joy performs well when she has low cognitive anxiety, which relates to her thoughts during shooting and high somatic anxiety, which relates to her physiological responses before and during shooting.
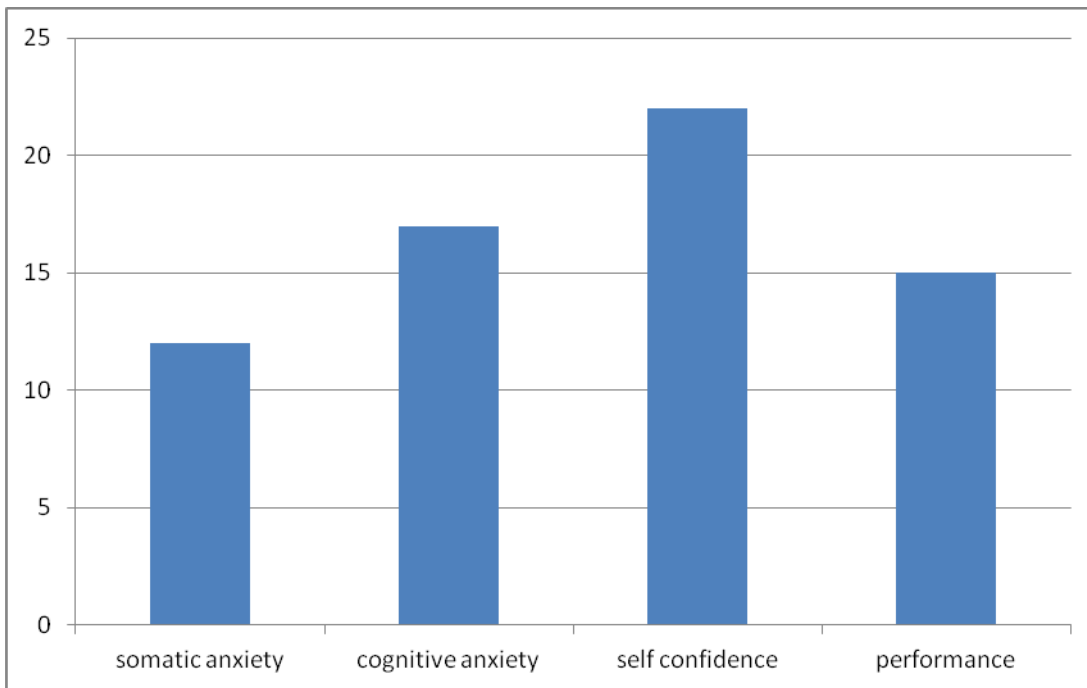
Figure 4: Tim's CSAI-2 scores and performance score

Tim's scores show that he was mildly anxious and was highly self-confident before his performance. The Cognitive A score of 17 indicates that the participant was mildly worried about their performance. The Somatic A state score of 12 shows that Tim was not worried about the somatic anxiety signs. On the performance measure, Tim had 15 w hich points to possible dissatisfaction about his performance which is contrary to the high self-confidence he had before the competition.
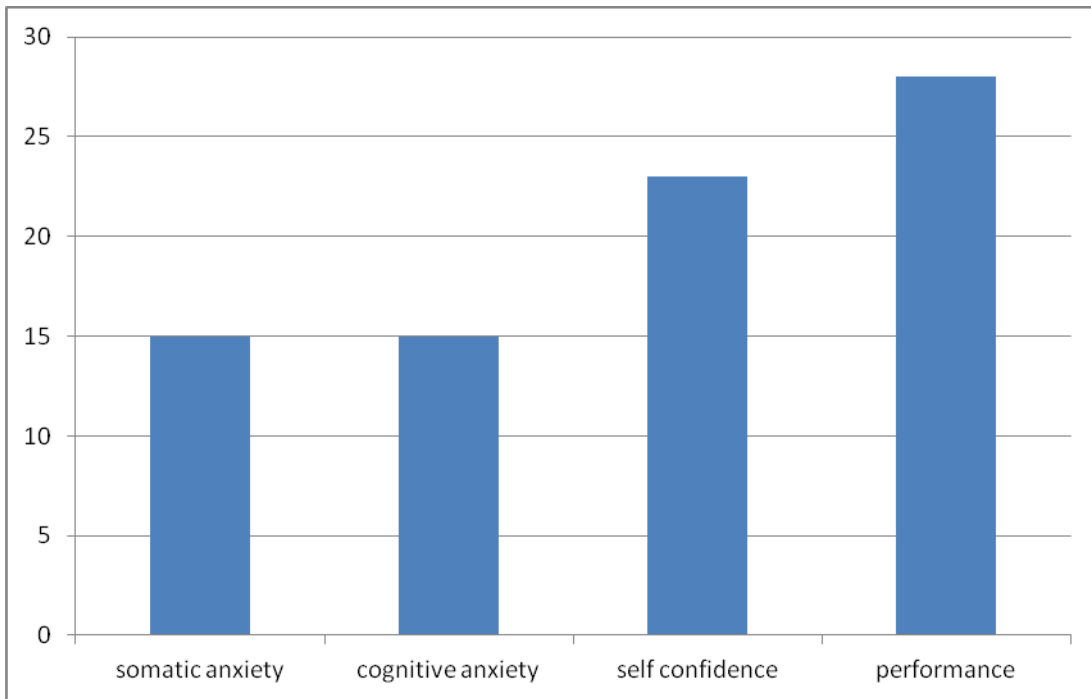
Figure 5: Jay's CSAI-2 scores and performance score

The profile for Jay shows that she had mild anxiety before her performance with the Cognitive A and Somatic A state anxiety being both 15. This shows that Jay was not highly worried about their performance. The score of 23 on t he self-confidence measure shows that the participant was confident of their performance. The performance score of 28 shows that Jay was pleased with her performance.
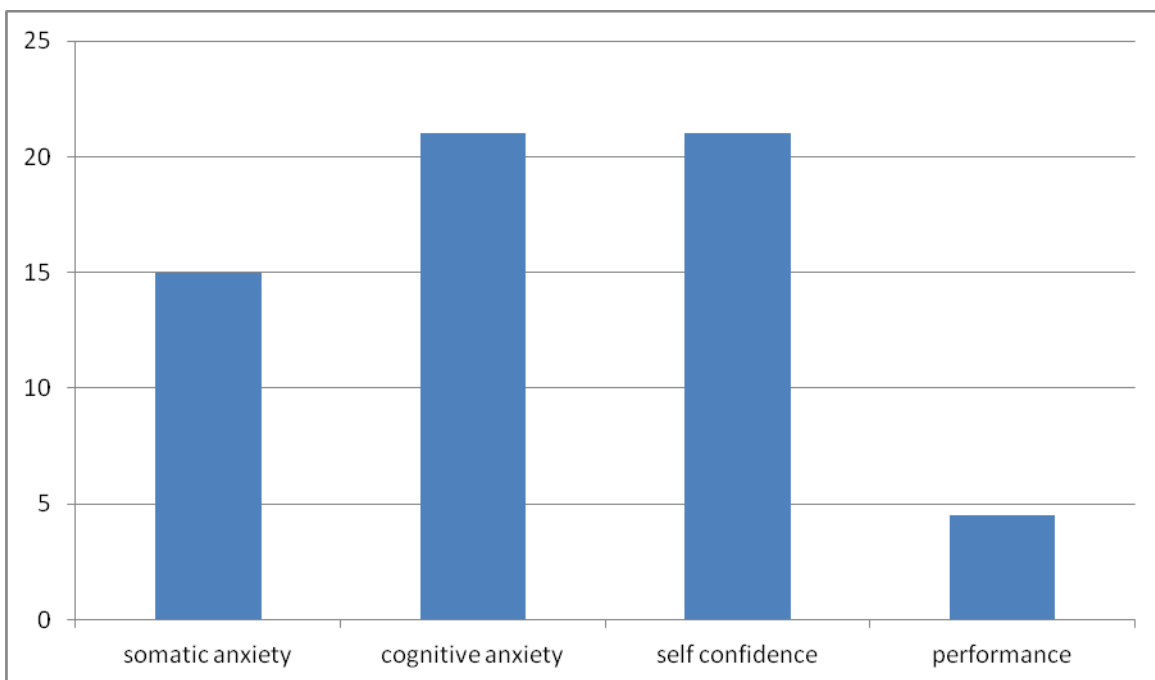
Figure 6: Jim's CSAI-2 scores and performance score

The Cognitive A score of 21 shows Jim had moderately high cognitive anxiety pointing to some worries about the performance. The score of 15 on the Somatic A-state subscale points to a mild concern about somatic anxiety and shows that he was not highly worried about his physiological anxiety signs. Jim's of 21 on the self-confidence scale that the participant was moderately confident of his performance in the competition. However contrary to this self-confidence, the performance score of 4 shows dissatisfaction with the performance.

4.3 Results of the Sport Grid-Revised

The Sport Grid Revised was administered 10 minutes before individual archer's competitions. The Sport Grid R was explained to the participants and the instructions on how to complete it were given beforehand. The results for individual archers are given below;
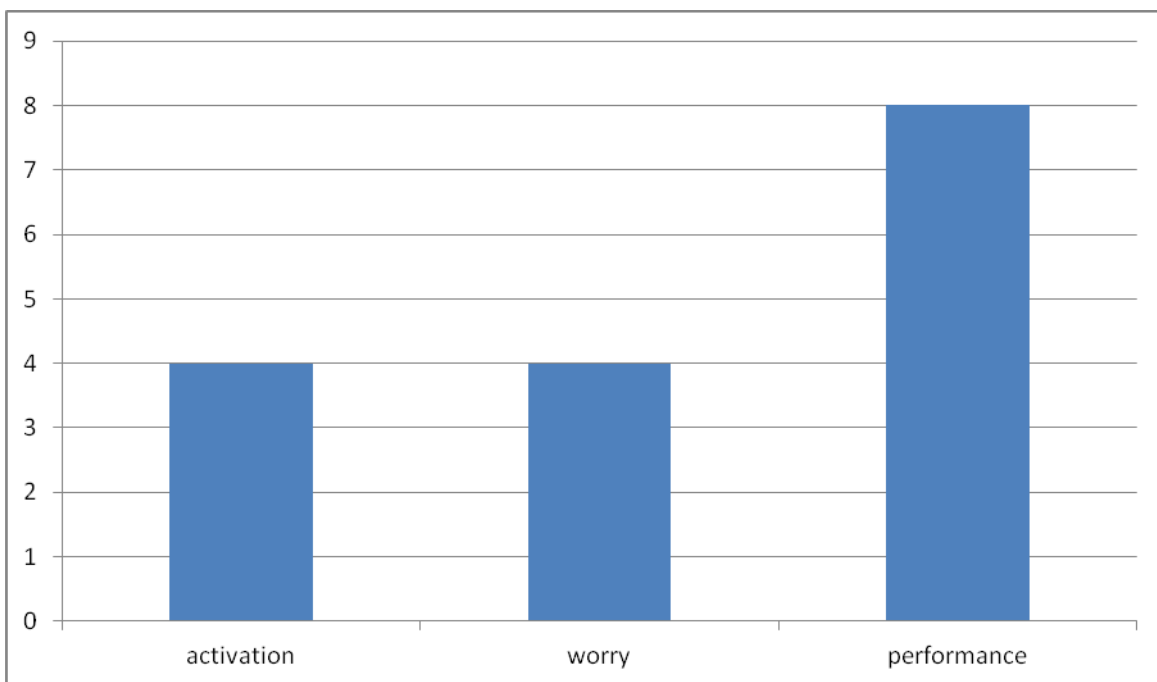
Figure 7: Sport Grid-R scores for Joy

The Sport Grid-R scores of 4 on both scales point to Joy being not worried about her performance whilst she was feeling a little sluggish. This profile points to someone who although not feeling physiologically aroused, is still confident about the forthcoming competition. Her performance score (8) which was taken after her shooting shows that she was satisfied with her performance.
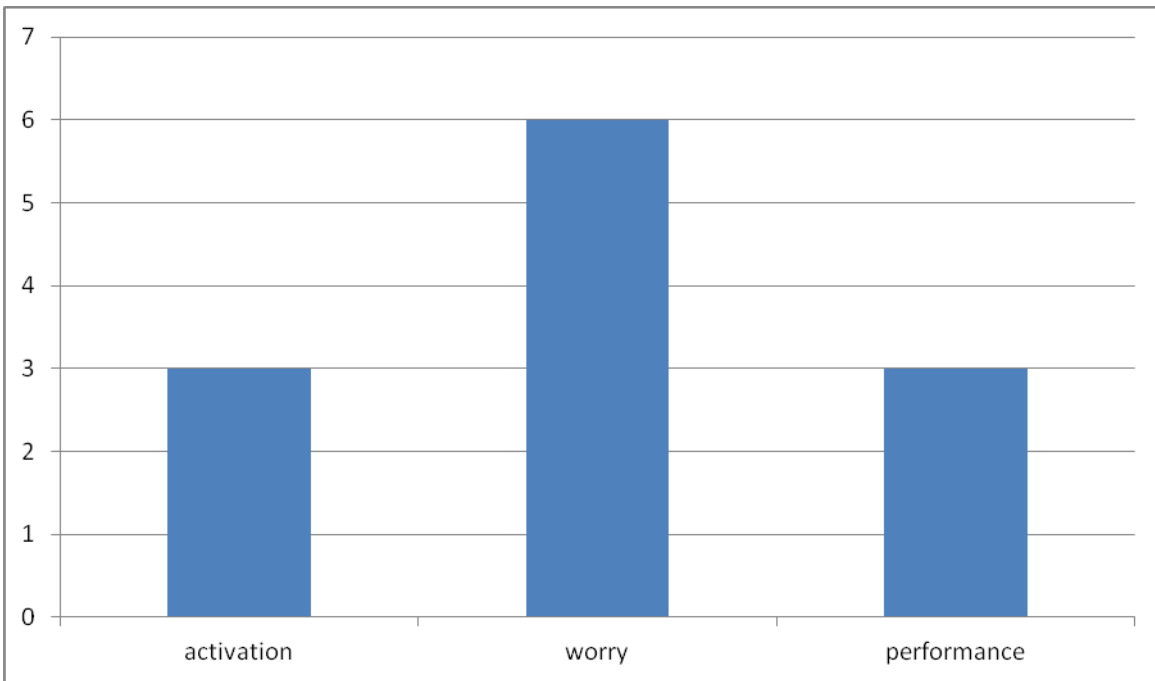
Figure 8: Sport Grid-R scores for Tim

Tim's scores of 3 on t he activation subscale shows that he was feeling sluggish before the competition. The score of 6 on t he worry subscale shows that he was worried about his performance. The performance score of 3 shows dissatisfaction with the performance.
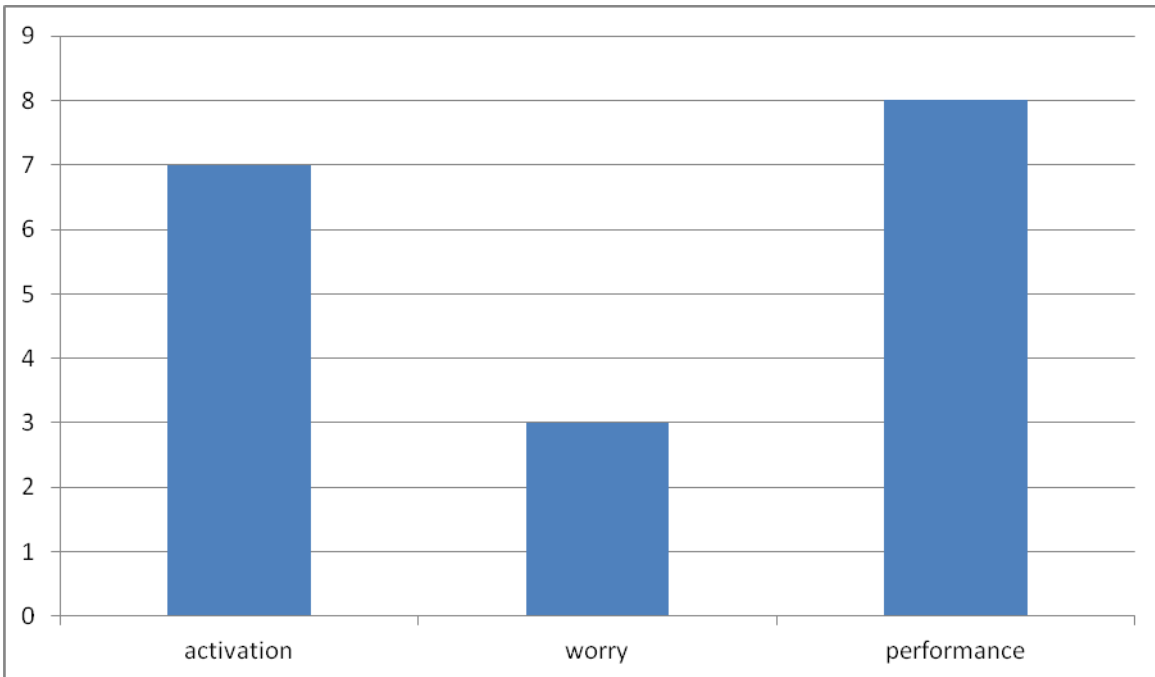
Figure 9: Sport Grid-R scores for Jay

Jay's score on the activation scale of 7 shows that she was highly pumped up for the competition. The worry scale score of 3 shows that she was not worried about her performance. The profile points to someone who because of not being worried about the competition becomes highly

activated before the shooting. Her performance score of 8 points to great satisfaction with her performance.
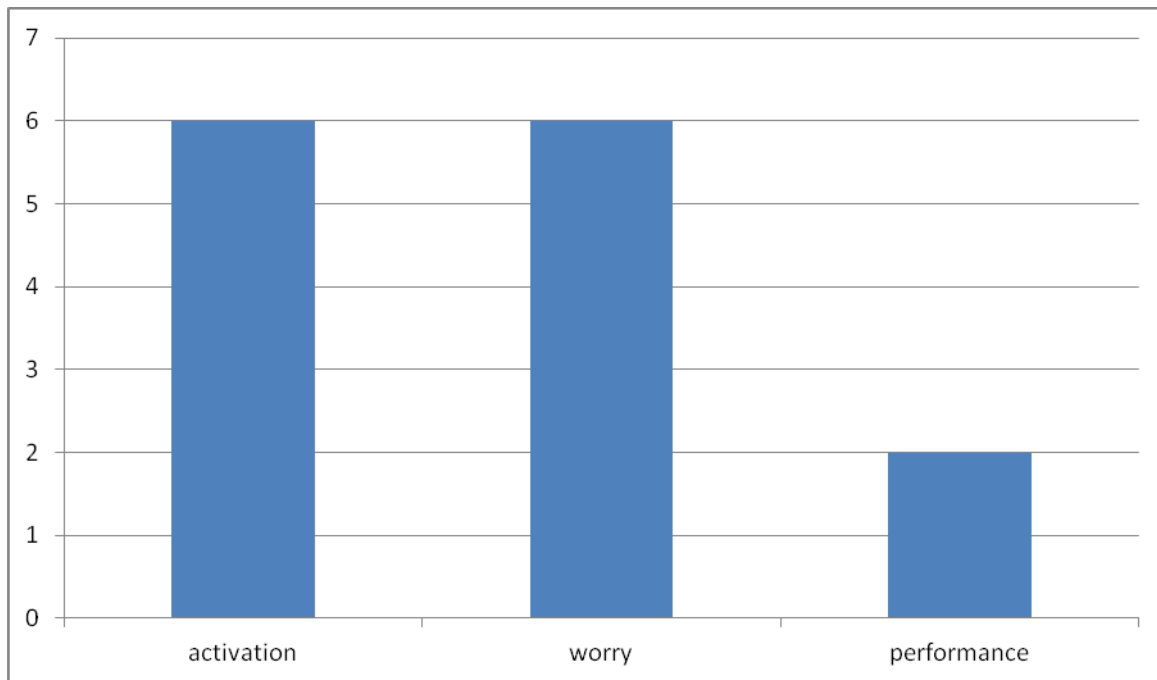
Figure 10: Sport Grid-R scores for Jim

Jim's score of 6 on both the activation and worry subscales points to someone who is worried about the forthcoming competition but who is also highly pumped up for the performance. This is a profile of someone who because of worrying becomes highly activated before a competition. The performance score of 2 is very low and shows dissatisfaction with the performance.

4.4 Presentation of qualitative results

The focus group interview and semi structured interview were conducted subsequent to the administration and scoring of the CSAI-2 and Sport Grid-R. The focus group and interview were partly used to uncover specific issues relevant to the pattern of dealing with anxiety and arousal which was depicted in the CSAI-2 and Sport Grid-R. As mentioned in the previous section, the results obtained from the CSAI-2 and Sport Grid-R assisted in the preparation of the content of the focus group interview and individual interview schedules, along with the body of literature on mental skills training, anxiety and arousal in sport. After the focus group interview and individual interview were conducted they were transcribed and then analysed using thematic analysis. Six major themes emerged from the analysis. The results showed that the participants were concerned of anxiety and arousal and how they affect their performance. Anxiety and arousal are seen as linked and are caused by things that include, weather, spectators, noise, confidence, stress, type of competition, physical strength and archery technique. The results also show that participants have

been exposed to MST programmes and are willing to improve their mental skills. The five themes are exposure to mental skills, application of mental skills, external influences on performance, internal influence on performance and archery characteristics. Table 2 below shows the major themes and their sub-themes;

Table 2: Themes from the thematic analysis of the focus group and individual in depth interview

Themes	Sub-themes
1. Experiences of anxiety and arousal	Definitions of anxiety
	Experiences before and during competition
2. Exposure to Mental Skills	Knowledge of mental training
	Previous exposure
	Importance of mental skills
3. Application of Mental Skills	Visualisation
	Attentional focus
	Routine
	Relaxation
	Positive Self talk
	Misunderstandings regarding mental skills training
4. External influences on performance	Effects of weather
	Effect of spectators
	Dealing with noise
	Team Support
5. Internal influences on performance	Effects of anxiety
	Confidence
	Choking
	Effects of emotions
	The Zone
6. Sport specific characteristics	Type of competitions
	Effect of shooting level
	Physical strength
	Practising technique

4.4.1   Experiences of anxiety and arousal
4.4.1.1 Defining anxiety and arousal
The participants were all familiar with anxiety and arousal. Both constructs were seen as important and affecting how one performs during competition. Anxiety and performance were seen as linked. Jim stated that;

> *I think they are similar and anxiety is you umm, the jitters you feel before and*
> *during a competition and arousal is the physical part of this like your shaking*
> (Line 45-46 focus group discussion).

Joy had the following to say about the relationship between anxiety and arousal;

> *They are definitely similar with anxiety being an emotion that you have when*
> *you are afraid about the competition and arousal just how your body is in*
> *reaction to the anxiety. I do not think you can have the one without the other*
> (Line 19-21 interview).

The idea of anxiety and arousal being linked is there in the literature (LeUnes & Nation, 2002). Joy states that the two constructs cannot exist without one another and this brings an important point. Arousal, which Gill (2000) defined as a general state of activation ranging on a continuum from deep sleep to extreme excitement is by its very nature always present. Freiheit (2010) states that sport anxiety in athletes is always present as they are always faced with fear of failure, poor performance, and negative evaluation.

4.4.1.2 Experiences before and during competition

The experiences of anxiety described were individualistic. Each participant noted experiencing extremely personal and distinctive feelings of anxiety. The majority of the participants experienced cognitive-based symptoms, while some described somatic-based symptoms. Cognitive based experiences included a lack of focus, constant worry, negative thought patterns and low confidence in abilities while somatic experiences include shaking and feeling butterflies in the stomach. Joy had this to say;

> *I get worried and I tend to overanalyse shots, I have negative thoughts and I*
> *start shaking and miss my shots. They affect my focus.* (Line 23-24
> interview)

Jay stated that she experienced anxiety and arousal differently. She stated that;

> *I shake a lot and think about all my failures in the past and l won't focus*
> (Line 57 focus group discussion).

Tim shared different experiences and mentioned that;

> *I usually start thinking about failure and then I panic and seat a lot and this*
> *affects my confidence* (Line 58-59 focus group discussion.)

Jim stated the following in describing his experiences;

> *With me it's usually a lot of sweating then I know I will perform badly* (Line
> 56 focus group discussion).

Although the participants described individualistic experiences of anxiety and arousal some commonalities exist and some of these have been proven by research. The participants experienced cognitive and somatic symptoms that were linked. Ree, French, MacLeod, and Locke (2008) in a study to validate the State-Trait Inventory for Cognitive and Somatic Anxiety were able to show

that although linked cognitive and somatic anxiety and distinct constructs that can be reliably and validly assessed.

4.4.2 Exposure to mental skills
4.4.2.1 Knowledge of mental training
All four participants knew what mental skills were in general but they could not give specifics on arousal and anxiety. However none of the participants had ever been involved in the systematic use of mental skills. Participants gave different meanings of what they considered to be mental skills and how these affected their performance. Joy equated mental skills to ability to focus and not become stressed. Joy stated that,

> *I am not exactly sure what you mean by mental skills, but are you meaning to be*
> *able to focus and not get stressed?"* (Line 10-11 interview)

Joy went on to add that,

> *…I think it's important not to stress, because if you stress, then you mess up*
> (Line 14-15 interview).

The view of seeing mental skills as having an ability to focus was also shared by Jay, who states that,

> *The pattern of how you think can affect how the shot goes so you need to focus,*
> *and control your thoughts and channel them to where they need to be regardless*
> *of your circumstances or mental strength"* (Line 17-19 focus group discussion).

Tim held a different view on what mental skills meant and emphasised the ability to control emotions. Tim stated that,

> *I think that mental skills will be how you control your mind, if it is like in a*
> *sporting situation it is how you control your own emotions, your thought patterns*
> *through competing and stuff like that, I think that it's quite important for our*
> *sport, especially since we need quite a lot of focus and concentration* (Line 8-11
> focus group discussion).

The knowledge the participants had on mental skills focused on controlling emotions, staying focussed and being able to handle stress. Their views are in line with most of the research done MST programmes. The research has shown that athletes have some knowledge on mental skills training even before they have been trained in such programmes (Eloff et al., 2011; Kruger, 2010).

4.4.2.2 Previous exposure

The participants stated that they had previous exposure to mental skills training. The different mediums of exposure included through other competitors and discussions among with other club members. Jay stated that,

> *I do not know if you saw the last National…… I think it was a team from Egypt that was here last year. The whole team together will do these calming exercises for example stretching this and moving this all together as if they were doing meditation together. It was a team thing.* (Line 157-160 focus group discussion).

Tim also stated that his exposure has been through his contact with archers from other countries. Tim had this to say,

> *And that's big overseas, but that's what we don't do here, I don't know if you saw it in China but a lot of the guys would pair up like almost as an army and do routines together. I don't know if they were trying to show off to other teams, to show them that they had more routines than the other teams. But when they do it, they all know exactly what they are doing, I don't know why they do it, but they do, and they are all uniformed* (Line 161-165 focus group discussion).

Exposure to MST programmes is important as it makes it easier for athletes to engage with a programme developed for them. Due to the increase of communications between countries and the growth of technology it is not surprising that the participants had been exposed to MST programmes. MacNamara, Button, and Collins (2010) in a study of talent development process also found that many of the athletes had been exposed to some form of mental skills. Mamassis and Doganis (2011) found that junior elite tennis players that took part in their mental skills training programme had already had exposure to mental skills although they were not using the in a systematic manner.

4.4.2.3 Importance of mental skills

The importance of mental skills was emphasised by all the participants as it was seen as part of becoming a good archer. Jim stated that,

> *I think that with archery itself the more relaxed you are, the better you shoot, your body needs to be relaxed for it to be able to go to the same positions each time you shoot in archery. It allows you to be more consistent, it allows you to just focus on what you are doing at the time and so should help you shoot better* (Line 31-34 focus group discussion).

Tim refers to what he calls mental strength which is seen as being important in archery. He states that;

Yes, I have known like many people who give up not because their physical ability prevents them from doing the sport but because their mental strength was not there to keep through the difficult time and stuff like that, a lot of guys with potential have stopped because their mental strength then hold out. So it plays a crucial role in whether you succeed or not (Line 39-43 focus group discussion).

The importance of MST in sport is supported by research. Eloff et al., (2010) in a survey of mental skills training among South African field hockey players at tertiary institutions found that the participants in the study perceived MST as an important tool to enhance performance in field hockey. However although they may have been exposed to mental skills, their understanding of them and the benefits of mental skills training is minimal at best. This is in line with what other researchers have found. Edwards and Edwards (2012) in a paper creating norms for mental skills in South African rugby players state that mental skills are naturally occurring, daily utilized, improvable abilities and techniques so therefore it came as no surprise that the participants in this study had an idea of what mental skills were. In addition, the people in this study and in many other studies have been shown to have differing understandings of what mental skills are (MacNamara et al., 2010).

4.4.3 Application of mental skills
4.4.3.1 Attentional Focus
The participants had different experiences on using mental skills. All the participants stated that they had not practised any systematic mental skills. When questioned about if the participant uses any mental skills Joy stated that,

Not really (Line 50 interview).

However when questioned further it came out that Joy employed some form of mental skills although they were not named as such. The following quotation comes from Joy,

At the moment I'm just trying to teach myself to focus on each arrow individually, it doesn't matter where it goes, it's gone, it doesn't matter (Line 79-80 interview).

The quotation shows that Joy was using the mental skill of attentional focus. Her answer to the first question shows that although she can be seen as applying attentional focus as a mental skill she does not see this as a mental skill in the technical sense.

4.4.3.2 Positive self-talk and relaxation
Tim stated that exposure to mental skills has led to an interest of trying them out. Tim stated that,

I do like stretching for a short time. During the tournament, I'll talk to myself a lot like. It's not that bad so I always talk to myself like try to relax, music is also

good, but we are not allowed to get on the line either, so you can't take it with

you... (Line 168-171 focus group discussion).

This quote shows how Tim employs relaxation using music and also uses positive self-talk. The failure to recognise that they are using mental skills is in line with the previous theme which showed that participants despite the exposure to mental skills use different terms to describe them. In a study of ice hockey goal minders, Rogerson and Hrycaiko (2002) found that although they had limited knowledge on mental skills training their participants were already employing mental skills although not in a systematic manner. Jim spoke of the importance of being relaxed during competitions. Jim stated that,

I think that with archery itself the more relaxed you are, the better you shoot. Your body needs to be relaxed for it to be going to the same positions each time you need for archery. It allows you to be more consistent, it allows you to just focus on what you doing at the time and so should help you shoot better (Line 31-34 focus group discussion).

Despite mentioning relaxation as important Jim did not state specifically how he attempts to stay relaxed.

4.4.3.3 Routines and visualisation

Jay mentioned going through a countdown sequence as a way to help with performance. The participant had this to say,

But sometimes you have a countdown, start with the big one and each number means do something else. Like 5 means straighten your feet, 4 means sit you back up, 3 means put your shoulders up, just so that you get every aspect checked and then usually 2 means take deep breath and 1 clear one, just release (Line 172-176 focus group discussion).

This quote shows how Jay has taught herself the technique of routines. She explains that it helps her to stay calm and focused. Systematic training will help in enhancing the mental skill she already has. Tim spoke of how visualisation usually helps him,

I normally do visuals that is I normally visualise high stakes situations I tell myself and visualise that if l am shooting like this then that is the end...then l am going to work the whole championship sets looking at shooting a ten like l visualised" (Line 437-440 focus group discussion).

Tim's description of visualization in the above quote shows how he has learnt to try and imagining shooting an arrow. More systematic training on i magery will probably enhance his ability to visualize.

4.4.3.4 Misunderstandings of mental skills training

Tim also brought up the failure of the archery club in applying mental skills in their training and competition as they stated that,

> *I don't know, but as a club now we normally focus on the technique and stuff like that, we haven't gotten to the point where we're taking the psychological aspects into account. I think that's like a much higher level. We need to get into the much higher level in the sport development to get to the psychological aspects, so we are working on the techniques basis. We can't start working on the psychological basics if we haven't got the technique down, so I think that is where we are now, but I think we are starting to get a few guys that are getting that down and will benefit us with psychological training* (Line 62-68 focus group discussion).

This quote shows a complete misconception of mental skills training that his believing that one must get the psychical aspects correct and be playing at a certain level for them to be able to be involved in mental skills training. The quote also sees the participant mentioning the club not focusing on the skills and while this is relevant, one of our goals that will be emphasised in the separation phase is the need for individual archers to take responsibility for their own development. This is to be done in the hope that when individual archers start using mental skills then the club will eventually start using the mental skills as well. The misconceptions regarding mental skills training might explain why although people have had an exposure to them they are not practiced in a systematic manner. Thelwell and Maynard (2003) also found in a study of young cricket players that whilst the participants were aware of mental skills training and sport psychology, none of the participants reported using mental skills training in a systematic manner. This failure to use mental skills systematically might be due to the misconceptions that people have. Muscat and Farres (2003) found that most coaches and athletes were of the idea that mental skills are inborn and therefore do not need to be practised.

4.4.4 External influences on performance
4.4.4.1 Noise

The participants mentioned how external forces act as a hindrance to performance. The external forces that were viewed as hindering performance include weather and to some extent noise. Noise was viewed by Tim and Joy as being facilitative if it is not too much.

Joy stated that some certain amount of noise is needed. Joy said,

> *I'm kind of used to people talking around me, but you missed it at the indoor. A and B were shooting for the eliminations match against each other, and there*

were the only two left and everyone went silent and they were like to the people

we can't really shoot without noise (laugh) (Line 150-154 interview).

This speaks to the need to use mental skills training to train for different scenarios. Joy went on to clarify the issue of levels of noise by giving an example when noise was a hindrance,

…the one time I was shooting in a competition and on a neighbouring field they were singing a national anthem and the person singing the national anthem started off too high (laugh) everyone's scores dropped because she was screeching (laugh) (Line 164-167 interview).

The quote shows how it is important to learn how to maintain focus for such situations. Research has shown how preparing for matches using visualisation scenarios and scripts can aid in maintaining focus (Gregg, Nederhof, & Hall, 2005). Tim gave an overview of the influence of how noise has affected other people before by stating,

The environmental factors are huge. I have been in so many competitions where guys have actually complained to the officials because of some random noise, like a car crash, or someone hooted and they actually call for a retake of the shot which they should not do if they had control over their ability to cope with noise (Line 141-149 focus group discussion).

4.4.4.2 Weather

Weather was also mentioned as having an effect on performance in archery. In regard to weather, Joy stated that,

like the last shoot that I shot, it poured with rain but the rain wasn't consistence, so every time you shot, it would not go well and you panicked, but the rain kept changing, the stronger it gets the lower the scores you get (Line 56-58 interview).

Jim stated the following in regard to the weather,

And the wind will affect you; it will push your arrow to the side depending on how strong it is (Line 137-138 focus group discussion).

Jim added that,

The biggest problem with the Grahamstown weather is when it's windy. It's never consistent so it's a lot harder to actual try and make up for the wind because you never quite know that it's blowing this side here or the other side,

it's different, you can't quite tell properly. Grahamstown likes to have gasps of

wind (Line 253-256 focus group discussion).

Weather is seen as a huge influence for one's performance and mental skills can be used to enhance coping with the anxiety and arousal levels brought about by bad weather. Chandrapal, Senanayake, and Suwarganda (2009) stated that archery is heavily influenced by external factors that include gravity, crosswind and rain.

4.4.4.3 Effect of spectators and other team members

The support of the team was seen as a positive by participants. Jim stated that,

Personally I think it helps as I do not like shooting alone, archery is a very

repetitive sport and after a while it can get boring if you have no one else there.

So usually when I shoot I'll be shooting with Lance, Stuart or with the rest of the

club members, which helps me train for longer and just continue going, so

instead of just being bored quickly l go on for a long time (Line 71-75 focus

group discussion).

Jay emphasised the importance of seeing other people's good performances as a positive of being part of a team,

Also with a lot of our members someone would come in not really into it and

shooting beers. Oh I am pretty good, I am pretty good, and then they see other

people and they are like, you know I can be better because I can do that and then

there will be more participation and things will just...start the ball rolling. (Line

103-106 focus group discussion).

Tim articulated on the importance of other people helping with one's technique by saying,

Like a lot of times your mind tells you that because you know the correct

technique, so a lot of times your mind will tell you that your body is doing the

correct thing meanwhile it's not and someone else will be able to see that and

then tell you, but you'll not even know (Line 97-99 focus group discussion).

This was further emphasised by Jim who stated,

Personally I actually lean back when I shoot until Lance actually told me that I

am leaning back which points I've got to try and correct it after I've joined and

stuff (Line 100-101 focus group discussion).

Holland, Woodcock, Cumming, and Duda (2010) in their study of young rugby players found that team support provides a supportive climate that has an influence on how athletes view their performance. The role of environmental factors in archery has been well documented in literature.

4.4.5 Internal influences on performance

As much as external factors influence performance participants also saw internal factors as having a major impact. The participants stated how factors like anxiety, confidence, stress and response to failure influenced their performance. The participants stated the need to control these factors as a way of getting into their zones of good performance.

4.4.5.1 Effects of emotions

Tim stated that,

> *I know there have been very seldom tournaments that I've actually gone in and competed without any stresses from varsity or work as such. I'm always in the Marlins Hall taking books out, shooting, studying then shooting again. You are trying to do both at the same time and you know you can't, you can't just focus on the one and then leave the other one. I think it does take a lot of strain on your performance if you have a lot of varsity work. When I was overseas I made a.., some will say no, I kind of made a physical effort not to think about varsity work while I was there, and only afterwards, after we were finished I was working, but like during the time we were competing I was trying to ignore that I did have work, when I did, but it does affect you, a lot. I find that in more relaxed situations you do perform better, well for me* (Line 20-30 focus group discussion).

This quote shows the added pressure faced by university athletes. The pressure of balancing time between practice and studying can also be seen a reason why systematic training of mental skills is not being done as people might feel that it is adding to pressure that already exists.

4.4.5.2 Importance of confidence in managing anxiety

Confidence in one's ability was also seen as influencing performance. Joy stated what happened during a shoot and described a phenomenon in which they failed to perform properly. She stated that,

> *It's tough, but you just have to not beat yourself up about it. In some of these nationals my scores just plunged, I don't know why maybe I was not confident. The first nationals I shot in the compound section and that was my highest national score at that time, but last year I could not focus when aiming at the target I could not get my sight to move. I was aiming right off the target to get in the middle; I could not figure it out* (Line 113-118 interview).

Jim mentioned how confidence influences one to shoot better and how this has an effect on the opponent who is put under pressure. Jim stated that,

Yes it can affect both you and your opponent because if you are shooting really well at the beginning you can feel more psyched up about it and more confident in yourself. Your opponent, when they see that you are shooting really well and they are not shooting quite as well, they eventually freak out and eventually mess up an arrow and just never recover (Line 195-199 focus group discussion).

Jay stated how knowing the opponent's ability often affects performance. Jay mentioned that an opponent is better than you then confidence usually takes a knock and this affects how one shoots. Jay said that,

I know when I'm shooting next to someone that I know that I can beat, I usually beat them, (laugh) because I just hit good scores from the first minute, but if I'm going into someone whom l know they quite possibly could beat me the arrows just don't go the way I want them to (Line 214-217 focus group discussion).

Tim mentioned how a good s tart is important in boosting one's confidence in later shoots. The participant states that,

Like what we always say is like in the fixture in one of our longest tournaments where you shoot 36 arrows at 90 metres, 36 arrows at 70, 50 and 30 meters, we always know that your 90 meters makes your tournament almost. If you have a bad 90 your mind is not going to be there, the chances of you actually performing well on your last three distances go really low. Like there are a few people that can come back from it but a lot of the time if you want a good score at the end you start off with a good score. So whatever you've done in the past obviously affects what will happen in the future (Line 200-206 focus group discussion).

The different interpretations of confidence show the importance of individual differences which has been documented in research. For example Harwood, Cumming, and Fletcher (2004) in a study involving five hundred seventy three elite young athletes in the UK found that individuals experience different internal factors like motivation, anxiety and confidence which have a significant influence on performance. The issue of how different individuals experience issues in sport is in line with Taylor (1995) who noted that individual needs and the specific demands of the sport should be taken into consideration when developing an MST programme. In the CSAI-2 it was shown that confidence does not mean a good performance as seen by the discrepancies between the self-confidence subscale and the performance scale.

4.4.6 Sport specific characteristics

4.4.6.1 Technique

The participants also spoke of specific archery characteristics that influence performance. The importance of technique and how it should be perfected was emphasised. The following quotes involve the issue of technique. Tim stated that,

> *It's almost like archery techniques have been well documented in the literature. It's you either you are doing it right or doing it wrong, you can play a certain amount with the technique in your personal shooting ability, but the overall basis, it must be there, you have to have the framework to be able to embellish on the actual system that you got. Therefore the technique is crucial, there's always stuff that people have said that's been proven to work. Like I've spent a lot of time in learning like the actual basics of what works and what's does not work, I try to tell people that I do that* (Line 108-114 focus group discussion).

Jim had this to say about technique,

> *The thing is, the position that you're in with the great technique, you don't normally use those muscles in everyday life, and for example you don't pick up boxes that way. So when it comes to shooting you've got to practise a lot, you've got to be disciplined and train your body to actually get into the right technique* (Line 116-120 focus group discussion).

Jay added that,

> *It's holding your body at that perfect position every single time and you make sure that those right muscles are doing the same thing that they did last time* (Line 122-123 focus group discussion).

4.4.6.2 Physical strength

The issue of physical strength and which level an archer shoots was also seen as having an influence on performance. Jay stated that,

> *I shoot the lightest bow in the club and they shoot a lot heavier and stronger, so they can shoot a lot further and a lot more accurate because their bows are bigger. So I don't have the strength to pull that heavy bow* (Line 126-128 focus group discussion).

Norlander, Bergman, and Archer (1999) found that the type of bow an archer uses has an influence on how well they perform.

Jim stated the following on physical strength,

Yes, physical strength for the endurance to be able to do it for the whole time you are shooting, and to be able to pull back each time and hold it each time, so it's mainly for the endurance of it after that (Line 130-132 focus group discussion).

The issue of technique and physical strength seen in the quotes above is very important in that the MST programme should be able to be incorporated with the technical as well as physical training needs. This helps in avoiding the misconception around MST programmes as being separate from other forms of training.

4.4.6.3 Type of competitions

The difference of whether the competition is indoor or outdoor was also seen to influence performance and one's anxiety and arousal. Joy spoke of how the challenges of outdoor shooting make it more interesting but also makes one need more focus. The participant stated that,

I do not really like indoor as much as outdoor, outdoor is more challenging because you have got weather conditions to contend with, you change distances, because outdoor I shoot 70 meters, 60 meters, 50 meters and 30 meters, but in indoors you only shoot 18 meters on an already small space (Line 140-143 interview).

Tim stated how indoor and outdoor shooting present different challenges,

Indoors have an Olympic like style ring where the targets are so small and your chance for error's is great The distances are close, like much closer than you normally shoot but then your chance for error is so small that is if you just make one mess up you lose the whole round. You cannot recover from one mistake. I think with the outdoor round you are more relaxed than the indoor round, that's why normally indoor rounds are much shorter than the outdoor round (Line 233-238 focus group discussion).

The quote shows how the participant's perception hinders his performance. Jay added that the differences between indoor and outdoor competitions are a matter of preference. She said that;

Yeah, I think I suppose I am lazy and I do not have to walk far, there is no cold wind and heat. Indoors is fine. That's the only difference, so really my targets don't really change that much (Line 240-242 focus group discussion).

4.5 Action Plan /Designing the programme

The next phase of the ODPM after the assessment phase is the action plan and implementation phases. The action plan of the ODPM involves the generation of the intervention to be implemented in this case the MST programme. The prominent findings from the results section showed that anxiety and arousal have an impact on the archer's performance. Anxiety comes from different

sources that include weather, noise, lack of confidence and fatigue. The results from the assessment phase also showed that different participants had different zones of optimal performance. The results also showed that different participants were comfortable with certain mental skills than others. The data collected in the earlier stage has been analysed the researcher used it to create a M ST programme specifically for arousal and anxiety that will fit the archers. The development was guided by current theory (Balague, 2000; Hanin, 2000; Matthews, 2003; Vealey, 1998) on the research of mental skills and attention was given to individual archers' needs and the South African context were mental skills training programmes are just starting to gain predominance. The two data collection methods carried out during assessment generated ground information that determined the content of the programme.

4.6 Context of the mental skills training programme

The participants were enthusiastic and participated well in the data collection phase. The results showed that different participants experienced and responded to anxiety and arousal differently. The results of the quantitative measures (CSAI-2 and Sport Grid-R) showed how different participants feel before shooting and the performance scores afterwards showed how they felt about their performances. The themes that came from the individual interview and focus group interview went deeper in exploring the different factors that participants view are important to them and also their different exposures and application of mental skills. The results from the assessment will be used to determine which mental skills techniques will be contained in each individual participant's mental skills manual. The manuals will contain some universal training aspects and some individually tailored training aspects.

Participant profiles were made using the results of the assessment phase to determine the mental skills training that each participant would take part in. These are given below;

- **Joy-** The results from the CSAI-2 show that Joy can perform well even with high levels of somatic anxiety. The result from the Sport-Grid also shows that she was feeling sluggish. Although she was satisfied by her performance Joy might benefit from mental skills that help control her level of somatic anxiety. During the interview with Joy she pointed out that she is willing to try mental skills that can help her deal with stress, different scenarios in regard to noise, weather and confidence.

- **Tim-** The results from the CSAI-2 shows that Tim was mildly anxious but self-confident before the competition. Despite this he was not satisfied with his performance. The Sport-Grid R points to some sluggishness and worry around his performance. In the focus group Tim was largely concerned with controlling emotions and handling stress from university

work. He was already engaging in some mental skills although not in a systematic manner. These mental skills include, relaxation using music, visualisation and self-talk.

- **Jay-** The results from the CSAI-2 shows that Jay was mild anxious but not highly worried about her performance. She was also satisfied with her performance. Her Sport Grid-R shows that she was highly pumped up and not worried about her performance. In the focus group she expressed the need to control patterns of thinking. She uses routines to help her keep calm. She also expressed some worries around failing to concentrate when she faces opponents that she knows are better than her.

- **Jim-** The results from Jim CSAI-2 show that he was highly anxious but confident before the competition. His performance score shows that he was disappointed with his performance. The Sport Grid-R points to someone who is pumped up and worried before the competition. During the focus group he expressed the importance of mental skills and had the most exposure in comparison to other participants. H e mentioned how relaxing one of the important aspects of archery was. He was concerned with confidence and how to deal with the ever changing weather especially the wind when competing.

The information in the above profiles together with Matthews (2003) theory which gives a basis of mental skills that are needed in archery was integrated together to develop the MST programme. Although action research usually focuses on group activities the nature of this MST programme requires some focus on individual aspects. The information from the profiles which provided strengths and weaknesses in regard to mental skills gave the basis of what mental skills will be targeted in the participants. Hanin's (2000) IZOF model which states that athletes have their own individual zones of optimal functioning was also taken into account. The archers will use the psychological techniques that can enhance them to get into these individualized zones.

4.7 Programme content and structure

The MST programme will be held over a period of 4 weeks. Taking into consideration the results of the assessment, archers were chosen to take part in activities that were in line with the results as shown in the participant profiles above. Participants with similar activities will take part as a group. During these group sessions the researcher will not lose sight on the role of individual aspects in the programme. The groups will help in creating a team atmosphere for the sessions. The assessment phase showed that archers have mental skills that they have and would want further training. The different activities in the programme will take place in sessions of one hour each. The sessions were made into one hour sessions because although most MST programmes run in sessions of between 30-120 minutes sessions (Brookfield, 2009; Farres, 2000) one hour was appropriate due to the busy

schedules the archers have as they balance being students as well as professional archers. One hour was also judged by the researcher to be sufficient to cover the theory and practice of mental skills. The MST programme will happen during weekdays. Since archers are all University students the activities will be done between 4 and 5 pm. The mental skills theory and the accompanying exercises were adapted, developed from and influenced by various theorists and authors that include; Davis, Nolen-Hoeksema, and Larson (1998); Hardy, Hall, and Hardy (2004); Heil and Zealand (2001); Hersey and Blanchard's (1988); Jacobson (1938); Morris, Spittle, and Watt (2005); Araki et al., (2006); Nideffer (1985); Orlick (1990); Richardson (1967); Ruis and Stevenson (2004); and Stodel (2002).

4.8 Session structure

The sessions are going to be one hour long and will involve an introduction and an exercise that will be carried out. The sessions will take the form of a workshop with the researcher leading the discussion and will take place at the Rhodes Archery club house which is where their training area is. Using the club house has the advantage of removing some of the misconceptions around mental skills training not being seen in the same light as physical and technical training. The participants who are taking part in the particular mental skills training are shown in brackets.

Before the first MST training session there will be a one hour introductory session that will involve all the participants. The introduction session follows the educational phase were the participants are taught about the mental skills. The session will focus on providing encouragement and also introducing the MST programme. Farres (2000) states that before athletes take part in MST training motivation needs to be given to the athletes as a way of encouragement. Farres (2000) suggests that this motivation can come from athletes reading other athletes' stories and testimonials on their own use of mental skills as a way of providing extra incentive and creating an image in the athletes' minds of what is possible and what they need to be able to do to get there. Orlick and Partington (2000) published a book on-line called *Psyched: Inner Views of Winning* which has 19 interviews with Canadian Olympic athletes. The athletes discuss their mental preparation and the role it played in their Olympic pursuits and accomplishments. The participants will each get three printed interviews from Orlick and Partington's book as a way of providing encouragement. Table 3 shows the four week time table for the programme;

Table 3: The mental skills training programme time table

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Week 1	Goal Setting 1	Imagery 1	Routine 1	Relaxation 1	Breathing exercises
Week 2	Cognitive Restructuring 1	Goal Setting 2	Imagery 2	Positive Self talk 1	Concentration Training 1
Week 3	Routine 2	Positive Self talk 2	Goal Setting 3	Imagery 3	Cognitive Restructuring 2
Week 4	Routines 3	Concentration Training 2	Relaxation 2	Goal Setting 4	Cognitive Restructuring 3

4.9 Mental skills manual

Each athlete will receive a manual (Appendix F) during the programme which they can use after completion of the programme. The manual contains explanations of some of the mental skills and worksheets that were used throughout the programme. As with physical talent, it will be necessary for the athlete to practice the psychological techniques in order to achieve success, meaning and familiarity with a specific method. The use of a mental skills manual allows each athlete to monitor and modify his or her personal psychological training programme. The mental skills manual will also be used to allow each participant to record his or her experiences, thoughts, and progress with the established programme**.**

GOAL SETTING (All participants)

Goal setting was identified by all archers to be an important part of their preparation and training before competition. Participants stated that even though they were involved in some form of goal setting this was not done in a uniform way and not consistently. Davis et al., (1998) states that creating goals in sports serves as a way to focus attention. The purpose of these exercises will be to help participants to develop a systematic way to set goals for sporting achievement.

Session 1: Explanation of goal setting

Goal setting will be explained to the participants. A hand-out will be provided to the participants to go through (See Appendix F for hand-out). Goals will be explained as involving physical training goals, mental training goals and technical training goals for training and competition. Archers will be given a goal setting worksheet and asked to fill in their goals (See Appendix F for worksheet). The goals will be physical, mental and technical training goals. Archers will be encouraged to fill in

realistic goals. Archers that struggle to come up with goals will be helped using the differentiation of outcome, performance, and process goals which are described below.

Session 2: Setting Goals- The goal setting staircase

Archers' homework on filling out the goal setting worksheet will be reviewed. Archers will be encouraged to take ownership of the goals they have set. The goal setting staircase metaphor will be introduced (See Appendix F). The metaphor states that small goals lead to another medium term goals that then lead to the long term goal. The process of developing the short, medium, and long term goals is a difficult one with which most people struggle. Due to this the participants with the help of the researcher will go through the process of identifying outcome goals as well as process goals. Outcome goals tend to focus on your place or score in a competition and process goals focus more on immediate, here-and-now behaviours performed with each shot, or even between shots and are very important in practice and in competition (Ruis and Stevenson, 2004).

Session 3: Setting smart goals

The archers will go through Hersey and Blanchard's (1988) recommendation of setting goals which is known by the acronym SMART. This means they will learn that goals need to be

1) Specific- goals need to be specific as vague goals will produce vague results
2) Measurable- a goal should also be measurable and observable. Numerical goals for example distance and time are more measurable than subjective goals.
3) Achievable- goals should be difficult enough to challenge yet realistic enough to be achievable.
4) Relevant- goals should be relevant to the archer's current ability and future potential.
5) Timeline- goals should have a timeframe or target date

After the session archers will be given the goal setting worksheet again and asked to fill it in.

Session 4: Summary

The archers will compare the two goal setting worksheets and note the differences if any. The researcher will go through the worksheets together with the participants and evaluate whether the goals are realistic. Participants will be encouraged not to try too much too soon. The goal setting exercises will be reviewed and archers will be asked to evaluate the exercise. Archers will also be encouraged to continue reviewing and evaluating their goals.

IMAGERY (Tim, Jim, Joy)

Imagery as a concept will be explained to the archers. Three archers stated that they are interested in imagery and think that it will help them enhance their performance. Morris, Spittle, and Watt (2005)

define imagery as the mental rehearsal or practice of a skill or performance using your senses. Participants will be told how imagery can be used to visualize themselves succeeding in upcoming events. Imagery has a range for the archers. For example, they can use it to prepare for certain situations or as part of their prematch routine, or even for that part of the competition when they have to switch off their iPods or phones which they use to listen to music. The rationale for imagery can be seen in the mental skills manual (Appendix F)

Session 1: Explanation of imagery

A hand-out on imagery (Appendix F) will be given and archers will go through it as part of the training. Imagery, also referred to as visualization, mental rehearsal or mental practice is a technique that involves the symbolic rehearsal of a physical activity in the absence of any gross muscular movement (Richardson, 1967, p. 9 15), hanging a situation, position or performance, allows an individual to deal with a situation before it occurs, therefore allowing one to better deal and cope with the actual event. As a result, an individual is able to prepare himself or herself for what he or she may expect to experience and how to respond effectively. Imagery is a strategy that, with practice, can be invaluable to athletes. However, it is necessary that the athlete establish the correct manner of developing and utilizing an imagery program. The participants will be educated on the use of imagery for motivational purposes, to correct past and potential errors and the use of imagery in combination with relaxation training and positive thinking. In addition, the athletes will be instructed on the use of both external and internal imagery. Internal imagery involves the individual imagining himself or herself as if performing the movements whereas in external imagery, an individual images the performance as if watching himself or herself on a television screen (Nideffer, 1985).

Session 2: Imagery Exercise 1

The two exercises in the following two sessions are adapted from Stodel (2002).

Imaging successful shooting (external imagery) – Before the asked to prepare a script of the exercise and then read it first before then visualising it. The participants are asked to imagine that the researcher has just video-taped their best shooting ever. They are asked to watch the tape in their mind. What do they see? As they recreate this experience they are encouraged to make the image as vivid as possible by using all their senses. They are told to try to imagine themselves shooting at the same level as they would actually shoot. What do they look like when they are shooting well? What sound do their bows make? How do their bodies move as they shoot? What does it feel like to make these great shots? They should open their eyes after this.

After the exercise the participants will be given a worksheet (Mental skills manual, Appendix F) to fill in.

Session 3: Imagery exercise 2

Imaging successful shooting (internal imagery) – The participants are asked to close their eyes and imagine that they are shooting in their favourite competition with their favourite bow. They are encouraged to do this activity from an internal perspective (i.e., as if they were inside their own body and they would see what they see as if looking out of their eyes). What can they see? Hear? Feel? As they make each shot in their mind get them to move their bodies in the correct way too. How do they feel when they shoot an awesome arrow? Again, they are encouraged to image in real-time.

After the exercise the worksheet will be reviewed and discussions based on this discussed.

Summary

A summary will be given for the imagery section. Archers will give feedback on the imagery exercises and a discussion will be held around this.

POSITIVE SELF-TALK (Joy, Tim, Jim)

Session 1: Introduction

A rationale for self-talk will be given (See Appendix F). The use of focus or mood words and positive self-statements that focus the athlete's attention on performance, create some emotion, or encourage the athlete to maintain the effort and build confidence, is very useful in sport. Self-talk has been defined as a multidimensional phenomenon concerned with athletes' verbalizations that are addressed to themselves (Hardy, Hall, & Hardy, 2005, p. 905). Participants will fill in a Belief in Self-Talk Questionnaire (BSQ) developed by Araki et al., (2006). The (BSQ) will be used to assess participants' belief in the effectiveness of self-talk. The BSQ is a self-report inventory with eight items. Four of the items will ask respondents to indicate the extent to which they agreed or disagreed with statements regarding belief in positive self-talk to enhance performance and four items examines belief in negative self-talk to harm performance (see Mental Skills Manual, Appendix F). Participants will rate the items on a scale with anchors of *strongly disagree* (0) to *strongly agree* (5). Araki et al., (2006) state that the BSQ has acceptable internal consistency (alpha = 0.74). The BSQ Discussion will be based around the scores that participants get and questions and misconceptions addressed. Searches on databases (Ebscohost, PubMed, Google Scholar, Medlin shows no results on researches using the BSQ in South Africa.

Session 2: Positive Self-talk techniques

This session will focus on the introducing the positive self-talk techniques that have been shown to manage worry (Heil & Zealand, 2001). The four methods are;

- problem solving which is converting worry into production action;
- thought saving which is taking a break from worry;
- thought review, which is managing expectations;
- thought stopping which is learning to stop bad thoughts and shifting quickly to a positive focus.

The participants will be asked to write down a statement that will be used to illustrate all the four techniques.

Negative self-statements

The participants will be told to write down 10 negative self-statements that they usually experience during competition. The participants will then challenge these techniques using the above mentioned techniques. This will be done until participants are able to easily replace the negative self-statements with positive ones.

Summary

A summary of the positive self-talk exercises will be given at the end to help with solidifying the work done.

COGNITIVE RESTRUCTURING (Tim, Jim, Joy)

Cognitive restructuring is a technique utilized to assist an individual to control and focus thoughts. Within competitive sport this exercise can be used to help an athlete recognize, stop, and replace his or her negative thoughts that can harm performance. Cognitive restructuring involves the use of positive thinking which is the changing of how thinks by repeatedly making positive mental statements (Orlick, 1990). More information on cognitive restructuring can be found in Appendix F.

Session 1: Introduction

As with all techniques, it will be necessary that each athlete receive a brief introduction into the background and format of cognitive restructuring. The participants will be educated on the key guidelines for effective positive thinking, as detailed below.

Guidelines for Positive Thinking (Adapted from T. Orlick (1990) :

- Self-statements should be positive and constructive.

- The self-statement should state relevant information. It should identify what you will do, how you will do it, and why you will do it.
- Self-talk should focus on factors within one's control.
- Self-talk must be learned and rehearsed in practice and simulated in competition.
- Individuals may experiment with self-statements to establish a personal regime.
- Progress must be monitored

Session 2

To assist with the implementation of the strategies discussed the following exercise will be done. The athletes will list approximately six to eight negative thoughts or statements or potential negative concerns. The participant and researcher will then discuss possible restructuring for each negative thought or concern. Participants will use a cognitive restructuring worksheet for the exercises (See Appendix F).

Session 3: Summary

A summary of cognitive restructuring will be given. Participants will give feedback and a discussion will centre on the feedback.

RELAXATION TRAINING (All participants)

Relaxation is very popular in sports. It is often used to control excessively high levels of anxiety and tension. It can be used in either training, before or during competitions. Four prevalent relaxation procedures can be adequately categorized under the broad heading of relaxation and these are progressive relaxation, autogenic training, meditation and biofeedback. Progressive relaxation is one of the most used and will be discussed below.

Session 1: Explanation of relaxation

An ability to relax gives an athlete the ability to gain control over his or her body, which enables one to remain calm and responsive to the task at hand. For many athletes the use of relaxation is used in collaboration with other techniques. Relaxation is a technique that many athletes use for a number of situations (induce sleep, pre-competition, post-competition). Progressive muscular relaxation (PMR) training is a popular relaxation method used by a number of successful athletes. Progressive relaxation involves the tensing of muscles, focusing on the feeling of each muscle, and releasing the muscle tension. Participants will then be given a chance to review their prior experience with relaxation and also their expectations for the exercise.

Session 2: Progressive Muscle Relaxation Exercise

The following is a sample of a progressive relaxation script that will be used by the participants

Lift your hand….clench it into a fist, notice the tension, release, and notice the contrasting relaxed feeling…Tense the other hand into a fist then relax…. Flex the right arm to tighten the biceps, then relax.. .. ..Flex the other arm, relax.. .Raise your eyebrows and frown to tense the forehead, relax.. . Shrug the shoulders for tension, relax....Take a deep breath, hold it to tense; slowly exhale and notice the relaxation...Do it again...Tighten your stomach muscles, relax….. Point your toes down to tense; relax.....Return to normal breathing (Jacobson 1938).

The purpose of this session will be to allow the participants to become aware of their areas of tension and gain an understanding of the feelings associated with relaxation. After the exercise the participants will discuss their perceived areas of tension and other established exercises and methods that could assist in relaxation. Each participant will given a sample relaxation recording and will be encouraged to use the recording during their relaxation time which will be during their practice. Once they become used to it and its effects then they will be able to identify tense muscles more easily during competition.

BREATHING EXERCISES (Tim, Jay, Jim)

Introduction

The rationale for breathing exercises will be given first. Breathing has been shown to reduce tension in the muscles and also in helping to relax. It can be useful in archery where muscle tension and physiological arousal have been shown to have an impact on performance. The following exercise will be done and participants will be encouraged to practice it twice a day. Below are two breathing exercises that will be given to the participants.

Breathing Exercise

The participants will be taught two breathing exercises.

Exercise 1

With one hand on the chest and the other on the belly, take a deep breath in through the nose, ensuring the diaphragm (not the chest) inflates with enough air to create a stretch in the lungs. Repeat this under breathing is under control. Matthews (2003) states that this exercise can be useful during competition as a way of helping athletes control their breathing.

Exercise 2

The following exercise is taken from Heil and Zealand (2001) and can be used in practice to help with controlling breathing.

Please close your eyes. Turn your attention to your breathing. Be an observer to the process of your breathing. And notice the way in which you breathe. Is it deep or shallow? Regular or irregular? Let yourself come to a way of breathing that is deep, slow, and regular. You will find as you breathe in this way, you will quite naturally come to be comfortable, relaxed, and at ease. (Pause.) Now you will find that you may relax even further by focusing, in conjunction with your breathing, on the muscle groups of your body. In a moment you will begin to count slowly from 1 to 10 focusing your attention in order on the muscle groups of your body. Ready to begin? Breathe in, count 1 silently to yourself, focus your attention on the muscles in the abdomen, and when you breathe out let these muscles relax. (Repeat: 2-chest/ 3-back/ 4-hips and thighs/ 5- lower legs and feet/ 6-shoulders and upper arms/ 7-forarms and hands/ 8-shoulders, neck, in lower jaw/ 9-face and head/ 10-whole body.) Once again, turn your attention to your breathing and let it be comfortable, relaxed and at ease. (Pause.) Now count backward from 3 to 1 and open your eyes. When you open your eyes, allow yourself to remain relaxed and at ease.

CONCENTRATION TRAINING (Jay, Joy)

Session 1: Introduction

Concentration is an important part of any sport. In archery participants shoot at targets from different distances and the ability to concentrate can often mean the difference between shooting well and shooting badly. The breathing exercises mentioned above will be used in conjunction with concentration training exercises. In this session the breathing exercise will be done first.

Session 2: Concentration Training

Before this exercise participants will be asked if they are comfortable with meditation as the exercise is taken from meditation exercises. The concerns will be addressed and those who are not comfortable after the explanations and rationale for the exercise will not be forced to take part. Participants will be encouraged to sit in a comfortable position. The following concentration exercise by (Heil & Zealand, 2001) will be used by the participants;

1) Breathing exercise until fully relaxed (Exercise 2).
2) With eyes closed the participants are encouraged to listen to sounds that they can hear and taking each separate sound, identifying it, and then mentally labelling it, for example voices, footsteps, or a cough. The participants are told to simultaneously attend to all the sounds without attempting to identify or label them.

3) The next step is to be aware of bodily sensations such as the feeling of where the chair or floor supports the body. They should mentally label each sensation as they notice it. Before moving on to another sensation, each sensation should take a few moments to be examined considering its quality and its source. Next, all these sensations should be felt simultaneously without identifying or labelling any particular one.

4) Next they should attend to their emotions or thoughts only. Each thought or emotion should appear gently, without being forced. The nature of the thoughts and feelings should be identified. They are urged to remain calm. They should feel one after another. Now they should try to tune into only one and hold attention there.

5) They are then told to open their eyes and pick some object across the room directly in front of them. While looking ahead they should see as much of the room and the objects in the room as their peripheral vision will allow. Then they should observe the entire room and all the items in it simultaneously. They are told to picture a broad funnel into which their mind is moving. They are told that in the middle of the funnel there is an object directly across the room from them. Then they should slowly narrow their focus by narrowing the funnel so the only thing at the small end of the funnel is the object across from them. Then they should expand their focus little by little, widening the funnel until they can see everything in the room.

Summary

A summary of concentration training is given at the end of the session.

ROUTINES (All participants)

Session 1: Introduction

A rationale for routine training will be given first. Performance routines are the stepping stone to maintaining focus under pressure (Heil & Zealand, 2001). The routines are likely to work better if done in a systematic manner. These routines give control over external and internal environments. The more familiarity, routine, and structure one can have in their external environment, the easier it is for one to be in control of your internal environment. The participants will then write down their precompetition performance routines.

Session 2: Pre-competition Routines

The participants together with the researcher will go through the precompetition routines of the participants and areas of concern addressed. The routine exercises adapted from Heil and Zealand (2001) will used as guidance (See Appendix F).

Session 3: Between Shooting Routines

The participants will review their between shooting routines. The guidelines proved by Heil and Zealand (2001) will used as guidance (See Appendix F).

Summary

A summary of the exercise will be given at the end of the session.

4.10 Separation

This will be the final phase of the research study were each participant will get a printed copy of their particular MST training package. The researcher will review the MST programme with each participant in one hour separation interviews were concerns and questions will be addressed. The participants will be encouraged to use the programme.

4.11 Summary

This chapter contained the presentation of the results of the assessment phase mentioned in the Methodology Section. The results were divided into two with the results of the CSAI-2 and Sport-Grid Revised presented in graphic form with explanations underneath and then the qualitative results (focus group and in-depth interview) were presented together. The section then moved on to the action plan which is the designing of the programme. The participant profiles were given before the context and structure of the programme were explained. The chapter then went on to include the mental skills that were going to be taught and then trained. The chapter ended by describing the separation process.

CHAPTER 5: DISCUSSION

5.1 Introduction

The purpose of this investigation was to qualitatively and quantitatively assess the current mental skills employed by individual archers in dealing with anxiety and arousal during their performances, and then use existing theory and the results of the assessment to develop a mental skills training programme. This section focuses on how the findings from the assessment relate to the programme that was developed.

5.2 Relationship between anxiety and arousal to performance

The relationship between anxiety and arousal to performance was central to the development of the programme as I determined what mental skills to focus on. The results confirmed that emotions have an impact on performance. Participants stated that how one feels before a competition will either have a positive or negative impact on their performance. Literature shows that the emotional condition of an athlete can either have a negative or positive impact on performance (Hanin, 2000; Jones, 2003). Anxiety was identified as the major emotion with which the participants battled. Results indicate that all participants saw anxiety and arousal as linked. Jim mentioned that anxiety was largely emotional and arousal on the other hand was the physiological aspect of anxiety. This view of anxiety and arousal as related is well documented in the literature (Gill 2000; Leunes & Nation, 2002; Marchant & Morris 2004).

The participants saw the relationship between anxiety and arousal to performance as being negative. The results show that if one is anxious and cannot control their arousal level then performance will be poor or below par. This is not in line with the literature which states that anxiety can be either facilitative or debilitative to an athlete's performance (Wilson, Smith, & Holmes, 2007). Jim stated that, "My performance is largely linked to how relaxed I am, without any bit of anxiety". Jokela and Hanin (1999) in a study of athletes showed that most of their participants had some level of anxiety which influenced performance either negatively or positively. These differences can be accounted for by the different participants' characteristics in the two studies. The role of personality differences is well documented and might have an impact on the issue of how anxiety can influence performance (Ilyasi & Salehian, 2011; Weinberg & Gould, 2007).

The results also showed support for the Multidimensional Anxiety Theory which suggests that anxiety is comprised of both cognitive and somatic anxiety components (Martens et al., 1992). However it is also important to note that in this study the cognitive component was seen as being anxiety and the somatic component as being arousal. This can be attributed to how the two

constructs are perhaps similar. The literature is split on two schools who view arousal and anxiety being two separate constructs and the other one which views them as being interrelated if not the same (Landers & Arent, 2006; Lavelle et al., 2004; Leunes & Nation, 2002; Marchant & Morris, 2004).

Despite experiencing both cognitive and somatic-based anxiety, cognitive symptoms were more prevalent. This finding suggests that athletes may experience a dominant and non-dominant form of anxiety consistent with Maynard and Cotton's (1993) observation that athletes were dominant in either cognitive or somatic-based anxiety. It is possible that an athlete's dominant form of anxiety may have a greater effect on his or her performance. The type of sport also seems to provide an explanation for cognitive anxiety being dominant amongst the participants. Archery has been described as a cognitive sport so it is normal for archers to have high levels of cognitive anxiety (Haywood & Lewis, 1989).

The results from the quantitative measures showed that all archers had different levels of arousal before the competition. Some were experiencing high levels of arousal and others were not. The participants later confirmed in the qualitative measures how the different levels of arousal affected their performance. Jay stated that increased arousal helped in bringing more focus while Joy claimed that increased arousal had a n egative influence on performance. This is in line with research especially on the IZOF that states that individuals have different zones of optimal performance (Hanin, 2000). According to Hanin (1994) every athlete has an individual optimal anxiety and arousal level which has an influence on one's performance. The negative relationship between arousal and anxiety to performance meant that training in relaxation, imagery and breathing exercises was essential in the MST that was developed.

5.3 Causes of anxiety

As a way of determining what sort of exercises to include in the programme it w as important to know what were the causes of anxiety among the participants. The participants were asked to discuss their experiences of anxiety surrounding competition. Analysis suggested that various sources of anxiety emerged from the data, including others' accomplishments, time pressures, certain races, academic concerns, training prior to competition, competition preparation strategies and the weather on t he day of competition. Giacobbi, Foore and Weinberg (2004) in a study of skilled and moderately skilled golfers found that there are different things that can be anxiety provoking to different athletes. With archery the issue of weather is well documented, and Robazza and Bortoli (1998) state that with outdoor archery the issue of weather has an impact as it affects the

concentration of an athlete. Jay stated that if it is windy then one becomes more anxious than on a calmer day. Noise was also seen as another cause of anxiety.

However despite the commonalities on what may cause anxiety there were differences as well. Jay stated that when shooting she required complete silence while Joy mentioned that complete silence is more likely to provoke more anxiety and will thus have a negative bearing on performance. These differences can be accounted for by the issue of individual differences. Individual differences are important in sport psychology as seen in the attention research has focused on them especially in the designing of MST programmes (Kruger, 2003; Pieterser & Potgieter, 2006; Potgieter et al., 2008; Thomas & Fogarty, 1997). The concept of individual differences has been explained as Neil, Mellalieu and Hanton (2006) state that individual differences arise because athletes have different personality traits, upbringings, training and experiences in their different sports. Orlick (1990) notes that when designing a MST programme it is important to look at the athlete profile before going ahead and designing the programme. An athlete's profile involves things like their personality, history, experience and preferences (Roper, 1998). Thomas and Fogarty (1997) in a study of golfers found that individual differences in cognitive preferences played a huge role in whether participants preferred either imagery or self-talk techniques as techniques for mental skills training. Massey, Meyer, and Hatch (2011) argue that due to individual differences in prior experience with MST programmes, physical skills and psychological profiles assumptions should not be made that all athletes of the same team are the same. The role of individual differences meant that participants were given different exercises to take part in accordingly.

5.4 Use of mental skills

To determine what to include in the programme it was essential to find out what previous exposure to mental skills the participants had had before. Participants showed that although they did not have the names for it th ey engaged in behaviours that were similar to certain mental skills. All participants had an idea of what mental skills were. Sport-specific research has indicated that archers have very individual methods that they undertake before preparing themselves for competition (Vealey, 1988). The results from the present investigation provide additional support for athletes' use of individual strategies which range from listening to music, sitting alone, and visualizing their race, to socializing with teammates (Gucciardi, Gordon, & Dimmock, 2009). Researchers have found no set strategy to mentally prepare athletes for competition; instead an athlete must find the most appropriate method to prepare him or herself for competition (Burton & Raedeke, 2008; Robazza, Pellizzari & Hanin, 2004; Vealey, 2007). The results in this research show that although some of the archers were doing some form of mental skills these were not done consistently due to lack of information and misconceptions around mental skills.

The participants saw mental skills as being related to how well one performs in that mental skills aided in one being focussed and being able to shoot well consistently. This is in line with the current research that has looked at mental skills as being central to performance (Vealey, 2007). A search through Ebscohost, Google scholar and PubMed found that most of the research on sport psychology is related to mental skills. A look at the sport psychological research in Africa all shows more interest on mental skills in the past 2 years (Edwards and Steyn, 2011; Eloff et al., 2011; Grobbelaar et al., 2011; Kruger, 2010). The exposure mental skills and their importance meant that the participants welcomed the idea of an MST programme. Participants were also able to specify which mental skills they might need to enhance and develop.

5.5 Student-athlete experience

The student-athlete experience was very essential in the MST programme that was developed. The issue of how long and when the programme would be done was largely influenced by the participants being students as well as athletes. The results suggested that collegiate athletes may experience unique stressors associated with the student-athlete experience (Pinkerton, Hinz, and Barrow, 1987). Etzel, Ferrante, and Pinkney (1991) suggested that the time requirements to travel, train and practice, the pressure and obligation to perform, and academic concerns and physical effort required are mentally, physically and emotionally exhausting experiences. This was corroborated by the participants in this study. Jim pointed out a trip to China where instead of concentrating on the training and competition on hand they kept thinking of how they were falling behind in their academic studies. For this group of athletes the balancing act between being archers and students at the same time has largely being felt as one member stated how they had tried to quit archery because it was taking a toll on their academic studies. This suggests that the university might not be accommodating of the archers needs. However the relationship between the archers and the university might be improving as seen by the university sponsoring two of the archer's trip to China.

5.6 Effects of gender on experiences of anxiety

Gender differences on experiences of anxiety were examined before the MST programme was developed so that considerations could be given in the development. Norton, Hope, and Weeks (2004) argue that there are some differences between males and females when it comes to sport anxiety. This is supported by Raudsepp (2008) who found that females are much more affected by sport anxiety as they have a higher level of social avoidance, and a larger fear of negative evaluation than males do. However this does not seem the case in this study. The comparisons between the two female and two male participants do not show any major differences. This does not

act as proof that gender differences cannot be found in experiences of anxiety as the sample size was too small to make generalisations.

5.7 Self-reflection

The importance of the researcher was mentioned in the methodology section. As a researcher I had my own bias and preferences that ended up being part of the research. I tried as much to speak of my own orientations and influences with the participants and my supervisor as a way of maintaining dependability in this research. The process of the research as a whole was tiring as I was also doing coursework for my MA Clinical psychology and an internship at a forensic mental hospital during the duration of this research.

5.8 Conclusion

This chapter looked at how the findings from the assessment influenced the development of the MST programme. Literature was also brought in as a reference point to the issues that had an influence. These issues include the relationship between anxiety and arousal to performance, causes of anxiety, use of mental skills, student-athlete experience and the effects of gender on the experience of anxiety.

CHAPTER 6: CONCLUSION

6.1 Introduction

The following chapter provides a summary of the research findings, the strengths of the study, the limitations of the study and gives recommendations for future research and interventions. The chapter ends by highlighting the final conclusion of the study.

6.2 Summary of the research findings

This research sought to develop an arousal and anxiety control MST programme for the Rhodes University Archery club. The programme was developed after assessing the current mental skills employed by individual archers of the Rhodes University archery Club that they use in controlling arousal and anxiety; and then using existing theory and the results of the assessment. The results from the quantitative measures (CSAI-2 and Sport Grid-R) showed that different participants have different levels of anxiety and arousal before competitions. The results also brought out that despite the levels of anxiety or arousal provided by the measures, a participant's appraisal of these ultimately influenced their performance. This means that having very high anxiety levels and worrying does not necessarily mean that performance will be bad. The results from the quantitative measures (CSAI-2 and Sport Grid-R) also gave support to the IZOF model which was reviewed in the literature. The model stated that athletes have different zones were their performance is optimal.

The results from the qualitative measures (focus group and in-depth individual interview) showed that there are a lot of factors that affect archers before and during a competition and that these influenced each archer differently. Some of the factors were weather, noise and type of competition. The results also showed that the participants were aware of mental skills but had not had any systematic training and were willing to use mental skills in the future. The archers were aware of the influence of how anxiety and arousal influences their performance and they had techniques they were already using. These techniques were in the form of mental skills; however they were not practised systematically or consistently. Using participant profiles the results of the assessment phase were consolidated and then literature from different authors (Hanin, 2000; Martens et al. 1990; Matthews, 2003; Vealey, 2007) taken to produce a programme that had the mental skills to be taught to the archers. The researcher analysed the results and determined what would be best for the archers, in conjunction with what they said they wanted to design the programme. All participants ended up with their own unique mental skills training programme that focuses on their own identified areas of comfort as seen from the results. A mental skills manual together with the designed programme will be given to each archer as a way of encouraging them to use the programme.

6.3 Limitations of the study

One of the limitations is that due to the fact that the programme was not going to be implemented and evaluated the archers might feel short changed as they will never get to be taught MST by the researcher. Another limitation is in regard to the sample size of 4 used. The Rhodes Archery Club has over 20 pa rticipants and due to this being a mini thesis the researcher was not allowed to implement the programme by the University. A larger sample would have provided room to make more comparisons on areas like gender, age and experience.

6.4 Strengths of the study

One of the strengths of the study was the use of methodological triangulation as a tool in this research. The use of quantitative and qualitative measures allowed the researcher to have different ranges of data to use in the development of the MST programme. The use of action research can be seen as strength in that it allowed the researcher to be part of the development of the MST programme. Overall the research was able to develop a programme that was individual specific and not just general.

6.5 Recommendations

As a result of the findings of this study several recommendations are suggested to the participants of this study, other researchers and athletes in general. The participants are encouraged to use the MST programme and the mental skills manual to help them in practising and using mental skills systematically and consistently. Other athletes from different sporting disciplines are also encouraged to seek training in mental skills. In conducting studies in sport psychology it is recommended that researchers are practically involved as part of the research and the action research method has been shown to work. In regards to the development of MST programmes researchers should look at individual differences as they have been shown to be important in the developing of MST programmes. This study has shown how individual differences and experiences play a part in the interpretations of anxiety and arousal. The literature from other researches although important should be used only in combination with individual characteristics and the local context.

6.6 Summary

The aims of the research of assessing the current mental skills employed by individual archers of the Rhodes University archery Club in controlling arousal and anxiety using the CSAI-2, Sport Grid- R, focus group and in-depth interview to develop an MST programme were achieved. The literature review showed that MST programmes have been developed for archery to enhance with performance. Anxiety and arousal were shown to have an effect on performance and that mental

skills can be taught to athletes so as to control anxiety and arousal. The results of the research showed how different people experience anxiety and arousal, and how this is linked to performance. The research was able to show how different archers had different zones of optimal performance and the importance of considering individual differences in the development of MST programmes.

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REFERENCES

Altheide, D. L., & Johnson, J. M. (1994). Criteria for assessing interpretive validity in qualitative research. In N. K. Denzin and Y.S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 485–499). Thousand Oaks, CA: Sage Publications.

Altrichter, H., Posch, P., & Somekh, B. (1993). *Teachers Investigate their Work: An Introduction to the Methods of Action Research.* London, UK: Routledge.

Anshel, M. H. (2003). *Sport Psychology: From Theory to Practice* (4th ed.). San Francisco: Benjamin Cummings Publishers.

Araki, K., Mintah, J.K., Mack, M.G., Huddleston, S., Larson L., & Jacobs, K. (2006). Belief in Self-Talk and Dynamic Balance Performance. *Athletic Insight, 8*, 123-134.

Arhar, J. M., Holly, M. L., & Kasten, W. C. (2001). *Action Research for Teachers: Travelling the Yellow Brick Road*. Upper Saddle River, NJ: Merrill/Prentice Hall.

Balague, G. (2000). Understanding identity, value and meaning when working with elite athletes. *The Sport Psychologist, 13,* 89–98.

Beckhard, R. (1972). *Organizational Development*. Reading, MA: Addison-Wesley.

Beauchamp, T. L., & Childress, J. F. (2001). *Principles of Biomedical Ethics* (5th ed.). Oxford: Oxford University Press.

Beedie, C. J., Terry, P. C., & Lane, A. M. (2000). The profile of mood states and athletic performance: Two meta-analyses. *Journal of Applied Sport Psychology*, *12,* 49–68.

Beer, M. (1980). *Organization Change and Development: A Systems View*. Glenview, IL: Scott, Foresman.

Bernard, H. R. (2002). *Research Methods in Anthropology* (3rd ed.). New York: Altamira Press.

Blackwell, L., Trzesniewski, K., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, *78*, 246–263.

Bloom, G. A. (1996). Life at the top: Philosophies of success. In J. H. Salmela (Ed.), *Great Job Coach! Getting the Edge from Proven Winners* (pp. 37–65). Ottawa, ON: Potentium.

Bloom, G. A., & Stevens, D. E. (2002). A team-building mental skills training programme with an intercollegiate equestrian team. *Athletic Insight: The Online Journal of Sport Psychology*, *4*, 1–16.

Bompa, T. (1999). *Periodization Training for Sports*. Champaign, IL: Human Kinetics Publishers.

Boyce, C., & Neale, P. (2006). *Conducting In-Depth Interviews: A Guide for Designing and Conducting In-Depth Interviews for Evaluation Input*. Massachusetts: Pathfinder International.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

Breitmayer, B., Ayres, L., & Knafl, K. (1993). Triangulation in qualitative research: Evaluation of confirmation and completeness purposes. *Image*, *25*, 237–243.

Brookfield, D. (2009). *Psychological Skills Training.* Retrieved November 25, 2012, f rom http://www.brianmac.co.uk/articles/article001.htm

Burton, D., & Raedeke, T.D. (2008). *Sport Psychology for Coaches*. Champaign, IL: Human Kinetics.

Calmels, C., d'Arripe-Longueville, F., Fournier, J. F., & Soulard, A. (2003). Competitive strategies among elite female gymnasts: An exploration of the relative influence of psychological skills training and natural learning experiences. *International Journal of Sport and Exercise Psychology*, *1*, 327–352.

Carron, A. V., Spink, K. S., & Prapavessis, H. (1997). Team-building and cohesiveness in the sport and exercise setting: Use of indirect interventions. *Journal of Applied Sport Psychology*, *9*, 61–72.

Clough, P., Earle, K., & Sewell, D. (2002). Mental toughness: The Concept and its measurement. In I. Cockerill (Ed.), *Solutions in sport psychology* (pp. 32-43). Cornwall: Thomson.

Chandrapal, M., Senanayake, A., & Suwarganda, E. (2009). *Laser Aiming Monitoring System for Archery Advanced Intelligent Mechatronics*. AIM 2009. IEEE/ASME International Conference.

Chein, S., Cook, S. W., & Harding, J. (1948). The field of action research. *American Psychologist, 3*, 33–44.

Coelho, E., Vasconcelos-Raposo, J., & Fernandes, H. (2007). Analyses factorial confirmatory da version Portuguese of the CSAI-2. *Motricidade, 3*(3), 73–82.

Cohen, A. B., Tenenbaum, G., & English, R. W. (2006). Emotions and golf performance: An IZOF-based applied sport psychology case study. *Behaviour Modification*, *30*, 259–280.

Coventry, K. R., & Hudson, J. (2001) Gender differences, physiological arousal and the role of winning in fruit machine gamblers. *Addiction*, *96*, 871–879.

Cox, R. H. (2007). *Sport Psychology: Concepts and Applications*. Boston: McGraw-Hill.

Cox, R. H., Martens, M. P., & Russell, W. D. (2003). Measuring anxiety in athletes: The revised competitive state anxiety inventory-2. *Journal of Sport and Exercise Psychology*, *25*, 519–533.

Craft, L. L., Magyar, M., Becker, B. J., & Feltz, D. L. (2003). The relationship between the Competitive State Anxiety Inventory-2 and sport performance: A meta-analysis. *Journal of Sport and Exercise Psychology, 25*, 44–65.

Crust, L. (2007). Mental toughness in sport: A review. *International Journal of Sport and Exercise Psychology, 5*(3), 270–290.

Davis, C., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and benefiting from the experience: Two construals of meaning. *Journal of Personality and Social Psychology, 75*, 561-574.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (1994). *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage.

De Zeeuw, G. (2003). Helping others: Projects or research? *Journal of Community and Applied Social Psychology*, *13*, 496–503.

Dockrat, S. Y. (2003). *The study of the impact of a psychological skills training programme on the performance of sprinters*. Unpublished thesis, University of Pretoria.

Duffy, E. (1962). *Activation and Behaviour*. New York: Wiley.

Edwards, D.J., & Edwards, S.D. (2012). Mental skills of South African male high school rugby players. *African Journal for Physical Health Education, Recreation and Dance, 18*, 12-23.

Edwards, D. J., & Steyn, B. J. M. (2008). Sport psychological skills training and psychological well-being. *South African Journal for Research in Sport, Physical Education and Recreation*, *30*(1), 15–28.

Edwards, G. (2006, March 9). Attack of the flying tomato. *Rolling Stone, 995*, 43–45.

Eloff, M., Grobbelaar, H.W., & Monyeki, M.A. (2010). A survey of mental skills training among South African field hockey players at tertiary institutions. *African Journal for Physical Health Education, Recreation and Dance, 17*(1), 37–50.

Eloff, M., Grobbelaar, H. W., & Monyeki, M. A. (2011). Mental skill levels of South African male student field hockey players in different playing positions. *African Journal for Physical Health Education, Recreation and Dance, 17*(4), 636–646.

Esternburg, K. G. (2002). *Qualitative Methods in Social Research.* Boston: McGraw-Hill.

Etzel, E. F., Ferrante, A. P., & Pinkney, J. W. (Eds.). (1991). *Counselling college student athletes: Issues and interventions.* Morgantown, WV: Fitness Information Technology.

Fallby, J., Hassmen, P., Kenitta, G., & Durand-Bush, N. (2006). Relationship between locus of control, sense of coherence, and mental skills in Swedish elite athletes. *International Journal of Sport and Exercise Psychology, 4*(2), 111–120.

Farres, L. G. (2000). A mental training tool: Implementing an effective mental skills training program. *BC Coach's Perspective, 4*(4), 14–17.

Faull, A. L. (2009). *Anxiety and motor performance: conscious processing and the process goal paradox*. Unpublished doctoral thesis, University of Wales.

Fine, M. (1992). Passions, politics and power: Feminist research possibilities. In M. Fine (Ed.), *Disruptive Voices: The Possibilities of Feminist Research*. Ann Arbor: The University of Michigan Press.

Freiheit, G. (2010). Anxiety in Sports. Retrieved 24 November 2011 from www.unicommons.com/node/21847/revisions

Gallucci, N. T. (2008). *Sport Psychology*. Hove: Psychological Press.

Giacobbi, P., Foore, B., & Weinberg, R. S. (2004). Broken clubs and expletives: The courses of stress and coping responses of skilled and moderately skilled golfers. *Journal of Applied Sport Psychology, 16*, 166–182.

Gill, D. L. (2000). Sport and exercise psychology around the world. *International Psychology Reporter*, *4*, 33–34.

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, *8* (4), 597–607.

Golden, A. S., Tenenbaum, G., & Kamata, A. (2004). Affect-related performance zones: Anideographic method for linking affect to performance. *International Journal of Sport and Exercise Psychology*, 2, 42–60.

Gordon, A. M. (1995). Self-regulation and goal setting. In J. Bloomfield, P. A. Fricker, and K. D. Fitch (Eds.), *Science and Medicine in Sport* (2nd ed.) (pp. 152–162). Australia: Blackwell.

Gould, D., Ecklund, R. C., & Jackson, S. A. (1992). 1988 U.S. Olympic wrestling excellence: I. Mental preparation, precompetitive cognition and affect. *The Sport Psychologist*, *6*, 358–382.

Gould, D., Greenleaf, C., & Krane, V. (2002). Arousal-anxiety and sport behavior. In T. S. Horn (Ed.), *Advances in Sport Psychology* (2nd ed.) (pp. 207–280). Champaign, IL: Human Kinetics.

Gould, D., Petlichkoff, L., & Weinberg, R. S. (1984). Antecedents of, temporal changes in and relationships between CSAI-2 subcomponents. *Journal of Sport Psychology*, *6*, 289–304.

Gregg, M., Nederhof, E., & Hall, C. (2005). The Imagery Ability, Imagery Use, and Performance Relationship. *Sport Psychologist*, *19*, 9–99.

Grobbelaar H. W., Malan, D. J. J., Steyn, B. J. M., & Ellis, S. M. (2011). The relationship between burnout and mood state among student rugby players over time. *African Journal for Physical Health Education, Recreation and Dance, 17* (4), 647–664.

Grobbelaar, H. W., & Eloff, M. (2011). Psychological skills of provincial netball players in different positions. *South African Journal for Research in Sport, Physical Education and Recreation*, *33*(2), 45–58.

Gucciardi, D.F., Gordon, S., & Dimmock, J.A. (2009). Evaluation of a mental toughness training program for youth-aged Australian footballers: I. A quantitative analysis. *Journal of Applied Sport Psychology, 21*(3), 307-323.

Hagtvet, K. A., & Hanin, Y. L. (2007). *Psychology of Sport and Exercise*, *8*, 47–72.

Hanin, Y. L. (2000). *Emotions in Sport*. Champaign, Illinois: Human Kinetics.

Hardy, L. (1996). A test of catastrophe models of anxiety and sports performance against multidimensional theory models using the method of dynamic differences. *Anxiety, Stress and Coping: An International Journal*, *9*, 69–86.

Hardy, J., Hall, C. R., & Hardy, L. (2004). A note on athletes' use of self-talk. *Journal of Applied Sport Psychology, 16,* 251–257.

Hardy, L., Jones, G., & Gould, D. (1996). *Understanding Psychological Preparation for Sport: Theory and Practice of Elite Performers*. New York: Wiley.

Harwood, C. G., Cumming, J., & Fletcher, D. (2004). Motivational profiles and psychological skill use within elite youth sport. *Journal of Applied Sport Psychology, 16*, 318–332.

Haywood, K. M., & Lewis, C. (1989). *Teaching Archery: Steps to Success*. Champaign, IL: Leisure Press.

Heil, J., & Zealand, C. (2001). Psychological Skills Training Manual. United States Fencing Association Technical Report (No. 2001-01). Colorado Springs, CO: United States Olympic Training Center.

Holland, M. J. G., Woodcock, C., Cumming, J., & Duda, J. L. (2010). Important mental qualities and employed mental techniques: The perspective of young elite team sport athletes. *Journal of Clinical Sport Psychology, 4*, 19–38.

Humara, M. (2002). The relationship between anxiety and performance: A cognitive-behavioral perspective. *Athletic Insight, 2*, 1–11.

Hung, T., Tang, W., & Shian, T. (2009). A case study of integrated sport sciences for an Olympic archer. *Journal of Medical and Biological Engineering, 29*(4), 100–115.

Hung, T., Lin, T., Lee, C., & Chen, L. (2008). Provision of sport psychology services to Taiwan archery team for the 2004 Athens Olympic Games. *International Journal of Sport and Exercise Psychology, 6*(3), 308–318.

Ilyasi, G., & Salehian, M.H. (2011). Comparison of Personality Traits Between Individual and Team Athletes. *Middle-East Journal of Scientific Research, 9* (4), 527- 530.

Iosifidou, P., & Doganis, G. (2001). Confirmatory factor analysis of the Greek version of the Competitive State Anxiety Inventory-2. *International Journal of Sport Psychology, 32*, 400–405.

Jacobson, E. (1938). *Progressive relaxation*. Chicago: University of Chicago Press.

Jarvis, M. (1999). *Sport psychology*. London, Routledge.

Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly, 24*, 602–611.

Jokela, M., & Hanin, Y. L. (1999). Does the individual zones of optimal functioning model discriminate between successful and less successful athletes? A meta-analysis. *Journal of Sports Sciences, 17*(11), 873–887.

Jones, G. (1995). More than just a game: Research developments and issues in competitive state anxiety in sport. *British Journal of Psychology, 86*, 449–478.

Jones, G., & Swain, A. (1992). Intensity and direction as dimensions of competitive state anxiety and relationships with competitiveness. *Perceptual and Motor Skills, 74*, 467–472.

Jones, J. G., Swain, A. B. J., & Hardy, L. (1993). Intensity and direction dimensions of competitive state anxiety and relationships with performance. *Journal of Sports Sciences, 11*, 525–532.

Jones, M. V. (2003). Controlling emotions in sport. *The Sport Psychologist, 117*, 471–486.

Kee, Y. H., & Wang, C. K. J. (2007). Relationships between mindfulness, flow dispositions and mental skills adoption: A cluster analytic approach. *Psychology of Sport and Exercise, 9*, 393–411.

Kelly, K. (2006). From encounter to text: collecting data in qualitative research. In M. Terre Blanche, K. Durrheim, & D. Painter, *Research in Practice* (Chap. 13). Cape Town: UCT Press.

Kitzinger, J. (1994). The methodology of Focus Groups: the importance of interaction between research participants. *Sociology of Health and Illness, 16*(1), 103–121.

Kopala, M., & Suzuki, L. A. (Eds.) (1999). *Using Qualitative Methods in Psychology*. London: Sage.

Kouli, O., Bebetsos, E., K amperis, I., & Papaioannou, A. (2010). The relationship between emotions and confidence among Greek athletes from different competitive sports. *Kinesiology, 2*, 194–200.

Krane, V. (1994). The mental readiness form as a measure of competitive state anxiety. *The Sport Psychologist, 8*, 189–202.

Kruger, A. (2010). Sport psychological skills that discriminate between successful and less successful female university field hockey players. *African Journal for Physical, Health Education, Recreation and Dance, 16*(2), 239-250.

Kruger, P. (2003). *Psychological skills and sport performance of South African Super 12 rugby players*. Unpublished M.A. thesis, University of the Free State, Bloemfontein.

Kruger, P. (2005). Psychological skills, state anxiety and coping of South African rugby players: A cognitive perspective. Unpublished Ph.D. dissertation, North-West University, Potchefstroom.

Landers, D. M., & Arent, S. M. (2001). Arousal-performance relationships. In J. M. Williams (Ed.), *Applied Sport Psychology: Personal Growth to Peak Performance* (4th ed.) (pp. 206–228). Toronto: Mayfield.

Lane, A., Sewell, D., Terry, P., Bartram, D., & Nesti, M. (1999). Confirmatory factor analysis of the Competitive State Anxiety Inventory-2. *Journal of Sports Sciences, 17*, 505–512.

Lavallee, D., Kremer, J., Moran, A., & Williams, M. (2004). *Sport Psychology: Contemporary Themes* (2nd ed.). London: Palgrave.

Lee, K. (2009). Evaluation of Attention and Relaxation Levels of Archers in Shooting Process using Brain Wave Signal Analysis Algorithms. *Athletic Insight, 12*(3), 341–350.

Lesyk, J. J. (1998). *Developing Sport Psychology within your Clinical Practice: A Practical Guide for Mental Health Professionals.* San Francisco: Jossey-Bass.

LeUnes, A., & Nation, J. R. (2002). *Sport Psychology* (3rd ed.). Pacific Grove, CA: Wadsworth.

Lewis, J. L., & Sheppard, S. R. J. (2006). Culture and communication: can landscape visualization improve forest management consultation with indigenous communities? *Landscape and Urban Planning, 77,* 291–313.

Löfman, P., Pelkonen, M., & Pietila, A. (2004). Ethical Issues in Participatory Action Research. *Scandinavian Journal of Caring Sciences*, *18*(3), 333–340.

Logan, H., Lutgendorf, S., Rainville, P., Sheffield, D., Iverson, K., & Lubaroff, D. (2001). Effects of Stress and Relaxation on Capsaicin-Induced Pain. *Journal of Pain*, *2*, 160–170.

Lundqvist, C. (2006). *Competing Under Pressure: State Anxiety, Sports Performance and Assessment.* Unpublished doctoral dissertation, Department of Psychology, Stockholm University.

Lundqvist, C., Kenttä, G., Durand-Bush., N., & Gustafsson, H. (2006). On the distinction between debilitative and facilitative states of competitive anxiety: An idiographic approach. *European Journal of Sport Science, 8*, 310–334.

Lyasi, G., & Salehian, M. H. (2011). Comparison of personality traits between individual Allyn and Bacon and team athletes. *Middle-East Journal of Scientific Research*, *9*(4), 527–530.

MacNamara, A., Button, A., & Collins, D. (2010). The role of psychological characteristics in facilitating the pathway to elite performance. *The Sport Psychologist*, *24*, 52–73.

Mamassis, G., & Doganis, G. (2004). The Effects of a Mental Training Program on Juniors Pre-Competitive Anxiety, Self-Confidence, and Tennis Performance. *Journal of Applied Sports Psychology*, *16*, 118–137.

Marchant, D. B., & Morris, T. (2004). Stress and anxiety in sport. In T. Morris and J. Summers (Eds.), *Sport Psychology: Theory, Applications and Issues* (2nd ed.) (pp. 74–100). Milton, Qld: John Wiley and Sons.

Martens, R., Burton, D., Vealey, R. S., Bump, L. A., and Smith, D. E. (1990). Development and validation of the competitive state anxiety inventory-2 (CSAI-2). In R. Martens, R. S. Vealey, & D. Burton (Eds.), *Competitive Anxiety in Sport* (pp. 117-173). Champaign, IL: Human Kinetics.

Martin, J. J., & Gill, D. L. (1991). The relationships among competitive orientation, sport-confidence, self-efficacy, anxiety, and performance. *Journal of Sport and Exercise Psychology, 13*, 149–159.

Massey, W. V., Meyer, B. B., & Hatch, S. J. (2011). The transtheoretical model: Examining readiness for psychological skills training. *Journal of Performance Psychology, 2,* 3–22.

Matthews, R. (2003). *Archery in Earnest.* London: Crowood Press.

Maynard, I. W., & Cotton, P. C. (1993). An investigation of two stress-management techniques in a field setting. *Sport Psychologist*, 7, 375–387.

McCutcheon, G., & Jung, B. (1990). Alternative Perspectives on Action Research. *Theory into Practice, 29*, 144–151.

McKernan, J. L. (1996). *A Handbook of Methods and Resources for the Reflective Practitioner.* London: Kogan Page.

McLean, G. N. (2005). *Organization Development: Principles, Process, Performance.* San Francisco: Berret-Koehler.

Merrick, E. (1999). An Exploration of Quality in Qualitative. Are "Reliability" and "Validity" Relevant? In M. Kopala & L. A. Suzuki (Eds.), *Using Qualitative Methods in Psychology* (pp. 25–48). Sage Publications: Thousand Oaks, London and New Delhi.

Morris, T., & Thomas, P. (1995). Approaches to applied sport psychology. In T. Morris and J. Summers (Eds.), *Sport Psychology: Theory, Applications and Issues* (pp. 215–258). Milton, Australia: Wiley.

Morris, T., Spittle, M., and Watt, A. P. (Eds.). (2005). Technical Aids to Imagery. In *Imagery in Sport* (pp. 237–266). Champaign, IL: Human Kinetics.

Morrow, J. R., Jackson, A. W., Disch, J .G., & Mood, D. P. (2011). *Measurement and Evaluation in Human Performance*. Campaign: IL: Human Kinetics.

Murphy, S., & Tammen, V. (1998). In search of psychological skills. In J. L. Duda (Ed.), *Advances in Sport and Exercise Psychology Measurement* (pp. 195–209). Morgantown, WV: Fitness Information Technology.

Murphy, S. M. (2005). *Sport Psychology Interventions*. Human Kinetics Publishers, Inc Champaign IL.

Muscat, A. C. & Farres, L. G. (2003, October). *Contextual Intelligence (CI): Lessons from Multi-Sport Games*. Paper presented at the Association for the Advancement of Applied Sport Psychology (AAASP) Conference, Philadelphia.

Neil, R., Mellalieu, S. D., & Hanton, S. (2006). Psychological Skills Usage and the Competitive Anxiety Response as a Function of Skill Level in Rugby Union. *Journal of Sports Science and Medicine, 5*, 415–423.

Nideffer, R.M. (1985). *An athletes' guide to mental training*. Champaign, IL: Human Kinetics.

Norlander, T., Bergman, H., & Archer, T. (1999). Primary process in competitive archery performance: Effects of flotation REST. *Journal of Applied Sport Psychology*, *11*, 194–209.

Norton, P. J., Hope, D. A., & Weeks, J. W. (Eds.). (2004). *The Physical Activity and Sport Anxiety scale (PSAS): Scale Development and Psychometric Analysis*. Lincoln, NE: University of Nebraska.

Orb, A., Eisenhauer, L., & Wynaden, D. (2001). Ethics in qualitative research. *Journal of Nursing Scholarship*, *33*(1), 93–96.

Orlick, T. (1986). *Psyching for Sport: Mental Training for Athletes*. Champaign, IL: Leisure Press.

Orlick, T. (1990). *In pursuit of excellence: How to win in sport and life through mental training.* (2nd ed.). Champaign, IL: Human Kinetics.

Orlick, T., & Partington, J. (1988). Mental links to excellence. *The Sport Psychologist, 2*(2), 105–130.

Patton, M. Q. (2001). *Qualitative Evaluation and Research Methods* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Pieterse, J. J., & Potgieter, J. R. (2006). Die effek van sportsielkundige intervensietegnieke op die prestasie van middelafstand-atlete. *South African Journal for Research in Sport, Physical Education and Recreation*, *28*(1), 85–89.

Pinkerton, R., Hinz, L., & Barrow, J. (1989). The college student athlete: psychological considerations and interventions. *Journal of American College Health, 37*, 218-226.

Potgieter, J. C., Grobbelaar, H. W., & Andrew, M. (2008). Sport psychological skill levels and related psychosocial factors that distinguish between rugby union players of different participation levels. *Journal of Social and Psychological Sciences, 1*(1), 43–64.

Raedeke, T. D., & Stein, G. L. (1994). Felt arousal, thoughts/feelings, and ski performance. *The Sport Psychologist*, *8*, 360–375.

Raudsepp, L. (2008). Confirmatory factor analysis of the revised competitive state anxiety inventory-2 among Estonian athletes. *IJSEP*, *85*(6), 85-95.

Ree, M. J., French, D., MacLeod, C., & Locke, V. (2008). Distinguishing cognitive and somatic dimensions of state and trait anxiety: development and validation of the State-Trait Inventory for Cognitive and Somatic Anxiety. *Behavioural and Cognitive Psychotherapy*, *36*, 313–332.

Richardson, A. (1967). Mental practice: a review and discussion. Research Quarterly, 38(2), 263-73

Robazza, C., & Bortoli, L. (1998). Mental Preparation Strategies of Olympic Archers During Competition: an exploratory investigation. *High Ability Studies*, *9*(2), 219–235.

Robazza, C., Bortoli, L., & Nougier, V. (2000). Performance emotions in an elite Archer: A case study. *Journal of Sport Behavior, 23*, 144–163.

Robazza, C., Pellizzari, M., & Hanin, Y.L. (2004). Emotion self-regulation and athletic performance: An application of the IZOF model. *Psychology of Sport and Exercise*, *5*, 379-404.

Rogerson, L. R., & Hrycaiko, D. W. (2002). Enhancing competitive performance in ice hockey goaltenders using centering and self-talk. *The Journal of Applied Sport Psychology*, *14*, 14–26.

Roper, E. A. (1998). *Intercollegiate Swimmers' Experiences of Anxiety and their Perceptions of a Mental Skills Training Program*. Unpublished thesis, University of Toronto.

Ruis, S., & Stevenson, C. (2004). *Precision Archery: Target Shooting, Field Competition, Bow Hunting*. Champaign, IL: Human Kinetics.

Savoy, C. (1993). A yearlong mental training program for a college basketball player. *The Sport Psychologist, 7*, 173–190.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. Education for Information, 22(2), 63-75.

Silva, J. M. (2010). *No one told you when to run: The past and present is not the future of sport psychology*. Keynote presentation, Association for Applied Sport Psychology, Providence, RI. Retrieved June 25, 2011, from http://www.bgsu.edu/downloads/lib/file96561.pdf.

Silva, J. M., & Weinberg, R. S. (Eds.) (1984). *Psychological Foundations of Sport*. Champaign, IL: Human Kinetics.

Speilberger, C. S. (1966). Theory and research on anxiety. In C. S. Speilberger (Ed.),*Anxiety and Behaviour* (pp. 3-20). New York : Academic Press.

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *Manual for the State Trait Anxiety Inventory (STAI)*. Palo Alto, CA: Consulting Psychologists Press.

Steyn, B. J. M., & Edwards, D. J. (2011). Establishment of norms for the Bulls Mental Skills Questionnaire in South African university students: An exploratory study. *African Journal for Physical, Health Education, Recreation and Dance, 17*, 596

South African National Association of Archery. (2007). Retrieved 3 M arch, 2011, f rom http://www.sanaa.org.za/page.php?11.

Stiles, W. B. (1993). Quality control in qualitative research. *Clinical Psychology Review, 13*, 593–618.

Stodel, E.J. (2002). Mental Training for juvenile athletes. A 28-Week Training Guide for Coaches. Retrieved 15 November 2012, from http://www.learning4excellence.com/pdf/JuvenileAthletes.pdf

Stringer, E., & Genat, W. (2004). *Action Research in Health*. Upper Saddle River, NJ: Pearson Merrill Prentice Hall.

Taylor, J. (1995). A conceptual model for integration athletes' needs and sport demands in the development of competitive mental preparation strategies. *The Sport Psychologist, 9*, 339–357.

Thelwell, R. C., & Maynard, I. W. (2003). The effects of a mental skills package on 'repeatable good performance' in cricketers. *Psychology of Sport and Exercise, 4*, 377–396.

Theodorakis, Y. (1996). The influence of goals, commitment, self-efficacy and self-satisfaction on motor performance. *Journal of Applied Sport Psychology, 8*, 171–182.

Theodorakis, Y., & Goudas, M. (2006). Self-talk in Sport Psychology. *Hellenic Journal of Psychology, 3*, 97–104.

Thomas, P. (1990). An overview of the performance enhancement process in applied psychology. Unpublished manuscript, United States Olympic Training Center, Colorado Springs.

Thomas, P. R., & Fogarty, G. (1997). Psychological skills training in golf: The role of individual differences in cognitive preferences. *The Sport Psychologist, 11*(1), 86–106.

Tsorbatzoudis, H., Barkoukis, V., Sideridis, G., & Grouios, G. (2002). Confirmatory factor analysis of the Greek version of the Competitive State Anxiety Inventory (CSAI-2). *International Journal of Sport Psychology, 33*, 182–194.

Van den Reever, Z. (2006). Sport psychological skills training of South African provincial netball players. Unpublished thesis, North West University.

Vealey, R. S. (1988). Conceptualization of sport-confidence and competitive orientation: preliminary investigation and instrument development. *Journal of Sport Psychology*, *8*, 221–246.

Vealey, R. S. (2007). Mental skills training in sport. In G. Tenenbaum, and R. C. Eklund (Eds.), *Handbook of sport psychology* (3rd ed.) (pp. 287–309). Hoboken, N.J.: Wiley.

Voet, D., & Voet, J. (2004). *Biochemistry* (3rd ed.). USA: Wiley.

Wanlin, C. M., Hrycaiko, D. W., Martin, G. L., & Mahon, M. (1997). The effects of a goal-setting package on the performance of speed skaters. *Journal of Applied Sport Psychology*, *9*, 212–228.

Ward, D. G., & Cox, R. H. (2004). The sport grid-revised as a measure of felt arousal and cognitive anxiety. *Journal of Sport Behavior, 27*, 93–113.

Weinberg, R. S., & Gould, D. (2003). *Foundations of sport and exercise psychology* (3rd ed.). Champaign, IL: Human Kinetics.

Weinberg, R. S., & Gould, D. (2007). *Foundations of sport and exercise psychology* (4th ed.). Champaign, IL: Human Kinetics.

Weinberg, R. S., & Gould, D. (2010). *Foundations of Sport and Exercise Psychology* (5th ed. Champaign, IL: Human Kinetics.

Whitney, T., & Karmakar, V. (1992). *Advanced Archer.* Colorado: Center Vision, Inc.

Wilkinson, S. (1988). The Role of Reflexivity in Feminist Psychology. *Women's Studies International Forum, 11*, 493–502.

Williams, J. M. (Ed.). (2001). *Applied Sport Psychology: Personal Growth to Peak Performance* (4th ed.). Mountainview, CA: Mayfield.

Wilson, M., Smith, N. C., & Holmes, P. S. (2007). The role of effort in moderating the anxiety-performance relationship: Testing the conflicting predictions of processing efficiency theory and the conscious processing hypothesis. *The British Journal of Psychology, 98*, 411–428.

Witton, G. (2004). Sport psychology. In L. Swartz, C. de la Rey, and N. Duncan (Eds.). *Psychology: An Introduction* (pp. 385–403). Cape Town: Oxford University Press.

Woodman, T., & Hardy, L. (2003). The relative impact of cognitive anxiety and self-confidence upon sport performance: A meta-analysis. *Journal of Sports Sciences, 21*, 443–457.

APPENDIX A: CONSENT FORM

RHODES UNIVERSITY

DEPARTMENT OF PSYCHOLOGY

AGREEMENT BETWEEN STUDENT RESEARCHER AND PARTICIPANT

I _____agree to participate in the research project of Malvern T. Chiweshe on the designing and implementation of a mental skills training programme for archery.

I understand that:

1. The researcher is a student conducting the research as part of the requirements for a Master's degree at Rhodes University.

2. The researcher is interested in participants' experiences of spirituality and well-being

3. My participation will involve filling in self report questionnaires and taking part in two focus groups, one before and one after the programme has been implemented. I will be asked to collaborate in the designing of the programme through training sessions with the researcher.

4. I am invited to voice to the researcher any concerns I have about my participation in the study and to have these addressed to my satisfaction. I can contact the Psychology Clinic if I feel any distress related to my participation on 046 603 7212.

5. I am free to withdraw from the study at any time – however I commit myself to full participation unless some unusual circumstances occur or I have concerns about my participation which I did not originally anticipate.

6. The report on the project may contain information about my personal experiences, attitudes and behaviours, but that the report will be designed in such a way that it will not be possible to be identified by the general reader.

Signed on……………………......

Participant………………………   Researcher…………………………

Witness……………………….

APPENDIX B: LETTER FOR PERMISSION TO CONDUCT RESEARCH

23 May 2011

Student Registrar

Rhodes University

Grahamstown

6139

Dear Sir/Madam

Re: Request to conduct a research project

I am currently a Masters in Clinical Psychology Student at Rhodes University. I would like to request permission to conduct a research study involving the Rhodes Archery Club. The data collection will include audio recorded focus group discussion and questionnaires. A more detailed exposition of the methodology is available upon request.

I feel that this research will be of great benefit to the University as well as my academic development.

The research will be carried with a strict ethical code of conduct. My supervisor, Mr Gary Steele is a lecturer at Rhodes University.

Please feel free to contact me with any questions you may have regarding the research.

Your positive response in this regard will be highly appreciated.

Kind Regards

Chiweshe Malvern Tatenda (M1 Clinical Psychology student)

Email- malrumy@gmail.com

Phone- 0787285093

APPENDIX C: INTRODUCING MENTAL SKILLS TRAINING

What is Psychological or mental skills training?

Psychological Skills Training (PST) or Mental Skills Training (MST) refers to the systematic and consistent practice of mental or psychological skills (e.g. focusing attention, regulating arousal, maintaining motivation). A large part of elite coaching now focuses on performance profiling – the identification of important PST objectives in the individual, so that areas of weakness can be located and addressed.

What's the purpose for this particular MST?

Arousal and anxiety have been shown to be important in archery performance. This research looks to

1) Assess the current mental skills employed by individual archers and their strengths and weaknesses.

2) Use existing theory and the results of the assessment to develop a mental skills training programme.

What is going to happen?

The first part involves the administration of the Competitive State Anxiety Inventory 2 (CSAI-2) and the Sport Grid-Revised which will be the quantitative research methods tools, while a focus group discussion will be the qualitative tool and will complement the questionnaires. The archers will be guided as to how to fill in the two assessment tools beforehand. The data collected will be analysed and using existing theory a mental skills training programme will be administered. The participants will each get a copy of their own particular mental skills training programme.

APPENDIX D: FOCUS GROUP SCHEDULE

A. Questions on Mental Skills

1. How do you understand anxiety and arousal and do they influence your performance?
2. Do you know what Mental Skills are?
3. Do you believe the mind has any importance when it comes to training and performing?
4. Do you believe the mind is able to influence your training and performance at all?
5. Do you employ any mental skills during competitions? If so how do they help?
6. What would you change in your mental preparation for competitions?

B. Team and Performance Issues

1. Do you think being a member of the archery club helps you in your performance?
2. Does other club members support you in your psychological preparation and how?
3. Does your physical state influence and your performance?
4. How do you respond to bad performances?
5. When you throw a bad round does it affect your confidence in the other rounds? If so how do you stay positive?
6. How do you rate your decision making under high pressure situations?
7. Is there a difference in the physical and psychological requirements between indoor and outdoor competitions?
8. Is there a difference in your preparations when taking part in indoor as compared to outdoor competitions?

C. Being in the Zone

1. Are you familiar with the phrase being in the zone?
2. Do you have times when you feel like you perform better than other times?
3. Before a competition do you know how you are going to perform based on your physical and mental state?
4. Is your performance influenced by the calibre of the opposition and how does this affect your focus and preparations?

APPENDIX E: INTERVIEW SCHEDULE

1. How do you understand anxiety and arousal and do they influence your performance?
2. Do you know what Mental Skills are?
3. Do you believe the mind is able to influence your training and performance at all?
4. Do you employ any mental skills during competitions? If so how do they help?
5. What would you change in your mental preparation for competitions?
6. Can you take me through your routine before you shoot?
7. Do you think being a member of the archery club helps you in your performance?
8. How do you respond to bad performances?
9. When you throw a bad round does it affect your confidence in the other rounds? If so how do you stay positive?
10. How do you rate your decision making under high pressure situations?
11. Is there a difference in the physical and psychological requirements between indoor and outdoor competitions?
12. Are you familiar with the phrase being in the zone? How do you understand it?

APPENDIX F: MENTAL SKILLS MANUAL
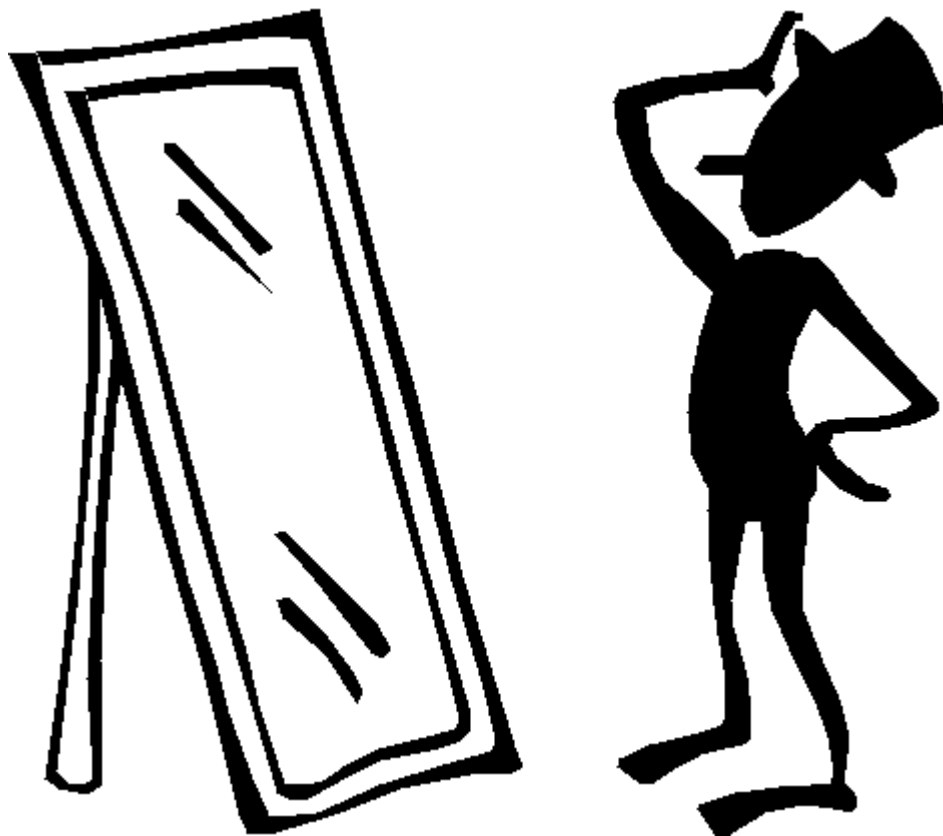
What is required to participate in Mental Skills Training?

Heil and Zealand (2001) suggested three characteristics that should exist in an athlete before attempting mental skills training. They are as follows.

1. **The athlete must want to do the exercise**. When a task is approached in a positive manner, a significant factor for potential success already exists. When an individual is hesitant to do an exercise, failure is likely. From an athlete's viewpoint, a decision has to be made that exercise completion is very important and that he/she will be self-motivated to achieve that end. Without that commitment, benefits derived from the exercises will be diminished.

2. **Each exercise must be completed fully.** Benefits are only achieved if exercises are completed fully. Partial completions may produce unsatisfactory results. The demand for exercise completion is reasonable. Mental skills have to be trained in much the same manner as do physical skills and physiological adaptations. They require time, effort, repetition, and progress feedback.

3. **The user must be concerned with perfection when completing an exercise.** Each exercise is structured deliberately, contains essential ingredients, does not include unnecessary activities, and requires self-recording and self-evaluation activities. When an exercise is performed, nothing should be omitted. There are no short cuts to exercise completion. The repetitions and recording procedures used are intended to practice elements so they eventually become skilled habits. No user should look for an opportunity to do less than that which is specifically required
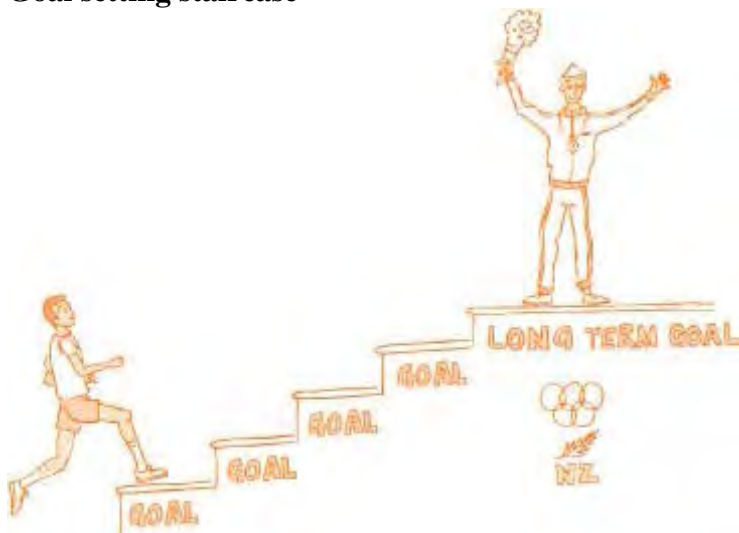
Goal Setting

Why bother with setting goals? What do they do?

- *Goals help you to discover what is important to you.* Do you just shoot for fun and not care about the standard you reach? If the answer is 'yes', then you do not have any goals. If the answer is 'no', then you need to think about just what standard you want to reach, before it's too late and you're saying 'if only...'.

- *Goals direct your training.* They keep you focused on where you are and what you should be doing.

- *Goals maintain your motivation.* When practice becomes tiring, your fingers hurt or you're just 'not in the mood', then it's easy to give up. Having short and medium-term goals helps you to realise the connection between commitment now and that medal or score (your long-term goal) later.

- *Goals increase effort.* If you set a goal that is important to you, then you are more likely to put in lots of effort to achieve it. Setting goals pushes you that little bit harder in striving to improve.

- **Performance v outcome**. A performance goal focuses on your ability or improvement. An outcome goal focuses on the results of your performance, e.g. winning a competition. Performance goals are entirely under your control, whereas outcome goals are entirely out with your control - you could shoot a world record but still lose if someone else does better. Learn to judge success and failure in terms of how *you* do, not only where you come in comparison with others. However, it's ok to want to win! Outcome goals should be set in conjunction to performance goals to add excitement.

- **'Self' goals**. Focus on your own personal progress, even when practising. Bad goal - I'm going to beat so and- so today. Good goal I'm going to focus on getting my release technique right at least 90% of the time today.

- **Positive goals**. Phrase your goal in a positive way - I'm going to do ....today as opposed to I'm not going to do ....today.

- **Have goals for training and competition**. You have a lot more practice time than competition time. Goals focusing on technique and not score are much more useful in practice, where you don't have the distraction of having to score well.

- **Different types of goal**. Not all goals have to be about your score or medals. They can be as mentioned above - focusing on one part of your technique. A short-term goal could be as simple as making sure that you warm up thoroughly before every practice, so that it becomes habit; telling yourself (adapted from Matthews, 2003, p. 2).

Goal setting staircase

Goal setting worksheet

NAME: **DATE:**

Current Strengths: Current Weaknesses:

-
-
-
-
-
-
-

GOAL(S) FOR THIS SEASON:

GOAL	STRATEGIES	TARGET DATE	COMMENTS/EVALUATION
Physical training goals			
Mental training goals			
Technical training			

Imagery

Imagery is the practice of shooting mental arrows. You use all your senses to create an internal 'video' of yourself shooting.

Why do it?
- You gain extra practice time whenever you want.
- It reduces skill learning time.
- It improves your powers of concentration.

In professional sport the use of visualisation or imagery is widespread. It is usually used to imagine successful performance of a p articular technique, race or whatever. Sport Psychology categorizes imagery into internal and external types, from the perspective of the person imaging, i.e. you are either observing yourself performing the technique or actually doing it. The recommendation is to get the images as vivid as possible and to be multi-sensory, to include sight, sound, smell, touch and even taste.

Importantly, imagery gives the user a chance to rehearse skills when they are not actually practicing. Imagery works by activating the neural networks in the brain that are used during actual practice, thereby reinforcing these pathways.

Uses of Imagery
- To engrave good performances into memory
- To imagine successes (high-light tape)
- To prepare for performing
- To regulate your emotions or state
- To review and evaluate prior performances
- To practice psychological skills
- To complement goal setting
- To learn new skills or refine well-learned skills.
- To train more effectively (handle difficulties in conditioning, increase interest)
- To practice when you are unable to physically practice (i.e., injury)
- To simulate competitive situations

Tips for imagery

- Relax before doing your imagery
- Start simple and work your way up (the ability to imagine is like a muscle: it gets stronger with practice)
- Focus on creating images that are vivid and controllable (Basic Training)
- Practice your imagery systematically (be consistent and persistent)

Imagery Worksheet

PURPOSE: To understand how to construct an imagery rehearsal scenario.

PROCEDURE: Begin by thinking what situations would be useful to practice visualizing. A step-by-step guide follows.

1. Determine a competitive situation in which to use imagery rehearsal as a skill building technique.

_____
_____
_____
_____

2. Identify the general objectives and specific goals of mental practice. What skills is the focus of the imagery rehearsal?

_____
_____
_____
_____

3. Can the overall goal of imagery rehearsal scenario be addressed in a s ingle imagery segment (like a brief film clip)? Or will two or more distinct segments be needed?

_____
_____

4. Set the stage by identifying and incorporating various scenario-perceptual modalities (visual, kinaesthetic, auditory, etc.).

_____
_____
_____
_____

5. What are the key visual and kinaesthetic elements that underlie the specific skills to be practiced in the visual rehearsal technique? How can these visual and kinaesthetic elements be elaborated in detail to enrich the skill building experience?

_____
_____
_____
_____

6. What is the best speed at which to conduct this rehearsal technique? (Or should different segments be rehearsed at different speeds?)

_____
_____
_____
_____

7. Is a mastery or coping focus best for this particular exercise? (Or perhaps, is a combination of the two appropriate?)

_____

_____

Cognitive Restructuring

Examples of how people use cognitive restructuring

Suppose that someone has a problem with depression. The person is in the habit of thinking "This proves that I'm no good" whenever he makes a small mistake. Suppose the person changed that habit, and started saying something like "At least I made a start! Now I know how to do better next time!" Does it make sense that this person would get less depressed by making this change?

Suppose someone has a problem with his temper. He is in the habit of saying to himself, whenever anyone slights him, "That son of a bitch! What the hell does he think he's doing!" Suppose this person changes his habit so that instead he says to himself, "The person did something I don't like. How big a deal is it? And how can I respond to it to make things come out best?" Does it make sense that this person might reduce his anger problem if he changed his thinking habits in this way?

Which of the following statements does NOT seem reasonable to you in thinking about the above examples?

1. The things the depressed person and the angry person were in the habit of saying to themselves are sentences that, on the face of it, would seem depressing thoughts or anger-producing thoughts.

2. The new thoughts that the people replaced these old patterns with seemed more positive and more rational.

3. All the people had to do was to say the new sentence to themselves one time, and they were immediately cured of their depression or anger problems.

Positive Self-Talk

Rationale

Positive statements encourage us and help us cope through distressing times. We can say these encouraging words to ourselves, and be our own personal coach. We have all survived some very distressing times, and we can use those experiences to encourage us through current difficulties. Examples of coping thoughts might be:

- Stop, and breathe, I can do this
- This will pass
- I can be anxious/angry/sad and still deal with this
- I have done this before, and I can do it again
- This feels bad, it's a normal body reaction – it will pass
- This feels bad, and feelings are very often wrong
- These are just feelings, they will go away
- This won't last forever
- Short term pain for long term gain
- I can feel bad and still choose to take a new and healthy direction
- I don't need to rush, I can take things slowly
- I have survived before, I will survive now
- I feel this way because of my past experiences, but I am safe right now
- It's okay to feel this way, it's a normal reaction
- Right now, I am not in danger. Right now, I'm safe
- My mind is not always my friend
- Thoughts are just thoughts – they're not necessarily true or factual
- This is difficult and uncomfortable, but it's only temporary
- I can use my coping skills and get through this
- I can learn from this and it will be easier next time
- Keep calm and carry on

Positive thinking worksheet

Write down a coping thought or positive statement for each difficult or distressing situation – something you can tell yourself that will help you get through. Write them down on a piece of card and carry it in your pocket or handbag to help remind you

Difficult or distressing situation	Coping thought / Positive statement

Belief in Self-Talk Questionnaire

For each of the following statements indicate the extent to which you disagree or agree by circling a number to the right.

	Strongly disagree	Moderately disagree	Disagree somewhat	Agree somewhat	Moderately agree	Strongly agree
1. I believe that my positive thoughts really help me to concentrate on a task.	0	1	2	3	4	5
2. I believe that my negative thoughts can directly hurt my performance.	0	1	2	3	4	5
3. I believe that my positive thoughts can lead to a good performance.	0	1	2	3	4	5
4. I believe that my negative thoughts can break my concentration.	0	1	2	3	4	5
5. My belief in my ability to do a task will help to improve my performance.	0	1	2	3	4	5
6. I believe that my negative thoughts can increase my anxiety about performance.	0	1	2	3	4	5
7. I believe that my positive thoughts will relax me enough to perform well.	0	1	2	3	4	5
8. I believe that doubting my ability to do a task hurts my performance.	0	1	2	3	4	5

Routines

Rationale for routine

Routines are very important in sport. Following a certain routine all the time before competitions help in bringing calm. The following are routines (Heil & Zealand, 2001) that can be taught to archers and are divided into routines for the night before, competition day, during competition and between shooting routines.

Night Before: Know your goals; be confident you will do your best; enjoy yourself

Competition Day: Enjoy the excitement; refocus from distractions. Follow routines for dressing, equipment check, and warm-up

Competition:

Phase I – Mental Training (5-10 minutes)

1. Relax 1 to 10

2. Energy check – Calm or energize, as needed

3. Inventory – Review competition strategy and goals

4. Preview Performance – Feel your bow and see success

Phase II – Prepare Mind and Body

1. Take care of last minute needs

2. Observe other archers

3. Adjust energy level – as needed

If tense or nervous the participant should do easy stretching; calm breathing, mental training – Relax 1 to 10 or other relaxation techniques. If the participant is tired or sluggish they can do quick breathing.

4. Focus on goals; refocus when distracted

STOP! Distraction; feel you bow and see success

5. Final preparation – energizing and focus on opponent

6. SHOOT!

Between shooting routines

1. REVIEW – Efficient analysis. Use resources at your disposal (e.g., consult with coach). Avoid over analysing.

2. ADJUSTMENT – If needed in to help with tactics or mental state. Use time available for physical and mental recovery. Each archer needs to identify which methods are helpful and under what circumstances they are best used.

3. REFOCUS – Gradually shift to competition mind set

4. READY

Concentration Training

Rationale: Concentration is very important in archery. Concentration Training can help archers in the following way;

- Pay attention to during each game or sport situation.
- Learn how to maintain focus and resist distractions, whether they come from the environment or from within themselves.
- Are able to regain their focus when concentration is lost during competition.
- Learn how to play in the here-and-now, without regard to either past or anticipated future events.