

***THE RELATIONSHIP BETWEEN NEGATIVE  
ADDICTION TO RUNNING AND RUNNING  
COMMITMENT AMONGST BLACK, ZULU-  
SPEAKING RUNNERS: AN EXPLORATORY  
STUDY.***


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## ***PREFACE***

THE AUTHOR HEREBY DECLARES THAT THIS THESIS, UNLESS  
STATED TO THE CONTRARY, IS A PRODUCT OF HER OWN WORK.



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**October 2000**

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## **ABSTRACT**

A survey research design was employed to explore the relationship between negative addiction to running and running commitment, through the construct of running enjoyment, amongst black, Zulu-speaking runners. Translated versions of the Biographical Information Questionnaire (Leask, 1997), Negative Addiction Scale (Hailey & Bailey, 1982), and Running Enjoyment Questionnaire (Basson & Macpherson, 1998) were administered to an opportunity sample of 79 Zulu-speaking runners, drawn from athletic clubs in the Durban and Pietermaritzburg regions of KwaZulu-Natal. On the basis of their negative addiction scale scores, runners were assigned to either a high (n = 23), moderate (n= 35), or low addiction group (n= 21). Multiple correlation analyses, parametric and nonparametric analysis of variance procedures, factor analyses, and multiple regression procedures were used to examine the relationship between running dependence, the four sources of running enjoyment, and demographic variables.

Significant relationships were found between running dependence and all four sources of running enjoyment. Further, the length of running history, the importance given to running by the participant, perceived fitness levels, and the number of Comrades marathons run were shown to play a role in both running dependence and commitment processes. For Zulu-speaking runners, both intrinsic and achievement running enjoyment sources were found to be more motivating than either extrinsic or nonachievement factors. Extrinsic and achievement factors were found to be more motivating for Zulu-speaking runners compared to Macpherson's (1998) sample of white runners. These results were discussed with reference to the literature on running dependence, running commitment, and cultural influences on motivation.



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## **CHAPTER ONE**

### **GENERAL OVERVIEW**

#### **1.1. INTRODUCTION**

Although the psychological and physiological benefits of regular exercise have been extensively documented (Biddle & Fox, 1989; de la Torre, 1995; Murphy, 1994), less attention has been given to the various negative effects associated with excessive exercise (Boutcher, 1991; Thornton & Scott, 1995). These effects include both physiological risks, such as: musculo-skeletal injury; myocardial infarction; pressure sores; and increased fatigue (Kirkcaldy & Shepherd, 1990; Thornton & Scott, 1995) and psychological consequences, such as depression and anxiety (Chan & Grossman, 1988; Thornton & Scott, 1995). Furthermore, over-exercise may reverse the positive impact of moderate activity (Thornton & Scott, 1995). Recent studies have identified a specific psychological consequence of over-exercise, namely exercise dependence (Veale, 1995). Various studies have begun to investigate what constitutes and causes exercise dependence, and research has demonstrated relationships between exercise dependence and psychological dimensions, including personality style (for example, Anderson, Basson, Geils, & Farman, 1997; Basson, 1999; Leask, 1997; Macpherson, 1998).

Despite the culturally diverse nature of sport and exercise, few attempts have been made to explore the meanings and motivations that sport holds among different cultural groups (Duda & Allison, 1990). Similarly, most studies on exercise dependence have focused on white, middle-class participants and have neglected to examine the phenomenon amongst exercisers from other cultures. Consequently, the current study was concerned with redressing the cultural void in the field by examining one form of exercise dependence, that is, negative addiction to running, amongst black participants. The overall objective of the study was to determine whether the phenomenon of negative addiction to running occurred amongst black runners and to identify possible interactions between running dependence and specific reinforcing aspects of running.

A variety of terms have been used to refer to the concept of exercise dependence. These include: "compulsion" (Abell, 1975, cited in Weinberg & Gould, 1995); "running addiction" (Sachs & Pargman, 1979); "commitment to running" (Carmack & Martens, 1979); "obligatory runner" (Yates, Leehey, & Shisslak, 1983), "exercise dependence" (De Coverley Veale, 1987; Pierce, Daleng, & McGowan, 1993); and "excessive exercise" (Loumidis & Roxborough, 1995). De Coverley Veale (1987) argues that "exercise dependence" is preferable to other terms as it classifies the phenomenon together with other compulsive behaviours. Furthermore, in keeping with theoretical knowledge of running dependence, the term implies degrees of dependence and does not suggest any particular etiology. Hence, this study generally utilised the term "running dependence".

A large portion of the study formed an extension of Macpherson's (1998) research which, in part, examined the relationship between running dependence and running commitment. Macpherson (1998) utilised Sachs and Pargman's (1997) model of running participation as a conceptual framework for exploring this relationship. More specifically, she focused on a specific aspect of running commitment, that is running enjoyment. This construct has been operationalised by Scanlan and Lewthwaite (1986). Macpherson (1998) found that subjects displaying high levels of running addiction were more motivated by intrinsic sources of enjoyment. However, her subjects were predominantly white and middle-class. An interesting research question is whether highly addicted black runners report similar sources of enjoyment and commitment. In order to address this research question, the current study will also use Sachs and Pargman's (1997) model as the conceptual framework for exploring the relationship between running addiction and commitment amongst black participants.

Furthermore, in exploring the relationship between running dependence and commitment amongst black, Zulu-speaking runners, this study draws upon the conceptual framework of Markus and Kitayama (1991). This framework identifies two culturally divergent self construals, namely independent selves and interdependent selves. Cross-cultural research has consistently demonstrated that cultural orientations of the self have important



consequences for personality development, attitude formation, motivation, and social behaviour (Markus & Kitayama, 1991).

The following section will offer a summary of the rationale for this research. Thereafter, a literature review for each of the major aspects of the study will be presented, namely: running addiction, commitment to running, and cultural influences on motivation and commitment. This will be followed by chapters focusing on the methodology, results of the study, and a discussion of the results. Finally, a summary and critique of the study, as well as recommendations for future research will be presented.

## **1.2. RATIONALE**

Exercise and sport is fast becoming an integral part of Western culture (de la Torre, 1995) and sport for pleasure and perceived health benefits seems to be on the increase (Joseph & Robbins, 1981). Moreover, in all societies, sport has layers of social significance which extend beyond health benefits (ibid.). Whilst the role played by sport in South Africa is not widely recognised, gradually the benefits of participation in sport are becoming better known. Sport not only plays a vital role in participants' physical and mental health, but is also important for the development of life and social skills, and for nation building (Sports Institute of South Africa, 1996). Moreover, sport is a valuable source of income for the South African economy, with it having an estimated impact of almost R8.9 billion in 1996 (ibid.). Running is one example of a sport that can result in numerous physiological, psychological, social, and economic benefits. There are, however, numerous health, psychosocial, and monetary costs associated with negative addiction to running, and addicted runners are unable to benefit from the positive aspects of the sport. Consequently, running dependence is an important and relevant field for psychologists to investigate. A more precise understanding of the psychological and physiological components of running addiction, in particular the motivational factors which underpin negative addiction to running, would be beneficial in the management and treatment of running addiction.

Not only is the investigation of running addiction important to ensure maximal health benefits from participation in sport, but it is necessary to make research on sport and exercise psychology more relevant for the entire population of South Africa. Most literature on running dependence originates from North America or Western Europe (Dishman, 1993). As a result there has been a "void" in the field of sport psychology with regard to the recognition of cultural variation in sport behaviour (Duda & Allison, 1990). This is surprising given the acknowledgement that sport transcends geographical and cultural boundaries and the recognition that cultural factors impact on psychological processes such as cognition, emotion, and motivation (Gauvin & Russel, 1993; Markus & Kitayama, 1991). More specifically, the role of sport amongst black participants needs to be investigated as traditionally, in African societies, sport has been an integral part of culture and has been used not only as a means of teaching survival and life-skills, but as a symbolic expression of personality development and a means of maintaining social cohesion (Brinson & Robinson, 1991). Additionally, in modern African society, participation in sport has increased in popularity as it offers a means of achieving social status, advancement, and personal success where historically few other opportunities have been available (Bale & Sang, 1996). An exploration of the relationship between running dependence and running commitment amongst black, Zulu-speaking runners is thus called for.

Furthermore, the nature of scientific inquiry demands generalizability and applicability of research findings across widely diverse population groups, as research which is confined to a homogenous group may lead to misleading theoretical perspectives. Comparative research is hence essential in order to provide theoretical insights into psychological phenomena which are applicable to all population groups (Duda & Allison, 1990; Gauvin & Russel, 1993). Of the research that has been conducted in South Africa, most, if not all, focuses on predominantly white, urban populations (Leask, 1997). Previous research findings have therefore been applicable only to a small percentage of the South African population. This is surprising, given the prominence of black South African runners in the world arena, especially in middle and long distance races (Bale & Sang, 1996). Despite the success of athletes such as Josiah Tugwane (winner of the 1996 Olympic marathon)

and Hezekiel Sepeng (Silver 800m medalist at the 1996 Olympics), little empirical attention has been given to the underlying meanings and motivations running holds for black participants. It is possible that cultural differences in running dependence and running commitment exist and it is particularly pertinent that this is explored given the increasing importance of exercise, sport, and running in black South African communities (Leask, 1997).

As running dependence is an emerging field of study, it is also important to conduct exploratory studies to identify which population groups are at risk for developing negative addiction to running, and to identify similarities and differences between populations in terms of degrees of addiction and reasons for continued participation. A cultural investigation will not only aid in the planning of prevention programmes in primary health care, but will also assist in the formation of treatment and intervention strategies which are applicable to the majority of the South African population (Biddle & Fox, 1989; Leask, 1997).

In summary, the inclusion of culture as a conceptual variable in sport psychology is not only consistent with the goals of scientific inquiry, but is relevant in South Africa where sport involvement occurs across diverse cultural groups. It is hoped that this study, which explores the phenomenon of running dependence and running commitment amongst Zulu-speaking runners, will contribute to the theoretical conceptualisation and understanding of running dependence by considering the impact of culture on the addiction and commitment processes.

## CHAPTER TWO

### RUNNING DEPENDENCE

#### 2.1. INTRODUCTION

*"I have run my whole life since infancy... It's the passion of my life. Running as long as possible - I've made that into a sport. I have no other secrets. Without running I wouldn't be able to live"*

*Cierpinski, 1980, cited in Weinberg and Gould, 1995.*

The numerous psychological and physiological benefits of regular running have been well-established. However, during the past two decades, a number of risks associated with consistent running have emerged (Ogles, Masters, & Richardson, 1995). Whilst terms such as "dependence" and "addiction" have traditionally been associated with intoxicating substances, recently a phenomenon termed "behavioural dependence" has been identified. This includes activities such as: gambling; television watching; overeating; shopping; and exercise (Steinberg, Sykes, & LeBoutillier, 1995). It is beginning to be recognised that since running has the potential to enhance moods and provide positive physiological and psychological rewards, it is possible for individuals to become dependent on running (De Coverely Veale, 1987). Despite this realisation, relatively little attention has been given to the risks of long-term participation in running, with running dependence having its own clinical manifestation, psychological profile, and internal dynamic (de la Torre, 1995).

Part of the reason for this lack of attention has been theoretical and methodological difficulties. Sachs and Pargman (1997) mention that research evidence on running dependence is sparse not only due to the relative newness of the concept, but also due to the difficulty in convincing dependent runners to participate in studies which may require them to stop running for a period of time. To illustrate, Baekeland (1970) noted that a

number of subjects were unwilling to abstain from their exercise routines despite offers of monetary rewards.

This chapter will explore the phenomenon of running dependence by outlining various conceptualisations, providing a brief overview of etiological explanations, and presenting means used to empirically measure running dependence.

## **2.2. DEFINITION OF RUNNING DEPENDENCE**

Although there is no generally accepted or formal definition of the concept of running dependence (Kline, Franken, & Rowland, 1994), the following two useful definitions have emerged from the literature:

Firstly, Sachs and Pargman define exercise addiction, under which the concept of running addiction can be located as:

*"Psychological and or physiological dependence upon a regular regimen of physical activity. Additionally, exercise addiction is characterised by recognisable withdrawal symptoms when the need to exercise remains unfulfilled after 24 - 36 hours. These withdrawal symptoms may encompass both psychological and physiological factors, including feelings of irritability, tension, guilt, uneasiness, bloatedness, muscle twitching, and discomfort."*

(Sachs & Pargman, 1979, pp.145).

In addition, Veale (1995) provides a clinical definition for primary exercise dependence, which he differentiates from secondary exercise dependence. This distinction will be discussed more fully in section 2.3.4. Veale proposed the following diagnostic criteria for primary exercise dependence:

1. *"Preoccupation with exercise which has become stereotyped and routine;*
2. *Significant withdrawal symptoms in the absence of exercise (for example, mood swings, irritability, insomnia);*
3. *The preoccupation causes clinically significant distress or impairment in their physical, social, occupational or other important areas of functioning;*
4. *The preoccupation with exercise is not better accounted for by another mental disorder (for example, as a means of losing weight or controlling calorie intake, as in an eating disorder)."*

(Veale, 1995, pp.2).



From the outset, it is important to note that the negative symptoms associated with running dependence are generally only experienced in a mild to moderate degree and "runners are not twitching in corners in agony from feelings of guilt and anxiety, but the symptoms are still felt and are quite real for the runners" (Sachs, 1991, pp. 239 - 240).

### **2.3. CONCEPTUALISATION OF RUNNING DEPENDENCE**

The origins of the term "exercise dependence", under which the concept of running dependence can be located, date back to the late 1960's. With the growing interest in the phenomenon of running dependence, there have been a number of theoretical shifts in its conceptualisation. This section briefly outlines the historical and theoretical development of the concept.

#### **2.3.1. Positive addiction to running**

The concept of positive addiction to exercise in general, and running in particular, was popularised by Glasser who asserted that runners become addicted to exercise much like substance users become addicted to substances (1976, cited in Sachs, 1981). In this view, running is seen as a positive addiction which, due to the benefits associated with frequent exercise, increases psychological and physical strength and well-being (Furst & Germone, 1993). This is in contrast to the negative addictions (for instance, drugs and alcohol) which inevitably undermine psychological and physiological functioning. Furthermore, while positively addicted runners view their running as an important aspect of their lives, they are still able to successfully integrate their running with other facets of their lives, such as work, family, and friends (Weinberg & Gould, 1995).

Running dependence was therefore initially understood to be a healthy habit in which the individual controls the activity (Anshel, 1991; Sachs, 1981). However, researchers began to note that for a small percentage of runners, exercise controlled their lives. Hence, recent research has indicated a need to differentiate between the benefits of regular activity and the detrimental psychological and physiological effects resulting from dependence on running (Anderson et al., 1997). Consequently, a theoretical distinction has been made

between positive addiction and negative addiction to running (Sachs, 1991; Weinberg & Gould, 1995).

### **2.3.2. Negative addiction to running**

While acknowledging the psychological and physiological benefits of running, current studies in sports and exercise psychology challenge the notion that running addiction is solely positive (Furst & Germone, 1993). The negative effects of running addiction were first recognised by Morgan (1979) who, based on case observations of runners who ran despite medical, vocational, or social contraindications, argued that the term "positive addiction" did not adequately account for the phenomenon of habitual running.

These observations sparked research interest in the detrimental effects of running dependence. Researchers have since asserted that addiction to running can cause psychological and physical harm if running is used to lessen awareness of daily problems, if it is the only source of gratification in runners' lives, and if runners' receive negative feedback from people who feel neglected due to the runners' all-consuming interest in running (Estok & Rudy, 1990). It seems that as dependence on running starts to consume other aspects of the runner's life, the positive benefits of running diminish and a negative dependence on running develops (Chan & Grossman, 1988).

Furthermore, researchers have identified symptoms associated with negative addiction to running. Firstly, running becomes the controlling factor, eliminating choice in other aspects of the negatively addicted runner's life (Sachs, 1981; Weinberg & Gould, 1995). In other words, the runner may feel compelled to run. Even when not running, the runner may be preoccupied with thoughts about running. Additionally, as negatively addicted runners begin to place running as their highest priority and start to structure their lives around their running schedule, home and work responsibilities suffer and relationships become of secondary importance (Rudy & Estok, 1990; Weinberg & Gould, 1995). To illustrate, Rudy and Estok (1990) investigated the relationship between dyadic adjustment and running addiction. They found that spousal ratings of marital adjustment decreased as perceptions of their spouses' running addiction increased (*ibid.*).

In addition, when prevented from running, negatively addicted runners experience withdrawal symptoms (Sachs, 1981; Sachs & Pargman, 1997). These include minor mood disorders such as increased anxiety, irritability, restlessness, and insomnia (Sachs & Pargman, 1997); increased feelings of depression, frustration, hostility, and guilt (Chan & Grossman, 1988; Thaxton, 1982); and lowered self-esteem (Rudy & Estok, 1986). Psychophysiological withdrawal symptoms have also been noted, for instance: tics; muscle soreness and tension; loss of appetite; and increased fatigue (Weinberg & Gould, 1995). Furthermore, a number of physiological risks have been associated with negative addiction to running. These include greater risk of musculo-skeletal injury and cardiac problems (Kirkcaldy & Shepherd, 1990). Moreover, as in the case of other addictions, the addicted runner may develop a tolerance to the positive effects of running and will need to continuously increase the frequency or duration of the run in order to maintain satisfaction (Butterworth, 1997; Weinberg & Gould, 1995). Finally, the true running addict continues to train even when running is medically, vocationally, or socially contraindicated (Weinberg & Gould, 1995).

### **2.3.3. Running Addiction as a process**

Recent literature contends that exercise dependence should be conceptualised as a process, rather than as categorically absent or present (Cripps, 1995; Sachs, 1981; Sachs & Pargman, 1997). Sachs (1991) conceptualises running addiction as an extension of ordinary behaviour which may, in some individuals, develop into a pathological dependence. In other words, running dependence is understood to vary on a continuum from a healthy habit to an addiction. It seems that, as with substance use, it is not necessarily the activity itself, but the nature and extent of the individual's involvement with the activity, which is predictive of the degree of dependence (Sachs, 1981; Sachs & Pargman, 1997). This view is in keeping with the dependence model proposed by De Coverly Veale (1987) which holds that the degree of dependence can be equated with the amount of negative affect occurring on cessation of activity and the amount of effort required to do without the activity.

Although the mechanisms by which running participation shifts from a positive to a negative addiction have not been identified, it is clear that negative addiction is one stage in a process which can only develop once the runner has progressed into and through the stage of positive addiction (Sachs, 1981). Various attempts have been made to delineate the phases of addiction, however this has resulted in a reified categorisation of runners into types with little recognition of the complex dynamics of individual participants or the dimensional nature of running addiction. To illustrate, de la Torre (1995) differentiates between three types of addicted runners. The first group of "healthy neurotic exercisers" are those individuals who run consistently, but do not lose control over their running. The second category is characterised by "compulsive runners" for whom running provides order and discipline central to their character. Finally, for the "addicted runner", running is an important, habitual, and compulsory way of regulating affect (ibid.). de la Torre (1995) does however recognise that the distinctions made between types of runners are artificial and that types overlap in a complex representation of dynamics.

In summary, running dependence is best conceptualised as a continuum ranging from positive to negative dependence. Although the present study focuses on negative addiction to running, it conceptualises running dependence in dimensional rather than categorical terms. Runners will therefore be viewed as more or less dependent on running.

#### **2.3.4. Primary and secondary exercise dependence**

Furthermore, De Coverley Veale (1987) makes a useful distinction between primary exercise dependence and exercise dependence which is secondary to an eating disorder. This is an important differentiation as there has been speculation of a possible link between excessive exercise and eating disorders (Biddle & Mutrie, 1991). More specifically, some researchers have argued that individuals with running dependence and eating disorders share similar intra- and interpersonal features. These features include: avoidance of anger and conflict; high self-expectations; high pain tolerance; the presence of withdrawal symptoms when prevented from engaging in their chosen pattern of behaviour; a degree of social isolation; and the need to be in control of self and environment (Yates et al., 1983). This theory has become known as the "Anorexia

Analogue Hypothesis". However, this hypothesis has been extensively critiqued (Coen & Ogles, 1993) and Blumenthal, O'Toole, & Chang (1984) suggest that there may be more differences than similarities between people with eating disorder diagnoses and individuals with running dependence.

Although many individuals with eating disorders exercise excessively in order to lose weight, De Coverley Veale (1987) argues that a theoretical distinction should be made between primary exercise dependence and excessive exercise which is secondary to eating disorder diagnoses. De Coverley Veale (1987) asserts that primary exercise dependence occurs separately from other mental disorders and is present when running is an end in itself. Furthermore, whilst self-inflicted weight loss by dieting is often a feature of primary exercise dependence, the weight loss is used as a means of improving performance rather than as a goal in itself (ibid.). Additionally, although preoccupation with exercise is sometimes the dominant clinical feature of secondary exercise dependence, this preoccupation occurs with other symptoms, such as a morbid fear of fatness (Veale, 1995). In secondary exercise dependence, the running addiction is thus secondary to the main dynamics of the eating disorder. Hence a diagnosis of primary exercise dependence can be differentiated from an eating disorder diagnosis by clarifying the ultimate aim of the exercise (De Coverley Veale, 1987). This distinction is important as the current study is concerned solely with primary exercise dependence.

## **2.4. ETIOLOGY OF RUNNING DEPENDENCE**

Physiological, psychological, and personality determinants have been offered as causal factors in the development of running addiction, however the process and mechanisms by which regular running develops into a negative addiction have not yet been clearly identified. Although an in-depth discussion of the etiology of running dependence is beyond the scope of this study, this section will provide a brief overview of some of the predominant theoretical orientations.



#### **2.4.1. Physiological perspectives**

Speculation concerning the causal mechanisms of exercise dependence has typically focused on the concept of physiological addiction produced by changes in body chemistry following aerobic exercise (Robbins & Joseph, 1985). These physiological explanations include several perspectives, the most popular being those based on: increased levels of analgesic and mood enhancing plasma B-endorphins (Pierce et al., 1993; Steinberg & Sykes, 1993); increased neurotransmitter secretion; increased cardiovascular fitness; and thermogenic explanations (Biddle & Mutrie, 1991; Cox, 1994; Murphy, 1994). Although these causal explanations have been extensively reviewed elsewhere (for example, Cox, 1994) and a detailed examination of these hypotheses is beyond the scope of this study, it is important to note that research findings have been equivocal and it has not yet been established why only some individuals who exercise at high intensities become dependent on exercise (Basson, 1999; Siff, 1998).

#### **2.4.2. Psychological perspectives**

The psychological perspective has also provided a number of explanations about the origins of running dependence (Sachs & Pargman, 1997). These explanations include the affect-regulation model which proposes that since running serves as a positive affect enhancer and negative affect reducer, addiction occurs when running is used as a method of reducing dysphoric mood states (Hauck & Blumenthal, 1992; Robbins & Joseph, 1985; Sachs & Pargman, 1997). Secondly, the distraction hypothesis accounts for running addiction by proposing that running addiction may develop when running functions as a distraction from stressful events and is the sole means of coping with daily stress (Murphy, 1994; Robbins & Joseph, 1985; Weinberg & Gould, 1995). Finally, a positive reward model has been offered to account for running dependence. This model proposes that for some runners, running serves to positively reinforce self-structures and competency beliefs, and is a source of self-fulfilment and mastery (Robbins & Joseph, 1985). Hence runners' may become addicted to running in order to continuously meet their expectations of positive rewards which are possibly not fulfilled in other areas of their lives (Sachs & Pargman, 1997). These psychological perspectives are extensively documented elsewhere (for example, Robbins & Joseph, 1985; Sachs & Pargman, 1997) and a detailed account of

these explanations is beyond the scope of this study. It is important to note, however, that these psychological perspectives have been fraught with methodological difficulties (Hauck & Blumenthal, 1992). In addition, there is still no explanation as to why only certain runners become addicted to running, which suggests a unique interaction between these runner's personality structures and the specific reinforcing aspects of running (Basson, 1999; Macpherson, 1998).

### **2.4.3. Personality determinants**

A number of researchers have attempted to identify personality factors implicated in the development of running dependence (Sachs, 1981). Despite interest in this strand of sport psychology, an overview of research reveals equivocal findings. Although a detailed discussion of the relationship of personality style to running addiction is beyond the scope of this study, a brief review of the role of personality in the etiology of running addiction is pertinent given this study's focus on the relationship between self, motivation, and addiction.

Whilst there is some evidence to suggest that there may be underlying similarities in the psychological profile of addicts (Steinberg & Sykes, 1985), in general, current research has not supported the idea of a prototypical addictive personality type. To illustrate:

- A constellation of obsessive compulsive and anxious personality traits have been cited as common to addicted exercisers (Blumenthal et al., 1984; Coen & Ogles, 1993; Goldfarb & Plante, 1984; Sachs, 1981). Moreover, Yates et al. (1991) observed that addicted runners display perfectionistic, anxious and depressive traits. While some research supports an increased incidence of obsessive compulsive features and anxiety in addicted runners, other evidence suggests that runners present with diverse personality traits without specific shared pathology (Basson, 1999). Blumenthal et al. (1984) found on the MMPI that addicted runners scored within normal range and did not exhibit significant psychopathology. Consequently, Blumenthal, Rose, and Chang (1985) warned against using a

psychopathological model of addicted runners which they perceive as "misleading and unnecessarily pejorative".

- Sachs (1979, cited in Sachs, 1981) found only a modest correlation between specific personality traits (namely: introversion/extraversion; neuroticism/stability; mood states; trait anxiety; and locus of control) and levels of running addiction. Moreover, scores of addicted runners for the identified traits were not very different from the published population norms. Furthermore, Sachs and Pargman (1979) and Jacobs (1980, cited in Sachs & Pargman, 1997) failed to uncover a personality typology for addicted runners. Similarly, Yates et al. (1991) found obligatory and nonobligatory runners were more similar than different, although obligatory runners tended to prefer social isolation.
- Leask (1997) found that addicted runners were more narcissistic than their non-addicted counterparts, especially in terms of their achievement needs, independence, and denial of their need for interpersonal relationships.
- Anderson et al. (1997) argued that there is some preliminary supportive evidence for personality differences between addicted and non-addicted runners. Using the MCMI, they found that running addiction is associated with a generally rigid, inflexible personality pattern of a schizotypal, dependent, and avoidant nature, characterised primarily by social detachment and low self-esteem.
- In contrast, Macpherson (1998) found no significant relationship between schizotypal, avoidant, and dependent personality subtypes on the MCMI and running addiction. Nevertheless, negative addiction to running was observed to be strongly associated with elevated passive-aggressive, antisocial, and aggressive personality scales. She argued that the emerging personality pattern was indicative of interpersonal difficulties, specifically interpersonal vulnerability which may be manifest in a competitive, suspicious, hostile, and avoidant interpersonal style.

Whilst a personality profile could possibly be teased out of the available evidence, there are numerous methodological difficulties with reported research findings (Sachs, 1981). These include: the testing of different groups of subjects and different levels of runners (Sachs, 1981); the use of different personality inventories; the univariate analysis of data

(Sachs, 1981); and the atheoretical use of test materials (Anderson et al., 1997; Basson, 1999; Wann, 1997). It thus seems that generalisations from reported findings should be treated with extreme caution.

Furthermore, it has been observed that regular runners tend to be a heterogeneous group of people and running is a popular activity which attracts people of diverse personalities (Sachs & Pargman, 1997; Schmied, Steinberg, Moss, & Sykes, 1994). Consequently, it is unlikely that a general trait characterisation of addicted runners will be meaningful (Sachs, 1981; Sachs & Pargman, 1997). As Anderson et al. (1997) argue, rather than rigidly categorising athletes into personality subtypes, an attempt should be made to understand the dynamic psychological processes underpinning running addiction. This calls for a more interactionist approach to the study of personality and running addiction, which includes a recognition of psychological, social, physiological, and personality factors, as well as the interaction amongst these variables (Basson, 1999). One important contextual factor which will be included in the current study is cultural background, which provides a framework for personality development and self-concept formation.

## **2.5. MEASUREMENT OF RUNNING DEPENDENCE**

In order to investigate the relationship between running dependence and mental health, it is first necessary to operationally define and measure the behaviour of those who are addicted to running (Hauck & Blumenthal, 1992). At present, there are few instruments available with which to measure running addiction. Although several questionnaires have been developed for the purpose of objectively measuring compulsive exercise behaviour, little psychometric data has been reported for these instruments (Hauck & Blumenthal, 1992; Leask, 1997). These instruments have been extensively reviewed elsewhere and interested readers are referred to Hauck and Blumenthal (1992) and Macpherson (1998).

The investigation of running dependence is further complicated by the fact that measures of running addiction are often unsystematic and range from those using behavioural criteria to those utilising more objective measures (Leask, 1997). The use of differing diagnostic criteria and means of measuring running addiction have resulted in a lack of

consistency in the research that has implications for the interpretation of results and generalizability of findings across studies (Loumidis & Roxborough, 1995). Furthermore, several researchers have relied on non-operationalised, single-item, self-report measures of addiction as evidence of concurrent or discriminant validity (Hauck & Blumenthal, 1992). In addition, research is hampered by the paucity of quantitative measures that can provide cut-off points to differentiate between running addiction, non-addicted running, and degrees of running addiction (Loumidis & Roxborough, 1995).

Besides the aforementioned measurement difficulties, the issue of cross-cultural measurement needs to be considered. In general, cross-cultural measurement issues have not received a lot of attention in the sport and exercise psychology literature. This is surprising given the acknowledgement that cultural factors can potentially produce distortions in test interpretation (Gauvin & Russel, 1993). More specifically, cross-cultural research requires, at the least, the translation, validation and, in some instances, adaptation of instruments (Gauvin & Russel, 1993). None of the available measures of running addiction have as yet been applied to Non-Western cultural groups, nor have researchers considered cultural influences on testing. This study aims to fill this void in running dependence research by adapting and validating the Negative Addiction Scale (Hailey & Bailey, 1982) for use amongst black Zulu-speaking runners. Further discussion of the cross-cultural adaptation of the tests used in this research will occur in the methodology chapter.

## **2.6. SUMMARY**

This chapter has examined the literature on the concept of running addiction. Different conceptualisations of the phenomenon were discussed, viewing running addiction as a positive or negative concept, as a process, and differentiating between primary and secondary exercise dependence. Various etiological positions were discussed, illustrating the ongoing controversy and lack of consistent findings in this line of research. Finally, difficulties in the assessment and measurement of running addiction were highlighted, with a special focus on cross-cultural measurement concerns.

## **CHAPTER THREE**

### ***RUNNING COMMITMENT***

#### **3.1. INTRODUCTION**

Another facet of this study was the investigation of motivational factors underpinning continued participation in running amongst black participants. More specifically, the current study will focus on one aspect of participation, namely commitment. This is important as an understanding of motivation may provide further insights into the nature of running dependence (Sachs, 1981). This chapter will discuss the concept of running commitment, present an overview of the Sports Commitment Model, focusing on the component of sports enjoyment, and outline the relationship between running addiction and running commitment. In addition, this chapter will examine cultural influences on motivation and commitment.

#### **3.2. SPORTS COMMITMENT**

The concept of commitment has been used in psychological theory to describe a set of factors which explain persistence and continued involvement in relationships and activities (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993; Scanlan & Simons, 1992). Despite general agreement concerning the meaning of commitment, operational definitions of commitment have varied, largely due to differing research objectives and contexts (Scanlan et al., 1993). This section will operationally define the construct of sports commitment and outline the Sports Commitment Model.

##### **3.2.1. The construct of sports commitment**

Sports commitment has been operationally defined as a "psychological construct representing the desire and resolve to continue sport participation" (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993, p.6). It represents a psychological state of attachment which reflects the motivational force for continued involvement (Scanlan et al., 1993). In addition, sports commitment can be examined globally (that is, commitment to sport in

general) or specifically (in other words, commitment to a particular activity). As such, it is a useful construct for examining maintained participation in running.

### **3.2.2. The Sports Commitment Model**

The Sports Commitment Model is based on Rusbult's Investment Model of Commitment (1980, cited in Scanlan, Simons, Carpenter, Schmidt, & Keeler, 1993) which has been effective in predicting commitment to romantic relationships, friendships, and work settings (Scanlan et al., 1993; Schmidt & Stein, 1991). The Sports Commitment Model, however, significantly modifies and extends Rusbult's model to examine the specific nature of commitment in sport (Scanlan et al., 1993).

The Sports Commitment Model defines five factors which are hypothesised to determine sports commitment. These components dynamically interact to either enhance or diminish running commitment (Scanlan et al., 1993). The components of this model are:

- Involvement alternatives:

This represents the attractiveness of the most preferred alternatives to continued participation (Scanlan & Simons, 1992; Scanlan et al., 1993). It has been proposed that commitment to running decreases as the attractiveness of alternatives increases.

- Personal investments:

This refers to the resources the runner invests in the activity (such as time and money) which cannot be recovered if participation is discontinued. The model proposes that the greater the investment an individual makes, the greater the commitment to continued participation (Scanlan & Simons, 1992; Scanlan et al., 1993).

- Involvement opportunities:

This represents the valued opportunities running provides which are present only through continued involvement (Scanlan et al., 1993). These opportunities include the possibility of mastery, social contacts, and obtaining of rewards (Scanlan & Simons, 1992).

- Social constraints:

This refers to social expectations and norms which create feelings of obligation to remain involved (Scanlan & Simons, 1992; Scanlan et al., 1993). These may include family, work, social, or team pressures (Scanlan & Simons, 1992).

- Sports / Running Enjoyment:

This factor refers to the runner's positive affective response to the running experience (Scanlan & Simons, 1992). The model posits that levels of commitment rise as running enjoyment increases.

This model recognises the multifaceted nature of sports commitment and is thus able to illustrate the varying psychological states of participants who have similar levels of sports commitment. Additionally, the model takes cognisance of both cognitive and affective determinants of sport commitment (ibid.). However, the model does not recognise the role of social factors (such as rewards, social pressure, and personality factors) in shaping running commitment. Nevertheless, the model remains an invaluable tool for understanding what motivates individuals to remain committed to a running regime.

Since running commitment is a broad construct consisting of numerous components (Scanlan & Simons, 1992), a decision was made to study a specific aspect of running commitment, namely enjoyment, as running enjoyment has been shown to be a strong predictor of sports commitment across differing levels of participation (Scanlan et al., 1993). In other words, the construct of sports/running enjoyment, which is located within the broader motivational context of sports commitment, forms the conceptual basis for this aspect of the study.

### **3.3. RUNNING ENJOYMENT**

The use of the sports enjoyment construct as a predictor of sports commitment has, to some extent, been validated by previous research. For example, Scanlan and Lewthwaite (1986) investigated sports enjoyment amongst youth wrestlers. They found a 0.7 correlation between enjoyment levels and the desire for future participation. Additionally, in a study by Scanlan, Stein, and Ravizza (1989), elite figure skaters reported that enjoyment enhanced their wish to exert effort and continue skating. Furthermore, research amongst child athletes (for example, Weiss & Petlichkoff, 1989, cited in Scanlan & Simons, 1992) has demonstrated that desire for enjoyment is an important motive for adoption of sport and adherence to sporting activities. Hence, there appears to be a



strong association between sports enjoyment and participation motivation in sport. This section will outline the construct of sports enjoyment and present a model of the sources of sports enjoyment.

**3.3.1. The construct of sports enjoyment**

Sports enjoyment represents the affective component of the broader sports commitment construct. It is operationally defined as the "positive affective response to sports experience that reflects generalised feelings such as pleasure, liking, and fun" (Scanlan & Lewthwaite, 1986, p.32). As a concept, it is more differentiated than global positive affect, but it is more general than a specific emotion, such as excitement (ibid.). In addition, although enjoyment is often viewed in the literature as indicative of intrinsic motivation, research has shown that sports enjoyment is broader and more inclusive than intrinsic motivation (Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992).

**3.3.2. Model of Sources of Sports Enjoyment**

Previous research has focused on achievement factors and intrinsic motivational factors in explaining the sources of sports enjoyment. However, there has been a growing recognition that sports enjoyment originates from extrinsic and intrinsic sources and can be achievement or nonachievement oriented (Scanlan & Simons, 1992). Scanlan and Lewthwaite (1986) present a useful two dimensional framework for identifying sources of sports enjoyment. This model is illustrated below in figure 1.

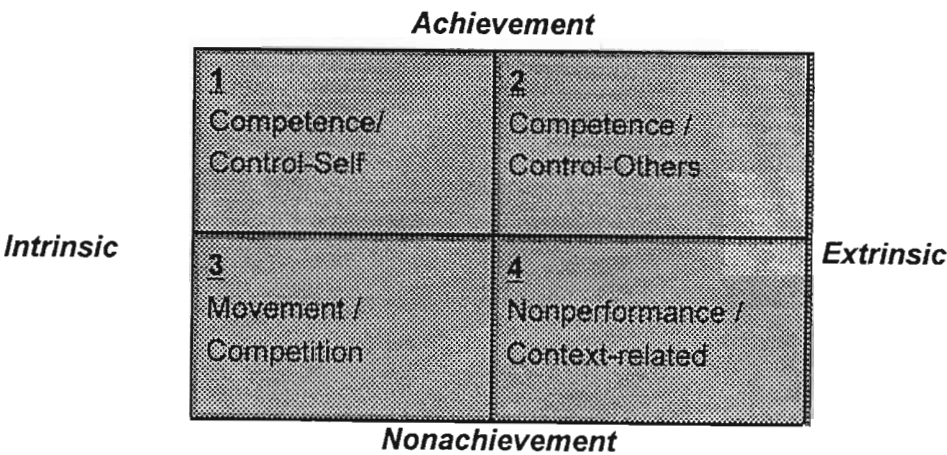


Figure 1. Scanlan and Lewthwaite’s (1986) Model of Sports Enjoyment

The model demonstrates that sports enjoyment is influenced by achievement and nonachievement factors, which can be intrinsic or extrinsic in origin. Achievement-intrinsic factors (Quadrant 1) are related to perceptions of competence and skill which are self-reinforced, such as feelings of mastery. Achievement-extrinsic sources (Quadrant 2) are related to feelings of competence and control that depend on feedback from others, for example positive social recognition. Nonachievement-intrinsic factors (Quadrant 3) are linked to the experience of the activity, for example: movement sensation or the thrill of competing. Finally, nonachievement-extrinsic sources (Quadrant 4) are related to the nonperformance aspects of a particular sport, like social-interaction with friends (Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992).

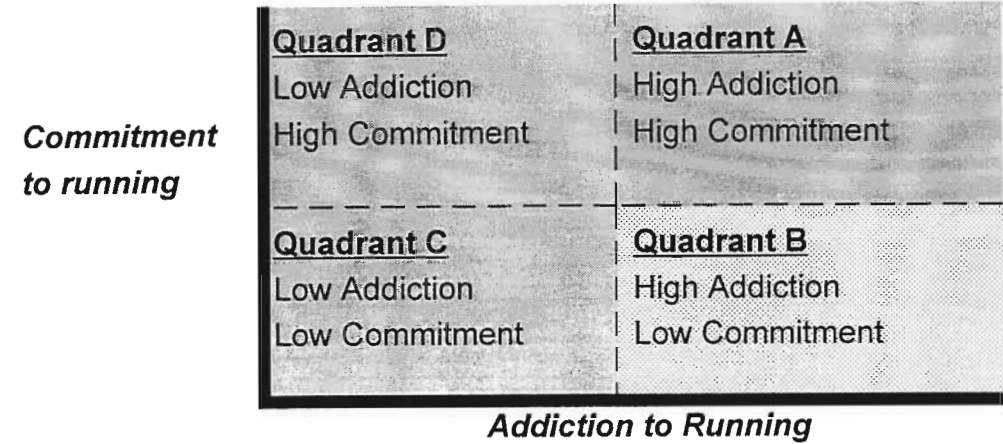
### **3.4. RELATIONSHIP BETWEEN RUNNING DEPENDENCE AND RUNNING COMMITMENT**

An additional focus of this study was the relationship between running commitment and dependence amongst black participants. Although Carmack and Martens (1979) used the term "commitment to running" synonymously with "addiction to running", Sachs and Pargman (1979) argue that running addiction and commitment are two conceptually distinct entities, and commitment to running is not necessarily indicative of running addiction. Sachs and Pargman (1997) suggest that addiction refers to a psychobiological dependence on running, while commitment represents the cognitive-intellectual aspects of the individual's relationship to running. Furthermore, the committed runner appears to have different underlying motives for running than the addicted runner. The committed, but not addicted, runner seems to run mostly for health and social reasons (including power, prestige, and money) rather than for altered states of consciousness or as a treatment for depression (*ibid.*).

Although Sachs and Pargman (1997) recognise that "running addiction" and "running commitment" are conceptually distinct processes, they hypothesise that the two concepts may be interrelated as both form the basis of running participation. Consequently, they propose viewing motivation for participation in running through a bi-factor model which examines the relationship between the two concepts.

3.4.1.        **A four quadrant model of running participation**

Sachs & Pargman (1997) proposed a four quadrant model of running participation which attempts to explore the relationship between running dependence and running commitment. This model forms one of the conceptual frameworks for the current research and is illustrated below in figure 2.



**Figure 2. Sachs and Pargman’s (1997) Model of Participation in Running**

The above model conceptualises two axes. The horizontal axis indicates the degree of psychobiological dependence on running and the vertical axis indicates the degree of cognitive-intellectual commitment to running (Sachs, 1991; Sachs & Pargman, 1997). Each quadrant is hypothesised to contain a different type of runner. Firstly, truly addicted runners, characterised by high levels of commitment and addiction, are located in Quadrant A. In contrast, the runners in Quadrant B are addicted to running but show lower levels of commitment. This could be due to socio-environmental pressures, such as family or work commitments. The occasional runner, characterised by low levels of commitment and addiction, is found in Quadrant C. Finally, the runners in Quadrant D are highly committed to running, but show low levels of addiction to the activity (Sachs & Pargman, 1997).

The model is dynamic, with the potential for movement through each of the quadrants. This movement is not random, but follows patterned directions. More specifically, Sachs and Pargman (1997) argue that running commitment develops prior to the possible development of running addiction as high levels of commitment are required to maintain

participation, without which addiction cannot develop. According to the model, all runners therefore begin with low levels of addiction and commitment (Quadrant C) and commitment to running must increase for addiction to increase. Once commitment increases, the runners move to Quadrant D. From Quadrant D, the runners can either return to Quadrant C, or running addiction may increase, shifting the runners to Quadrant A. Movement from Quadrant A is only to Quadrant B, which is characterised by low levels of commitment, but high levels of addiction. This is a very unstable quadrant and within a short period of time, the runners will either experience a decrease in addiction and move to Quadrant C or an increase in commitment and return to Quadrant A (Sachs & Pargman, 1997).

Although this model is useful for mapping the relationship between running commitment and dependence, Sachs and Pargman (1997) recognised the need to consider the specific components of commitment and their unique relationship to running addiction. This research will explore a specific aspect of running commitment, that is running enjoyment, and its relationship to running addiction.

A recent study by Macpherson (1998) explored the relationship between the motivational sources of running enjoyment and running addiction. The results from this study confirm that running enjoyment is an important motivational construct for runners, as relatively high scores were obtained on all measures of enjoyment. Furthermore, it was found that runners characterised by high levels of addiction were more motivated by both achievement-intrinsic and nonachievement-intrinsic factors than less addicted runners. Therefore, it appears that intrinsic rather than extrinsic sources of motivation are more strongly associated with high levels of addiction. Nevertheless, as this study was conducted predominantly amongst white runners, it is possible that addicted runners from other population groups may cite other sources of motivation for continued participation. In order to expand the theoretical understanding of both addiction and commitment processes, it is therefore essential to consider the impact of cultural factors on motivation and commitment.

### **3.5. CULTURAL INFLUENCES ON MOTIVATION AND COMMITMENT**

Given this study's focus on the relationship between running dependence and running commitment amongst Zulu-speaking runners, it is pertinent to examine possible cultural influences on motivation and commitment. This section will present a model for understanding culturally divergent selves, and will broadly outline cultural influences on motivational processes and current cross-cultural research in sport motivation.

#### **3.5.1. Culture, self-concept, and motivation**

Contemporary research on the self views the self as a social construct produced in part by the socio-cultural context. This milieu informs which information is self-relevant and provides a context for structuring the self (Campbell, Trapnell, Heine, Katz, Lavalley, & Lehman, 1996). The self is therefore bound to differ from one culture to another (Campbell et al., 1996; Heelas, 1991). As the self-concept is generally assumed to influence the nature of individual experience and to mediate social behaviour, cultural variations in self-concepts are thought to result in cross-cultural differences in cognitive, emotional, and motivational processes (Markus & Kitayama, 1991; Markus & Kitayama, 1994; Matsumoto, 1996). In order to identify sources of motivation amongst Zulu-speaking runners, it is essential to consider cultural influences on the self. The following section will therefore present a framework for understanding cultural variations in self-concept.

##### **3.5.1.1. Two construals of the self**

Markus and Kitayama (1991) present a framework for understanding cultural variations in self-concepts. They propose that people from more individualistic cultures (such as North America, or Western Europe) generally hold independent views of the self. In other words, the self is perceived to be a bounded, distinct entity which is clearly separable from others (Markus & Kitayama, 1991; Matsumoto et al., 1994). In contrast, collectivist cultures (such as African and Asian societies) are associated with an interdependent view of the self. In such cultures, the self is perceived as unbounded, flexible, and contingent on social context. The interdependent self places less emphasis on pursuing personal goals, instead the self has a more extrinsic, social focus and

strives to maintain connectedness with relevant others and harmony with the in-group. Behaviour is thus largely determined and organised by the thoughts, feelings, and actions of members of the in-group (Mwamwenda, 1994).

Despite evidence in support of these divergent views of the self, the distinctions made between independent and interdependent self-construals must be recognised as general tendencies which emerge when cultures are considered as a whole. These differences are not absolute since all cultures have considerable self-concept variation amongst their members (Matsumoto, 1996). Specifically, the nature of the self-construal adopted by individuals within a culture will be influenced by factors such as: age; socio-economic status; gender; religion; and education (Markus & Kitayama, 1991). In addition, irrespective of cultural background, people have complex selves with both independent and interdependent components and it is the relative salience and emphasis placed on these components which vary cross-culturally (Bochner, 1994). Nevertheless, these broad cultural variations in self-construals are important to recognise as the nature of the self impacts on motivational processes and behavioural phenomena, such as running dependence and running commitment. The following section will therefore outline how cultural differences in self-construals influence motivation.

#### 3.5.1.2. Implications of culturally-divergent selves for motivation

As discussed previously, self-construals are powerful phenomena which provide a framework through which cultural variation in motivation can be understood (Matsumoto et al., 1994). It seems that people with independent construals of the self are more motivated by intrinsic sources of motivation, which include the desire for personal achievement and the need to enhance one's personal standing in order to affirm one's uniqueness, ability, and autonomy (Markus & Kitayama, 1991; Matsumoto et al., 1994). Furthermore, it is postulated that independent selves will be more motivated by activities which facilitate the expression of personal intrinsic attributes through the mastery of skills, competition, and the recognition of one's autonomy and personal achievements by others. This hypothesis is supported by recent research which found that although a sample of predominantly white runners cited extrinsic and intrinsic achievement and

nonachievement sources as motivating, continued involvement was more strongly associated with intrinsic sources of motivation (Macpherson, 1998). In summary, it seems that for the independent self, sources of motivation seem to be chiefly intrinsic and self-oriented in nature.

In contrast, people with interdependent self-construals appear to be guided by extrinsic, social, and other-oriented sources of motivation. In particular, it seems that achievement motivation is socially oriented, where the objectives are to attain recognition for the in-group, meet the expectations of others, and maintain relatedness, rather than achieving personal success and enabling favourable comparison between oneself and others (Markus & Kitayama, 1991; Matsumoto, 1996). Given this finding, an interesting research question would be whether Zulu-speaking runners (who originate from a largely collectivist cultural context) are more motivated by extrinsic rather than intrinsic factors. This research question has, in part, been examined in prior cross-cultural research on sport motivation.

### **3.5.2. Cross-cultural research in sport motivation**

In general, research on cultural variation in sport motivation has been sparse (Duda & Allison, 1990). Moreover, of the few studies conducted, most have focused on achievement motivation. For example, Hayashi and Weiss (1994) compared achievement motivation among Anglo-American and Japanese marathoners. They found some cultural differences in achievement motivation, notably that Anglo runners were more competitive than Japanese. This was postulated to point to Anglo runners' desire to stand out as individuals. However, no significant differences in self-construals were demonstrated. Hayashi and Weiss (1994) argued that the lack of cultural differences in the self could be a result of either generational differences (where younger people are socialised in less traditional and more individualistic modes of thinking, feeling, and acting), or the nature of the physical domain, as running could promote similar self-perspectives, irrespective of cultural views. Similarly, Hayashi (1996) found no significant variations in self-construals amongst Anglo and Hawaiian weightlifters, despite the fact that Hawaiian cultural identity is generally accepted as interdependent

and Anglo-American self-construals as independent. Both Anglo and Hawaiian weightlifters demonstrated interdependent self-construals which Hayashi (1996) argued could be explained in terms of the interdependent nature of weightlifting which promotes cooperation, sharing, and connectedness with training partners. This observation supports Triandis et al.'s (1988) contention that individuals within independent cultures can belong to many groups with contradictory norms, and in the event of role conflict, individuals often conform to the norms of one group over the other. The lack of differences in self-construal could hence reflect conformity to the interdependent nature of the physical activity (Hayashi, 1996). In other words, the specific nature of the sports domain may influence which components of the self-concept are more salient. Finally, since running is thought to promote individuality (Sachs, 1981), it is quite possible that within the context of running, black Zulu-speaking runners will draw upon more independent construals of the self, even though Zulu culture is traditionally perceived as interdependent (Mwamwenda, 1994). This may have important motivational consequences. Specifically, Zulu-speaking runners may, despite their cultural background, cite intrinsic sources of enjoyment as more motivating than extrinsic sources.

### **3.6. SUMMARY**

Running commitment was used in this study in a motivational sense. This chapter presented Scanlan and Simons' (1992) multifaceted Model of Sports Commitment, in which running commitment can be located. Furthermore, the concept of sports enjoyment, an affective motivational construct which forms the running commitment component of this study, and the sources of sports enjoyment model were outlined. In addition, Sachs and Pargman's (1997) model of running participation, which explores the relationship between running addiction and running commitment, was presented. This model forms one of the conceptual frameworks for the present study. Finally, cultural influences on motivation and commitment, with particular reference to Markus and Kitayama's (1991) model of culturally divergent selves, were outlined.



## **CHAPTER FOUR**

### **METHODOLOGY**

#### **4.1. RESEARCH AIMS AND QUESTIONS**

As the current study was largely exploratory and descriptive in nature, specific research hypotheses were not generated. Instead, the following research questions were posed:

1. A primary aim of this study was to explore and describe the concept of negative addiction to running amongst black, Zulu-speaking runners, in KwaZulu-Natal. More specifically, the following question was asked: which biographical and running behaviour variables distinguish between high, moderate, and low levels of negative addiction to running ?
2. Another research aim was to explore and describe, through the construct of running enjoyment, the concept of commitment to running amongst Zulu-speaking runners. In particular, the following research question was posed: which sources of running enjoyment are the most motivating for Zulu-speaking runners ?
3. An additional, related aim was to explore the relationship between biographical variables and sources of running enjoyment.
4. A further aim was to explore the relationship between running behaviour variables and sources of running enjoyment.
5. A fundamental aim of this study was to explore the relationship between negative addiction to running and running commitment, through the construct of sports enjoyment, amongst Zulu-speaking runners. Specifically, the relationship between negative addiction to running and the four sources of running enjoyment would be explored.

6. A final research aim was to explore and identify the sources of running enjoyment which, for black, Zulu-speaking runners, distinguish between high, moderate, and low levels of negative addiction to running.

## **4.2. RESEARCH DESIGN**

Given the exploratory nature of this study, a non-experimental, survey research design was adopted. In addition, a cross-sectional, correlational design was utilised to facilitate an exploration of the relationships between the research variables. This design has inherent weaknesses, such as the inability to manipulate independent variables, the lack of power to ensure random sampling, and the risk of inaccurate interpretation (Bryman & Cramer, 1997; Kerlinger, 1992). Consequently, the present research design has limited ability to reveal causal processes (Bryman & Cramer, 1997; Wampold, 1996). Nevertheless, this design is well-suited to the descriptive and exploratory nature of the research questions, which aim to identify and elucidate relationships amongst variables rather than discover causal pathways.

## **4.3. SAMPLE CHARACTERISTICS**

A nonprobability, opportunity sample of 79 Zulu-speaking, black runners, over the age of 18 years, was drawn from running clubs in the Pietermaritzburg and Durban regions of KwaZulu-Natal. This method of sampling was chosen for convenience, and due to the difficulty in accessing black runners who live in peri-urban and rural areas.

Despite the convenience of an opportunity sample, there are various methodological difficulties associated with using such samples. These include: the possibility of response bias (Babbie & Wagonaar, 1992); the inability to statistically evaluate sampling error (Diamantopoulous & Schlegelmilch, 1997); the possibility that significant relationships between variables are a result of the influence of uncontrolled extraneous variables (Bryman & Cramer, 1997); and weak generalizability of results to the broader population (Kerlinger, 1992). These weaknesses can however be minimised by a response rate of over 70%, which reduces response bias (Babbie & Wagonaar, 1992). This study achieved a response rate of approximately 65%. Furthermore, the current study controlled for the

influence of extraneous variables by collecting biographical data in an attempt to better understand the manner in which factors such as age, gender, and education interacted with the research variables. These extraneous variables were also statistically controlled for in data analysis.

#### **4.4. PROCEDURE**

Prior to sampling, the psychometric instruments were translated into Zulu through the translation-backtranslation method. Backtranslation is widely accepted by researchers as an appropriate method of translation (Gauvin & Russel, 1993; Leung & Van de Vijver, 1996).<sup>1</sup> This procedure involved translating the original English version of the instruments into Zulu by a bilingual translator, who being a Psychology Honours student, was well-versed in the relevant concepts. Following this, the Zulu version of the instruments was backtranslated into English by a second bilingual translator. The backtranslated and original versions of the instruments were then compared by a Zulu-speaking psychologist to determine linguistic and semantic equivalence. The backtranslation procedure was repeated until the backtranslated English versions matched the original instruments.

Following the translation procedure, the chairpersons of running clubs in the Durban and Pietermaritzburg regions were telephonically contacted to request permission to conduct research at their clubs. This request was followed by a letter which explained the aim of the research, and ensured that personal information would remain confidential. Appointments were then made to attend club meetings in order to obtain subjects. At these meetings, a brief presentation of the purpose of the study was made and questionnaires, with self-addressed stamped envelopes, were administered to runners who volunteered to participate. In order to increase motivation for participation in the study, runners were offered, on receipt of a written request, personal feedback about the results of the study. Subsequent club meetings were also attended to collect questionnaires which had not already been posted to the researcher.

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<sup>1</sup> The limitations of this method of translation are discussed in section 6.6.

## **4.5. PSYCHOMETRIC INSTRUMENTS**

In the present study, three psychometric instruments were administered to, and completed by all respondents. These instruments were: a Biographical Information Questionnaire (adapted from Leask, 1997); the Negative Addiction Scale (Hailey & Bailey, 1982); and the Running Enjoyment Questionnaire (compiled by Basson & Macpherson, 1997, cited in Macpherson, 1998). Each of these instruments, as described in section 4.4., were translated from their original English form into a Zulu-language version.<sup>2</sup> The following sub-sections will present the psychometric properties of the three instruments.

### **4.5.1. Biographical Information Questionnaire**

The current study adapted Leask's (1997) original Biographical Information Questionnaire. This adjusted questionnaire (see Appendix B & C) elicited important biographical information from respondents, as well as information pertaining to respondents' running history, exercise behaviour, and current fitness levels.

### **4.5.2. Negative Addiction Scale**

Hailey and Bailey's (1982) Negative Addiction Scale (NAS) was used to measure the extent of respondents' negative addiction to running. The NAS measures the psychological aspects of negative addiction (ibid.). It evaluates mental states during running days and non-running days, and assesses runners' perceptions about running, running strategies, motives for running, and the importance of running to the person (Thornton & Scott, 1995).

The NAS yields a possible negative addiction score ranging from 0 (*low*) to 14 (*high*). The first 12 items assess the psychological characteristics of running, and the last question consists of an 11-point checklist which evaluates specific aspects of the respondent's running behaviour (Leask, 1997). Statistical information on the NAS, obtained by previous studies is summarized below, in Table 1.

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<sup>2</sup> Appendices B to G contain copies of the original and translated versions of the psychometric tests.

**Table 1.      A summary of statistical information on the NAS**

| Previous Studies                    | N   | Mean | SD         | Range |
|-------------------------------------|-----|------|------------|-------|
| Macpherson (1998)                   | 80  | 3.00 | 2.15       | 0 -10 |
| Leask (1997)                        | 112 | 3.05 | 1.99       | 0 -11 |
| Anderson et al. (1997)              | 49  | 3.82 | 2.45       | 1 -13 |
| Furst & Germone (1993) <sup>3</sup> | 188 | 3.20 | 2.20       | 0 -11 |
|                                     |     | 4.40 | 2.20       | 0 -11 |
| Hailey & Bailey (1982)              | 60  | 5.39 | Not listed | 0 -10 |

In addition, Hailey and Bailey (1982) divided the sample into different groups on the basis of running history and found that group means ranged from 3.84 (SD = 1.95) for the group with the shortest running history, to 6.38 (SD = 2.61) for the group with the longest running history. Similarly, Furst and Germone (1993) reported group means which ranged from 2.00 (SD =1.60) to 5.30 (SD = 2.40), with runners who had a longer running history obtaining higher mean scores. Neither Leask (1997) nor Macpherson (1998) found a significant relationship between the extent of addiction and the length of running history.<sup>4</sup>

As the NAS does not provide verbal anchors to indicate relative amounts of addiction, it is unclear at what score a person is considered to be negatively addicted (Furst & Germone, 1993). Anderson, et al. (1997) and Leask (1997) used a cut-off point of 3, categorising runners who scored above 3 as "negatively addicted". Using a frequency analysis with quartiles for guidelines, Macpherson (1998) divided her runners into three groups: "low negative addiction" (scores ranging from 0 to 1), "moderate negative addiction" (scores ranging from 2 to 4), and "high negative addiction" (scores of 5 or greater). The "high addiction" group obtained a mean score of 6.06 (SD = 1.35), the "moderate addiction" group had a mean score of 3.03 (SD = 0.70), and the "low addiction" group achieved a mean score of 0.45 (SD = 0.51). This study used a similar method to

<sup>3</sup> Furst & Germone (1993) divided their sample into two groups: those who had run for up to 6 years and those who had run for over 6 years.

<sup>4</sup> The mean scores and standard deviations for all psychometric instruments are reported in Chapter Five.

divide respondents into three levels of addiction. This method, and the mean scores for each addiction group, is outlined in section 5.3.1.

Earlier studies which used the NAS have generally failed to provide reliability and validity information (Thornton & Scott, 1995). The one exception has been Leask (1997) who reported a Cronbach Alpha coefficient of 0.65 for her sample. In the current study a reliability analysis was conducted to test whether the NAS-Zulu version (see Appendix E) was an adequate measure of running addiction. A Cronbach's Alpha coefficient of 0.61 was obtained for the current sample, which (although lower than ideal) is adequate. This seems to indicate that, in terms of reliability, there is a negligible difference between the original and translated versions of the scale. In terms of validity, Thornton and Scott (1995) argue that the NAS has strong face validity. Furthermore, a Spearman correlation between the NAS and the Running Addiction Scale (Rudy & Estok, 1989, cited in *ibid.*) revealed a strong positive relationship ( $r = 0.81$ ;  $p < 0.001$ ) suggesting that the two scales measure similar subjective and objective dimensions of running activity. This implies that the NAS has good convergent validity (Macpherson, 1998).

Although there is little psychometric information available for the NAS, the current study used this scale due to its availability, accessibility, and the relative success with which previous studies have used it (for example: Anderson, et al., 1997; Leask, 1997; Macpherson, 1998).

#### **4.5.3. The Running Enjoyment Questionnaire**

The current study used the Running Enjoyment Questionnaire (REQ), developed by Basson and Macpherson (1998), to measure levels of running enjoyment. This instrument is based on the conceptual dimensions of sport enjoyment, which is a component of the broader concept of sports commitment (Scanlan & Simons, 1992). The REQ is a 28-item questionnaire which uses the bipolar dimensions of intrinsic-extrinsic and achievement-nonachievement enjoyment to produce four subscales which together yield a composite measure of running enjoyment (Macpherson, 1998). The four subscales are: achievement-intrinsic (REQ-AI); achievement-extrinsic (REQ-AE); nonachievement-intrinsic (REQ-NAI);

and nonachievement-extrinsic enjoyment (REQ-NAE). Each item is rated on a five-point Likert scale, ranging from "very important" (1) to "very unimportant" (5) (ibid.).

Based on a sample of 80 runners, Macpherson (1998) provides initial statistical information for the REQ scales. In this study, a composite mean score of 107.71 was obtained ( $SD = 12.03$ ). The mean score for the REQ-AI subscale was 27.58 ( $SD = 3.32$ ), the REQ-AE mean score was 21.62 ( $SD = 4.72$ ), the REQ-NAI mean score was 27.83 ( $SD = 9.80$ ), and the REQ-NAE mean score was 25.67 ( $SD = 3.70$ ).

Prior research has demonstrated that the REQ has acceptable levels of internal reliability. Internal reliability was initially assessed by means of a pilot study conducted on 48 runners, and was later assessed on a sample of 80 runners (Macpherson, 1998). Despite the demonstrable reliability of the REQ for samples of white (predominantly male) runners, the reliability of the REQ has not been assessed for samples of black runners. Furthermore, since the present study used a translated version of the original instrument (see Appendix G), it was necessary to examine whether the Zulu version of the REQ was a reliable measure of running enjoyment. Consequently, the internal reliability of the REQ composite scale, and the four subscales, was assessed by means of the Cronbach's Alpha reliability test. The reliability statistics of the REQ for the current research sample, together with the results from Macpherson's (1998) pilot and main study are reflected below in Table 2.

**Table 2.      A summary of the internal reliability statistics for the REQ**

| Running Enjoyment Scale  | Cronbach's Alpha Coefficient |                   |                         |
|--------------------------|------------------------------|-------------------|-------------------------|
|                          | Current Study                | Macpherson (1998) | Macpherson Pilot (1998) |
| Achievement-Intrinsic    | 0.66                         | 0.71              | 0.78                    |
| Achievement-Extrinsic    | 0.72                         | 0.80              | 0.80                    |
| Nonachievement-Intrinsic | 0.64                         | 0.61              | 0.82                    |
| Nonachievement-Extrinsic | 0.78                         | 0.72              | 0.79                    |
| Composite Scale          | 0.90                         | 0.88              | 0.91                    |

**Table 7. Research sample by running intensity**

| Running Intensity | Number | % of Sample |
|-------------------|--------|-------------|
| Low               | 19     | 24.1        |
| Medium            | 33     | 41.8        |
| High              | 27     | 34.2        |

The second category, "medium intensity", received the most responses ( $n = 33$ ; 41.6% of the sample), with the majority of subjects responding in the "medium" and "high" intensity categories ( $n = 60$ ; 76% of the sample).

**5.2.3. Running importance**

Furthermore, subjects were asked to rate the importance that running plays in their lives by means of a five-point ordinal scale, ranging from "a top priority" (1) to "unimportant" (5). The following table reflects the results of this scale:

**Table 8. Research sample by running importance**

| Running Importance | Number | % of Sample |
|--------------------|--------|-------------|
| A top priority     | 63     | 79.7        |
| Very important     | 14     | 17.7        |
| Important          | 2      | 2.5         |
| Fairly important   | 0      | 0.0         |
| Unimportant        | 0      | 0.0         |

Approximately 97.5% of the sample ( $n = 77$ ) reported that running was either "a top priority" or "very important" in their lives. In the current sample, none of the runners responded in either the "fairly important" or "unimportant" categories.

**5.2.4. Perceived fitness levels**

Subjects were also requested to self-rate their present fitness levels on four dimensions: stamina; strength; speed; and flexibility. Each dimension was assessed by means of a five-point ordinal scale, with possible responses ranging from "very high" (1) to "very low" (5). Table 9 reflects the distribution of scores on all four dimensions.



**Table 9. Research sample by perceived fitness levels**

| Fitness Dimension | Very High |      | High |      | Medium |      | Low |     | Very Low |     |
|-------------------|-----------|------|------|------|--------|------|-----|-----|----------|-----|
|                   | N         | %    | N    | %    | N      | %    | N   | %   | N        | %   |
| Stamina           | 23        | 29.1 | 33   | 41.8 | 21     | 26.6 | 2   | 2.5 | 0        | 0   |
| Strength          | 19        | 24.1 | 32   | 40.5 | 27     | 34.2 | 1   | 1.3 | 0        | 0   |
| Speed             | 10        | 12.7 | 26   | 32.9 | 39     | 49.4 | 4   | 5.1 | 0        | 0   |
| Flexibility       | 10        | 12.7 | 27   | 34.2 | 36     | 45.6 | 4   | 5.1 | 2        | 2.5 |

For the dimensions of stamina and strength, the "high" response category received the most responses ( $\underline{n}$  = 33, 41.8% of subjects;  $\underline{n}$  = 32, 40.5% of subjects, respectively). In addition, for these dimensions the majority of subjects responded in the two highest categories ( $\underline{n}$  = 56, 70.9% of subjects;  $\underline{n}$  = 51, 64.6% of subjects, respectively). In terms of speed and flexibility, the "medium" response category received the highest number of responses ( $\underline{n}$  = 39, 49.4% of subjects;  $\underline{n}$  =36, 45.6% of subjects, respectively). For all fitness dimensions, the "very low" and "low" response categories received only a nominal number of responses.

**5.3. DESCRIPTIVE STATISTICS**

This section outlines the mean and standard deviation scores of the Negative Addiction and Running Enjoyment Scales, for the entire research sample.<sup>2</sup>

**5.3.1. Negative Addiction Scale (NAS)**

The current research sample obtained a wide range of NAS scores. Following the findings of Anderson et al. (1997), Hailey and Bailey (1982), Leask (1997), and Macpherson (1998), a decision was made to divide the runners, using the mean, mode, and quartile scores of the NAS as guidelines, into three groups of low, moderate, and high negative addiction to running. The low negative addiction group contained runners with NAS scores between 0 and 2, the moderate addiction group consisted of runners with scores between 3 and 6, and the high addiction group was comprised of runners with scores of 7 and above. The mean and standard deviation scores for the three addiction groups, as well as the total sample, are displayed below, in Table 10.

<sup>2</sup> All statistics were calculated to two decimal places.

**Table 10. Descriptive statistics for the NAS**

| Group        | N  | Min | Max | Mean | SD   | %    |
|--------------|----|-----|-----|------|------|------|
| Total Sample | 79 | 0   | 10  | 4.67 | 2.77 | 100  |
| High NAS     | 23 | 7   | 10  | 8.23 | 0.90 | 29.1 |
| Moderate NAS | 35 | 3   | 6   | 4.31 | 1.21 | 44.3 |
| Low NAS      | 21 | 0   | 2   | 1.38 | 0.74 | 26.6 |

The entire sample's mean NAS score was 4.67 (SD = 2.77). The high addiction group obtained a mean score of 8.23 (SD = .90), the moderate addiction group had a mean score of 4.31 (SD = 1.21), and the low addiction group had a mean score of 1.38 (SD = 0.74).

#### 5.3.1.1. Comparison of mean NAS scores with mean NAS scores of previous studies

A series of z-tests for independent samples were performed to examine whether the present sample's mean NAS score differed significantly from the mean NAS scores obtained by previous studies. The following table reflects the results of these z-test comparisons:

**Table 11. z-Test comparisons of mean NAS scores**

| Studies                | N   | Mean | SD                      | z value |
|------------------------|-----|------|-------------------------|---------|
| Present Study          | 79  | 4.67 | 2.77                    |         |
| Macpherson (1998)      | 80  | 3.00 | 2.15                    | 4.18*** |
| Leask (1997)           | 112 | 3.05 | 1.99                    | 4.50*** |
| Anderson et al. (1997) | 49  | 3.82 | 2.45                    | 1.81    |
| Furst & Germone (1993) | 188 | 3.20 | 2.20                    | 4.20*** |
|                        |     | 4.40 | 2.20                    | 0.77    |
| Hailey & Bailey (1982) | 60  | 5.39 | Not listed <sup>3</sup> | -0.72   |

 $\alpha < .05$ 
$$^{**} \alpha < .01$$

\*\*\*  $\alpha < .001$

This table reveals that the present sample's mean NAS score was significantly higher than the mean NAS score obtained by Furst & Germone's (1993) sample of runners who had exercised for up to six years ( $z = 4.20, \alpha < .001$ ), Leask (1997) ( $z = 4.50, \alpha < .001$ ), and Macpherson (1998) ( $z = 4.18, \alpha < .001$ ). However, the current sample's mean NAS score did not differ significantly from Anderson et al.'s (1997) mean NAS score ( $z = 1.81, \alpha = .07$ ).

<sup>3</sup> Hailey and Bailey (1982) do not provide a standard deviation. This study used the same standard deviation that Leask (1997) used for the z- tests.

**Table 13. z-Test comparisons of the REQ scale means in the current study and Macpherson's (1998) study.**

|           | Present study<br>N = 79 |       | Macpherson (1998)<br>N= 80 |       | z-Test<br>Comparisons |
|-----------|-------------------------|-------|----------------------------|-------|-----------------------|
| Scales    | Mean                    | SD    | Mean                       | SD    | z Values              |
| REQ-AI    | 29.76                   | 3.27  | 27.58                      | 3.32  | 4.19***               |
| REQ-AE    | 29.06                   | 4.13  | 21.62                      | 4.72  | 10.48***              |
| REQ-NAI   | 29.45                   | 3.26  | 27.83                      | 9.80  | 1.41                  |
| REQ-NAE   | 27.84                   | 4.60  | 25.67                      | 3.70  | 3.29**                |
| REQ total | 116.08                  | 13.10 | 107.7                      | 12.03 | 4.21***               |

$$^{**} \alpha < .01$$

\*\*\*  $\alpha < .001$

In the current study, the mean scores for most of the REQ subscales differed significantly from the sample means in Macpherson's (1998) study. More specifically, the present sample's mean score on the achievement-intrinsic scale ( $z = 4.19, \alpha < .001$ ); the achievement-extrinsic scale ( $z = 10.48, \alpha < .001$ ); and the nonachievement-extrinsic scale ( $z = 3.29, \alpha < .01$ ), were significantly higher than that of Macpherson's (1998) study. No significant difference was found between the mean scores on the nonachievement-intrinsic scale ( $z = 1.41, \alpha = .16$ ). In addition, the present sample's mean score on the REQ composite scale ( $z = 4.21, \alpha < .001$ ) was significantly higher than the mean score obtained by Macpherson (1998). These results seem to suggest that extrinsic (and achievement) sources of enjoyment are more motivating for the current sample of black, Zulu-speaking runners than for previous samples of white runners.

## 5.4. INFERENCE STATISTICS

#### 5.4.1. Multiple correlation procedure

Pearson's product-moment multiple correlation procedure was conducted on all research variables, with the aim of identifying variables significantly correlated with each other. These significantly correlated variables were used to guide further statistical analyses.

#### 5.4.1.1. Variables significantly correlated with the NAS

As negative addiction to running was a focus of the present study, variables significantly correlated with the NAS were extracted from the multiple correlation matrix and were

selected for inclusion in multivariate procedures. These significantly correlated variables are displayed below, in Table 14.

**Table 14. Variables significantly correlated with the NAS**

| Scale                    | Variable correlated with NAS      | Correlation Coefficient |
|--------------------------|-----------------------------------|-------------------------|
| Biographical Information | Running History                   | .282*                   |
|                          | Running Importance                | .445***                 |
|                          | Stamina                           | .268*                   |
|                          | Strength                          | .273*                   |
|                          | Number of Comrades completed      | .510**                  |
| REQ                      | Achievement-Intrinsic             | .414***                 |
|                          | Achievement-Extrinsic             | .308**                  |
|                          | Nonachievement-Intrinsic          | .392***                 |
|                          | Nonachievement-Extrinsic          | .241*                   |
|                          | Running Enjoyment Composite Scale | .383**                  |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

5.4.1.2. Variables significantly correlated with the REQ

Another focus of this study was running enjoyment, hence variables significantly correlated with the REQ composite scale and the four REQ subscales were extracted from the correlation matrix. The variables significantly correlated with the REQ composite scale are displayed in Table 15. Tables 16 to 19 depict the variables which were significantly correlated with the four REQ subscales.

**Table 15. Variables significantly correlated with the REQ composite scale**

| Scale                    | Variables correlated with the REQ | Correlation coefficient |
|--------------------------|-----------------------------------|-------------------------|
| Biographical Information | Gender                            | .222*                   |
|                          | Running Importance                | .321**                  |
|                          | Number of Comrades completed      | .554**                  |
| NAS                      | Composite Scale                   | .383**                  |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

The variables which correlated significantly with the REQ were included in further relevant statistical analyses.

**Table 16. Variables significantly correlated with the nonachievement-intrinsic scale of the REQ.**

| Scale                    | Variables correlated with REQ-NAI | Correlation coefficient |
|--------------------------|-----------------------------------|-------------------------|
| Biographical Information | Age                               | .227*                   |
|                          | Gender                            | .302**                  |
|                          | Running Importance                | .389***                 |
| REQ                      | Achievement-Intrinsic             | .698***                 |
|                          | Achievement-Extrinsic             | .596***                 |
|                          | Nonachievement-Extrinsic          | .664***                 |
|                          | REQ Composite Scale               | .844***                 |
| NAS                      | Composite Scale                   | .392***                 |

\*  $\alpha < .05$ 
\*\*  $\alpha < .01$ 
\*\*\*  $\alpha < .001$

**Table 17. Variables significantly correlated with the achievement-intrinsic scale of the REQ.**

| Scale                    | Variables correlated with REQ-AI | Correlation coefficient |
|--------------------------|----------------------------------|-------------------------|
| Biographical Information | Age                              | .289**                  |
|                          | Gender                           | .227*                   |
|                          | Education                        | -.249*                  |
|                          | Running History                  | .246*                   |
|                          | Running Importance               | .440***                 |
|                          | Number of Comrades completed     | .518**                  |
| REQ                      | Achievement-Extrinsic            | .588***                 |
|                          | Nonachievement-Intrinsic         | .698***                 |
|                          | Nonachievement-Extrinsic         | .577***                 |
|                          | REQ Composite Scale              | .812***                 |
| NAS                      | Composite Scale                  | .414***                 |

\*  $\alpha < .05$ 
\*\*  $\alpha < .01$ 
\*\*\*  $\alpha < .001$

**Table 18. Variables significantly correlated with the nonachievement-extrinsic scale of the REQ.**

| Scale                    | Variables correlated with REQ-NAE | Correlation coefficient |
|--------------------------|-----------------------------------|-------------------------|
| Biographical Information | Number of Comrades completed      | .504**                  |
|                          | Flexibility                       | .259*                   |
| REQ                      | Achievement-Intrinsic             | .577***                 |
|                          | Achievement-Extrinsic             | .733***                 |
|                          | Nonachievement-Intrinsic          | .664***                 |
|                          | REQ Composite Scale               | .892***                 |
| NAS                      | Composite Scale                   | .241*                   |

\*  $\alpha < .05$                       \*\*  $\alpha < .01$                       \*\*\*  $\alpha < .001$

**Table 19. Variables significantly correlated with the achievement-extrinsic scale of the REQ.**

| Scale                    | Variables correlated with REQ-AE | Correlation coefficient |
|--------------------------|----------------------------------|-------------------------|
| Biographical Information | Education                        | -.233*                  |
|                          | Running History                  | .263*                   |
|                          | Number of Comrades completed     | .428*                   |
| REQ                      | Achievement-Intrinsic            | .588***                 |
|                          | Nonachievement-Intrinsic         | .596***                 |
|                          | Nonachievement-Extrinsic         | .733***                 |
|                          | REQ Composite Scale              | .868***                 |
| NAS                      | Composite Scale                  | .308*                   |

\*  $\alpha < .05$                       \*\*  $\alpha < .01$                       \*\*\*  $\alpha < .001$

The above tables reveal that a number of different variables correlated significantly with each of the REQ scales. More specifically, the biographical variables of age, gender, and running importance were significantly correlated with the achievement-intrinsic and nonachievement-intrinsic scales of the REQ. The variable of education was significantly negatively correlated with both of the achievement scales of the REQ. In other words, the lower the level of education of subjects, the higher the scores obtained on the achievement-intrinsic and the achievement-extrinsic scales. The variables of running history and number of Comrades completed were significantly correlated with both the achievement-intrinsic and achievement-extrinsic scales. Moreover, number of Comrades completed was significantly correlated with the nonachievement-extrinsic scale, as was the variable of

flexibility. In addition, all four subscales of the REQ were significantly correlated with the total score on the NAS. Finally, the four REQ subscales were significantly positively correlated with each other. This implies that the various components of running enjoyment are closely related to each other, with the common denominator being a strong sense of running enjoyment, and ultimately running commitment (Macpherson, 1998).

5.4.1.3. Individual REQ items significantly correlated with the NAS

Multiple correlation procedures were performed to identify the individual REQ items which correlated significantly with the NAS. The results are reflected in the following table:

Table 20. Individual REQ items significantly correlated with the NAS.

| REQ scale | Running Enjoyment Questionnaire Items  | Correlation coefficient |
|-----------|--|-------------------------|
| REQ-AI    | What I enjoy about running is the sense of personal achievement I get                      | .314**                  |
|           | What I enjoy about running is the feeling of personal control I get                        | .294**                  |
|           | What I enjoy about running is that I have control over my health and fitness               | .309**                  |
|           | What I enjoy about running is the challenge of breaking through pain barriers              | .241*                   |
|           | What I enjoy about running is that I can plan my own training programme                    | .225*                   |
| REQ-NAI   | What I enjoy about running is the routine of training                                      | .321**                  |
|           | What I enjoy about running is the physical sensation of running                            | .393***                 |
|           | What I enjoy about running is the sensation of feeling a "high" after or during a good run | .276*                   |
| REQ-AE    | What I enjoy about running is that important person/s in my life respect me for my running | .464***                 |
|           | What I enjoy about running is the quiet satisfaction of people knowing that I am a runner  | .324**                  |
| REQ-NAE   | What I enjoy about running is the opportunity it provides me for socialising after a run   | .259*                   |
|           | What I enjoy about running is the friends I have made through running                      | .251*                   |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

The two intrinsic scales of the REQ had a number of items significantly correlated with the NAS. More specifically, 71.43% of the achievement-intrinsic scale's items and 42.86% of the nonachievement-intrinsic scale's items were significantly correlated with the NAS. In



terms of the extrinsic scales of the REQ, 28.57% of the items of the achievement-extrinsic scale were significantly correlated with the NAS. Similarly, 28.57% of the nonachievement-extrinsic scale's items were significantly correlated with the NAS. Table 21 presents the percentage and number of subjects that responded in the "very important" category for each of the three negative addiction groups on these significant REQ items.

**Table 21. Percentage and number of subjects in the three NAS groups that responded in the "very important" category for the REQ items that significantly correlated with the NAS.**

| REQ scale | REQ items  | N: HA | % HA  | N: MA | % MA  | N: LA | % LA  |
|-----------|--|-------|-------|-------|-------|-------|-------|
| REQ-AI    | What I enjoy about running is the sense of personal achievement I get                      | 16    | 69.57 | 10    | 28.57 | 7     | 33.33 |
|           | What I enjoy about running is the feeling of personal control I get                        | 10    | 43.48 | 15    | 42.86 | 3     | 14.29 |
|           | What I enjoy about running is that I have control over my health and fitness               | 19    | 82.61 | 16    | 45.71 | 11    | 52.38 |
|           | What I enjoy about running is the challenge of breaking through pain barriers              | 14    | 60.87 | 14    | 40.00 | 4     | 19.05 |
|           | What I enjoy about running is that I can plan my own training programme                    | 14    | 60.87 | 16    | 45.71 | 4     | 19.05 |
| REQ-NAI   | What I enjoy about running is the routine of training                                      | 16    | 69.56 | 11    | 31.43 | 0     | 0.00  |
|           | What I enjoy about running is the physical sensation of running                            | 20    | 86.96 | 11    | 31.43 | 6     | 28.57 |
|           | What I enjoy about running is the sensation of feeling a "high"                            | 14    | 60.87 | 5     | 14.29 | 4     | 19.05 |
| REQ-AE    | What I enjoy about running is that important person/s in my life respect me for my running | 17    | 73.91 | 2     | 5.71  | 4     | 19.05 |
|           | What I enjoy about running is the quiet satisfaction of people knowing that I am a runner  | 15    | 65.22 | 14    | 40.00 | 2     | 9.52  |
| REQ-NAE   | What I enjoy about running is the opportunity it provides me for socialising               | 15    | 65.22 | 10    | 28.57 | 2     | 9.52  |
|           | What I enjoy about running is the friends I have made through running                      | 13    | 56.52 | 12    | 34.29 | 5     | 23.81 |

**Key:** HA = high negative addiction group; MA = moderate negative addiction group; LA = low negative addiction group.

Runners who fell into the high negative addiction group responded more often in the "very important" category than runners who belonged to either the moderate or low negative



**Table 13. z-Test comparisons of the REQ scale means in the current study and Macpherson's (1998) study.**

| Scales    | Present study<br>N = 79 |       | Macpherson (1998)<br>N= 80 |       | z-Test<br>Comparisons |
|-----------|-------------------------|-------|----------------------------|-------|-----------------------|
|           | Mean                    | SD    | Mean                       | SD    | z Values              |
| REQ-AI    | 29.76                   | 3.27  | 27.58                      | 3.32  | 4.19***               |
| REQ-AE    | 29.06                   | 4.13  | 21.62                      | 4.72  | 10.48***              |
| REQ-NAI   | 29.45                   | 3.26  | 27.83                      | 9.80  | 1.41                  |
| REQ-NAE   | 27.84                   | 4.60  | 25.67                      | 3.70  | 3.29**                |
| REQ total | 116.08                  | 13.10 | 107.7                      | 12.03 | 4.21***               |

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

In the current study, the mean scores for most of the REQ subscales differed significantly from the sample means in Macpherson's (1998) study. More specifically, the present sample's mean score on the achievement-intrinsic scale ( $z = 4.19, \alpha < .001$ ); the achievement-extrinsic scale ( $z = 10.48, \alpha < .001$ ); and the nonachievement-extrinsic scale ( $z = 3.29, \alpha < .01$ ), were significantly higher than that of Macpherson's (1998) study. No significant difference was found between the mean scores on the nonachievement-intrinsic scale ( $z = 1.41, \alpha = .16$ ). In addition, the present sample's mean score on the REQ composite scale ( $z = 4.21, \alpha < .001$ ) was significantly higher than the mean score obtained by Macpherson (1998). These results seem to suggest that extrinsic (and achievement) sources of enjoyment are more motivating for the current sample of black, Zulu-speaking runners than for previous samples of white runners.

**5.4. INFERENCEAL STATISTICS**

**5.4.1. Multiple correlation procedure**

Pearson's product-moment multiple correlation procedure was conducted on all research variables, with the aim of identifying variables significantly correlated with each other. These significantly correlated variables were used to guide further statistical analyses.

5.4.1.1. Variables significantly correlated with the NAS

As negative addiction to running was a focus of the present study, variables significantly correlated with the NAS were extracted from the multiple correlation matrix and were

selected for inclusion in multivariate procedures. These significantly correlated variables are displayed below, in Table 14.

Table 14. Variables significantly correlated with the NAS

| Scale                    | Variable correlated with NAS      | Correlation Coefficient |
|--------------------------|-----------------------------------|-------------------------|
| Biographical Information | Running History                   | .282*                   |
|                          | Running Importance                | .445***                 |
|                          | Stamina                           | .268*                   |
|                          | Strength                          | .273*                   |
|                          | Number of Comrades completed      | .510**                  |
| REQ                      | Achievement-Intrinsic             | .414***                 |
|                          | Achievement-Extrinsic             | .308**                  |
|                          | Nonachievement-Intrinsic          | .392***                 |
|                          | Nonachievement-Extrinsic          | .241*                   |
|                          | Running Enjoyment Composite Scale | .383**                  |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

5.4.1.2. Variables significantly correlated with the REQ

Another focus of this study was running enjoyment, hence variables significantly correlated with the REQ composite scale and the four REQ subscales were extracted from the correlation matrix. The variables significantly correlated with the REQ composite scale are displayed in Table 15. Tables 16 to 19 depict the variables which were significantly correlated with the four REQ subscales.

Table 15. Variables significantly correlated with the REQ composite scale

| Scale                    | Variables correlated with the REQ | Correlation coefficient |
|--------------------------|-----------------------------------|-------------------------|
| Biographical Information | Gender                            | .222*                   |
|                          | Running Importance                | .321**                  |
|                          | Number of Comrades completed      | .554**                  |
| NAS                      | Composite Scale                   | .383**                  |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

The variables which correlated significantly with the REQ were included in further relevant statistical analyses.



**Table 18. Variables significantly correlated with the nonachievement-extrinsic scale of the REQ.**

| Scale                    | Variables correlated with REQ-NAE | Correlation coefficient |
|--------------------------|-----------------------------------|-------------------------|
| Biographical Information | Number of Comrades completed      | .504**                  |
|                          | Flexibility                       | .259*                   |
| REQ                      | Achievement-Intrinsic             | .577***                 |
|                          | Achievement-Extrinsic             | .733***                 |
|                          | Nonachievement-Intrinsic          | .664***                 |
|                          | REQ Composite Scale               | .892***                 |
| NAS                      | Composite Scale                   | .241*                   |

\*  $\alpha < .05$       \*\*  $\alpha < .01$       \*\*\*  $\alpha < .001$

**Table 19. Variables significantly correlated with the achievement-extrinsic scale of the REQ.**

| Scale                    | Variables correlated with REQ-AE | Correlation coefficient |
|--------------------------|----------------------------------|-------------------------|
| Biographical Information | Education                        | -.233*                  |
|                          | Running History                  | .263*                   |
|                          | Number of Comrades completed     | .428*                   |
| REQ                      | Achievement-Intrinsic            | .588***                 |
|                          | Nonachievement-Intrinsic         | .596***                 |
|                          | Nonachievement-Extrinsic         | .733***                 |
|                          | REQ Composite Scale              | .868***                 |
| NAS                      | Composite Scale                  | .308*                   |

\*  $\alpha < .05$       \*\*  $\alpha < .01$       \*\*\*  $\alpha < .001$

The above tables reveal that a number of different variables correlated significantly with each of the REQ scales. More specifically, the biographical variables of age, gender, and running importance were significantly correlated with the achievement-intrinsic and nonachievement-intrinsic scales of the REQ. The variable of education was significantly negatively correlated with both of the achievement scales of the REQ. In other words, the lower the level of education of subjects, the higher the scores obtained on the achievement-intrinsic and the achievement-extrinsic scales. The variables of running history and number of Comrades completed were significantly correlated with both the achievement-intrinsic and achievement-extrinsic scales. Moreover, number of Comrades completed was significantly correlated with the nonachievement-extrinsic scale, as was the variable of

flexibility. In addition, all four subscales of the REQ were significantly correlated with the total score on the NAS. Finally, the four REQ subscales were significantly positively correlated with each other. This implies that the various components of running enjoyment are closely related to each other, with the common denominator being a strong sense of running enjoyment, and ultimately running commitment (Macpherson, 1998).

5.4.1.3. Individual REQ items significantly correlated with the NAS

Multiple correlation procedures were performed to identify the individual REQ items which correlated significantly with the NAS. The results are reflected in the following table:

Table 20. Individual REQ items significantly correlated with the NAS.

| REQ scale | Running Enjoyment Questionnaire Items  | Correlation coefficient |
|-----------|--|-------------------------|
| REQ-AI    | What I enjoy about running is the sense of personal achievement I get                      | .314**                  |
|           | What I enjoy about running is the feeling of personal control I get                        | .294**                  |
|           | What I enjoy about running is that I have control over my health and fitness               | .309**                  |
|           | What I enjoy about running is the challenge of breaking through pain barriers              | .241*                   |
|           | What I enjoy about running is that I can plan my own training programme                    | .225*                   |
| REQ-NAI   | What I enjoy about running is the routine of training                                      | .321**                  |
|           | What I enjoy about running is the physical sensation of running                            | .393***                 |
|           | What I enjoy about running is the sensation of feeling a "high" after or during a good run | .276*                   |
| REQ-AE    | What I enjoy about running is that important person/s in my life respect me for my running | .464***                 |
|           | What I enjoy about running is the quiet satisfaction of people knowing that I am a runner  | .324**                  |
| REQ-NAE   | What I enjoy about running is the opportunity it provides me for socialising after a run   | .259*                   |
|           | What I enjoy about running is the friends I have made through running                      | .251*                   |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

The two intrinsic scales of the REQ had a number of items significantly correlated with the NAS. More specifically, 71.43% of the achievement-intrinsic scale's items and 42.86% of the nonachievement-intrinsic scale's items were significantly correlated with the NAS. In

terms of the extrinsic scales of the REQ, 28.57% of the items of the achievement-extrinsic scale were significantly correlated with the NAS. Similarly, 28.57% of the nonachievement-extrinsic scale's items were significantly correlated with the NAS. Table 21 presents the percentage and number of subjects that responded in the "very important" category for each of the three negative addiction groups on these significant REQ items.

**Table 21. Percentage and number of subjects in the three NAS groups that responded in the "very important" category for the REQ items that significantly correlated with the NAS.**

| REQ scale | REQ items  | N: HA | % HA  | N: MA | % MA  | N: LA | % LA  |
|-----------|--|-------|-------|-------|-------|-------|-------|
| REQ-AI    | What I enjoy about running is the sense of personal achievement I get                      | 16    | 69.57 | 10    | 28.57 | 7     | 33.33 |
|           | What I enjoy about running is the feeling of personal control I get                        | 10    | 43.48 | 15    | 42.86 | 3     | 14.29 |
|           | What I enjoy about running is that I have control over my health and fitness               | 19    | 82.61 | 16    | 45.71 | 11    | 52.38 |
|           | What I enjoy about running is the challenge of breaking through pain barriers              | 14    | 60.87 | 14    | 40.00 | 4     | 19.05 |
|           | What I enjoy about running is that I can plan my own training programme                    | 14    | 60.87 | 16    | 45.71 | 4     | 19.05 |
| REQ-NAI   | What I enjoy about running is the routine of training                                      | 16    | 69.56 | 11    | 31.43 | 0     | 0.00  |
|           | What I enjoy about running is the physical sensation of running                            | 20    | 86.96 | 11    | 31.43 | 6     | 28.57 |
|           | What I enjoy about running is the sensation of feeling a "high"                            | 14    | 60.87 | 5     | 14.29 | 4     | 19.05 |
| REQ-AE    | What I enjoy about running is that important person/s in my life respect me for my running | 17    | 73.91 | 2     | 5.71  | 4     | 19.05 |
|           | What I enjoy about running is the quiet satisfaction of people knowing that I am a runner  | 15    | 65.22 | 14    | 40.00 | 2     | 9.52  |
| REQ-NAE   | What I enjoy about running is the opportunity it provides me for socialising               | 15    | 65.22 | 10    | 28.57 | 2     | 9.52  |
|           | What I enjoy about running is the friends I have made through running                      | 13    | 56.52 | 12    | 34.29 | 5     | 23.81 |

**Key:** HA = high negative addiction group; MA = moderate negative addiction group; LA = low negative addiction group.

Runners who fell into the high negative addiction group responded more often in the "very important" category than runners who belonged to either the moderate or low negative



addiction groups, for every REQ item that was significantly correlated with the NAS (see Table 20). Furthermore, runners in the moderate addiction group responded more often in the "very important" category than runners in the low addiction group for most of the significant REQ items, with the exception of one achievement-extrinsic item ("What I enjoy about running is that important person's in my life respect me for my running"), two achievement-intrinsic items ("What I enjoy about running is the sense of personal achievement I get from it" and "What I enjoy about running is that I have control over my health and fitness"), and one nonachievement-intrinsic item ("What I enjoy about running is the sensation of feeling a "high" after or during a good run"). It appears that, in this sample, runners characterised by high levels of addiction are more motivated by all four sources of running enjoyment, than runners with lower levels of running dependence.

5.4.1.4. Individual REQ items significantly correlated with running history

A multiple correlation procedure was performed to identify the individual REQ items which were significantly correlated with running history. The following table depicts the results of this procedure:

**Table 22. Individual REQ items significantly correlated with running history**

| Scale   | Running Enjoyment Questionnaire Items  | Correlation coefficient |
|---------|--|-------------------------|
| REQ-AI  | What I enjoy about running is the sense of personal achievement I get              | .246*                   |
|         | What I enjoy about running is achieving personal best times                        | .342**                  |
| REQ-NAI | What I enjoy about running is the challenge of completing a marathon               | .284*                   |
| REQ-AE  | What I enjoy about running is receiving rewards such as medals                     | .284*                   |
|         | What I enjoy about running is the satisfaction of seeing my name on a results list | .279*                   |
|         | What I enjoy about running is wearing club colours/kit when I run                  | .287**                  |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

A number of REQ items significantly correlated with running history. Specifically, 28.57% of the REQ-AI items and 42.86% of the REQ-AE items correlated significantly with Running History. In addition, one item from the REQ-NAI scale was significantly correlated with

running history. It seems that as length of running involvement increases, factors linked to achievement and mastery (both intrinsic and extrinsic) are perceived to be the most enjoyable.

#### 5.4.1.5. Individual REQ items significantly correlated with running importance

Table 23 depicts the results of a multiple correlation procedure, performed to identify the individual REQ items significantly correlated with running importance.

**Table 23. REQ items significantly correlated with running importance**

| Scale   | Running Enjoyment Questionnaire Items                                 | Correlation coefficient |
|---------|---|-------------------------|
| REQ-AI  | What I enjoy about running is the sense of personal achievement I get | .310**                  |
|         | What I enjoy about running is the feeling of personal control I get   | .468***                 |
|         | What I enjoy about running is achieving personal best times           | .281*                   |
|         | What I enjoy about running is the challenge of breaking through pain  | .230*                   |
| REQ-NAI | What I enjoy about running is the routine of training                 | .318**                  |
|         | What I enjoy about running is the physical sensation of running       | .334**                  |
|         | What I enjoy about running is good sweat I work up during a run       | .236*                   |

\*  $\alpha < .05$ 
$$^{**} \alpha < .01$$

\*\*\*  $\alpha < .001$

The two intrinsic scales of the REQ had a number of items which correlated significantly with running importance. Specifically, 57.14% of the REQ-AI items and 42.86% of the REQ-NAI items were significantly correlated with running importance. In addition, no items from the extrinsic scales were significantly correlated with running importance. It thus seems that as running importance increases, runners in this sample find intrinsic sources of enjoyment more motivating than extrinsic sources of enjoyment.

All biographical and running enjoyment variables which were significantly correlated with the NAS (see Table 14) and the REQ (see Tables 15 to 19) were entered into further inferential and multivariate statistical analyses.



### 5.4.2. One-way ANOVA comparing the three negative addiction groups on significant variables

A one-way analysis of variance (ANOVA) procedure was conducted to establish whether the three groups of negative addiction to running (described in section 5.3.1) significantly differed from each other in terms of selected variables. Analysis of variance procedures are based on the following assumptions: homogeneity of variance; normality of score distribution; and the independence of observations (Howell, 1997). Although the current research sample met the statistical requirements for the homogeneity of variance and the independence of observations assumptions, the full requirements of the normality assumption were not met. In order to validate the results of the parametric ANOVA, a decision was made to perform nonparametric ANOVAs in conjunction with the parametric ANOVA procedure. The nonparametric ANOVA procedure is discussed more fully in section 5.4.3. More specifically, all variables significantly correlated with the NAS (see Table 14) were entered into the ANOVA. Significant results for this ANOVA are displayed below, in Table 24.

**Table 24. One-way ANOVA of significant biographical and REQ variables by negative addiction groups**

|                                     | Variable                 | Mean:<br>HA | Mean:<br>MA | Mean:<br>LA | F Ratio  |
|-------------------------------------|--------------------------|-------------|-------------|-------------|----------|
| <b>Biographical<br/>Information</b> | Stamina                  | 4.35        | 3.86        | 3.76        | 3.72*    |
|                                     | Strength                 | 4.13        | 3.94        | 3.48        | 4.35*    |
|                                     | Number of Comrades       | 8.29        | 3.08        | 3.00        | 5.72**   |
|                                     | Running History          | 3.04        | 3.34        | 1.95        | 6.39**   |
|                                     | Running Importance       | 4.96        | 4.89        | 4.38        | 12.56*** |
| <b>REQ</b>                          | Achievement-Intrinsic    | 31.30       | 29.71       | 28.14       | 5.78**   |
|                                     | Achievement-Extrinsic    | 30.74       | 28.89       | 27.52       | 3.61*    |
|                                     | Nonachievement-Intrinsic | 31.39       | 28.97       | 28.00       | 7.59**   |
|                                     | REQ Composite Scale      | 123.04      | 115.00      | 110.24      | 6.18**   |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

**Key:** HA = high negative addiction group; MA = moderate negative addiction group; LA = low negative addiction group.

A number of significant results emerged from the ANOVA, revealing which research variables were able to differentiate between the low, moderate, and high negative addiction groups. In order to identify the direction of these group differences, *post hoc* multiple comparison tests were performed on all significant ANOVA results. Tukey's honestly significant difference test and Scheffe's test ( $\alpha < .05$ ) were used as these *post hoc* tests offer adequate protection against a Type I error without being unduly conservative (Corston & Colman, 2000). The following results emerged from these tests:

#### 5.4.2.1. Differences between the addiction groups on biographical variables

##### *5.4.2.1.1. Stamina*

This variable was able to distinguish between the high and low negative addiction groups ( $F(2,76) = 3.72$ ;  $\alpha < .05$ ), with runners in the high addiction group reporting greater levels of stamina than runners in the low addiction group. No significant differences emerged between the high and moderate, or the moderate and low addiction groups on this variable.

##### *5.4.2.1.2. Strength*

The strength variable successfully distinguished between runners with high levels of negative addiction and runners with low levels of negative addiction ( $F(2,76) = 4.35$ ;  $\alpha < .05$ ). Highly addicted runners reported significantly greater levels of strength than runners in the low addiction group. This variable was unable to differentiate between either the high and moderate, or the moderate and low addiction groups.

##### *5.4.2.1.3. Number of Comrades completed*

Runners in the high negative addiction group reported running significantly more Comrades marathons than runners in both the low and moderate negative addiction group ( $F(2,76) = 5.72$ ;  $\alpha < .01$ ). No significant differences emerged between the moderate and low negative addiction groups on this variable. This finding is similar to that of Macpherson (1998).

##### *5.4.2.1.4. Length of running history*

This variable distinguished between runners in the high and low addiction groups. Running history also differentiated moderately addicted runners from runners with low levels of

addiction ( $F(2,76) = 6.39; \alpha < .01$ ). Both moderately and highly addicted runners reported running for significantly more years than runners with low levels of addiction. No significant differences emerged between the high and moderate addiction groups on this variable.

#### 5.4.2.1.5. *Running importance*

Running importance was able to differentiate the low from the high negative addiction group, as well as the low from the moderate addiction group ( $F(2,76) = 12.56; \alpha < .001$ ). Runners in both the high and moderate negative addiction groups reported that running was more important to them than runners in the low addiction group. No significant differences emerged between the highly and moderately addicted runner on this variable.

#### 5.4.2.2. Differences between the negative addiction groups in terms of the REQ

##### 5.4.2.2.1. *Achievement-intrinsic*

The achievement-intrinsic scale was able to differentiate the high from the low negative addiction group ( $F(2,76) = 5.78; \alpha < .01$ ), with highly addicted runners obtaining significantly higher means than runners with low levels of addiction. This variable did not distinguish between the high and moderate, or the moderate and low addiction groups.

##### 5.4.2.2.2. *Achievement-extrinsic*

The achievement-extrinsic scale distinguished between the high and low negative addiction groups ( $F(2,76) = 3.61; \alpha < .05$ ). Highly addicted runners obtained significantly higher means on this scale than runners in the low addiction group. This variable did not distinguish between the high and moderate, or the moderate and low addiction groups.

##### 5.4.2.2.3. *Nonachievement-intrinsic*

Runners characterised by high levels of negative addiction had significantly higher means on this variable than runners characterised by both moderate and low levels of negative addiction to running ( $F(2,76) = 7.59; \alpha < .01$ ). This variable did not differentiate the moderate addiction group from the low addiction group.

#### 5.4.2.2.4. *REQ composite score*

The REQ composite score was able to distinguish between the high and low negative addiction groups, with highly addicted runners reporting significantly greater levels of enjoyment than runners in the low addiction group ( $F(2,76) = 6.18$ ;  $\alpha < .01$ ). This variable also distinguished the high from the moderate addiction group, with the high addiction group reporting more enjoyment. There was no significant difference between the means of the moderate and low addiction groups.

In addition, although the REQ-NAE scale correlated significantly with the NAS, the ANOVA was unable to discriminate significantly between the low, moderate, and high negative addiction groups on this variable ( $F(2,76) = 2.76$ ;  $\alpha = .07$ ). The means of the three groups on this variable appeared significantly different (low: 26.57; moderate: 27.43; high: 29.61), but the large standard deviations (low: 4.46; moderate: 4.42; high: 4.67) revealed a high amount of overlap between the groups which could have led to non-significant results. Furthermore, the biographical variables which were not significantly correlated with the NAS were unable to distinguish between the three addiction groups.

#### 5.4.3. **Nonparametric analysis of variance on the three negative addiction groups**

Nonparametric procedures are useful when the normality and homogeneity of variance assumptions underlying parametric tests have been violated as they do not make assumptions about the shape of the score distribution (Howell, 1997). However, there is much debate in the statistical research literature about the importance and role of nonparametric tests, with some researchers claiming that parametric tests are sufficiently robust to deal with skewed data (Howell, 1997). Despite this claim, it was decided (for completeness) to use a nonparametric ANOVA procedure (namely, the Kruskal-Wallis test) to validate the results of the one-way ANOVA, as the research variables generally did not fulfill the assumption of normality (see section 5.4.2.). Furthermore, it was decided not to rely solely on the findings from the Kruskal-Wallis ANOVA, as the parametric ANOVA has greater power than its nonparametric counterpart (Howell, 1997). All variables which were significantly correlated with the NAS (see Table 14) were entered into the Kruskal-Wallis test. Table 25 depicts the significant results of this analysis.

Table 25. Kruskal-Wallis one-way ANOVA of significant variables by NAS

|                          | Variable                  | df | Chi-Square |
|--------------------------|---------------------------|----|------------|
| Biographical Information | Stamina                   | 2  | 8.17*      |
|                          | Strength                  | 2  | 7.31*      |
|                          | Length of Running History | 2  | 11.25**    |
|                          | Running Importance        | 2  | 19.03***   |
| REQ                      | Achievement-Intrinsic     | 2  | 10.06**    |
|                          | Achievement-Extrinsic     | 2  | 10.67**    |
|                          | Nonachievement-Intrinsic  | 2  | 15.84***   |
|                          | Nonachievement-Extrinsic  | 2  | 7.75*      |
|                          | REQ Composite Scale       | 2  | 15.34***   |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

These results largely support the findings of the parametric ANOVA (see Table 24). The Kruskal-Wallis test (like the parametric ANOVA) found significant differences between the mean scores of the three addiction groups on the following biographical variables: running importance ( $\chi^2(2) = 19.03$ ;  $\alpha < .001$ ); running history ( $\chi^2(2) = 11.25$ ;  $\alpha < .01$ ); strength ( $\chi^2(2) = 7.31$ ;  $\alpha < .05$ ); and stamina ( $\chi^2(2) = 8.17$ ;  $\alpha < .05$ ). The only biographical variable which did not differentiate between the three addiction groups on the Kruskal-Wallis test, but which significantly distinguished between the three groups on the ANOVA, was the number of Comrades marathons completed ( $\chi^2(2) = 5.42$ ;  $\alpha = .066$ ). However, this result did approach significance. In addition, both the parametric and the nonparametric ANOVA extracted largely the same nonsignificant results. Both procedures found that the means of the three addiction groups were not significantly different for the biographical variables which did not significantly correlate with the NAS.

In addition, like the ANOVA, the Kruskal-Wallis test found significant differences between the three addiction groups on the following running enjoyment variables: REQ composite scale ( $\chi^2(2) = 15.34$ ;  $\alpha < .001$ ); REQ-AI ( $\chi^2(2) = 10.06$ ;  $\alpha < .01$ ); REQ-AE ( $\chi^2(2) = 10.67$ ;  $\alpha < .01$ ); and REQ-NAI ( $\chi^2(2) = 15.84$ ;  $\alpha < .001$ ). However, for the REQ-NAE, the ANOVA and Kruskal-Wallis test derived different results. The ANOVA found that the three running addiction groups did not differ significantly on this variable ( $F(2,76) = 2.76$ ;  $\alpha = .07$ ), whilst

the Kruskal-Wallis test found that the three groups did differ significantly ( $\chi^2(2) = 7.75$ ;  $\alpha < .05$ ).

**5.4.4. Paired sample t-Tests comparing the REQ intrinsic and extrinsic, and REQ achievement and nonachievement scales**

A paired sample *t*-test was conducted to determine whether the mean score of the REQ intrinsic scale (REQ-AI and REQ-NAI) differed significantly from the mean score of the REQ extrinsic scale (REQ-AE and REQ-NAE). A further *t*-test was conducted to test whether the mean score of the REQ achievement scale (REQ-AI and REQ-AE) differed significantly from the mean score of the REQ nonachievement scale (REQ-NAI and REQ-NAE). The following table displays the significant findings of these procedures.

**Table 26. Paired sample t-tests of the REQ subscales**

| REQ Scale 1 in Procedure    | REQ Scale 2 in procedure         | df | t Value |
|-----------------------------|----------------------------------|----|---------|
| intrinsic scale (AI & NAI)  | extrinsic scale (AE & NAE)       | 78 | 3.52**  |
| achievement scale (AI & AE) | nonachievement scale (NAI & NAE) | 78 | 3.18**  |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

A significant difference was found between the achievement scales of the REQ and the nonachievement scales, with higher mean scores being obtained for the achievement scales ( $t = 3.18$ ,  $\alpha < .01$ ). In addition, a significant difference was found between the mean scores of the intrinsic scales of the REQ and the extrinsic scales, with subjects obtaining higher mean scores on the intrinsic scales ( $t = 3.52$ ,  $\alpha < .001$ ).

**5.5. MULTIVARIATE STATISTICAL PROCEDURES**

**5.5.1. Factor analyses**

**5.5.1.1. Factor analysis of all significant research variables**

A factor analysis was performed on the NAS, REQ scales, and other significant variables, with the aim of identifying the underlying dimensions of the research sample which could be used to represent relationships amongst interrelated variables. A decision was made to exclude the variable "Number of Comrades marathons completed" from the procedure, as it had a high number of missing values and its inclusion may have biased the results.

A principal components analysis, followed by varimax rotation of factors, resulted in the selection of 5 factors. The variables that contributed to the factor analysis were selected using the standard cut-off point of  $> .4$ , for the significance of factor loadings (Kerlinger, 1986)<sup>1</sup>. The identified factors, after varimax rotation, are reflected below in Table 27.

**Table 27. Factor analysis of significant research variables after varimax rotation.**

| Factor | Class of variables | Variable                  | Factor Loading |
|--------|--------------------|---------------------------|----------------|
| 1      | Running Enjoyment  | Nonachievement-Extrinsic  | .90            |
|        |                    | Achievement-Extrinsic     | .83            |
|        |                    | Nonachievement-Intrinsic  | .81            |
|        |                    | Achievement-Intrinsic     | .74            |
| 2      | Fitness Dimensions | Speed                     | .83            |
|        |                    | Stamina                   | .76            |
|        |                    | Strength                  | .75            |
|        |                    | Flexibility               | .70            |
| 3      | Running Addiction  | Running Importance        | .78            |
|        |                    | Negative Addiction Scale  | .73            |
| 4      | Running History    | Running Intensity         | .77            |
|        |                    | Length of Running History | .76            |
| 5      | Running Frequency  | Running Frequency         | .79            |
|        |                    | Kilometres run per week   | .76            |

Five factors emerged from this procedure, all of which generally fell into their own class of variables. The first factor, which consisted of the four REQ subscales, was the largest and contributed 26.9% of the variance. Factor 2 consisted of the four fitness dimensions and contributed 16.6% of the variance. Factors 3, 4, and 5 largely consisted of running behaviour variables, extracted from the Biographical Information Questionnaire. These factors contributed 10.3%, 8.5%, and 7.6% of the variance respectively. The NAS, together with the "Running Importance" variable, comprised Factor 3. This suggests that, for this sample, the NAS and the "Running Importance" variable are interrelated. These results also

<sup>1</sup> Although some researchers have set the significance for factor loadings at  $> .3$  (Kerlinger, 1986), it was decided, in this study, to set a more stringent significance level.

provide some support for the NAS, the REQ, the biophysical fitness variables, and the running behaviour variables being independent.

#### 5.5.1.2. Factor analysis of individual REQ scale items

A factor analysis was also conducted on the individual REQ items, in order to identify the dimensions which underpinned the REQ in the current research sample. A principal components analysis, followed by varimax rotation, resulted in the extraction of 8 factors, which generally fell into their own class of variables (see Table 28, below).

The final factor analysis excluded REQ items 8, 13, 18, and 22, as the initial procedure revealed that these items loaded across a number of factors. The 8 extracted factors accounted for 72.2% of the variance. Factor 1 contained items referring to extrinsic influences on enjoyment and accounted for 27.8% of the variance. This extrinsic factor also contained an item referring to a "runner's high" which black runners may have interpreted as the external demonstration of strength and endurance. Factor 2 consisted of items referring to intrinsic sources of enjoyment, and contributed 10.1% of the variance. Factor 3 consisted of items pertaining to the social/running identity of the runner. This factor contributed 6.9% of the variance. Factor 4 consisted mainly of personal achievement items and comprised 6.5% of the variance, while factor 5 contained items referring to the therapeutic benefits of running and contributed 6.4% of the variance. Factor 6 was a general running factor and contributed 5.4% of the variance, while factor 7 contained affiliation items and contributed 4.9% of the variance. Finally, factor 8 contained items referring to personal control and contributed 4.2% of the variance. These results suggest that the sources of running enjoyment are perhaps more complex than merely intrinsic and extrinsic nonachievement and achievement factors.



**Table 28. Factor analysis of REQ scale items, after varimax rotation**

| Factor | Variable Class                 | REQ Item   | Factor Loading |
|--------|--------------------------------|--|----------------|
| 1      | Extrinsic factor               | important persons in my life respect me for my running                 | .79            |
|        |                                | sensation of feeling a "high" after or during a good run               | .79            |
|        |                                | others think of me as a special sort of person because I run marathons | .78            |
|        |                                | that it is such a popular sport  | .72            |
| 2      | Intrinsic factor               | the challenge of breaking through pain barriers                        | .80            |
|        |                                | the good sweat I work up during a run                                  | .80            |
|        |                                | the personal rewards I get for my own achievements                     | .69            |
| 3      | Social/Running identity factor | that it enables me to feel part of a group                             | .77            |
|        |                                | buying and wearing kit such as running shoes                           | .73            |
|        |                                | the opportunity it provides me for socialising after a run             | .63            |
| 4      | Achievement factor             | the satisfaction of seeing my name on a results list                   | .78            |
|        |                                | the challenge of completing a marathon                                 | .74            |
|        |                                | achieving personal best times  | .64            |
| 5      | Therapeutic factor             | gives me a chance to deal with my stress levels                        | .75            |
|        |                                | the feeling of relaxation during and after a run                       | .72            |
|        |                                | affords me the opportunity to spend time alone on the road             | .56            |
| 6      | General Running factor         | the sense of personal achievement I get from it                        | .79            |
|        |                                | the physical sensation of running                                      | .72            |
| 7      | Affiliation factor             | being with lots of people  | .58            |
|        |                                | the friends that I have made through running                           | .54            |
| 8      | Personal Control factor        | the feeling of personal control I get out of running                   | .83            |
|        |                                | that I can plan my own training programme                              | .79            |
|        |                                | the routine of training  | .58            |

**5.5.2. Multiple regression analyses**

Multiple regression analyses were conducted to identify the variables significantly correlated with the NAS and REQ (see Tables 14 and 15) which were best able to predict negative addiction to running, and running enjoyment. This statistical procedure was also performed in order to remove possible bias which may have occurred from dividing the sample into

three levels of addiction by means of statistical cut-off points, since multiple regression analysis treated the NAS data as continuous rather than dichotomous. The variable "Number of Comrades marathons completed" was excluded from these procedures due to a high number of missing values which could have biased findings. Although initial multiple regression procedures included the variable "Running Importance", a decision was made to exclude this variable from subsequent procedures due to its interrelationship with the NAS (see section 5.5.1.1.) and the top priority granted it by most of the runners (see section 5.2.3., Table 8) which would have confounded the results.

5.5.2.1. Stepwise multiple regression with NAS as the dependent variable.

5.5.2.1.1. *Stepwise multiple regression with NAS as the dependent variable and all significantly correlated variables as the independent variables*

A stepwise multiple regression procedure was performed with negative addiction to running as the dependent variable. The independent variables included the significant variables extracted from the multiple correlation matrix (see Table 14). The findings for this procedure are displayed below in Table 29.

**Table 29. Stepwise multiple regression with NAS as the dependent variable, and all significantly correlated variables as the independent variables.**

| Dependent Variable | Independent variable           | Step | R <sup>2</sup> | ANOVA |           |
|--------------------|--------------------------------|------|----------------|-------|-----------|
|                    |                                |      |                | df    | F ratio   |
| NAS                | Achievement-Intrinsic (REQ-AI) | 1    | .17            | 1     | 15.97**** |
|                    | Strength                       | 2    | .22            | 2     | 10.69**** |

\*\*\*  $\alpha < .001$                       \*\*\*\*  $\alpha < .0001$

The stepwise procedure entered the achievement-intrinsic scale of the REQ as the best predictor of NAS scores ( $F = 15.97, \alpha < .0001$ ), with this variable accounting for 17% of the variance on its own. The fitness dimension of strength was also found to be a significant predictor of running addiction. This variable accounted for a further 5% of the variance ( $F = 10.69, \alpha < .0001$ ), with both variables contributing 22% to the combined variance. The remaining 78% of the variance was accounted for by unknown variables.

5.5.2.1.2.     *Stepwise multiple regression with NAS as the dependent variable and REQ factors as the independent variables*

A stepwise multiple regression procedure was conducted with the NAS as the dependent variable and the 8 REQ factors (see Table 28) as the independent variables. The purpose of this procedure was to identify the REQ factors, underlying the current research sample, which best predicted the NAS. Table 30 reflects the results of this analysis:

**Table 30.     Stepwise multiple regression with NAS as the dependent variable and REQ factors as the independent variables**

| Dependent Variable | Independent variable        | Step | R <sup>2</sup> | ANOVA |           |
|--------------------|-----------------------------|------|----------------|-------|-----------|
|                    |                             |      |                | df    | F ratio   |
| NAS                | General Running Factor (6)  | 1    | .14            | 1     | 12.23***  |
|                    | Personal Control Factor (8) | 2    | .23            | 2     | 11.13**** |
|                    | Extrinsic Factor (1)        | 3    | .32            | 3     | 11.48**** |

\*\*\*  $\alpha < .001$                       \*\*\*\*  $\alpha < .0001$

The results of this analysis reveal that the general running factor was the best predictor of the NAS ( $F = 12.23, \alpha < .001$ ), accounting for 14% of the variance on its own. Although this factor consists of two seemingly unrelated items, collectively the items appear to say something about the runners as a group. Another significant predictor of the NAS was the personal control factor ( $F = 11.13, \alpha < .0001$ ) which accounted for an additional 9% of the variance, and in combination with the general running factor accounted for 23% of the variance. Finally, the extrinsic factor was also a significant predictor of NAS scores( $F = 11.45, \alpha < .0001$ ) and contributed 9% of the variance. These three factors, in combination, contributed 32% of the variance in NAS scores. The remaining 68% of the variance was accounted for by unknown factors. It therefore seems that runners who: get a sense of personal achievement from running; enjoy the sensations of running; gain a sense of personal control from running; and obtain social reinforcement for running are prone to having high NAS scores.

5.5.2.2. Stepwise multiple regression with REQ scales as the dependent variables

Stepwise multiple regression analyses were performed with the REQ composite scale, and the four REQ subscales as dependent variables, in order to identify the research variables which best predicted the REQ subscales. The independent variables included all variables significantly correlated with each of the respective scales (see Tables 15 to 19), but excluded the number of Comrades marathons run and running importance, for reasons mentioned in section 5.5.2. The following table reflects the results of these procedures:

**Table 31. Stepwise multiple regression with REQ scales as the dependent variables and significantly correlated variables as the independent variables**

| Dependent variable | Independent variable | Step | R <sup>2</sup> | ANOVA |           |
|--------------------|----------------------|------|----------------|-------|-----------|
|                    |                      |      |                | df    | F ratio   |
| REQ Composite      | NAS                  | 1    | .15            | 1     | 13.20***  |
| REQ-AI             | NAS                  | 1    | .17            | 1     | 15.97**** |
|                    | Age                  | 2    | .24            | 2     | 11.74**** |
| REQ-NAI            | NAS                  | 1    | .15            | 1     | 13.96***  |
|                    | Gender               | 2    | .21            | 2     | 10.09**** |
| REQ-AE             | NAS                  | 1    | .10            | 1     | 8.04**    |
| REQ-NAE            | Flexibility          | 1    | .07            | 1     | 5.55*     |
|                    | NAS                  | 2    | .11            | 2     | 5.32**    |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

\*\*\*  $\alpha < .001$

\*\*\*\*  $\alpha < .0001$

This table reveals that the NAS was the best predictor of the REQ composite score ( $F = 13.20, \alpha < .001$ ), accounting for 15% of the variance in the composite REQ scores. The remaining 85% of the variance was accounted for by unknown variables. Similarly, the best predictor of the achievement-intrinsic scale was the NAS ( $F = 15.97, \alpha < .0001$ ), which accounted for 17% of the variance. A further significant predictor for this scale was age, which accounted for another 7% of the variance ( $F = 11.74, \alpha < .0001$ ). In addition, two significant predictors of the nonachievement-intrinsic scale were identified: the NAS, which accounted for 15% of the variance ( $F = 13.96, \alpha < .001$ ); and gender, which accounted for an additional 6% of the variance ( $F = 10.09, \alpha < .0001$ ). A significant predictor of the nonachievement-extrinsic scale was flexibility, accounting for 7% of the variance ( $F = 5.55, \alpha < .05$ ). A further significant predictor of this scale was the NAS, which accounted for an

additional 4% of the variance ( $F = 5.32, \alpha < .01$ ). The NAS was also a significant predictor of the achievement-extrinsic scale, accounting for 10% of the variance ( $F = 8.04, \alpha < .01$ ). In summary, these results show that although the majority of the variance on the four REQ scales' scores is accounted for by unknown factors, runners with high NAS scores are likely to derive enjoyment from all four sources of running enjoyment.

#### 5.5.2.3. Exploring the relationship between running dependence and running commitment through multiple regression techniques.

In exploring the relationship between running dependence and running commitment, a decision was made not to divide the runners into groups based on Sachs and Pargman's (1997) running participation model (see section 3.4.), as a statistical division of the runners into groups would have been arbitrary and, given evidence of the processual and continuous nature of addiction processes, theoretically unsupported. Instead, two multiple regression analyses were performed which treated the NAS and REQ data as continuous.

The first multiple regression analysis used the NAS as the dependent variable. The REQ scales were excluded from the list of independent variables so that variables which predicted the NAS independently of the REQ could be identified. The second multiple regression analysis used the REQ composite score as the dependent variable. The NAS was excluded from the list of independent variables in order to identify the variables which best predicted the REQ, without the confounding effect of the NAS. The aim of these procedures was to identify the variables which commonly predicted both the REQ and the NAS. Furthermore, if certain co-predictors of the REQ and NAS could be identified and a high linear slope between the NAS and REQ could be proved, then assumptions about the relationship between the NAS, REQ, and other research variables could be made.

##### *5.5.2.3.1. Independent stepwise multiple regression analyses with NAS and REQ as the dependent variables, excluding REQ and NAS variables, respectively.*

A stepwise multiple regression method was conducted to identify the variables which significantly predicted the NAS, independently of the REQ. The independent variables

included only those biographical variables found to be significantly correlated with the NAS<sup>1</sup> (see Table 14). The results of this procedure are displayed below, in Table 32.

**Table 32. Stepwise multiple regression with NAS as the dependent variable, excluding REQ variables.**

| Dependent Variable | Independent Variable | Step | R <sup>2</sup> | ANOVA |         |
|--------------------|----------------------|------|----------------|-------|---------|
|                    |                      |      |                | df    | F ratio |
| NAS                | Running History      | 1    | .08            | 1     | 6.63*   |
|                    | Stamina              | 2    | .16            | 2     | 7.33**  |

\*  $\alpha < .05$

\*\*  $\alpha < .01$

The above results indicate that two variables significantly predict the NAS independently of the REQ. The most important predictor was running history, which contributed to 8% of the variance of the NAS scores ( $F = 6.63, \alpha < .05$ ). Stamina was identified as another significant predictor which together with "Running History" accounted for 16% of the variance ( $F = 7.33, \alpha < .01$ ). The remainder of the variance was accounted for by unknown variables.

Secondly, a stepwise multiple regression was performed with the REQ composite score as the dependent variable, in order to identify significant predictors of the REQ, independently of the NAS. The independent variables thus excluded the NAS and included only those biographical variables significantly correlated with the REQ composite score (see Table 15). This procedure revealed that no variables significantly predicted the REQ independently of the NAS. In other words, there were no common predictors of the NAS and REQ in the current research sample, and a number of unknown variables must have played a role in contributing to the variance in the REQ composite score.

<sup>1</sup> Due to reasons mentioned in section 5.5.2., the variables "Number of Comrades completed" and "Running Importance" were excluded.

## **5.6. SUMMARY OF RESULTS**

The statistical procedures performed in this study produced a number of significant findings, the details of which are located in the relevant sections. The main findings of the present study can be summarized as follows:

- 5.6.1.** It was possible to distinguish between the high, moderate, and low negative addiction groups. More specifically the variables of: stamina; strength; REQ-AI; and REQ-AE distinguished runners characterised by high levels from runners characterised by low levels of negative addiction. In addition, the variables: REQ-NAI; REQ composite score; and number of Comrades run differentiated the high from the moderate, and the high from the low negative addiction groups. Finally, the variables "Running History" and "Running Importance" distinguished the high from the low, as well as the moderate from the low addiction group.
- 5.6.2.** Conflicting results from the parametric and nonparametric ANOVAs emerged on the following variables: number of Comrades marathons completed and REQ-NAE.
- 5.6.3.** Subjects in this sample found that the achievement and intrinsic scales of the REQ were more motivating than the extrinsic and nonachievement scales. This was demonstrated through a series of paired sample *t*-tests.
- 5.6.4.** Five factors were extracted which underpin this sample of runners. The largest two factors were a running enjoyment factor and a fitness factor. The remaining three factors largely consisted of running behaviour variables.
- 5.6.5.** Eight factors were extracted from the REQ for this sample, namely: an extrinsic factor; intrinsic factor; social/running identity factor; achievement factor; therapeutic factor; general running factor; affiliation factor; and personal control factor.

- 5.6.6.** The most significant predictors of the NAS, in this sample, were the REQ-AI scale and the biographical variable of strength. However, when the REQ variables were excluded from the list of independent variables, it was found that length of running history and stamina were significant predictors of the NAS. In addition, the REQ factors best able to predict the NAS were namely: the general running factor; the personal control factor; and the extrinsic factor.
- 5.6.7.** The NAS was a significant predictor of all four REQ subscales as well as the REQ composite scale. It seems that high levels of running addiction are related to high levels of running enjoyment.
- 5.6.8.** Despite the significant correlation between the REQ and the NAS in the multiple correlation matrix, no variable was able to independently predict both scales.



## **CHAPTER SIX**

### **DISCUSSION**

#### **6.1. INTRODUCTION**

The present study explored the relationship between negative addiction to running and running commitment in a sample of black, Zulu-speaking runners. This chapter reflects upon the results of the study, with particular reference to the research literature on running dependence, running commitment, and cultural influences on motivation and commitment. Each aspect of the current study will be considered in the light of the study's research questions. Since the objectives of the study were primarily descriptive and exploratory, and data analysis was, in general, correlational, no causal explanations for running dependence will be proposed in the subsequent discussion. Finally, this chapter will conclude with a consideration of the conceptual and methodological limitations of the current study, and will provide some suggestions for future research.

#### **6.2. RUNNING DEPENDENCE**

This section considers the research variable of negative addiction to running, as operationalised by the NAS (Hailey & Bailey, 1982). Since the NAS has not been previously administered to a sample of Zulu-speaking runners, only tentative explanations are proposed for the results of the current study.

##### **6.2.1. The Negative Addiction Scale**

The current research sample of black, Zulu-speaking runners obtained a wide dispersion of NAS scores, ranging from 0 to 10 (see section 5.3.1., Table 10). This is in keeping with the results of previous studies (for instance: Anderson et al., 1997; Leask, 1997; Macpherson, 1998). In addition, this study found that the present research sample of Zulu-speaking runners achieved significantly higher mean NAS scores than those of Leask's (1997) and Macpherson's (1998) samples (see section 5.3.1.1., Table 11). Although no significant difference emerged between the mean NAS score of the current sample and Anderson et al.'s (1997) sample, this result should be treated with caution due to the small

sample size of Anderson et al.'s (1997) study. A possible reason for the difference in mean NAS scores between the current research sample and prior South African studies conducted amongst white runners could be the role of cultural factors on the answering of self-report questionnaires (Leung & Van der Vijver, 1996). Leung and Van der Vijver (1996) argue that members of traditionally collectivist cultures tend to respond to self-report measures in a socially desirable manner. In other words, Zulu-speaking runners may have overreported addictive behaviours in an attempt to present themselves in the best possible light to the researcher. Although this explanation seems paradoxical, it is possible that Zulu-speaking runners may have attached different meanings to the running addiction scale items. Specifically, these runners may have interpreted the NAS items as indicators of intense commitment (rather than addiction) to the running activity. Consequently, they may have rated themselves strongly on these items in order to present themselves as highly committed to running.

This explanation seems to be further supported by the finding that no significant differences emerged between the NAS scores for the current sample and the mean NAS scores of either Hailey and Bailey's (1982) sample, or Furst and Germone's (1993) sample of runners who had run for more than six years. It therefore appears that the current research sample is comparable to American samples with lengthy histories of running participation. It makes intuitive sense that a long history of participation in running is suggestive of high levels of running commitment. This result thus seems to provide support for the claim that this sample of Zulu-speaking runners may have interpreted the NAS items as indicative of a sense of commitment to running. However, this explanation remains tentative as the study did not explore the meanings attached by Zulu-speaking runners to the NAS items. It would be interesting to explore, in future qualitative research, the complex meanings which participants attach to behaviours which are indicative of negative addiction to running. Furthermore, future studies should examine the validity of both the NAS items and the criteria used to identify running addiction in samples of Zulu-speaking runners. Finally, as this is the first time that the NAS has been administered to a sample of Zulu-speaking runners, it would be interesting for future research studies to

compare the mean NAS scores of the current sample with the NAS scores of other samples of Zulu-speaking runners.

### **6.2.2. The relationship between running behaviour variables and negative addiction to running**

This section reflects upon the relationship between negative addiction to running and the running behaviour variables extracted from the Biographical Information Questionnaire (see Appendix B & C).

#### 6.2.2.1. The relationship between fitness dimensions and running addiction

This study found that the fitness dimensions of stamina and strength were significantly related to negative addiction to running (see section 5.4.1.1., Table 14), with increased levels of stamina and strength being associated with increased levels of negative addiction to running amongst Zulu-speaking runners. This seems to confirm Macpherson's (1998) findings amongst white runners. It thus seems that subjective ratings of strength and stamina are significantly related to negative addiction to running for both Zulu-speaking and white runners. Furthermore, in the current sample, runners in the high negative addiction group achieved significantly higher mean scores on these dimensions than runners characterised by low levels of negative addiction to running.

A possible reason for these findings is that together stamina and strength may refer to an endurance factor, which could be implicated in the development of running dependence. In order to develop an addiction to running (either positive or negative) runners possibly need high levels of stamina and strength which enable them to run frequently, for long distances, and with great intensity. This claim is supported by research literature on running dependence which argues that frequency, distance, and intensity of the running activity are factors associated with running dependence (Weinberg & Gould, 1995). Runners with lower levels of endurance would thus be generally precluded from developing a negative addiction to running. This explanation further seems to be confirmed by the finding that in the multiple regression procedures, both stamina and strength emerged as significant predictors of the NAS (see section 5.5.2., Tables 29 & 32).

However, this explanation should be treated judiciously given the participants' subjective ratings of fitness levels. In the present study, it is unclear whether highly addicted runners are objectively fitter than runners characterised by lower levels of running addiction or whether highly addicted runners cognitively distort their perceived levels of fitness. As a result, it would be useful, in future studies, to further explore the relationship between negative addiction to running and fitness dimensions, using more objective, physiological tests. Nonetheless, highly addicted runners may use subjective assessments of fitness as a form of communication (for example, to convey a sense of prowess or endurance). It would therefore be interesting, in future qualitative studies, to examine the complex meanings which highly addicted Zulu-speaking runners attach to fitness variables.

#### 6.2.2.2. Negative addiction to running and running importance

This study found that running importance was significantly related to negative addiction to running (see section 5.4.1.1., Table 14). Both the high and the moderate negative addiction groups achieved significantly higher mean scores on this variable than runners characterised by low levels of negative addiction to running. These findings amongst Zulu-speaking runners tend to confirm Macpherson's (1998) findings amongst white runners. It makes intuitive sense that for participants to become dependent on the running activity, runners must place great importance on the activity. Where running is not perceived to be important to the participant, it is highly unlikely that a dependence on the activity (either positive or negative) will develop. Moreover, these results tend to confirm research findings on running dependence (see section 2.3.2.) which note that a characteristic of the dependence process is that running becomes a central activity in the life of the participant (Weinberg & Gould, 1995). Furthermore, the suggestion can be made that as runners begin to place more emphasis and importance on the running activity, they are at increased risk for developing a dependence on the activity, whether this be positive or negative.

Although the above explanations tend to be confirmed by initial multiple regression analyses which revealed that running importance was a significant predictor of the NAS (see section 5.5.2.), a factor analysis conducted on all significant research variables

demonstrated that running importance was interrelated with the NAS (see section 5.5.1.1., Table 27). It is therefore possible that the NAS and the running importance variable measure very similar aspects of running behaviour. Consequently, the above interpretations must be treated judiciously. Furthermore, it must be noted that the importance that running plays in the lives of participants was researched in a preliminary manner, by means of a 5-point Likert scale. It would be useful to expand this aspect of the study in future research, possibly by examining, in a qualitative study, the complex meanings and values attached by participants' to the running activity.

#### 6.2.2.3. The relationship between negative addiction to running and running history

The current study showed that running history was significantly related to negative addiction to running (see section 5.4.1.1., Table 14). Runners in both the high and the moderate addiction groups obtained significantly higher mean scores on this variable than runners in the low negative addiction group. It therefore seems that as length of running involvement increases, participants are more likely to be negatively addicted to running. This finding tends to confirm findings from both Hailey and Bailey's (1982) as well as Furst and Germone's (1988) studies.

Furthermore, current research literature on running dependence provides some potential explanations for the above findings (see section 2.3.). This literature (for example, Anderson et al., 1997) notes that runners may become dependent on the physiological and psychological benefits of running. Given this finding, the association between length of running involvement and negative addiction to running is not surprising, as it takes regular participation over a period of time to experience both the physiological benefits (such as increased well-being and fitness) and the psychological benefits of running. As it is only through time that these benefits become manifest, and participants become at risk for developing a dependency on the running activity, this generally excludes novice or irregular runners from becoming negatively addicted to running. This explanation is further confirmed by research evidence which suggests that subjects are only at risk for developing a running dependence if they have been regular participants in the running activity, over an extended period of time (Sachs, 1981). Although the time frame

necessary for the development of a negative addiction to running may vary from four months to two years (Sachs, 1981), it seems that the possibility of becoming dependent on running is greater as the length of participants' running involvement increases. In the current study, this explanation tends to be confirmed by the finding that running history emerged, according to a multiple regression procedure, as a significant predictor of the NAS (see section 5.5.2.3.1., Table 32). It therefore seems that as length of running involvement increases, Zulu-speaking participants are at increased risk for developing a dependency on the running activity.

#### 6.2.2.4. Negative addiction to running and number of Comrades marathons run

The variable "number of Comrades marathons completed" was also significantly related to negative addiction to running (see section 5.4.1.1., Table 14). The study found that highly and moderately addicted Zulu-speaking runners had run significantly more Comrades marathons than runners in the low addiction group. This finding confirmed Macpherson's (1998) results amongst white runners. This result is not surprising given that the Comrades marathon is an ultramarathon, with more regular and committed runners generally participating in it. Nevertheless, these results should be interpreted with caution due to the large number of missing responses on this variable.

### **6.3. RUNNING ENJOYMENT**

The following section examines the research variable of running enjoyment, as operationalised by the REQ (Macpherson, 1998). This variable is one aspect of the broader construct of running commitment. With the exception of Macpherson (1998), the REQ has not been formerly used in research studies. In addition, the REQ has not been previously administered to a sample of Zulu-speaking runners. As a result, this section proposes only tentative explanations for the results of the present study, which should be treated with a modicum of caution.

#### **6.3.1. Sources of running enjoyment amongst Zulu-speaking runners**

The exploration of the concept of running commitment, through the construct of running enjoyment, amongst Zulu-speaking runners yielded some noteworthy research findings.

In particular, the results of the current study reflected that running enjoyment was an important motivational construct for this sample of Zulu-speaking runners, with relatively high means being obtained on all four REQ scales (see section 5.3.2., Table 12). It therefore appears that intrinsic, extrinsic, achievement, and nonachievement sources of enjoyment are perceived to be important motives for continued participation in the running activity for Zulu-speaking runners. Moreover, these results confirm Macpherson's (1998) findings amongst white runners. This suggests that both white and Zulu-speaking runners not only perceive the sources of running enjoyment to be diverse, but view them as important motivational factors for maintaining running participation. On the whole, these findings support Scanlan & Simons' (1992) claim that running is an activity potentially rich in rewarding experiences.

Related to the above point, the study found that for the current research sample of black, Zulu-speaking runners, sources of running enjoyment were potentially more complex and diverse than the four sources proposed by the Model of Sports Enjoyment (Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992). More specifically, eight factors were identified which underpinned the REQ in the current research sample (see section 5.5.1.1., Table 28), namely: an extrinsic factor; a social/running identity factor; a personal achievement factor; a therapeutic factor; a general running factor; an affiliation factor; and a personal control factor. Some of these identified factors appear to be specific to the running activity. It is therefore possible that there exist, in other sporting domains, sport-specific sources of enjoyment which extend beyond the general enjoyment sources proposed by Scanlan and Lewthwaite (1986). It would be interesting, in future research, to further explore this tentative hypothesis by examining sources of sports enjoyment in other sporting contexts.

Furthermore, this study found that the current sample of Zulu-speaking runners appeared to be significantly more motivated by both achievement-extrinsic and nonachievement-extrinsic factors than Macpherson's (1998) sample of white runners (see section 5.3.2.1., Table 13). This noteworthy finding can possibly be accounted for in terms of cultural differences between the samples. As mentioned in section 3.5.2., prior research on cross-

cultural differences in motivation has noted that individuals from collectivist cultures, with more interdependent self-structures, are generally more motivated by extrinsic, other-referenced factors which serve to maintain group relatedness than individuals who emerge from more individualistic cultural contexts and who have more independent views of the self (Markus & Kitayama, 1991). Although the current study did not include cultural self-construals as a research construct, it is commonly accepted that Zulu culture is collectivist in orientation, and hence interdependent self-structures are more likely to be salient amongst Zulu-speaking individuals (Mwamwenda, 1994). Nevertheless, as other extraneous variables could account for these observed differences, this preliminary explanation should be treated with caution. Moreover, this tentative explanation requires further investigation in a study which not only conceptualises culturally divergent self-construals as an integral aspect of the research design, but which examines the cultural meanings attached to both intrinsic and extrinsic sources of motivation.

Despite a large body of research which suggests that persons with interdependent selves should be more motivated by extrinsic rather than intrinsic factors (Markus & Kitayama, 1991; Matsumoto, 1996), the present study revealed that Zulu-speaking runners viewed intrinsic enjoyment sources as significantly more reinforcing than extrinsic enjoyment sources (see section 5.4.4., Table 26). This result seems to confirm earlier research on cross-cultural differences in sport motivation. In particular, Hayashi (1996) noted that any cultural member has both independent and interdependent self-structures. He argued that the nature of the sports domain influences which components of the self-concept become more salient (*ibid.*). Therefore, the salience of intrinsic motivational factors in the present research sample can possibly be accounted for by examining the specific characteristics of running. Running is commonly thought to promote individuality, independence, and autonomy (Basson, 1999; Sachs, 1981). It is possible that, within this sports context, Zulu-speaking runners draw upon more independent aspects of the self and consequently, experience intrinsic sources of enjoyment as generally more motivating than extrinsic factors. Nonetheless, this tentative hypothesis needs to be further explored in a study which conceptualises cultural identity as an integral aspect of the research design. Such a study should take cognisance of the complex interaction between cultural self-structures,



sports context, and motivational factors, through the use of an interactionalist paradigm (Basson, 1999).

In addition, a significant difference emerged between the current sample of Zulu-speaking runners and Macpherson's (1998) sample of white runners on the achievement-intrinsic scale (see section 5.3.2.1., Table 13), with the present sample scoring significantly higher mean achievement-intrinsic scores. It remains unclear why this difference between white and Zulu-speaking runners emerged. A possible explanation for the emphasis on achievement-intrinsic factors may lie in historical differences between Zulu-speaking runners and white runners, where Zulu-speaking runners have had fewer opportunities for experiences of mastery, competence and control than white runners. For historically-disadvantaged runners, running may provide a unique opportunity for achievement and mastery, which they may not have experienced in other areas of their lives. This tentative explanation should however be treated with caution as the current study did not investigate other areas in which these runners may, or may not, have experienced mastery, competence, and control. Notwithstanding this caution, the above explanation seems to be further supported by the finding that the present sample was significantly more motivated by achievement factors (both intrinsic and extrinsic) than nonachievement factors (see section 5.4.4., Table 26). It thus seems that the current sample of Zulu-speaking runners places great value on both the opportunity for personal achievements (and the concomitant feelings of mastery, competence, and control), as well as the opportunities for social recognition of these achievements that running affords the participant.

### **6.3.2. The relationship between biographical variables and sources of running enjoyment amongst Zulu-speaking runners**

This section reflects upon the relationship between biographical variables (as measured by the Biographical Information Questionnaire) and the four motivational sources of running enjoyment.

The biographical variable of age was significantly correlated with both the achievement-intrinsic scale and the nonachievement-intrinsic scale of the REQ (see section 5.4.1.2., Tables 16 & 17). It therefore seems that as the age of participants increases, self-reinforced sources of mastery, competence, and control, together with the inherent qualities of the running activity become more salient. This seems to be confirmed by the finding, in the multiple regression procedure (see section 5.5.2.2., Table 31), that age was a significant predictor of achievement-intrinsic enjoyment. A possible reason for this finding is that sources of running enjoyment, and consequently motivation for continued involvement in running activity, may change through the life-span. Although research has pointed to the possibility that sources of motivation may change as a function of the length of running participation and age of the participant (Thornton & Scott, 1995), this was not a focus of the current study. Nonetheless, this finding points to the need for future longitudinal studies which explore the manner in which the motives for running participation change across the lifespan.

In addition, this study found a significant relationship between gender and the two intrinsic scales of the REQ (see section 5.4.1.2., Tables 16 & 17). Given the small number of female subjects ( $n = 7$ ) in the current research sample, these results should be treated with caution. Nonetheless, these findings are suggestive of some emerging gender differences between male and female Zulu-speaking runners, with female runners reportedly obtaining more reinforcement from both achievement-intrinsic and nonachievement-intrinsic factors than male runners. It would be interesting to further explore these emerging gender differences in a follow-up study.

Furthermore, this study found that education was significantly negatively correlated with both the achievement-extrinsic and the achievement-intrinsic enjoyment scales (see section 5.4.1.2., Tables 17 & 18) with lower levels of education being associated with higher levels of both extrinsic and intrinsic achievement motivation. This can possibly be accounted for through acknowledging that a poor educational background generally limits a person's opportunities for both personal accomplishments and the social recognition of personal achievements. Consequently, for runners with limited education, running may

serve as a unique opportunity for achieving a sense of personal mastery, competence, and control, as well as an avenue for obtaining social recognition in an environment where few such opportunities may be available.

### **6.3.3. The relationship between running variables and running enjoyment**

This section considers the relationship between running behaviour variables (as measured by the Biographical Information Questionnaire) and the four motivational sources of running enjoyment.

#### **6.3.3.1. The relationship between running importance and running enjoyment**

Runners' perceptions of the importance that running plays in their lives was significantly positively correlated with both the achievement-intrinsic scale and the nonachievement-intrinsic scale of the REQ (see section 5.4.1.2., Tables 16 & 17). The above findings demonstrate that as running becomes an increasingly important and integral aspect of the runner's life, intrinsic sources of enjoyment become more salient and motivating.

An examination of the achievement-intrinsic REQ items significantly correlated with running importance seems to confirm the above finding (see section 5.4.1.5., Table 23). In particular, item 1 ("What I enjoy about running is the sense of personal achievement I get from it"), item 5 ("What I enjoy about running is the feeling of personal control I get from running"), item 17 ("What I enjoy about running is achieving personal best times"), and item 21 ("What I enjoy about running is the challenge of breaking through pain barriers") were significantly related to running importance. In other words, as running is increasingly viewed as a source of mastery, competence, and self-control by the runner, the importance given to the running activity tends to increase, with the running activity becoming an integral aspect of the runner's self-identity. This finding tends to support earlier research which claims that when running is used to positively reinforce the self, the running activity may take central place in the runner's self-image (Robbins & Joseph, 1985). As mentioned earlier, in section 6.3.1., the relationship between achievement-intrinsic factors and running importance amongst Zulu-speaking runners can possibly be accounted for in historical terms, where there have generally been few opportunities

available to black South Africans for mastery experiences. Consequently, when black runners start to perceive running as a unique source of mastery, competence, and self-reinforcement, the running activity may become an important (and possibly central) feature of the runner's self-identity.

In addition, the claim that nonachievement-intrinsic factors become more salient as running is afforded more importance by the participant is confirmed by the finding that item 3 ("What I enjoy about running is the routine of training"), item 7 ("What I enjoy about running is the physical sensation of running"), and item 23 ("What I enjoy about running is the good sweat I work up during a run") of the REQ were significantly related to running importance(see section 5.4.1.5., Table 23). It makes intuitive sense that the participant needs to enjoy, and be reinforced, by the nonperformance aspects of running, such as movement sensations, in order for the running activity to be given importance in the runner's life. Not only is it unlikely that a person will perceive running to be an important part of their lives if they do not enjoy the sensations and experience of running, but it is unlikely that they will remain involved and committed to the sport when they do not receive pleasure and reinforcement from the inherent qualities of the running activity.

#### 6.3.3.2. The relationship between running history and running enjoyment

The number of years that subjects had devoted to running was significantly related to both the achievement-intrinsic and achievement-extrinsic enjoyment scales (see section 5.4.1.2., Tables 17 & 18). These results suggest that runners receive more reinforcement from both intrinsic and extrinsic achievement sources as length of running involvement increases.

This finding tends to be confirmed by an exploration of the achievement-intrinsic scale items significantly correlated with running history (see section 5.4.1.4., Table 22). These items include item 1 ("What I enjoy about running is the sense of personal achievement I get from it"), and item 17 ("What I enjoy about running is achieving personal best times"). This suggests that self-reinforced sources of mastery, competence, and control become more salient as running involvement increases. These results tend to confirm prior

research on running participation which noted that veteran runners (rather than novices) tend to cite mastery and competence motives as reasons for continued involvement in running (Thornton & Scott, 1995). Moreover, these results are not surprising as it takes time and continued involvement for runners to achieve the running goals they set for themselves. Furthermore, it is only through time, as running goals are regularly obtained, that runners' develop a sense of mastery, competence, and personal achievement. Consequently, novice runners are generally excluded from experiencing the same sense of mastery, competence, and control that more experienced runners do.

Furthermore, this study found that Zulu-speaking runners are more motivated by achievement-extrinsic factors as the length of their running involvement increases. This claim appears to be confirmed by items 6 ("What I enjoy about running is receiving rewards such as medals, badges, etc."), 10 ("What I enjoy about running is the satisfaction of seeing my name on a results list"), and 18 ("What I enjoy about running is wearing club colours when I run"), which were significantly related to running history (see section 5.4.1.4., Table 22). These results are not surprising, as it takes time for runners to attain sufficient levels of fitness and experience to not only participate in races, but to receive extrinsic rewards for their efforts, thereby generally excluding novice runners from this source of reinforcement. In addition, these items generally refer to the recognition, by others, of both running achievements and the participants' social identity as runners. The relationship between social identity items and length of running history makes intuitive sense as it takes regular and continued involvement in running to not only develop a "runner identity", but for this "runner identity" to be visibly demonstrated through external symbols such as medals, club colours, running gear, and results lists. Furthermore, the above results seem to confirm prior research on running commitment, which points out that as running involvement increases, the social identity aspects of running become salient reasons for continued commitment to running (Thornton & Scott, 1995). It would be interesting, in future research, to explore how runners' social constructions of themselves, and their running activity, impact on running commitment processes.

In general, the nonachievement-intrinsic and the nonachievement-extrinsic scale items were not significantly related to running history, with only item 11 from the nonachievement-intrinsic scale being significantly correlated with running history ("What I enjoy about running is the challenge of completing a marathon/half marathon"). A possible reason for this finding is that marathons require lengthy periods of training as well as a high degree of fitness (Masters & Ogles, 1995). This requirement would generally exclude novice runners from regular participation in marathon activity, and consequently this source of reinforcement.

#### 6.3.3.3. The relationship between number of Comrades run and running enjoyment

The study found that the number of Comrades marathons completed was significantly related to both the achievement-extrinsic and nonachievement-extrinsic enjoyment scales (see section 5.4.1.2., Tables 18 & 19). One would intuitively expect that as participants complete more Comrades marathons, they would receive greater social recognition of their running achievements, and would be viewed increasingly by others as possessing a "runner identity". Furthermore, it is not surprising that increased levels of nonachievement-extrinsic enjoyment are associated with a greater number of Comrades marathons run, as the Comrades ultramarathon is well-known for the camaraderie, social support, and affiliation which it engenders amongst participants. These tentative conclusions should, however, be treated with caution, given the large number of missing responses on this variable. Nonetheless, it would be interesting, in future qualitative research, to explore the meanings runners attach to participation in the Comrades ultramarathon.

### **6.4. THE RELATIONSHIP BETWEEN RUNNING DEPENDENCE AND RUNNING ENJOYMENT**

This section reflects upon the relationship between the research variables of negative addiction to running (as operationalised by the NAS) and running enjoyment (as operationalised by the REQ). More specifically, the relationship between negative addiction to running and each of the four sources of running enjoyment, outlined by the Sports Enjoyment Model (Scanlan and Lewthwaite, 1986), is considered.

#### **6.4.1. The relationship between the achievement-intrinsic scale and negative addiction to running**

As mentioned earlier, in section 3.3.2., achievement-intrinsic sources of running enjoyment refer to perceptions of mastery, competence, and control that are self-reinforced, such as feelings of mastery in performing a skill (Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992). The current study found that achievement-intrinsic factors were significantly related to negative addiction to running amongst Zulu-speaking runners. Moreover, this study revealed that Zulu-speaking runners characterised by high levels of negative addiction to running were more motivated by self-reinforced feelings of mastery and control than runners characterised by low levels of negative addiction to running. This result supports Macpherson's (1998) finding amongst highly addicted white runners. It therefore seems that achievement-intrinsic sources of running enjoyment are more motivating for both black, Zulu-speaking and white highly addicted runners than for runners with lower levels of addiction.

This tends to be confirmed by an exploration of the individual achievement-intrinsic scale items which were significantly correlated with the NAS (see section 5.4.1.3., Table 20). More runners in the high addiction group than runners in either the moderate or low addiction groups reported that item 1 ("What I enjoy about running is the sense of personal achievement I get from it") and item 21 ("What I enjoy about running is the challenge of breaking through pain barriers") were very important to them (see section 5.4.1.3., Table 21). This suggests that Zulu-speaking runners in the high negative addiction group are more motivated by the mastery aspects of running (that is the sense of accomplishment, self-fulfilment, and competence running provides) than runners in the lower addiction groups.

In addition, in the present study, the achievement-intrinsic scale of running enjoyment emerged, according to the multiple regression analysis (see section 5.5.2.1.1, Table 29), as a significant predictor of the NAS. This result suggests that participants who perceive running to be an important source of mastery and competence (and hence self-worth), may be at increased risk for developing a dependence on the activity. A possible reason

for these findings is that higher levels of both achievement-intrinsic enjoyment and running dependence were found to be positively correlated with increased perceptions of the importance of running to the participant (see sections 6.2.1.2 & 6.3.1.3.). In other words, as running is increasingly viewed as a source of mastery and competence, running tends to become a more important and thus integral aspect of the runner's self-image and identity. Moreover, as running gains importance for the participant, levels of dependence on the activity tend to increase. The above results seem to support the positive-reward hypothesis about the etiology of running dependence (see section 2.4.2.). According to this hypothesis, when running is used to positively reinforce self-structures and competency beliefs, and is perceived to be a major source of self-fulfilment and mastery, the running activity may take central place in the runner's self-image. Runners may therefore become dependent on running in order to obtain regular reinforcement of their competence and self-worth, and maintain their self-structures (Basson, 1999; Robbins & Joseph, 1985).

Furthermore, an examination of the "personal control" items of the achievement-intrinsic scale significantly related to the NAS seems to confirm the link between mastery running and running dependence. In particular, a greater proportion of highly addicted runners than runners in either the moderate or low negative addiction groups reported that item 5 ("What I enjoy about running is the feeling of personal control I get out of running"), item 13 ("What I enjoy about running is that I have control over my health and fitness"), and item 25 ("What I enjoy about running is that I can plan my own training programme") was very important to them (see section 5.4.1.3., Table 20 & 21). It therefore seems that achievement-intrinsic factors of running which provide the runner with a sense of personal control over, and structure in, their lives are more reinforcing for highly addicted Zulu-speaking runners than runners with lower levels of running dependence.

In addition, the suggestion that running provides the highly addicted runner with a sense of personal control and structure is supported by the finding that the "Personal Control" factor, identified as a significant factor underpinning the REQ in the current sample (see section 5.5.1.2., Table 28), emerged as a significant predictor of the NAS in a multiple



regression analysis (see section 5.5.2.1.2., Table 30). The results of the study thus indicate that not only does running provide the participant with a sense of personal control, but the experience and valuing of these control aspects of running is predictive of running dependence. A possible explanation for these results may lie in the personality structure of dependent runners. Although personality factors were not included in the current study as an integral aspect of the research design, prior research sheds some light on this relationship (see section 2.4.3.). In particular, previous research (such as Andersen et al., 1997; Leask, 1997; Macpherson, 1998) has provided evidence that highly dependent runners experience a range of intra- and interpersonal difficulties. Consequently, it has been proposed that highly addicted runners may use running as an adaptive solution to personality and interpersonal difficulties, in order to maintain psychological cohesion and viability. When this occurs, the running activity may be adhered to with compulsive dedication. This dedication can be understood as an adaptive defence to ward off the fear of losing the control that running affords the participant (Basson, 1999). Although previous research has found a link between personality, control factors, and running dependence, these studies have been conducted amongst white runners. Given the evidence of cross-cultural personality differences (Markus & Kitayama, 1991), such findings cannot simply be generalised to a sample of black, Zulu-speaking runners. It is therefore important to explore the relationship between personal control, personality, and running dependence amongst Zulu-speaking runners, in a future qualitative study.

Another possible explanation for the above finding is that running provides the highly addicted runner with a sense of personal control and competence, which they may not experience in other areas of their lives. Although the current study did not explore other facets of the highly addicted runners' lives where they experience control and competence (or the lack thereof), it is possible that running is the one activity in which they are guaranteed of regularly experiencing feelings of competence and control. To some extent, this tentative hypothesis is supported by the finding that self-reinforced sources of mastery, competence, and control, are cited as more motivating for runners with lower levels of education (see section 6.2.1.2.). When running becomes a guaranteed source of self-reinforcement in a socio-cultural context where few such reinforcers are available,

the dependent runner may be reluctant to stop running, even when faced with negative physiological, social, and psychological consequences. This hypothesised link between running dependence and the runner's perception of competence and control in their daily lives would be an important area to explore in a qualitative, follow-up study.

#### **6.4.2. The relationship between the nonachievement-intrinsic scale and negative addiction to running**

Nonachievement-intrinsic sources of enjoyment refer to factors which are linked to the experience of running, such as movement sensations or the thrill of competing (Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992). In addition, this scale contains items relating to the therapeutic/coping effects of running, such as "dealing with stress levels more effectively" (see Appendices F & G). This study found that nonachievement-intrinsic factors were significantly related to negative addiction to running. More specifically, Zulu-speaking runners characterised by high negative addiction to running scored significantly higher means on this scale than runners characterised by either moderate or low levels of negative addiction to running. This result is supportive of Macpherson's (1998) findings amongst white runners. It therefore seems that the self-reinforced, nonperformance aspects of running are more motivating for both Zulu-speaking and white highly addicted runners, than for runners who fall into the moderate or low running addiction groups.

The above results suggest that runners are more likely to become highly addicted to running when they enjoy the inherent qualities of running. It makes intuitive sense that as the participant increasingly experiences running sensations as enjoyable, the runner will be motivated to run more frequently, with more intensity, and for longer distances. These running behaviour variables have been implicated by previous researchers as characteristics of running dependence (for example, Weinberg & Gould, 1995). In addition, previous research has postulated that specific movement-derived sources of enjoyment are crucial to continued commitment to running (Scanlan & Simons, 1992). It would be difficult to maintain running participation if the runner did not enjoy the experience of running. Moreover, it has been argued that running dependence cannot develop without the pre-existence of high levels of commitment to running (Sachs & Pargman, 1997).

Another possible reason for these results is the relationship between length of running history and negative addiction to running (see section 5.4.1.1., Table 14). As it takes time to learn to enjoy (and be motivated by) the physical sensations of running, members of the low addiction group are generally excluded from experiencing the reinforcement that nonachievement-intrinsic sources of enjoyment can provide. Further, it is possible that as runners with low levels of addiction increasingly enjoy the physical aspects of running, they could become more dependent on the activity.

The important motivating role that the inherent qualities of the running activity plays for the highly addicted Zulu-speaking runner appears to be confirmed by an examination of some of the nonachievement-intrinsic scale items significantly related to the NAS (see section 5.4.1.3., Table 20 & 21). In particular, more runners in the high addiction group than runners in either the moderate or low addiction groups reported that item 7 ("What I enjoy about running is the physical sensation of running") was very important to them. This item, moreover, formed part of a "General Running" factor, extracted from a factor analysis (see section 5.5.1.2., Table 28), which emerged as a significant predictor of the NAS in a multiple regression analysis (see section 5.5.2.1.2., Table 30). This seems to suggest that the physical and movement sensations of running are more reinforcing for highly addicted Zulu-speaking runners than for runners with moderate or low levels of running dependence.

This seems to be confirmed by an examination of item 15 ("What I enjoy about running is the sensation of feeling a "high" after or during a good run") which was perceived by a greater percentage of highly addicted than less addicted Zulu-speaking runners to be very important. These results provide tentative support for physiological explanations of the etiology of running dependence (see section 2.4.1.). It is possible that the physical sensations of running may induce changes in mood and temperament, which could translate into psychological benefits (Basson, 1999; Kirkcaldy & Shepard, 1990). It has been suggested that these psychological benefits could arise directly, through the release of mood-altering chemicals which decrease autonomic reactions to stress, or indirectly, through an increased sense of self-efficacy and positive body-image (ibid.).

The above explanation tends to be confirmed by an examination of item 3 ("What I enjoy about running is the routine of training") which was also significantly related to the NAS (see section 5.4.1.3., Table 20). More runners in the high addiction group, compared to runners in either the moderate or low addiction groups, reported that item 3 was very important to them. Moreover, this item comprised part of a "Personal Control" factor, extracted from a factor analysis conducted on the REQ (see section 5.5.1.2., Table 28), which was a significant predictor of the NAS (see section 5.5.2.1.2., Table 30). As mentioned in section 6.4.1.1., previous research has argued that highly addicted runners may use running as a means of maintaining personality cohesion and control, in the face of intra- and interpersonal difficulties. These results therefore tend to support the etiological position that the physiological consequences and physical sensations of running (as well as the experience of the running activity) may translate into some psychological benefits. However, the nature of this somato-therapeutic relationship, and the mechanisms by which psychological benefits arise from physical activity, remains unclear and controversial (Siff, 1999; Steinberg & Sykes, 1993). Consequently, these tentative explanations (presented above) require further investigation in a study aimed at examining how the physical sensations of running interact with psychological factors, together with how both the physiological and psychological consequences of running are related to running dependence.

#### **6.4.3. The relationship between the achievement-extrinsic scale and negative addiction to running**

Achievement-extrinsic sources of enjoyment are those factors which are related to feelings of competence and control that are dependant on feedback from others, such as positive social recognition (Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992). In addition, this scale includes items which refer to extrinsic rewards for achievements, such as "receiving rewards such as medals", and the recognition of the person's "runner identity" by others, such as the "quiet satisfaction of people knowing that I'm a runner" (see Appendices F & G). This study found that achievement-extrinsic factors were significantly related to negative addiction to running. More specifically, highly addicted Zulu-speaking runners were significantly more motivated by externally-reinforced feelings of competence

and control than runners with low levels of addiction to running. This finding differs from that of Macpherson's (1998) study which noted that achievement-extrinsic factors were not significantly related to running dependence and could not differentiate between levels of addiction. It therefore seems that Zulu-speaking runners, characterised by high levels of addiction, are more motivated by achievement-extrinsic factors than their white peers. In other words, the above results suggest that highly-addicted Zulu-speaking runners are more motivated by social and extrinsic achievement factors than white runners. This difference can possibly be explained in terms of cultural differences in self-construals which impact on motivation processes (see section 3.5.1.2.). Prior research has argued that cross-cultural differences in achievement motivation arise, in part, due to culturally divergent self-construals. More specifically, Markus and Kitayama (1991) identified two divergent self-construals: the independent self (associated with individualistic, Western cultures) and the interdependent self (associated with more collectivist cultures, such as traditional African society). These researchers proposed that individuals with an interdependent view of the self will generally be more motivated by extrinsic, other-referenced, and socially-orientated achievement factors (with the aim of maintaining group relatedness and enhancing the standing of the ingroup) than individuals who have more independent views of the self (ibid.). It is therefore possible that, due to culturally divergent ways of structuring the self, highly addicted Zulu-speaking and white runners award achievement-extrinsic factors with differing degrees of importance.

Since neither the broad construct of culture, nor the more specific construct of cultural self-construals were included as research constructs in the current research design, this preliminary cultural explanation should be treated with caution. It is, moreover, difficult to determine whether the observed differences between highly addicted white and Zulu-speaking runners were due to cultural factors, or other extraneous variables which were not controlled for in the current study. Nevertheless, the above results suggest that some cultural differences, which seem to impact on the relationship between addiction and commitment, exist between highly addicted white and Zulu-speaking runners. This tentative explanation needs to be more fully explored in a follow-up investigation which conceptualises culture as part of the research design.

The motivating role that achievement-extrinsic factors play for highly addicted Zulu-speaking runners is further confirmed by an examination of the individual scale items significantly correlated with the NAS (see section 5.4.1.3., Table 20). Specifically, a greater proportion of highly addicted than less addicted Zulu-speaking runners reported that both item 2 ("What I enjoy about running is that important people respect me for my running") and item 22 ("What I enjoy about running is the quiet satisfaction of people knowing I'm a runner") were very important to them. This finding seems to confirm that highly addicted Zulu-speaking runners are more motivated by extrinsic-achievement factors than less addicted runners. More specifically, these two items reveal that highly addicted black runners are more motivated by the social recognition that they receive for their running behaviour and their "runner identity" than less addicted runners.

A possible reason for the above findings is the relationship between running history and negative addiction to running, together with the positive correlation between running history and achievement-extrinsic sources of enjoyment (see sections 5.4.1.1., Table 14. & 5.4.1.2., Table 18). Since it takes time to develop a sense of identity as a runner, and a sense of belongingness to a group of runners, this generally precludes runners who are less addicted and who have run for shorter time periods. As length of involvement increases, it is more likely that participants will perceive themselves as possessing a "running identity". In addition, when this "running identity" becomes one of the most salient and important aspects of the self-structure, for which the runner gains external reinforcement and recognition from others, it is highly likely that a dependence on the running activity will develop. In such cases, the runner may be forced to compulsively adhere to the running activity, despite medical or social contraindications, as a withdrawal from running could mean the loss of the participants' primary self-esteem and self-structure validating activity.

The above explanation seems to be further confirmed by the finding that an "Extrinsic" REQ factor emerged, according to the multiple regression analysis (see section 5.5.2.1.2., Table 30), as a significant predictor of negative addiction to running. The individual REQ items which comprise this factor include two achievement-extrinsic items: item 2 ("What

I enjoy about running is that important people respect me for my running"), and item 14 ("What I enjoy about running is that others think of me as a special sort of person because I run marathons")(see section 5.5.1.2., Table 28). Both of these items point to the importance placed, by the runner, on others recognising that the participant belongs to a group of runners. In other words, these items seem to relate to the social recognition of, and respect for, a "running identity".

Finally, the loss of an identity-confirming activity could be even more keenly felt when there are limited alternatives available for social recognition in the runner's daily life. This tentative hypothesis seems to be supported by the negative correlation between education and achievement-extrinsic factors (see section 5.4.1.2., Table 18). It seems that runners with low levels of education place great importance on achievement-extrinsic enjoyment sources. This occurs, possibly because limited education restricts one's opportunities for both social recognition and achievement. In such cases, running may provide a unique opportunity for not only achievement and mastery, but for the attainment of the recognition and respect of others. However, these preliminary conclusions must be treated with caution since this study did not explore other domains in the runners' lives where they may (or may not) have gained social recognition and respect. In order to understand the relationship between running dependence and running commitment, it would be useful to explore, in future qualitative research, the complex, multiple meanings runners attach to the activity together with the manner in which a "running identity" interacts with dependence and commitment processes.

#### **6.4.4. The relationship between the nonachievement-extrinsic scale and negative addiction to running**

Nonachievement-extrinsic sources of running enjoyment refer to the externally-based, nonperformance aspects of running, such as social interaction with peers and significant others (Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992). This scale also contains items which refer to the participants' social identity as runners, for example "it enables me to feel part of a group", and affiliation factors, such as "being with lots of people" (see Appendices F & G). The present study revealed that nonachievement-extrinsic sources

of enjoyment were significantly related to negative addiction to running. More specifically, Zulu-speaking runners characterised by high levels of addiction seemed to be more motivated by nonachievement-extrinsic factors than runners in both the moderate and low addiction groups (see section 5.4.3., Table 25). This result differs from that obtained by Macpherson's (1998) study which found that nonachievement-extrinsic factors were not significantly related to running addiction, and did not differentiate between the three addiction groups. This suggests that highly addicted Zulu-speaking runners are more motivated by nonachievement-extrinsic factors than highly addicted white runners.

This difference between highly addicted white and Zulu-speaking runners can possibly be accounted for by cultural differences in motivational processes (see section 3.5.1.2.). Markus and Kitayama (1991) proposed that the interdependent view of the self (associated with more collectivist cultures, such as traditional African society) would be more motivated by extrinsic factors, such as the desire to maintain relatedness and connectedness with others in the ingroup, than the independent self (associated with individualistic, Western cultures). Consequently, highly addicted Zulu-speaking runners are possibly more motivated by affiliation factors than highly addicted white runners, due to cultural differences in self-construals. However, for reasons mentioned in section 6.4.1.3., this preliminary explanation needs further investigation in a study which conceptualises culture as an integral part of the research design.

This tentative conclusion seems to be further supported by an examination of the nonachievement-extrinsic scale items which were significantly correlated with the NAS (see section 5.4.1.3., Table 20 & 21). More runners in the high negative addiction group than runners in the lower addiction groups reported that item 16 ("What I enjoy about running is the opportunity it provides me for socialising after a run") was very important. This item formed part of a "Social Identity" factor which underpinned the REQ in the current research sample (see section 5.5.1.2., Table 28). In addition, on item 24 ("What I enjoy about running is the friends that I have made through running"), a greater percentage of highly addicted runners than less addicted runners reported that this item was very important. Moreover, item 24 formed part of an "Affiliation" factor which



underpinned the REQ (see section 5.5.1.2., Table 28). Thus highly addicted Zulu-speaking runners seem to experience affiliation and social identity factors as more motivating and reinforcing than less addicted runners.

As mentioned in section 6.4.3., a possible reason for the above results could be the relationship between running history and negative addiction to running (see section 5.4.1.1., Table 14). Developing both a social identity as a runner and a sense of relatedness to the running ingroup takes time, thereby excluding novice runners who are less addicted. Given the research literature on running dependence (see section 2.3.2.), it is not surprising that highly addicted runners place greater importance on social identity and affiliation factors than less addicted runners. Previous research has found that as running activity increasingly takes central place in the runner's life, social commitments and relationships (apart from those related to running) are given secondary importance (Rudy & Estok, 1990; Weinberg & Gould, 1995). Consequently, highly addicted Zulu-speaking runners, for whom affiliation factors are very motivating, may place increased emphasis on affiliation factors connected to running in order to counter the loss of social connectedness in other areas of their lives. However, the current study did not explore the extent to which Zulu-speaking runners are socially connected in other life domains. Given previous research findings on the interpersonal difficulties experienced by addicted runners (for example, Macpherson, 1998), this would be a useful area to examine in future studies.

## **6.5. ADDITIONAL FINDINGS**

Five factors emerged from a factor analysis conducted on all the research variables (see section 5.5.1., Table 27), the largest being a running enjoyment factor. This factor contained the four sources of running enjoyment. The second factor to emerge was a fitness factor which consisted of the four fitness dimensions. Factors 3, 4, and 5 generally consisted of running behaviour variables. In addition, the NAS score, together with the running importance variable comprised factor 3. This suggests that running importance and the NAS are strongly interrelated and may measure similar aspects of running behaviour.

## **6.6. LIMITATIONS OF THE STUDY**

This section discusses both the methodological and the conceptual limitations of the study which potentially impact on the validity of the conclusions drawn from the results.

Firstly, this study was limited by the use of a cross-sectional research design. This research design was unable to determine whether running enjoyment and motivational factors were antecedents of running addiction or consequences of the addiction process (Hauck & Blumenthal, 1992). Moreover, as the research design did not control for the role of extraneous variables, alternative interpretations of the results are possible (Robbins & Joseph, 1985). Consequently, this design limited the researcher's ability to provide causal explanations of running dependence amongst Zulu-speaking runners. Although this is an important limitation, the purpose of this study was to identify possible relationships amongst variables rather than provide etiological explanations for running dependence.

A further limitation of this study was the use of an opportunity method of sampling which made it difficult to determine whether the current research sample is representative of the broader South African running population. As such a sample is often fraught with selection biases (Schmied et al., 1994), the current sample of runners may have differed from the broader running population in terms of running dependence and commitment factors. Consequently, the external validity of the study's results is questionable. The external validity is also threatened by the contexts from which the research subjects were sampled. Although subjects were drawn from a fairly broad geographical area, they were not sampled from particularly diverse settings. The current sample was generally derived from athletic clubs and hence may be biased towards persons who run for reasons of mastery and competition, excluding less competitive runners who comprise the majority of running participants (Joseph & Robbins, 1985; Thornton & Scott, 1995). This has important implications for the relevance, utility, and application of findings to other groups of runners and running contexts (Howell, 1997). Although Williams (1973, cited in Silva & Shultz, 1997) suggests that this limitation can be countered by examining the sample for psychosocial characteristics which distinguish it from the broader population, it is difficult to determine, in the context of the present study, whether this sample had any unique

psychosocial features. Since the possibility that the research sample differed from the broader running population on various demographic variables can not be excluded, conclusions drawn from the results of the current study should be treated with a modicum of caution.

The various psychometric instruments employed provide additional limitations to the current study. Firstly, the psychometric properties of the NAS (Hailey & Bailey, 1982) have not been adequately established (Macpherson, 1998). In addition, the NAS not only has an arbitrary cut-off point for addiction, but provides no verbal anchors to indicate relative amounts of addiction. It is therefore unclear at what point an individual becomes addicted to running (Leask, 1997; Macpherson, 1998). Moreover, the division of runners into three addiction groups on statistical grounds is theoretically problematic since running dependence is conceptualised as a process, rather than being categorically present or absent (Sachs & Pargman, 1997). A simple addiction score does not reflect the complexity of the addiction process. Furthermore, the validity of the Running Enjoyment Questionnaire (REQ) is undetermined. It is therefore unclear whether the REQ actually measures the construct of running enjoyment and the broader construct of running commitment (Macpherson, 1998).

Another limitation of the study is the use of subjective, self-report measures of running behaviour which are often inaccurate as subjects tend to respond in a socially desirable manner (Leung & Van der Vijver, 1996). As sport participation occurs in a social context, it is reasonable to assume that self-presentation strategies would impact on the reporting of running behaviour. A possible way of overcoming this limitation would be to include an objective assessment of running behaviour (such as training logs) in future research studies.

In addition, the back-translation method of translation, utilised by this study, has a number of limitations which possibly jeopardized the validity of the results. Researchers have argued that the use of bilingual translators may result in questionable cross-cultural equivalence of psychometric instruments as bilingual individuals may adopt concepts and

values similar to the second culture's language they have mastered. Consequently, bilingual persons may represent a separate population whose translation responses cannot be generalized to monolingual populations (Sperber, Devellis, & Boehlecke, 1994). This raises a question about the validity of the translated instruments. These authors suggest pre-testing of the translated instruments (which involves a comparison of the results of the translated scales with those of previously used scales in the same language, on the same topic, with the same sample) as a means of countering this limitation (*ibid.*). However, since no previous research had been conducted amongst Zulu-speaking runners, this was not possible in the context of the current study.

A further limitation of the translation procedure was the failure to conduct a formal comparison of the original and backtranslated versions of the instruments in order to facilitate the identification of problematic items. This would have involved the use of Likert scales to compare and rank the two versions of each scale item on language comparability and similarity of interpretability (Sperber et al., 1994). Although the present study did compare the instruments informally, the formal procedure would have been more rigorous and useful in the development and validation of the instruments. With the above limitations in mind, conclusions drawn from the results of this study should be treated with caution.

In summary, these methodological and conceptual limitations point to the need for the replication of research studies across different samples and contexts, as well as the need for the utilisation of multiple methodologies, in order to confirm research findings and enhance the generalizability of results.

## **6.7. RECOMMENDATIONS FOR FUTURE RESEARCH**

Negative addiction to running is a real phenomenon, deserving of attention in future sport psychology research (Sachs, 1981). With this in mind, the present study identified several directions for future research.

Firstly, this study points to the need for future qualitative research on running dependence. This would facilitate an uncovering of the dynamic, complex, and multiple meanings

attached by participants to the running activity, and inherent to running dependence and commitment processes. In addition, such research methodology would enable future researchers not only to expand upon areas of interest which emerged from the present study in an indepth manner, but also to explore research questions beyond the scope of the current quantitative methodology. Possible suggestions for future qualitative research studies include: an exploration of the personal and cultural meanings attached to running; participants' understandings and explanations of the relationship between culture and running behaviour; and participants' explanations and understandings of running dependence and running commitment. In particular, it would be useful to conduct qualitative interviews with participants from the present study identified as being negatively addicted to running. These interviews should focus on both individual and situational variables associated with, and contributing towards, running dependence. In other words, a qualitative study may help to uncover the complex personal and situational dynamics which contribute to the development of running dependence.

In addition, this study has pointed to the need for future studies to explore the relationship between personality factors and running dependence amongst Zulu-speaking runners. Although there is a body of research which has explored the relationship between personality, running commitment, and running dependence ( for example: Anderson et al., 1997; Leask, 1997; Macpherson, 1998), this research has focused predominantly on white, male runners. The replication of these studies amongst different cultural groups and across different social contexts would help determine the external validity of previous findings, and would therefore be an important theoretical development for the study of running dependence. In addition, this study has identified the importance of social factors in running dependence and running commitment processes. Future studies therefore need to incorporate the social components of running dependence (such as sport skill variables, sport settings, social influences, and cultural factors) into research designs which provide a biopsychosocial conceptualisation of running dependence. In particular, this study suggested that limited social opportunities for success and mastery may play a role in the development of running dependence amongst black runners. In the light of this claim, it would be useful to examine how socio-cultural norms and structural changes

in South Africa impact on running behaviour and dependency processes amongst black runners. In other words, future studies should adopt interactional research designs (Macpherson, 1998) which do not simply employ (translated) personality inventories, but which explore the unique manner in which personality variables, situational factors, and socio-cultural contexts interact and influence running dependence and commitment processes (Basson, 1999).

Related to the above point, since running involves both psychological and physiological dimensions, it would be theoretically fruitful for future research to adopt a psychophysiological approach which attempts to integrate both psychological and physiological variables in a common conceptual framework (Murphy, 1994). This would facilitate a more holistic understanding of running dependence. This psychophysiological approach could possibly be achieved through either manipulating psychological variables and observing participants' physiological responses, or by manipulating physiological variables (for example: spending time on treadmills) and measuring subjects' psychological responses. Future research designs which explore the interaction between the physiological and psychological components of running dependence (using both state, trait, and physiological measures) would contribute towards a theoretical understanding of the reciprocal causes and effects of the various components (Macpherson, 1998).

Furthermore, since previous research on sport and exercise dependence has primarily been located within the domain of running, it is questionable whether results from these studies can be generalized to other sport settings. Within each sport domain, there may be sport-specific situational and individual factors which impact on sport behaviours, such as dependence and commitment. Future research on exercise dependence should therefore explore whether research findings on running dependence can be extended to other sporting domains. These sporting domains should include both aerobic sports (such as swimming) and nonaerobic sports (for instance, weight-training).

Further research is also needed on the utility, reliability, and validity of both the NAS and the REQ. Not only do the translated versions of these instruments need to be

administered and validated amongst other samples of Zulu-speaking runners, but the cross-cultural equivalence of these instruments needs to be established. In addition, for the NAS, it seems that further research on the cut-off points for addiction is required. It would also be useful to further explore the conceptualisation of the relationship between running addiction and running commitment in terms of Sachs and Pargman's (1997) two factor model (Leask, 1997; Macpherson, 1998). In addition, since this study only explored one aspect of running commitment (namely running enjoyment), it would be theoretically fruitful to study the concept of running commitment within the broader context of the Sports Commitment Model (Scanlan & Simons, 1992). This would lead to a more refined understanding of the running commitment construct. Finally, since the current study observed cultural differences in the relationship between running dependence and running commitment, it would be useful for future studies to explore the relationship between culture, running commitment, and running dependency processes in more detail. A useful point of departure may be the inclusion of Markus and Kitayama's (1991) framework of culturally divergent self-construals as an integral aspect of future research designs.

## **CHAPTER SEVEN**

### ***SUMMARY OF STUDY AND CONCLUSIONS***

In general, the field of sport and exercise psychology has been marked by a cultural void (Duda & Allison, 1990). This study is an attempt to redress this deficit by exploring the concept of negative addiction to running amongst black, Zulu-speaking runners. More specifically, this study has attempted to examine the relationship between negative addiction to running and running commitment, through the construct of running enjoyment, amongst Zulu-speaking runners.

The exploration of the concept of negative addiction to running amongst Zulu-speaking runners revealed some noteworthy findings. In particular, Zulu-speaking runners achieved significantly higher negative addiction scores than previous samples of white South African runners (for example, Leask, 1997 and Macpherson, 1998). Although, this potentially can be explained in terms of cross-cultural differences in the answering of self-report measures (Leung & Van der Vijver, 1996), an alternative explanation is that Zulu-speaking runners interpreted the running addiction items as references to an intense sense of commitment to running. This tentative conclusion points to the need for further research which examines both the validity of the NAS items for culturally divergent groups of runners as well as the meanings which Zulu-speaking participants attach to the criteria for running addiction.

Furthermore, the study found that a number of running behaviour variables were significantly related to negative addiction to running amongst Zulu-speaking runners, most notably: the fitness dimensions of stamina and strength, the number of Comrades marathons run, running importance, and length of running history. These results seem to confirm Macpherson's (1998) findings amongst white runners.

In addition, a number of notable research findings emerged from the examination of the running enjoyment construct amongst Zulu-speaking runners. While the study revealed



that, similar to the white runners in Macpherson's (1998) study, Zulu-speaking runners were strongly motivated by all four sources of running enjoyment, further investigation showed that the sources of running enjoyment were, for Zulu-speaking runners, more complex and diverse than those originally proposed by Scanlan & Lewthwaite (1986). Furthermore, some of these identified sources of running enjoyment appear to be specific to the running context, such as the general running factor and the runner identity factor. This seems to suggest that there are both general and sport-specific sources of sports enjoyment. It would be theoretically useful to further examine this tentative hypothesis by extending the study of sports enjoyment into other sporting domains.

A further finding was that Zulu-speaking runners were more motivated by extrinsic sources of enjoyment than the white runners in Macpherson's (1998) study. This seems to confirm cross-cultural research on motivation which notes that persons from traditionally collectivist cultures tend to be more motivated by extrinsic, other-referenced factors than persons from individualistic cultural contexts (Markus & Kitayama, 1991). However, this potential link between culture and sources of running enjoyment requires further investigation in a study which conceptualises culture as an integral part of the research design.

Another notable finding was that Zulu-speaking runners were more motivated by intrinsic than extrinsic sources of enjoyment. Although this result seems to contradict cross-cultural research on motivation (for example, Markus & Kitayama, 1991), it appears to support Hayashi's (1996) claim that the sports domain influences which aspects of the self-concept are salient. Since it has been argued that running promotes individuality (Basson, 1999; Sachs, 1981) it is possible that Zulu-speaking participants draw upon independent aspects of the self in running contexts and consequently experience intrinsic sources of running enjoyment as more reinforcing than extrinsic factors. This tentative explanation, however, requires further exploration in a study which recognises the complex interaction between cultural self-structures, sports contexts, and motivational factors.

The study further revealed that Zulu-speaking runners were more motivated by achievement-intrinsic factors than Macpherson's (1998) sample of white runners. It is possible that running may provide historically-disadvantaged Zulu-speaking runners with unique opportunities for mastery and achievement, which they may not have experienced in other areas of their lives. This claim appears to be supported by the finding that Zulu-speaking runners were more reinforced by achievement compared to nonachievement sources of enjoyment. It would be interesting to further explore this explanation through an examination of the meanings which participants attach to both the mastery experiences of running as well as the running activity.

Furthermore, the study revealed that highly addicted Zulu-speaking runners were more motivated by both achievement-intrinsic and nonachievement-intrinsic sources of enjoyment than less addicted runners. This confirms Macpherson's (1998) findings amongst highly addicted white runners. A possible explanation for these results lies in the suggestion that highly addicted runners not only experience a wide range of intra- and interpersonal difficulties, but may use running as an adaptive solution to these difficulties (Basson, 1999; Macpherson, 1998). This possibly occurs through either the enhancement of mood states through the physical effects of running (Steinberg & Sykes, 1988) or through a positive-reward effect, where running serves to reinforce the self-structures of addicted participants (Robbins & Joseph, 1985). In the light of this evidence, it is not surprising that highly addicted runners are more motivated by the self-reinforced aspects of running. Nevertheless, as the personality characteristics of highly addicted Zulu-speaking runners were not examined in this study, this hypothesis requires further investigation in a study which explores the relationship between personality variables, running dependence, and running commitment.

The study also revealed that highly addicted Zulu-speaking runners were more motivated by both achievement-extrinsic and nonachievement-extrinsic factors than less addicted runners. This finding does not confirm Macpherson's (1998) findings amongst highly addicted white runners. As mentioned previously, a possible reason for the differences between highly addicted white and Zulu-speaking runners may lie in cross-cultural

differences in motivation. A potential explanation for the different emphasis placed by highly addicted and less addicted Zulu runners on achievement-extrinsic factors (such as social recognition for running) may lie in the formation of a runner identity. When a "running identity" becomes an important aspect of the self-structure, for which the runner gains external reinforcement, the participant may be forced to compulsively adhere to the activity, as a withdrawal from running could mean the loss of the participants' primary self-esteem and self-structure validating activity. Moreover, highly addicted Zulu-speaking runners may be more reinforced by the nonachievement-extrinsic aspects of running due to the loss of social relationships associated with running dependence (Rudy & Estok, 1986). It is possible that highly addicted runners may use affiliation factors associated with running to counter the loss of social relations in other areas of their lives.

The conclusions drawn from this study are tentative due to the various limitations of the research design. Nevertheless, this study provides an important foundation for understanding the relationship between running dependence and running commitment. More specifically, in attempting to redress the cultural void in sport psychology research, the study has suggested that there may be important differences in running dependence and running commitment processes between white and Zulu-speaking runners. Additional research is however required to further clarify the relationship between running addiction, running commitment, and cultural context. Such research should, moreover, employ a biopsychosocial model of running dependence which includes the interaction between psychological variables (such as personality factors), physiological factors (for instance, the endorphin hypothesis), and socio-cultural variables (such as cultural self-concepts) as integral parts of the research design.

## REFERENCES

- Anderson, S.J., Basson, C.J., Geils, C., & Farman, R. (1997). Personality style and mood states associated with a negative addiction to running. South African Journal of Sports Medicine, 4 (4), 6-11.
- Anshel, M.H. (1991). A psycho-behavioural analysis of addicted versus non-addicted male and female exercisers. Journal of Sports Behaviour, 14, 145-154.
- Babbie, E., & Wagonaar, T.C. (1992). Practising social research. Belmont, California: Wadsworth Publishing Corporation.
- Baekeland, F. (1970). Exercise deprivation. Archives of General Psychiatry, 22, 365-369.
- Bale, J.E., & Sang, J. (1996). Kenyan running: Movement culture, geography and global origins. London: Frank Cass.
- Basson, C.J. (1999). Personality and behaviour associated with excessive dependence on exercise: Some reflections from research. Paper presented at PSYSSA conference. UCT . September 1998.
- Biddle, S.J.H., & Fox, K.R. (1989). Exercise and health psychology: Emerging relationships. British Journal of Medical Psychology, 62, 205-216.
- Biddle, S., & Mutrie, N. (1991). Psychology of physical activity and exercise: A health related perspective. London: Springer-Verlag.
- Blumenthal, J.A., O'Toole, L.C., & Chang, J.L. (1984). Is running an analogue of anorexia nervosa? Journal of the American Medical Association, 252, 520-523.

Blumenthal, J.A., Rose, S., & Chang, J.L. (1985). Anorexia nervosa and exercise: Implications from recent findings. Sports Medicine, 2, 237-247.

Bochner, S. (1994). Cross-cultural differences in the self concept. A test of Hofstede's individualism/collectivism distinction. Journal of Cross-Cultural Psychology, 25, 273-283.

Boutcher, S.H. (1991). The influence of aerobic exercise on illness. In L. Diamant (Ed.), The psychology of sports, exercise and fitness. Social and personal issues (pp. 103-114). New York: Hemisphere Publishing.

Brinson, L., & Robinson, E.L. (1991). The African-American athlete: A psychological perspective. In L. Diamant (Ed.), The psychology of sports, exercise and fitness: Social and personal issues (pp. 249-259). New York: Hemisphere Publishing.

Bryman, A., & Cramer, C. (1997). Quantitative data analysis with SPSS for Windows. A guide for social scientists. London: Routledge.

Butterworth, S.W. (1997). Exercise addiction. <http://www.sdra.com/~change/endorph.html>. 06/04/97.

Campbell, J.D., Trapnell, P.D., Heine, S.J., Katz, I.M., Lavalley, L.F., & Lehman, D.R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. Journal of Personality and Social Psychology, 70, 141-156.

Carmack, M.A., & Martens, R. (1979). Measuring commitment to running: A survey of runner's attitudes and mental states. Journal of Sports Psychology, 1, 25-42.

Chan, C.S., & Grossman, H.Y. (1988). Psychological effects of running loss on consistent runners. Perceptual and Motor Skills, 66, 875-883.

Coen, S.P., & Ogles, B.M. (1993). Psychological characteristics of the obligatory runner: A critical analysis of the anorexia analogue hypothesis. Journal of Sport and Exercise Psychology, 15, 338-354.

Corston, R., & Colman, A. (2000). A crash course in SPSS for Windows. Oxford: Blackwell Publishers.

Cox, R.H. (1994). Sports psychology: Concepts and applications. Madison: Brown & Benchmark Publishers.

Cripps, B. (1995). Exercise addiction and Chronic Fatigue Syndrome: Case study of a mountain biker. In J. Annett, B. Cripps, & H. Steinberg (Eds.), Exercise addiction. Motivation for participation in sport and exercise (pp. 22-33). Leicester: British Psychological Society.

De Coverley Veale, D.M.W. (1987). Exercise dependence. British Journal of Addiction, 82, 735-740.

de la Torre, J. (1995). *Mens sana in corpore sano*, or exercise abuse? Clinical considerations. Bulletin of the Menninger Clinic, 59, 15-31.

Diamantopoulous, A., & Schlegelmilch, B.B. (1997). Taking the fear out of data analysis. London: Dreyden Press.

Dishman, R.K. (1993). Exercise adherence. In R.N. Singer, M. Murphey, & K. Tennant (Eds.), Handbook of research in sport psychology (pp.779-798). New York: MacMillan.

Duda, J.L., & Allison, M.T. (1990). Cross-cultural analysis in exercise and sport psychology: A void in the field. Journal of Sport and Exercise Psychology, 12, 114-131.

Estok, P.J., & Rudy, E.B. (1986). Physical, psychosocial, menstrual changes / risks, and addiction in the female marathon and nonmarathon runner. Health Care for Women International, 7, 187-202.

Furst, D.M., & Germone, K. (1993). Negative addiction in male and female runners and exercisers. Perceptual and Motor Skills, 77, 192-194.

Gauvin, L., & Russel, S.J. (1993). Sport-specific and culturally adapted measures in sport and exercise psychology research: Issues and strategies. In R.N. Singer, N. Murphey, & K. Tennant (Eds.), Handbook of research in sport psychology (pp.891-900). New York: MacMillan.

Goldfarb, L.A., & Plante, T.G. (1984). Fear of fat in runners: An examination of the connection between anorexia nervosa and distance running. Psychological Reports, 55, 296.

Hailey, B.J., & Bailey, L.A. (1982). Negative addiction in runners: A quantitative approach. Journal of Sport Behaviour, 5, 150-154.

Hauck, E.R., & Blumenthal, J.A. (1992). Obsessive and compulsive traits in athletes. Sports Medicine, 14, 215-227.

Hayashi, C.T. (1996). Achievement motivation among Anglo-American and Hawaiian male physical activity participants: Individual differences and social contextual factors. Journal of Sport and Exercise Psychology, 18, 194-215.

Hayashi, C.T., & Weiss, M.R. (1994). A cross-cultural analysis of achievement motivation in Anglo-American and Japanese marathon runners. International Journal of Sport Psychology, 25, 187-202.

Heelas, P. (1981). Introduction: indigenous psychologies. In P. Heelas & A. Lock (Eds.), Indigenous psychologies. The anthropology of the self, (pp. 1-18). London: Academic Press.

Howell, D.C. (1997). Statistical methods for psychology (4th ed.). Belmont: Duxbury Press.

Joseph, P., & Robbins, J.M. (1981). Worker or runner? The impact of commitment to running and work on self-identification. In M.H. Sacks & M.L. Sachs (Eds.), Psychology of running (pp.131-146). Champaign, IL: Human Kinetics.

Kerlinger, F.N. (1992). Foundations of behavioural research. Chicago: Holt, Rinehart, and Winston, Inc.

Kirkcaldy, B.D., & Shepherd, R.J. (1990). Therapeutic implications of exercise. International Journal of Sports Psychology, 21, 165-184.

Kline, T.J.B., Franken, R.E., & Rowland, G.L. (1994). A psychometric evaluation of the Exercise Salience scale. Personality and Individual Differences, 16, 509-511.

Leask, Z. (1997). Narcissism, physical self-efficacy and exercise addiction: A comparative analysis of runners and aerobic exercisers. Unpublished master's thesis, University of Natal, Pietermaritzburg.

Loumidis, K.S., & Roxborough, H. (1995). A cognitive-behavioural approach to excessive exercise. In J. Annet, B. Cripps, & H. Steinberg (Eds.), Exercise addiction: Motivation for participation in sport and exercise (pp.34-52). Leicester: British Psychological Society.

Leung, K., & Van de Vijver, F. (1996). Cross-cultural research methodology. In F.T.L. Leong & J.T. Austin (Eds.), The psychology research handbook: A guide for graduate students and research assistants (pp. 351-358). Thousand Oaks: Sage.



Macpherson, A.P. (1998). The role of personality style and running commitment in negative addiction to running. Unpublished master's thesis, University of Natal, Pietermaritzburg.

Markus, H.R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. Psychological Review, 98, 224-253.

Matsumoto, D. (1996). Culture and psychology. Pacific Grove: Brooks/Cole Publishers.

Matsumoto, D. (1994). Introduction. In D. Matsumoto (Ed.), People. Psychology from a cultural perspective (pp.1-16). Pacific Grove: Brooks/Cole Publishing Co.

Matsumoto, D., Kitayama, S., & Markus, H.R. (1994). Culture and Self: How Cultures Influence the way we view ourselves. In D. Matsumoto (Ed.), People. Psychology from a Cultural Perspective (pp.17-38). Pacific Grove: Brooks/Cole Publishing Co.

Morgan, W.P. (1979). Negative addiction in runners. The Physician and Sportsmedicine, 7, 56-70.

Murphy, M.H. (1994). Sports and drugs and runner's high. In J. Kremer & D.M. Scully (Eds.), Psychology in sport (pp.173-188). London: Taylor and Francis.

Mwamwenda, T.S. (1994). Educational psychology: An African perspective. Durban: Butterworths.

Norusis, M.H. (1990). SPSS /PC+ Advanced statistics 4.0 [computer programme]. Chicago : SPSS Inc.

Ogles, B.M., Masters, K.S., & Richardson, S.A. (1995). Obligatory running and gender: An analysis of participative motives and training habits. International Journal of Sport Psychology, 26, 233-248.

Pierce, E.F., Daleng, M.L., & McGowan, R.W. (1993). Scores on exercise dependence among dancers. Perceptual and Motor Skills, 76, 531-535.

Pierce, E.P., Eastman, N.W., Tripathi, H.L., Olson, K.G., & Dewey, W.L. (1993). b-Endorphin response to endurance exercise: The relationship to exercise dependence. Perceptual and Motor Skills, 77, 767-770.

Robbins, J.M., & Joseph, P. (1985). Experiencing exercise withdrawal: Possible consequences of therapeutic and mastery running. Journal of Sport Psychology, 7, 23-39.

Rudy, E.B., & Estok, P.J. (1990). Running addiction and dyadic adjustment. Research in Nursing and Health, 13, 219-225.

Sachs, M.L. (1981) Running addiction. In M.H. Sacks & M.L. Sachs (Eds.), Psychology of running (pp. 116-126 ). Champaign, IL.: Human Kinetics.

Sachs, M.L. (1991) Running: A psychosocial phenomenon. In L. Diamant (Ed.), The psychology of sports, exercise and fitness. Social and personal issues. New York: Hemisphere Publishing.

Sachs, M.L., & Pargman, D. (1979). Running addiction: A depth interview examination. Journal of Sport Behaviour, 2, 143-155.

Sachs, M.L., & Pargman, D. (1997). Running addiction. In M.L. Sachs, & G.W. Buffone (Eds.), Running as therapy: An integrated approach (pp.231-254). Englewood Cliffs, NJ: Jason Aronson.

Scanlan, T.K., Carpenter, P.J., Schmidt, G.W., Simons, G.W., & Keeler, B. (1993). An introduction to the Sports Commitment Model. Journal of Sport and Exercise Psychology, 15, 1-15.

Scanlan, T.K., & Lewthwaite, R. (1986). Social psychological aspects of competition for male youth sport participants: IV. Predictors of sport enjoyment. Journal of Sport Psychology, 8, 25-35.

Scanlan, T.K., & Simons, J.P. (1992). The construct of sports enjoyment. In G.C. Roberts (Ed.), Motivation in sport and exercise (pp. 199-215). Champaign, IL.: Human Kinetics.

Scanlan, T.K., Simons, J.P., Carpenter, P.J., Schmidt, G.W., & Keeler, B. (1993). The Sport Commitment Model: Measurement development for the youth-sport domain. Journal of Sport and Exercise Psychology, 15, 16-38.

Scanlan, T.K., Stein, G.L., & Ravizza, K. (1989). An in-depth study of former elite figure skaters: II. Sources of enjoyment. Journal of Sport and Exercise Psychology, 11, 65-83.

Schmidt, G.W., & Stein, G.L. (1991). Sport commitment: A model integrating enjoyment, dropout, and burnout. Journal of Sport and Exercise Psychology, 8, 254-265.

Schmied, L.A., Steinberg, H., Moss, T., & Sykes, E.A. (1994). Aerobic exercise and Type A behaviour. Journal of Sports Sciences, 12, 433-445.

Siff, M.C. (1998). Running Addiction. <http://www.aol.com/~mcsiff>. 6/11/98.

Sperber, A.D., Devellis, R.F., & Boehlecke, B. (1994). Crosscultural translation: Methodology and validation. Journal of Crosscultural Psychology, 25, 501-524.

Sports Institute of South Africa. (1996). A case for sport and recreation. Pretoria: Author.

Steinberg, H., & Sykes, E.A. (1985). Introduction to symposium on endorphins and behavioural processes: Review of literature on endorphins and exercise. Pharmacology Biochemistry & Behaviour, 23, 857-862.

Steinberg, H., & Sykes, E.A. (1993). Mood enhancement through physical exercise: Introduction to a workshop on health, sport and physical exercise. In H. Schroder, K. Reschke, M. Johnston, & S. Maes (Eds.). Health psychology: Potential in diversity (pp. 204-209). Regensburg: S. Roderer Verlag.

Steinberg, H., Sykes, E.A., & LeBoutillier, N. (1995). Exercise addiction: Indirect measures of "endorphins"? In J. Annet, B. Cripps, & H. Steinberg (Eds.), Exercise addiction: Motivation for participation in sport and exercise (pp 10-21). Leicester: British Psychological Society.

Thaxton, L. (1982). Physiological and psychological effects of short-term exercise addiction on habitual runners. Journal of Sport Psychology, 4, 73-80.

Thornton, E.W., & Scott, S.E. (1995). Motivation in the committed runner: Correlations between self-report scales and behaviour. Health Promotion International, 10 (3), 177-184.

Triandis, H.C., Bontempo, R., & Villareal, M.J. (1988). Individualism and collectivism: Cross-cultural perspectives on self and ingroup relationships. Journal of Personality and Social Psychology, 54, 323-338.

Veale, D. (1995). Does primary exercise dependence really exist? In J. Annett, B. Cripps & H. Steinberg (Eds.), Exercise addiction. Motivation for participation in sport and exercise. (pp.3-6). Leicester: British Psychological Society.

Wampold, B.E. (1996). Designing a research study. In F.T.L. Leong & J.T. Austin (Eds.), The psychology research handbook: A guide for graduate students and research assistants (pp. 59-72). Thousand Oaks: Sage.

Wann, D.L. (1997). Sports psychology. Englewood Cliffs, NJ: Prentice Hall.

Weinberg, R.S., & Gould, D. (1995). Foundations of sport and exercise psychology. Champaign, IL.: Human Kinetics.

Yates, A., Leehey, K., & Shisslak, C.M. (1983). Running:- An analogue of anorexia? New England Journal of Medicine, 308, 251-255.

Yates, A., Shisslak, C.M., Allender, J., & Crago, M. (1991). Comparing obligatory to nonobligatory runners. Psychosomatics, 33, 180-189.

**APPENDIX A**  
**COVERING LETTER FOR RESEARCH QUESTIONNAIRES**



**UNIVERSITY OF NATAL**  
Pietermaritzburg

---

**School of Psychology**

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To whom it may concern

**SPORT PSYCHOLOGY RESEARCH**

I am presently completing my Masters degree in Clinical Psychology at the University of Natal, Pietermaritzburg. Together with my supervisor, Professor Clive Basson, I am conducting research in the field of Sport Psychology. I am particularly interested in the field of running, and running enjoyment, and my research focuses on what factors motivate runners to start and maintain a running programme.

More specifically, my research focuses on Zulu-speaking runners as previous research in this area has focused almost entirely on the running behaviour of white runners, and has neglected to investigate running behaviour in other population groups.

I would appreciate your co-operation in completing the attached questionnaires. All information will be treated with confidentiality. Should you wish to receive feedback about the results of the research, I can be contacted at the address listed below.

Yours sincerely

Bronwyn Myers  
(Masters student, Clinical Psychology)  
Contact Address:  
13A Dorsetshire Road  
Westville  
3630

Prof. Clive Basson  
(Supervisor)

## APPENDIX B

### Biographical Information Questionnaire (Leask, 1997)

#### English Version

#### BIOGRAPHICAL INFORMATION

**Please note that all information will be kept strictly confidential.**

RESEARCH NUMBER: \_\_\_\_\_

1. NAME: \_\_\_\_\_

2. AGE: \_\_\_\_\_

3. SEX:                      Male [ ]                      Female [ ]

4. HOME LANGUAGE: \_\_\_\_\_

5. OCCUPATION: \_\_\_\_\_

6. EDUCATION: \_\_\_\_\_

7. TELEPHONE NUMBER: \_\_\_\_\_

8. RESIDENTIAL AREA: \_\_\_\_\_

9. MARITAL STATUS:  
 Never married [ ]      Married [ ]      Common law partner [ ]  
 Divorced [ ]      Widowed [ ]      Remarried [ ]

10. WHAT TYPE(S) OF EXERCISE/SPORT DO YOU DO?  
*(Please list the exercise in column A in order of importance to you and tick relevant responses for columns B and C for all exercise)*

| A. EXERCISE | B. EXERCISE FREQUENCY |            |           | C. EXERCISE INTENSITY* |        |      |
|-------------|-----------------------|------------|-----------|------------------------|--------|------|
|             | Less than<br>2x/week  | 2-4x/ week | 5+ x/week | Low                    | Medium | High |
| 1.          |                       |            |           |                        |        |      |
| 2.          |                       |            |           |                        |        |      |
| 3.          |                       |            |           |                        |        |      |
| 4.          |                       |            |           |                        |        |      |
| 5.          |                       |            |           |                        |        |      |

\* Low: Never to slightly out of breath; Medium: Quite out of breath; High: "Huffing and Puffing"/ Faint

11. RATE HOW IMPORTANT RUNNING IS IN YOUR LIFE: *(Tick appropriate [ ].)*  
 a) A top priority [ ]  
 b) Very Important [ ]  
 c) Fairly important [ ]  
 d) Unimportant [ ]

12. HOW MANY MONTHS HAVE YOU CONSISTENTLY DEVOTED TO RUNNING?  
*i.e. you have not voluntarily stopped running for more than 6 weeks. An exception to this is serious illness or injury. Please tick the appropriate [ ].*

- a)less than six months

b)6 months to one year

c)1 - 2 years

d)2 - 5 years

e)5 and more years
- [ ]

[ ]

[ ]

[ ]

[ ]

13. ON AVERAGE, HOW MANY KILOMETRES PER WEEK DO YOU NORMALLY RUN?  
*(excluding tapering weeks or months)* \_\_\_\_\_

14. HOW MANY STANDARD AND /OR HALF MARATHONS HAVE YOU COMPLETED?  
WHAT HAS BEEN YOUR PERSONAL BEST TIME FOR THESE ?

| Marathon | Number completed | Personal Best Time |
|----------|------------------|--------------------|
| Standard |                  | ____ hrs ____ mins |
| Half     |                  | ____ hrs ____ mins |

15. HOW MANY OF THE FOLLOWING MARATHONS HAVE YOU COMPLETED AND  
WHAT WAS YOUR PERSONAL BEST TIME?

| Marathon | Number of times run | Personal best time |
|----------|---------------------|--------------------|
| Comrades |                     | ____ hrs ____ mins |

16. ESTIMATE YOUR PRESENT LEVEL OF FITNESS IN THE FOLLOWING AREAS:

| Area        | Verv High | High | Medium | Low | Very Low |
|-------------|-----------|------|--------|-----|----------|
| Stamina     |           |      |        |     |          |
| Strength    |           |      |        |     |          |
| Speed       |           |      |        |     |          |
| Flexibility |           |      |        |     |          |



**APPENDIX C**  
**Biographical Information Questionnaire (Leask, 1997)**  
**Zulu Version**

**IMININGWANE YAKHO**

Uyacelwa ukuthi wazi ukuthi yonke iminingwane iyogcinwa iyimfihlo.

INOMBOLO YOCWANINGO: \_\_\_\_\_

1. IGAMA: \_\_\_\_\_

2. IMINYAKA: \_\_\_\_\_

3. UBULILI: Isilisa [ ] Isimame [ ]

4. ULIMI OLUKHUMAYO: \_\_\_\_\_

5. UMSEBENZI: \_\_\_\_\_

6. IMFUNDO: \_\_\_\_\_

7. INAMBA YOCINGO: \_\_\_\_\_

8. INDAWO OHLALA KUYO: \_\_\_\_\_

9. ISIMO SEZOMSHADO: \_\_\_\_\_

Angishadile [ ] Ngishadile [ ] Ngishade ngokweSintu [ ]

Ngahlukanisa [ ] Ngingumfelwa/kazi [ ] Ngishade okwesibili [ ]

10. YINHLIBONI YOKUZILOLONGA/YODLALO OWENZAYO?

(Uyacelwa ukuba ubhale kwingxenye A imidlalo ngobumqoka bayo kuwena bese ufaka izimpendulo ezifanele ngaphansi kwengxenye B kanye nengxenye C kuyo yonke imidlalo)

| A. UMDLALO | B. UZIQEQESHA KANGAKANANI           |                  |                          | C. UNGAKANANI UMFUTHO* |                   |          |
|------------|-------------------------------------|------------------|--------------------------|------------------------|-------------------|----------|
|            | Ngaphansi kwezinsuku ezi-2 ngesonto | ezi 2-4 ngesonto | ngaphezu kuka-5 ngesonto | uphansi                | uphakathi nendawo | uphezulu |
| 1.         |                                     |                  |                          |                        |                   |          |
| 2.         |                                     |                  |                          |                        |                   |          |
| 3.         |                                     |                  |                          |                        |                   |          |
| 4.         |                                     |                  |                          |                        |                   |          |
| 5.         |                                     |                  |                          |                        |                   |          |

\*Phansi: Angiphelelwa umoya; Maphakathi: Ngiyaye ngiphelelwe umoya; Phezulu: Ngiyaye ngikhefuzele ngiphelelwe amandla ngiquleke

11. KALA UKUTHI KUNGABE UKUGIJIMA KUSEMQOKA KANGAKANANI EMPILWENI YAKHO: (Maka endaweni efanele [ ]).

a) Kusemqoka kakhulu [ ]

b) Kusemqoka [ ]

c) Kusemqoka ngokungatheni [ ]

d) Akukho mqoka [ ]

12. ZINGAKI IZINYANGA USUZIGIJIMILE UZILOLONGA UNGAPHUMULI ?  
*njengo kuthi awukaze uyeke ikigijima isikhathi esingaphezu kwamasonto ayi-6. Ukuyeka ngenxa yokugula noma ukulimala, ungakubali njengokuyeka. Maka maqondana nesikhathi osiyekile [ ].*
- a) ngaphansi kezinyanga eziyi-6 [ ]
  - b) phakathi kwezinyanga eziyi-6 kuya onyakeni [ ]
  - c) unyaka 1 - 2 [ ]
  - d) iminyaka 2 - 5 [ ]
  - e) iminyaka emi- 5 noma ngaphezulu [ ]

13. UMA UNGALINGANISA, MANGAKI AMAKILOMITHA OJWAYELE UKUWAGIJIMA NGESONTO (*ungawabali amasonto noma izinyanga lapho usuqala khona ukuphelelwa umfutho*) \_\_\_\_\_

14. MINGAKI IMINCINTISWANO( LAPHO UGIJIMA IBANGA ELIDE NOMA ELIFUSHANE) OSUKE WAGIYIMA KUYONA? IZIPHI IZIKHATHI OZONZILE KWILEMNCINTISWANO?

| Umnincintiswano | Inani layo | Isikhathi osenzile     |
|-----------------|------------|------------------------|
| Emide           |            | _____ihora_____imizuzu |
| Emifushane      |            | _____ihora_____imizuzu |

15. MINGAKI KULEMNCINTISWANO OSUKE WAYIGIJIMA, KANYE NESIKHATHI OSENZILE?

| Umnincintiswano | Izikathi osuke wawungenela | Isikhathi osenzile     |
|-----------------|----------------------------|------------------------|
| I-Comrades      |                            | _____ihora_____imizuzu |

16. KALA IZINGA OKULO MANJE EKUZILOLONGELENI UKUGIJIMA LAPHA NGEZANSI:

| Izinga           | Phezulu khakulu | Phezulu | Maphakathi | Phansi | Phansi kakhulu |
|------------------|-----------------|---------|------------|--------|----------------|
| Ukubekwezela     |                 |         |            |        |                |
| Umfutho          |                 |         |            |        |                |
| Ijubane          |                 |         |            |        |                |
| Ubulula bomzimba |                 |         |            |        |                |

**APPENDIX D**  
**Negative Addiction Scale (Hailey & Bailey, 1982): English Version**

**RUNNING SCALE**

*Please tick the appropriate answer. Please answer all items.*

1. During An Average Week I Run:  
a) every day [ ]   b) 6 days [ ]   c) 5 days [ ]   d) 4 days [ ]-   e) It varies [ ]
2. On Days That I Do No Run I Feel:  
a) tense [ ]   b) guilty [ ]   c) no different from running days [ ]   d) Other (specifiy) \_\_\_\_\_
3. Since I Have Been Running My Interest in Social Activities Has:  
a) increased [ ]   b) decreased [ ]   c) remained the same [ ]
4. On Days That I Do No Run I Feel Depressed Or Mentally Sluggish.  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]
5. On Days That I Do Not Run I Feel Deprived.  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]
6. If I Stopped Running My Physical Health Would Decline Significantly  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]
7. Running is My Primary Form of Recreation  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]
8. I Experience A 'Runners High' on the Majority of My Runs  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]
9. Running is A Common Topic of Conversation for Me  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]
10. It is Important for All Runners to Take Some Time Off From Their Regular Held Running Routine  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]
11. Running Has Influenced My Lifestyle  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]
12. My Interest in Running Has Caused Some Family Or Interpersonal Tensions.  
a) strongly agree [ ]   b) agree [ ]   c) indifferent [ ]   d) disagree [ ]   e) strongly disagree [ ]

13. Please Read the Following Statements and Tick all the ones which apply to your Running Behaviour:

- a) I run at approximately the same time every day [ ]
- b) I run in unfavourable conditions [ ]
- c) I have a consistent weekly training schedule with the same pattern of running  
and non-running days [ ]
- d) I run at whatever time of the day is most convenient to my other daily activities [ ]
- e) I have a training partner that I run with whenever possible [ ]
- f) I keep a written record of my running [ ]
- g) I plan my other daily activities around what time I want to run [ ]
- h) I am usually disciplined and run on days that I really do not feel like doing it [ ]
- i) I set weekly mileage goals for myself [ ]
- j) I am able to meet the weekly mileage goals I set [ ]
- k) I feel that if I do not maintain my self-discipline, I would stop running completely  
tomorrow [ ]

**APPENDIX E**  
**Negative Addiction Scale (Hailey & Bailey, 1982) : Zulu Version**

**OKUKALA UKUGIJIMA**

*Uyacelwa ukuba umake maqondana nempendulo okuyiyona yona. Uyacelwa ukuba uphendule yonke imibuzo.*

1. Njalo ngesonto ngigijima:

- a) nsukuzonke [ ]    b) izinsuku eziyisi-6 [ ]    c) izinsuku eziyisi-5 [ ]    d) izinsuku ezi-4 [ ]  
e) ziyashintshashintsha [ ]

2. Ezinsukwini engingagijimi ngazo ngiyaye ngizizwe:

- a) ngicindezekile [ ]    b) nginecala [ ]    c) kungekho mehluko [ ]    d) okunye (chaza)-----

3. Selokhu ngiqalile ukugijima, ugqozi lokulangazelela imidlalo yomphakathi:

- a) lukhulile [ ]    b) lwehlile [ ]    c) alukashintshi [ ]

4. Ngezinsuku engingagijimi ngazo ngiyaye ngizizwe ngiphatheka kabuhlungu nengqondo yami ishona icindezeleke.

- a) ngiyavuma kakhulu [ ]    b) ngiyavuma [ ]    c) akunamehluko [ ]    d) angivumi [ ]  
e) angivumi kakhulu [ ]

5. Ezinsukwini engingagijimi ngazo ngiyaye ngizizwe ngicindezekile.

- a) ngiyavuma kakhulu [ ]    b) ngiyavuma [ ]    c) akunamehluko [ ]    d) angivumi [ ]  
e) angivumi kakhulu [ ]

6. Uma ngiyeka ukugijima impilo yami iyafekela

- a) ngiyavuma kakhulu [ ]    b) ngiyavuma [ ]    c) akunamehluko [ ]    d) angivumi [ ]  
e) angivumi kakhulu [ ]

7. Ukugijima into esemqoka engizithokozisa ngayo

- a) ngiyavuma kakhulu [ ]    b) ngiyavuma [ ]    c) akunamehluko [ ]    d) angivumi [ ]  
e) angivumi kakhulu [ ]

8. Ngiyaye ngizizwe ngingumgijimi ophezulu emincintiswaneni

- a) ngiyavuma kakhulu [ ]    b) ngiyavuma [ ]    c) akunamehluko [ ]    d) angivumi [ ]  
e) angivumi kakhulu [ ]

9. Ukugijima kwiysisihloko sazo zonke izinto engizikhulumayo

- a) ngiyavuma kakhulu [ ]    b) ngiyavuma [ ]    c) akunamehluko [ ]    d) angivumi [ ]  
e) angivumi kakhulu [ ]

10. Kusemqoka kubagijimi ukuthatha ikhefu

- a) ngiyavuma kakhulu [ ] b) ngiyavuma [ ] c) akunamehluko [ ] d) angivumi [ ]  
e) angivumi kakhulu [ ]

11. Ukugijima kube nomthelela empilweni engiyiphilayo

- a) ngiyavuma kakhulu [ ] b) ngiyavuma [ ] c) akunamehluko [ ] d) angivumi [ ]  
e) angivumi kakhulu [ ]

12. Ukugijima kwami sekube nokuthikameza ubudlelwane bami nomndeni wami noma nabangane bami

- a) ngiyavuma kakhulu [ ] b) ngiyavuma [ ] c) akunamehluko [ ] d) angivumi [ ]  
e) angivumi kakhulu [ ]

13. Uyacelwa ukuba ufunde lokhu okubhalwe lapha ngezansi bese umaka maqondana nalokho ocabanga ukuthi kuchaza indlela ogijima ngayo:

- a) Ngigijima cishe ngezikhathi ezifanayo nsuku zonke [ ]  
b) Ngigijima ngisho phansi kwezimo ezingezinhle [ ]  
c) Nginezikhathi ezifanayo ngesonto zokuziqeqesha kanye nalezo zokungagiji [ ]  
d) Ngijima nanoma yingasiphi isikhathi engicabanga ukuthi asiphazamisani neminye imisebenzi yosuku [ ]  
e) Nginomunye engiziqeqesha nanye uma enethuba [ ]  
f) Nginendawo engibhala kuyo phansi engisuke ngikwenza uma ngiziqeqesha [ ]  
g) Ngiyaye ngihlele eminye imisebenzi yosuku ngendlela yokuthi kungaphazamisi ukugijima kwami [ ]  
h) Ngiyayilandela imigomo yami yokugijima ngangokuthi ngiyaye ngigijime ngisho ngizwa ukuthi akuvumi [ ]  
i) Ngiyaye ngizihlele ibanga engifisa ukulifeze ekupheleni kwesonto [ ]  
j) Ngivame ukulifeza ibanga engisuke ngizihlele lona [ ]  
k) Ngizizwa ngingayigcini imigomo engizihlelela yona, ngiyayeka ukugijima kusasa [ ]

**APPENDIX F**  
**The Running Enjoyment Questionnaire (Basson & Macpherson, 1998)**  
**English Version**

**RUNNING ENJOYMENT QUESTIONNAIRE**

*Please read the statement below and rate each of the 28 statements that follow according to the extent to which they are important to you or not important to you. Try to be as honest as you can as there are no right or wrong answers. I am interested in your personal responses*

**What I enjoy about running is:**

1. The sense of personal achievement I get from it  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
2. That important person/s in my life (spouse, partners, parents, children) respect me for my running  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
3. The routine of training  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
4. Being with lots of people  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
5. The feeling of personal control I get out of running  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
6. Receiving rewards such as medals, badges, etc.  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
7. The physical sensation of running  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
8. Being outdoors, and in the open air  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
9. The personal rewards I get for my own achievements  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
10. The satisfaction of seeing my name on a result list/ results board  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
11. The challenge of completing a marathon / half marathon  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
12. That it is such a popular sport  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]

**What I enjoy about running is:**

13. That I have control over my health and fitness  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
14. That others may think of me as a sort of special person because I run marathons  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
15. The sensation of feeling a "high" after or during a good run  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
16. The opportunity it provides me for socialising after a run  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
17. Achieving personal best times  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
18. Wearing club colours / kit when I run  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
19. That it gives me a chance to deal with my stress levels more effectively  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
20. It affords me the opportunity to spend time alone on the road  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
21. The challenge of breaking through pain barriers  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
22. The quiet satisfaction of people knowing that I am a runner  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
23. The good sweat I work up during a run  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
24. The friends that I have made through running  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
25. That I can plan my own training programme  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
26. Buying and wearing kit such as running shoes, heart-monitors, etc  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
27. The feeling of relaxation during and after a run  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]
28. That it enables me to feel part of a group  
very important [ ] important [ ] indifferent [ ] unimportant [ ] very unimportant [ ]



**APPENDIX G**  
**The Running Enjoyment Questionnaire (Basson and Macpherson, 1998)**  
**Zulu Version.**

**IMIBUZO YOKUTHOKOZELA UKUGIJIMA**

*Uyacelwa ukuba ufunde lembuzo engama-28 bese usho ukuthi ngabe lokhu ekubuzayo kusemqoka kangakanani kuwe. Zama ukuba uphendule ngangendlela okubona ngayo kuwe, ngoba ayikho impendulo engcono ukunyenye, kepha impendulo ichaza indlela obona ngayo. Ngifisa ukwazi ukuthi ngabe lokhu ukungezansi kusemqoka kangakanani kuwe.*

**Engikuthokozelayo ngokugijima:**

1. Umuzwa wokuphumelela engiwuthola kukhona

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

2. Ukuthi umuntu/abantu abesemqoka empilweni yami bayangihlonipha ngokugijima kwami

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

3. Indlela engigijima ngayo ngazo zonke izikhathi

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

4. Ukuba nabantu abaningi

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

5. Umuzwa wokukwazi ukuzilawula ingiwuthola ngokugijima

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

6. Ukuthola imiklomelo njenge zindondo, namabheji, kanye nokuningi

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

7. Umuzwa engiwuzwayo ngokugijima

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

8. Ukuba ngaphandle ngishaywe umoya

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

9. Izinto engizithokozisa ngazo emva kokunqoba

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

10. Ukuneliseka engikuzwayo uma ngibona igama lami ohlwini lwemphumela

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

## Engikuthokozelayo ngokugijima:

### 11. Inselelo yokuqeda umncintiswano omude noma omfishane

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 12. Ukuthi ukugijima umdlalo odumile

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 13. Ukuthi ngiyakwazi ukulawula impilo yami kanve nokuqina komzimba wami

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 14. Ukuthi abantu bacabanga ngami njengomuntu uthize ngoba ngikwazi ukugijima amabanga amade.

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 15. Umuzwa wokuzizwa ngimkhulu emva noma ngasikhathi sokugijima kahle

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 16. Ithuba lokukwazi ukuhlanganyela nabantu emva kukugijima

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 17. Ukukwazi ukufeza izikhathi engisuke ngizibekela zona

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 18. Ukugqoka imibala yeqembu noma izingubo zeqembu uma ngigijima

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 19. Kunginika ithuba lokulwisana nesithukuthezi ngendlela eyimpumelelo

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 20. Kwenza ngikwazi ukuchitha isikhathi ngingedwa emgwaqweni

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 21. Inselelo yokunqoba izithiyo zobuhlungu emzimbeni

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 22. Ukuneliseka engikuzwayo uma abantu bazi ukuthi ngingumgijimi

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 23. Izithukuthuku eziphumayo uma ngigijima

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

### 24. Abangani enginabo ngenxa yokugijima

kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]

**Engikuthokozelayo ngokugijima:**

25. Ukuthi ngiyakwazi ukuzenzela uhlelo lwami lokuziqeqesha  
kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]
26. Ukuthenga nokugqoka izimpahla zokugijima njenge zicathulo, iwashi lokukala umfutho wenhliziyo, kanye nokunye  
kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]
27. Umuzwa wokukhululeka ngesikhathi nasemumva kokugijima  
kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]
28. Ukuthi kungenza ngizizwe ngiyingxenye yeqembu  
kusemqoka kakhulu [ ] kusemqoka [ ] akunamehluko [ ] akukho semqoka [ ] akukho semqoka kakhulu [ ]