

# **Anxiety and Sport:**

*Time to ask what rather than why.*

being a Thesis submitted for the degree of  
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by

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**ABSTRACT**

Approaches to the study of anxiety in sport have tended to rely on the use of questionnaires to assess levels of competitive anxiety. The development of the Competitive State Anxiety Inventory-2 (Martens et al., 1982) has according to Jones (1995) led to considerable research investigating the relationship between anxiety and sport performance.

Study 1 reported here utilised the CSAI-2 with an additional directional scale to examine individual differences and competitive state anxiety in sport. Results revealed that there were no significant differences ( $p < .05$ ) between three achievement levels of competitive swimmers ( $n=89$ ) for intensity scores, however, significant differences were found for cognitive anxiety and somatic anxiety directional scores across levels. Further, unexpected correlations between CSAI-2 intensity and directional scores for several items, highlighted the importance of considering individual differences in the interpretation of anxiety symptoms.

Study 2 was based on Davidson and Schwartz's (1976) Matching Hypothesis which claims that interventions, to be effective, must be matched to the individual's dominant mode of experiencing anxiety. Female high level skaters ( $n=15$ ) were assigned to a control group ( $n=5$ ), a cognitive anxiety group or a somatic anxiety group based on interview data, CSAI-2 scores, coach reports, and performance at a simulated competitive event. Results revealed that there was no support for the Matching Hypothesis, and that greater attention should be devoted to using methods that allow for a more individualised approach to understanding anxiety in sport.

A diary-based methodology incorporating Watson and Tellegen's (1985) concept of mood, was employed in study 3 with high level Netballers ( $n=8$ ) and Super League Rugby League Referees ( $n=8$ ), to examine the relationships between anxiety, mood and sport and other life events for a 4 week period. Results suggested that this methodology can be used to allow data to be analysed ideographically and from an inter-individual basis as well, and helps to place sport anxiety into a broader context in relation to other mood states and life events.

Finally, study 4 further developed the use of the diary based methodology by investigating the relationship between mood, anxiety and performance in International Student Rugby players ( $n=11$ ). Whilst no clear relationship was found between anxiety, mood states and match performance scores, several interesting findings revealed that much more could be achieved by re-directing focus at what anxiety means to an individual both before and after sport performance.

The findings from the diary-based studies are discussed in terms of the need to address the meaning of anxiety in sport, in part, by drawing on the approach taken within existential-phenomenological psychology.

**DEDICATION**

*To my children,  
Catherine and Vincent.*

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# 1 Chapter One: Individual Differences in Competitive State Anxiety in Sport

## **1.1. Introduction**

Psychologists such as Freud (1936), Jung (1945) and others have identified anxiety as one of the most important concepts in understanding mental behaviour. However, it was not until the 1950s that interest developed in attempting to define anxiety and stress in such a way that would allow both experimental psychologists and clinicians to investigate its effects more rigorously. May's (1977) seminal text on the meaning of anxiety, and Selye's (1956) work on stress helped to clarify the terms and identify important differences between anxiety, stress, fear and arousal. Unfortunately, according to Selye (1980) many researchers continue to use these terms interchangeably, even though their differences have been carefully expounded (Fischer, 1970).

Researcher interest in the area of stress has focused on its relationship to physical illness (Barefoot *et al.*, 1983), psychiatric disturbance (Brown and Harris, 1978) and coping mechanisms (Meichenbaum, 1985) amongst other areas; the tendency throughout these studies has been to view stress as a universally negative phenomenon and, as such something to be avoided or controlled. This one sided conceptualisation of stress would not find favour with the "founding father" of stress, Hans Selye, who postulated that individuals can experience bad stress (distress) or good stress (eustress) and, in so doing, contended that: **"it is the exercise of this control, or the lack of it, that can decide whether we are made or broken by the stress of life"** (Selye, 1980, p26).

Anxiety, in contrast to stress has generally been viewed as something to be avoided (Fromm, 1942); it is understood as a negative emotion (Rogers, 1961) by all schools of psychology with the notable exception of this existential-phenomenological theorists. For Example, May (1977) distinguished between normal anxiety which results from growth, and neurotic anxiety that occurs where an individual conforms or develops values in an attempt to avoid normal anxiety.

In the sporting world, researchers, coaches and participants frequently use the terms, stress and anxiety synonymously (Jones and Hardy, 1990). Much apparent confusion exists in the literature where although researchers such as Jones and Hardy argue that there is a need to **"take great care to explain...terminology such as stress, arousal, activation and anxiety"** (Jones and Hardy, 1990, p283), there is little evidence of this in most research articles and coaching manuals. Initial interest in sports research focused on the stress-performance relationship by investigating how performance on simple motor tasks was affected by stress (Martens and Landers, 1970), and by studying the efficacy of various stress management procedures on performance in sport (Crocker *et al.*, 1988, Burton and Williams-Rice, 1989). This body of work is largely based upon Yerkes and Dodson's (1908) inverted-U hypothesis which states that performance will rise under the influence of stress up to a certain point, at which any increase in stress will result in a decline in performance. This theory has been vigorously challenged by Hardy and Fazey (1987) as being unable to fully explain what actually occurs to performance in sport when an athlete "goes over the top". At least in terms of enhancing ecological validity, Hardy (1990) has proposed that Catastrophe theory provides a more complete explanation of the stress performance relationship. The Catastrophe theory model states that performance tends to fall rapidly and dramatically where the athlete experiences greater than optimum levels of stress, and importantly, that motivational states are likely to alter when performers experience cognitive and somatic anxiety. This complex model suggests that the effects of physiological arousal on performance can be either mild or severe, and that this depends largely upon cognitive anxiety. However, Kremer and Scully (1994) have argued that whilst Catastrophe theory has considerable intuitive appeal, its complexity makes it difficult to verify empirically.

According to Martens *et al.* (1990) the main focus of research into anxiety and sport has been on the relationship between multi-dimensional anxiety and performance (Gould *et al.*, 1984; Burton, 1988) individual differences (Martens and Gill, 1976) and temporal patterning (Mahoney and Avenier, 1977). Interest has centred on the anxiety response preceding, during and post competition in sport. Specific measures from either a physiological basis, or emanating from a trait approach have been developed for use within sport. Two of the most widely used (Jones and Hardy, 1990) are the Sport Competition Anxiety Test (SCAT) and the Competitive State Anxiety Inventory (CSAI-

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2) (Martens, 1977, 1980). Whilst these measures, in particular, have led to considerable research in the area, there remain many basic questions still to be addressed. Studies investigating the relationship between anxiety and sports performance have suffered due to methodological problems associated with obtaining valid and reliable measures of performance (Jones and Hardy, 1990) and the failure to use different paradigms to explore the influence of somatic anxiety and cognitive anxiety upon motor performance (Burton, 1988).

A considerable obstacle to sound theory building in anxiety and sport research, is the issue of the individual's interpretation of anxiety and how anxiety impacts on the athlete during sports performance itself. The solution to these issues may only be resolved by use of more appropriate statistical measures, such as factor analysis or principal components analysis (Smith, 1989), or by focusing on the intensity and directional dimensions of competitive state anxiety (Swain and Jones, 1993). In addition, the use of other paradigmatic approaches to the problem, such as those which concern themselves with experiential aspects and individual perceptions of anxiety may prove fruitful.

Coaches, sports psychologists and others involved in sport have been encouraged through appropriate literature and educational units, for example, the National Coaching Foundation's Mental Preparation for Performance Key course, to help their athletes to reduce or remove their anxiety prior to competition. Practical suggestions to assist this process include adopting different motivational strategies and instructing athletes in goal setting and mental imagery skills (NCF Mental Training Programme, Hardy and Fazey, 1990). Whilst there is some evidence that these approaches and techniques seem beneficial for some sports performers (Kirschenbaum and Witrock, 1984), the results of these studies have been less than unequivocal. From a practical perspective, the uncritical acceptance of a view that refers to anxiety as a consistently and uniformly debilitating emotional state, is problematic where certain sports performers do not appear to accept this definition at a personal level. This experiential approach has much in common with research carried out by Hanin (1980) which suggested that each athlete possesses their own individual zone of optimal functioning (IZOF), and that athletes will perform at their best only when anxiety levels fall within their own IZOF. In this way, Krane (1993) has been able to emphasise in her work that individual

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interpretations about the frequency and intensity of anxiety symptoms vary considerably between different athletes.

In conclusion, research into anxiety and performance in sport has increased quite significantly during the past 15 years, and especially since the development of the CSAI-2 (Martens *et al*, 1990). However, many vital questions remain unanswered, whilst the need for greater ecological validity and the recognition of individual differences (Mace, 1990) as one of the most important variables to consider, has guided researchers increasingly.

### ***1.1.1. Some Important Conceptual Terms***

#### **1.1.1.1. Anxiety**

Anxiety has been described as a negative state which involves a disproportionate response to objectively non-threatening situations. Freud (1936) refers to anxiety as the general feeling of uneasiness that is left when an individual acts or thinks contrary to the conscience or superego. Non-Freudian psychologists such as Kelly (1955), explain anxiety in similar terms to the psychoanalytical school, by suggesting that anxiety is the feeling an individual has with the recognition that they cannot make sense of an experience, or in Kelly's terms, that an experience falls outside of an individual's personal construct system. Again, Rogers (1961) defines anxiety as a threat and an unpleasant emotional state, in that it occurs when an individual views an experience as being incompatible with their self-image. Finally, within the mainstream, it is left to the existential-phenomenological psychologists such as May (1977), Giorgi (1970) and Fischer (1970) to differentiate between normal anxiety which is part of the growth process, and neurotic anxiety, which is a reaction that is typically disproportionate to the threat. These researchers stress that normal anxiety should be confronted and not avoided, and that it is inextricably bound up with personal growth and development of the self. In contrast, neurotic anxiety is more problematic in that it results from a failure by an individual to meet the challenge of normal anxiety in the first place.

Within sports research, the work of Spielberger (1966), that divided anxiety into state and trait anxiety has provided the theoretical base in most studies. Trait anxiety refers to a personality disposition that predisposes a person to perceive particular situations as threatening and to respond with state anxiety. According to Spielberger, state anxiety is a transitory emotional state that varies in intensity and fluctuates over time. The theory suggests that high trait anxious individuals are expected to react to threatening situations, such as sports competitions and tests, with high state anxiety.

Martens (1977) developed a specific instrument (SCAT) to measure competitive A-trait in sport; this inventory consists of 15 questions which measure intensity on a three point scale. Martens claims that: **“Competitive A-trait is...a construct that predicts how individuals differ in their perceptions of threat in objective competitive situations”** (Martens *et al.*, 1990, p231). Further work by Martens *et al.* (1980) resulted in the composition of a sports specific state anxiety measure, the CSAI-2. This inventory consists of 27 items which focus on cognitive anxiety, somatic anxiety and self-confidence.

#### 1.1.1.2. Somatic Anxiety

According to Gould *et al.* (1984), competitive sport anxiety can be divided into two distinct components, somatic anxiety and cognitive anxiety. Jones and Hardy (1990) argue that somatic anxiety refers to the perception of physiological symptoms associated with anxiety, such as sweating, increased heart rate and physical tension. This conceptualisation is based on a psychophysiological approach to understanding anxiety. However as Fischer (1970) has pointed out, researchers adhering to a strictly physiological approach to anxiety may have difficulty in identifying and delineating the particular constitutive physiological processes that are essential for fear, arousal, activation or anxiety.

Sports research thus far has generally followed the propositions of those researchers, for example, Mandler and Sarason (1952) and Buss (1962), who have identified both psychic components of anxiety and autonomic reactions to stress which they have labelled typically as somatic anxiety. Somatic anxiety in sport refers to the athlete's

perception of physiological responses (Davidson and Schwartz, 1976) and more precisely, it is concerned with, "**one's perception of the physiological-affective elements of the anxiety experience, that is, indications of autonomic arousal**" (Morris *et al.*, 1981, p.541).

### **1.1.1.3. Cognitive Anxiety**

Neuropsychologists, such as Goldstein (1939) have assisted clinicians and researchers to differentiate between fear and anxiety, by defining fear as the perception of threat from a specific object, and anxiety as an apprehension which engulfs the whole personality. An even more promising approach has been developed by cognitive theorists such as Lazarus and Folkman (1972) in emphasising the importance of an individual's appraisal of a threat as the key to understanding anxiety. Cognitive theorists refer to anxiety as an emotion that may involve acute feelings of worry, a fear of failure and general inattentiveness. Those researchers adopting a cognitive approach appear to be following Freud's general view, that psychological matters should be considered psychologically.

Within sport, researchers such as Martens *et al.* (1980) have defined cognitive state anxiety as the negative feelings and images of failure which may be experienced at different intensity levels and frequencies by athletes in competitive sport situations. During the past 15 years Martens *et al.*'s (1982) CSAI-2 has been the most widely used measure of cognitive anxiety in sports research. Between 1982, with the introduction of the CSAI-2, and 1990 some 16 published studies have utilised this inventory. The CSAI was developed largely from Spielberger's (1966) State Anxiety Inventory and remains the most sensitive scale according to Martens *et al.* (1990), for measuring cognitive state anxiety in sports contexts.

### ***1.1.2. Competitive State Anxiety***

The Competitive State Anxiety Inventory (CSAI) was developed by Martens *et al.* (1980) as a sport specific measure of state anxiety. This measure grew out of earlier work by Spielberger *et al.* (1970) which resulted in the development of the State Anxiety Inventory (SAI). The CSAI consisted of ten items of the SAI that were

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modified for a sports environment. Further progress was made in measuring competitive state anxiety in sport with the introduction of the CSAI-2 by Martens *et al.* (1990). The CSAI-2 consists of twenty seven items which are subdivided into three subscales within the questionnaire to measure cognitive anxiety, somatic anxiety, and self-confidence. The inventory is scored by compiling separate totals for each of the three subscales. The range of scores possible is from a low of nine to a high of thirty-six on each subscale. Items are scored on a four point Likert scale, and according to Martens *et al.* (1990) the CSAI-2 is easy to administer and should normally take less than five minutes to complete. In addition, Martens states that the integrity of the CSAI-2 is not adversely affected by the failure to complete all nine items within the subscale, however, he suggests that where two or more responses are missing from a subscale the measure will be invalidated.

Martens *et al.* (1990) have reported that reliability alpha co-efficients from .79 to .90 demonstrate a high degree of internal consistency for each of the CSAI-2 subscales. Validity of the measure has been established by investigating its relationship with other previously validated scales. The CSAI-2 cognitive anxiety subscale correlates quite strongly with SCAT ( $r = .45$ ) and Spielberger *et al.*'s (1970) Trait Anxiety Inventory ( $r = .50$ ). The CSAI-2 somatic anxiety subscale correlates well with SCAT ( $r = .62$ ) and TAI ( $r = .37$ ), and the CSAI-2 self-confidence subscale as predicted, correlates negatively with SCAT ( $r = -.55$ ) and TAI ( $r = -.46$ ).

The CSAI-2 is the most frequently used measure of state anxiety in sport (Jones and Hardy, 1990). Support for the multi-dimensional approach to measuring anxiety in sport by administering the CSAI-2 has come from Swain and Jones (1993) and Gould *et al.* (1984). Following the work of Jones and Swain (1992), a separate four point scale has been included within the original CSAI-2 measures to assess athletes' perceptions towards their anxiety levels. This additional directional scale allows respondents to indicate whether they view particular anxiety and self-confidence levels as facilitative or debilitating.

Recently, Stadulis *et al.* (in press), have begun to develop a children's version of the CSAI-2. The CSAI-2 children's form measures somatic anxiety, cognitive anxiety, and

self-confidence on a fifteen item scale. The scale can be completed by children 8 years and over, and assesses intensity not direction. Exploratory factor analysis carried out by Stadulis *et al.*, with children (n=627) have confirmed that the psychometric properties match those of the adult 27 item CSAI-2.

#### **1.1.2.1. Self-Confidence**

Martens (1990) has included a subscale within the CSAI-2 to measure self-confidence. He has claimed that the self-confidence subscale emerged after factor analyses of cognitive anxiety and somatic anxiety items in the CSAI-2. In addition, Martens has drawn on support from Vealey's (1986) study that revealed a significant negative relationship between A-trait and self-confidence state. However, other studies (Gould *et al.*, 1984) have reported that competitive A-trait was not related to state self-confidence in sport.

The inclusion of a measure of self-confidence in the CSAI-2 nevertheless raises several important questions. The CSAI-2 is a state measure; therefore there is a clear problem in relying on support from Vealey's (1986) work as this used a trait measure of competitive anxiety. The CSAI-2 is based largely on Davidson and Schwartz's (1976) matching hypothesis model and Spielberger's (1966) multi-dimensional approach, both of which describe cognitive and somatic anxiety as independent responses to stress. The focus here is clearly upon anxiety, no mention is made to self-confidence.

Research specifically addressing self-confidence in sport (Feltz and Doyle, 1981; Gould and Hodge, 1989) has identified a range of strategies used by athletes to develop confidence. These include, the use of positive self talk, goal setting, visualisation, and developing a task rather than outcome focus.

Self-confidence has been discussed in terms of its close relationship with Bandura's (1977) concept of self-efficacy. A closer examination of self-efficacy theory reveals that high levels of self-efficacy, that is, belief in one's ability to succeed at a particular task, should lead to lower emotional arousal being associated with performance of the task.

However, Rodgers has asserted that the research findings are not unequivocal in this respect and that:

**“whilst management of anxiety symptoms can result in an increased sense of mastery over the arousal control, this does not necessarily demonstrate an increase in feelings of self-efficacy”** (Rodgers, 1997, p92)

Recent work by Parfitt and Smith (1998) reported that self-confidence was more strongly related to performance in a tennis serving task than either somatic or cognitive anxiety intensity or direction. Once again this seems to confirm the importance of self-confidence in mediating sport performance. However, the relationship between competition anxiety and self-confidence remains difficult to determine.

## 1.2. Review of Literature

### 1.2.1. *Major Theories of Anxiety*

In his review of the major theories of anxiety, Fischer (1970) states that the concept of anxiety holds a central position in most psychological theories of behaviour. According to Hergenhahn (1984), several theorists have placed anxiety at the nodal point of their theories of personality, and consider the issue of anxiety and its causes as the fundamental question facing a psychology concerned with developing healthy humans.

Freud's earliest works (1901, 1936) identified anxiety as an unpleasant emotional state, which individuals attempt to reduce or avoid if possible. The so-called ego defence mechanism elaborated by Freud (1936), explains the various techniques and strategies that individuals are supposed to use in controlling or removing the sensation of anxiety. This rather negative view of anxiety advocated by the Freudians has had a considerable effect upon the general view of the role of anxiety and its constituent parts (Caruso, 1964).

In almost complete contrast, humanistic psychologists and researchers following various existential and phenomenological approaches such as Fromm (1942) and May (1977), offer a more complex definition of anxiety and its function. In general, they view anxiety as a universal phenomenon featuring throughout the lives of all individuals irrespective of their psychological condition or health. Their perspective tends to emphasise the potential for anxiety to be viewed almost favourably by individuals, and at least, not described uniformly as a debilitating feature of life which must be avoided. Of considerable importance for these theorists is the distinction between what May (1977) refers to as normal anxiety and neurotic anxiety. The former represents anxiety experienced as a by-product of individual growth and facing the challenges of everyday life both small and large; the latter is the result of an individual's attempts to escape from normal anxiety by avoiding the challenges of life through avoidance behaviour and by conforming to values arrived at by others, or by using other similar psychological strategies. The approach advocated by these researchers may be helpful in identifying why certain individuals willingly place themselves in anxiety inducing and stressful

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situations, such as competitive sport, and may even go some way to explaining why particular individuals view anxiety favourably.

Whilst Freudian, neo-Freudian, Humanistic and Existential approaches to anxiety have dominated the work of psychologists interested in therapy and clinical work, the position has been quite different within research and experimentally focused fields. Researchers adopting behaviourist methodologies such as Skinner (1974) have tended to ignore the issue of anxiety. They have argued that from a behavioural perspective, fear is indistinguishable from anxiety and therefore, anxiety is merely another name for fear. This apparent conceptual clarity has, however, not always prevented behaviourism from investigating anxiety by another name.

A closer examination of research in anxiety reveals that the trait approach has frequently provided the theoretical impetus. First elucidated by Allport (1937), Trait theory suggested that individuals represent the synthesis of a number of individual psychic units or traits. Allport defined these mental structures or traits as, **“a neuropsychic structure having the capacity to render many stimuli functionally equivalent, and to initiate and guide equivalent and meaningfully consistent forms of adaptive and expressive behaviour”** (Allport, 1961, p.347).

Early interest in the area from a research perspective focused on the relationship between anxiety and performance (Hamilton, 1959; Morris *et al.*, 1981). The work of Spielberger (1966) and more recently Spielberger (1989) has generated considerable interest in researching the impact of anxiety and stress on a variety of behaviours. Spielberger's (1966) research on the effects of anxiety on learning and academic achievement led to the development of the STAI (State Trait Anxiety Inventory) which has been the most widely used measure in anxiety research during the past three decades. The STAI was developed to enable researchers to measure state and trait anxiety. The state-trait distinction in anxiety research arose from a consideration of Allport's earlier work in the area of trait psychology, and importantly, from empirical evidence emanating from the factor analytic studies of Cattell and Scheir (1961). Spielberger (1989) states that trait anxiety can be viewed as a personality dimension, and that individuals high in trait anxiety are likely to experience state anxiety more

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frequently and with greater intensity, than are low trait anxious individuals. Trait anxiety is therefore a relatively fixed and permanent feature of an individual's personality, whilst state anxiety is a more transitory phenomenon.

The STAI consists of twenty items scored on a four-point scale: 'Almost never', 'Sometimes', 'Often', 'Almost always'. The validity and reliability of the scale is such that from the early 1970s to the mid 1980s the STAI was used in over 2,500 studies (Spielberger, 1989). A children's version of STAI has been successfully developed, and the scale has been translated into numerous languages for use across the world (Spielberger, 1989).

STAI has been frequently used to measure anxiety in sports and several studies (Hollingsworth, 1975; Martens and Gill, 1976) have focused on state anxiety, whilst others have focused on trait anxiety and sporting achievement (Rohaly, 1971; Tannenbaum and Milgram, 1978).

From a different perspective, some physical education departments and a small number of psychology programmes during the 1960s and 1970s in North America, were beginning to investigate the effects of stress and arousal on motor skills (Schmidt, 1988). Whilst there appears to be considerable confusion within the motor skills literature about the conceptualisation of stress, anxiety and arousal, most research in the area describes anxiety in terms of arousal (Weinberg and Ragan, 1978). In addition, where stress is considered within this area of study it is frequently defined as a **“negative emotional state, leading to avoidance or escape from unpleasant situations”** (Schmidt, 1988, p.172). Arousal, in contrast, is described as a neutral diversion, and is concerned with the level of energy that an individual will direct at a task. Studies investigating anxiety and motor behaviour and anxiety, competition and motor performance (Martens and Landers, 1970), and arousal and motor performance (Landers, 1980) highlights the interest that was being shown by motor research in the broad area. Although it can be argued that the vast majority of studies in the motor skill area were interested in investigating the effects of physiological and neurological arousal and activation, rather than anxiety, they represented the first controlled attempts to study the relationship with sports performance. Against this, it has been argued by

Martens (1977) that laboratory based motor tasks had little in common, from both a psychomotor and purely physical perspective, with sports skills as used in a sporting situation. However, the focus on anxiety and performance in motor skills research, provided new impetus for the subsequent study of the relationships between anxiety and performance in sport. Recent commentators (Jones and Hardy, 1990) have emphasised the need to use reliable, objective and valid performance measures in studies investigating the effects of anxiety on performance in sport. A closer examination of the current body of research in the area reveals that few studies have successfully met this important criterion.

### ***1.2.2. Anxiety Measures in Sport***

Greater progress has been apparently made in developing sport specific, valid and reliable measures of anxiety in sport. Work by Mandler and Sarason (1952) suggested that anxiety may in fact be a learned response, rather than an inherited biological trait. Following from this explanation, researchers (Martens, 1977) developed situation-specific measures to capture the essence of anxiety experiences in different environments and milieus. The first such measure intended for use within competitive sport was established by Martens (1977); the Sport Competition Anxiety Test (SCAT), for the most part, owed its origin to the trait version of Spielberger's (1966) STAI.

Studies utilising SCAT were conducted to assess the value of the scale in predicting A-state responses in competitive sport situations (Martens, 1977; Scanlan & Passer, 1979). However, recognition of the importance of state anxiety in sporting situations, led Martens *et al.* (1980) to modify Spielberger *et al.*'s (1970) State Anxiety Inventory (SAI) to produce a sport specific measure. The Competitive State Anxiety Inventory (CSAI) consisted of 10 items and was considered a more sensitive scale than the SAI for use in competitive sport environments.

Work within the mainstream of psychology by Endler (1978) suggested that anxiety could be considered a multidimensional construct, and that both A-trait and A-state consisted of a number of distinct, yet interrelated, components. Further, a number of other researchers (Liebert and Morris, 1967; Davidson and Schwartz, 1976; Borovec,

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1981) had already identified two apparently separate elements, within anxiety, variously referred to as cognitive worry, or cognitive anxiety, and emotional arousal, or somatic anxiety. The CSAI-2 was developed by Martens *et al.* (1990) to enable assessment of cognitive anxiety, somatic anxiety and self-confidence, which was included in the 27 item scale because of conceptual links to A-trait and A-state anxiety (Jones, 1990).

Whilst the CSAI-2 has become the principal measure used in anxiety research in competitive sport due to its relevance to sport, and its sensitivity in recording the multidimensional nature of anxiety (Caruso *et al.*, 1990), researchers have not completely abandoned the use of the SCAT in their studies. For example, Segal and Weinberg (1984) used SCAT and the Bem Sex Role Inventory to investigate the relationship between gender and competitive trait anxiety. The results based on the administration of these two scales to a large sample of undergraduate female (n=166) and male (n=125) students, revealed significant sex differences, with females exhibiting higher levels of competitive trait anxiety than males. Their explanation of these findings draws upon the possible effect of differences in socialisation between the sexes. The possibility that females and males may, in addition, differ in terms of competitive trait in their genetic make-up is not discussed. Further, although the differences were significant, their importance psychologically is less clear, as mean scores for both males and females fell within a moderate range.

SCAT has also been employed in studies assessing the personality of sports participants (Gravelle *et al.*, 1982) differences between athletes and non-athletes (Silvenvoinem *et al.*, 1985) and the impact of sports programmes on personality changes (Jerome, 1982). These studies have tended to follow earlier work by Morgan (1973) where the focus was on identifying whether the sporting personality type existed as distinct from other personality types. Martens (1980) and Kroll (1970) have criticised this approach, suggesting that sports personality research needs to be more theory driven.

The use of specific measures rather than global, and the efforts of some researchers to narrow their focus, has improved the validity and reliability of studies in the area. An important development has been the use of both SCAT and CSAI-2 in some studies. This approach was used by Krane *et al.* (1994) investigating the interaction between

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cognitive anxiety, somatic anxiety, trait anxiety and performance in a softball competition. This study can be compared with work by Finkenberg *et al.* (1992), who examined the effect of competitive trait anxiety on performance in taekwondo. Fifty-eight subjects completed SCAT and were categorised in groups showing high, medium or low competitive anxiety trait. Multivariate analysis of co-variance found no significant differences between subjects on competitive anxiety, age or gender. Hogg (1982) found, using SCAT, that female swimmers recorded significantly higher levels of competitive anxiety trait than male swimmers. The literature reveals that differences between groups in competitive anxiety trait have been found by some studies using SCAT as the sole measure of anxiety, and conversely, that many other studies have found no significant differences between age groups, sexes, or level of performer.

### ***1.2.3. Anxiety and Sports Performance***

Researchers (Jones *et al.*, 1988; Matheson, 1988) have investigated the effect of anxiety on performance from a multi-dimensional competitive state anxiety perspective. Jones *et al.* (1988) examined the relationship between cognitive anxiety, somatic anxiety and self-confidence upon performance on reaction time motor tasks. The CSAI-2 was completed by subjects (n=12) on four separate occasions prior to task performance. No significant differences were found in any of the analyses conducted. However, the results did suggest that somatic anxiety increased as the event neared, and tended to be associated with increased errors on the more complex reaction time task. An earlier study by Barnes *et al.* (1986), however, concluded that cognitive anxiety was a significant predictor of sporting performance and that somatic anxiety was not. Elite male competitive swimmers (n=14) completed the CSAI-2 immediately prior to their races; the anticipated result of this study was that somatic anxiety would be more associated with poor performance than would high levels of cognitive anxiety. This theoretical prediction is consistent with the explanation offered by Wine (1980), that excessive somatic anxiety can cause physiological fatigue and over arousal, and may even divert attention away from the task towards worry and fear of failure, therefore having cognitive effects.

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Further work has investigated the differences in competitive anxiety and perceived competence with high and low level swimmers (McNamara, 1996). One hundred and fifty one male and female ten to thirteen year old swimmers completed SCAT, and the self - perception profile for children. The results revealed that, as competitive trait anxiety levels decreased perceived athletic competence and global self-worth scores increased. These findings seem to suggest that trait anxiety measures such as the SCAT are considered important in studies where the focus is to investigate how this particular personality disposition relates to other broad based personality constructs.

In a closer examination of the anxiety-performance hypothesis, Burton (1988), found that overall cognitive anxiety was more related to swimming performance than somatic anxiety, and that interestingly, somatic anxiety immediately prior to the event negatively impacted on short or long duration performances, but had an insignificant effect on moderate length events. These rather more complex results in Burton's study, seemed to be more capable of disentangling the anxiety-performance relationship in sport than had previous work. For example, studies by Gould *et al.* (1984), Gould *et al.* (1987) and Krane and Williams (1994) suggested that somatic anxiety has a more deleterious effect on performance in sport than cognitive anxiety. This finding is inconsistent with predictions contained within Morris *et al.*'s (1981) multidimensional theory of test anxiety. This states that somatic anxiety should only primarily affect performance initially, and should have little impact as it dissipates once the sports performer "gets into" the match or the event itself. Finkenberg *et al.* (1992) studied the effect of competitive trait anxiety on performance in a Taekwondo competition. Analysis of variance showed no significant differences between groups for age or sex for competitive anxiety, with the exception of young boys (mean age 10.7 years) whose scores were significantly higher than a normative sample of male youth athletes. The study also revealed that no significant differences existed across groups for competitive anxiety on a closed skill activity (i.e. forms) and a more open skill task (i.e. sparring). Surprisingly, the results of this study were not discussed in terms of the difficulties associated with providing valid, reliable and sensitive performance measures. Finkenberg *et al.* (1992), were unclear about exactly how performance was assessed, however in terms of sparring, it seems likely that it was based on a win/loss ratio. This type of performance measure, it can be argued, hardly addresses the concerns raised by

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Jones and Hardy (1990), in their calls for greater accuracy and rigour in assessing sports performance. For example, successful performance in “one on one” competitive sports events depends partly on how well an opponent performs, and is therefore an unreliable indicator of the actual level of performance achieved by the victor. Of course, another explanation of these results could be that, as Jones and Swain (1992) have suggested, anxiety intensity scores do not describe how the experience of anxiety is perceived. Several athletes in the Finkenberg *et al.* study may in fact have perceived low anxiety as debilitating in terms of performance and other participants may have evaluated high levels of anxiety as facilitative. Jones *et al.* (1994) developed a scale to be used alongside the CSAI-2 to measure an athlete’s interpretation of their scores for cognitive anxiety, somatic anxiety, and self-confidence. Whilst the CSAI-2 assesses the intensity of anxiety that an individual experiences, it has been criticised by Jones and Hardy (1990) for failing to consider an athlete’s interpretation of their anxiety levels. The facilitative/debilitative scale developed by Jones *et al.* (1994) allows researchers to differentiate between anxiety that is welcomed and anxiety that is perceived negatively.

Work addressing sports performance, and intensity and direction of anxiety responses (Lane *et al.*, 1995) examined the antecedents of competitive anxiety among triathletes. One hundred and seventy five male athletes completed CSAI-2 which included the direction scale of Jones *et al.* (1994). The Prerace Questionnaire (Jones *et al.*, 1990) was used to assess the antecedents of anxiety; six factors are measured by this inventory, termed, Perceived Readiness, Attitude Towards Previous Performance, Position Goals, Coach Influence, External Environment and Time Difficulty Goal. Results revealed that Recent Form was the sole predictor of performance, accounting for 11% of the variance in finish position. In addition, Recent Form predicted performance without being mediated by anxiety responses. This finding is supported by Hammermeister and Burton’s (1993) study assessing anxiety in endurance athletes. In discussing this, Lane *et al.* (1995), have suggested that anxiety and other psychological states may be of much less importance than physiological and skill based differences between athletes in long duration events. This study has stressed that following the findings of Hall *et al.* (1994), perceived ability is an important mediator of anxiety response and a strong predictor of performance. Lane *et al.* (1995), have concluded that researchers need to develop sports specific constructs to identify the antecedents of anxiety, and Terry (1995) has

advocated that studies examining the predictive effectiveness of psychological state measures need to utilise a subjective performance criterion. Again, this work could be interpreted as highlighting the need to consider ideographic approaches to facilitate the collection of in-depth and individualised data; arguably more subtle and sensitive methods are required if research is to satisfactorily address such a complex issue as the relationship between psychological states and sport performance. Nevertheless, studies (Wiggans and Brustad, 1996) have continued to use CSAI-2 with the added directional scale to explore the relationship with sport performance. This work identified that self-confidence scores were most strongly related to facilitative anxiety interpretation and positive performance expectations. This is supported by Edwards and Hardy (1996) in their study assessing the interaction effects of competitive anxiety, and self-confidence on performance in netball. Again, little support was found for a clear and positive relationship between facilitative anxiety and performance. However, the results revealed that level of self-confidence was the most influential factor in terms of mediating the effects of anxiety on performance. This finding was further supported by Terry *et al.* (1996) in their study of anxiety in tennis. One hundred male and female tennis players completed CSAI-2 an hour prior to match play in singles and doubles events. Winners of singles and doubles matches had significantly higher levels of self-confidence than losers, which suggests that self-confidence rather than competitive anxiety, is the most important factor in predicting successful performance. However, it was identified that the measure of performance used in this study did not allow the researchers to consider the quality of the performance. Again, similar to other studies (Finkenberg *et al.*, 1992; Lane *et al.*, 1995) it may be that to examine meaningfully the relationship between anxiety and sport performance, researchers should try to include both outcome and process data within an overall performance measure.

Although refinements and improvements in measures of competitive anxiety have occurred, Burton (1988) suggests that there is need for much greater precision in performance measurement. This is supported by Jones and Hardy (1990) and Krane (1993) in stressing the need for more valid, objective and reliable measures of performance.

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### ***1.2.4. Other Approaches to Anxiety and Sport Performance***

Whilst focus has recently been directed at the need for better performance measures, and at utilising the multi-dimensional model of state anxiety to investigate performance in sport, the Russian sport psychologist, Yuri Hanin (1980) has approached the issue from a rather different position. Hanin's Zone of Optimal Functioning hypothesis (ZOF) refers to the specific band or zone of anxiety in which best performances are most likely to occur. This hypothesis closely resembles Csikszentmihalyi's (1975) Flow model, in that the emphasis is on individual differences, and the importance of the sports performer's perception of the task or challenge. Krane (1993) had sixteen University soccer players complete the CSAI-2 prior to match performance over the course of a season to identify their individual cognitive and somatic anxiety zones. Performance was measured by utilising a form of notational analysis, that relied on experienced observers recording skills and behaviours of players at matches and after viewing video recordings. The results indicated that the poorest performances occurred when the athlete's cognitive and somatic anxiety were above their individually determined optimal zones, and interestingly, that their best performances took place when anxiety was within or below their optimal zones. Although not supported by other studies on the ZOF hypothesis (Hanin, 1980), Krane's findings have been partially explained in terms of motivation. It has been suggested that although low levels of anxiety may indicate low levels of motivation, and that this may affect the effort put into a match overall, it does not necessarily impinge upon the successful performance of soccer skills. In addition, Krane (1993) argued that her results did not replicate the findings of previous research into the ZOF hypothesis, because of her subjects inability, due to their inexperience, to identify their ZOF, and due to inadequacies in the performance measures used.

Several researchers (Martens, 1977; Gould *et al.*, 1987) have criticised previous studies that have relied upon imprecise competitive outcome measures, for example, win/lose in wrestling, and measures which fail to control for differences between skill level in the subjects. According to these researchers, intra-individual performance measures where performance is assessed against previous efforts may provide the solution. A related concern is that whilst studies have been undertaken to investigate differences between



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sports in terms of competitive state anxiety (Gould *et al.*, 1984; Taylor, 1987) there have been relatively few attempts to explore differences between a range of achievement levels within a particular sport. This is somewhat surprising given the substantial body of work on the relationship between performance and anxiety, and that the capacity to use anxiety productively may be one of the important psychological skills which separate elite sports participants from the rest (Krane, 1993).

Although not directly addressing achievement level and anxiety in sport, a study by Matheson (1988) in which high school gymnasts (n=50) completed the CSAI-2 prior to three different gymnastic sessions, revealed that level of competition, and not the experience of the gymnasts, difficulty of routines, or number of performances, correlated significantly with state anxiety levels. However, although this study did not consider how high achievement level athletes would respond to the various standards of competition, it could be argued that highly rated athletes possess robust and greater amounts of self-confidence (McAuley, 1985) and that this may assist them to manage anxiety productively.

### ***1.2.5. Individual Differences and Competitive State Anxiety***

Several studies have found differences between male and female athletes (Hogg, 1982; Duesing, 1985; Kolt and Kirkby, 1994), with female athletes reporting higher cognitive anxiety and somatic anxiety than males measured by the CSAI-2. A number of interpretations of this particular finding are possible, including discussion on the influence of socialisation processes, trait, genetic or biological explanations, and claims that male and female sports performers are not atypical of the population overall. However, an ingenious study by Swain and Jones (1991) investigating gender role endorsement and competitive anxiety found that masculine females reported less cognitive state anxiety than feminine males. Female subjects (n=37) and male subjects (n=60) were classified as either masculine or feminine role endorsing after completing the BEM Sex Role Inventory. The CSAI-2 was completed by subjects on five occasions prior to an important competition. Interestingly, results revealed that whilst masculine males reported the lowest levels of state anxiety and feminine females scored the highest, masculine females were lower in both state and trait anxiety (as measured by

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SCAT) than feminine females. Again, this finding may be interpreted in a variety of ways. One possible explanation could be that sex differences in sport largely reflect the attractiveness of sporting pursuits for masculine males, and conversely, that most feminine males avoid competitive sports. It could be, therefore, that the frequently reported difference between males and females in terms of anxiety is largely a result of the greater proportion of masculine males in sport relative to the general male population as a whole.

A further area of research has addressed the issue of anxiety and time to the event. Studies (Gould *et al.*, 1984; Karteroliotis and Gill 1987) have reported differences in temporal patterning between cognitive and somatic anxiety, with somatic anxiety typically elevating most rapidly close to the event and cognitive state anxiety maintaining high levels even post game or after the event. Swain, Jones and Cale (1990) administered CSAI-2 on five occasions prior to an important competition. Subjects (n=87) responses revealed that as the event neared, there was a progressive increase in the strength of the relationship between cognitive and somatic anxiety.

There seems to be consensus over the effects of time on state anxiety, in that a number of studies (Lisher and Hardy, 1986; Parfitt and Hardy, 1987; Martens *et al.*, 1990) have reported that cognitive state anxiety has remained stable prior to the event, while somatic state anxiety has increased immediately before the competition. Of particular noteworthy attention, research by Jones, Swain and Cale (1991) suggests that males and females display similar temporal patterning with somatic anxiety, however, female athletes report an increase in cognitive anxiety as the competition approaches.

There has been surprisingly little attention within the sport literature towards a consideration of age and competitive anxiety. This situation may be more to do with ethical issues associated with carrying out research with young children, and reflect a lack of adequate, valid and reliable measures. The need for age appropriate measures of competitive state and trait anxiety would seem urgent, given the suggestion (Scanlan and Lewthwaite, 1984) that excessive stress, burnout and increased anxiety encourage “drop out” from youth sport, at least in North America.

Given the ease with which the CSAI-2 can be administered, Martens (1990) suggests that no more than five minutes are required to complete the questionnaire, the straight forward nature of the completion instructions, and its face validity, it seems unusual that the measure has not been used in any published research with children, or young athletes under fourteen years old. However, a children's scale is now being developed, although the work on this by Stadulis *et al.* (in press) is at an early stage.

Finally, most early research into competitive anxiety in sport has tended to view anxiety as a negative emotional state or undesirable trait, and as something that typically impairs performance and enjoyment in sport. However, this view has been recently challenged, especially by those theorists who place a particular emphasis on individual differences and the importance of an individual's perception of events. Research (Jones and Swain, 1992; Jones *et al.*, 1993) has revealed that whilst the CSAI-2 measures intensity of symptoms associated with anxiety, it has not facilitated a study of whether the anxiety is perceived favourably or unfavourably by the respondent. Jones *et al.* (1993) investigating the intensity and directional aspects competitive state anxiety and the relationship with sports performance, found that a high performing group of gymnasts rated their cognitive anxiety as being more facilitative in terms of performance than the weaker performing group. In a later study, Jones *et al.* (1994) considered intensity and interpretation of anxiety symptoms in elite and non-elite sports performers. Elite (n=97) swimmers and non-elite (n=114) swimmers completed the CSAI-2 one hour prior to competition. Whilst the results showed that there was no difference between the two groups on cognitive anxiety and somatic anxiety for intensity scores, elite performers interpreted both anxiety scores as being more facilitative of performance than did the non-elite swimmers. These findings suggest that some high achievement level athletes may view anxiety as a favourable emotional state associated with good performance. This proposition has been tentatively supported by Gould *et al.*'s (1993) findings, that showed wrestlers worst performances were associated with negative pre-competition emotional states and that their strongest efforts were associated with positive pre-competition feelings.

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## 2 Chapter Two: Study 1

### 2.1. Methodology

#### 2.1.1. Hypotheses

Competitive sport has been described as an anxiety inducing environment (Martens, 1977). Researchers have reported differences in competitive anxiety experiences between the sexes (Hogg, 1982), at different times (Huddleston and Gill, 1981), and as a result of cognitive intervention programmes (Murphy and Woolfolk, 1987). Notably fewer, if any, studies have set out to investigate the mediating effects of performance level, or age upon competitive anxiety. In addition, a review of research into competitive anxiety in sport during the past 15 years, reveals that the underlying assumption has been to view competitive anxiety as a destructive and debilitating phenomenon. It could be argued that this bias is the result of the dominance of cognitive and trait approaches and methodologies in current sports psychology research (Kerr, 1985).

The historical, social and indeed professional reasons for this dominance need not be explored at this juncture. However, as Martens (1987) has repeatedly stressed, the sports research community may need to consider the use of radically different paradigms and to examine anxiety in sport from completely new perspectives.

This study, in attempting to identify individual differences between athletes in terms of their experience and perceptions of anxiety and its physical and psychological symptoms, has restricted itself to using the CSAI-2 measure. In this way, this study may be viewed as an attempt to apply familiar and accepted methods in investigating competitive sport anxiety, in the interests of supporting the need for a more comprehensive and richer analysis of the subject in subsequent studies.

The literature provided support for investigation of the following general hypotheses:

It was hypothesised that a significant relationship existed between a measure of intensity of cognitive anxiety and the direction of cognitive anxiety in competitive swimmers.

It was hypothesised that a significant relationship existed between a measure of the intensity of somatic anxiety and the direction of somatic anxiety scores as measured by the CSAI-2.

Further, it was hypothesised that differences for the three dependent variables - cognitive anxiety, somatic anxiety and self-confidence existed as a function of level, age and sex. To investigate hypothesis three (above) the following null hypotheses were stated:

It was hypothesised that differences for competitive anxiety, somatic anxiety, self-confidence for intensity and direction existed between pre (8 days) and post test (half-hour) scores.

### ***2.1.2. Method***

The study measured the competitive state anxiety of competitive club swimmers by employing a sports specific measure, the CSAI-2 with an additional scale to address direction. Responses to the questionnaires and the demographic information recorded on each provided the data to test the three main hypotheses investigated in this research.

#### **2.1.2.1. Subjects**

A sizeable sample (n=89) of swimmers from a single competitive club was accessed to enable meaningful comparisons to be made across age cohorts, achievement levels and between sexes. Swimmers were categorised into three different age groupings: swimmers aged 11 and under (n=28); swimmers aged 12-14 (n=30); and swimmers aged 15 and over (n=31). In terms of achievement level, swimmers were categorised into three levels based on the developmental squad system operating in the club. The high achievement level group (n=22) consisted of a range of age group swimmers who had all achieved national qualifying times. The second level (n=40) contained swimmers capable of performing at regional and county level, and a third level (n=27) was for promising club swimmers. As was previously mentioned, the categorising of swimmers according to achievement level was for the most part based on the existing

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developmental pyramid operating within the club. Training regimes, coaching input and competitive programs are individually tailored for the five squads which represent the club at various levels. All senior swimmers are members of the Olympic squad, next come swimmers in the Serpent and Kingfisher Squads, and finally, the lowest of competitive swimmers are members of the junior National and Scorpion squads.

Competitive swimmers within the club are moved between squads at appropriate junctures within the season to meet their individual development and training needs. Most swimmers within the five squads considered in this study had entered competitive swimming through the Club's developmental programme and its carefully structured feeder system (Appendix A6). In terms of sex, female swimmers (n=46) and male swimmers (n=43) were included in the study.

#### **2.1.2.2. Procedure**

This study originally arose from a request by the coaching staff of a large (800 swimmers on the programme) and well established swim club, for a programme of psychological support and mental skills training. Prior to the commencement of any educational work within the club, or the design of appropriate intervention strategies, coaching staff agreed to take part in a preliminary study to investigate competitive anxiety in a suitable sample (n=89) of the clubs swimmers across a range of achievement levels.

The researcher visited the club to discuss the study in detail and explain how the data would assist the process of devising an appropriate psychological skills training programme for the club.

All coaches, interested parents and guardians were provided with a short briefing paper on the specific study on anxiety and the project overall (Appendix A1 and A2). The relevant squad coaches were instructed in the correct procedures for administering the CSAI-2 measure and the SCAT (Martens, 1977) inventory including instructions relating to anti-socially desirable responding. Data from the SCAT, whilst not considered on the present study, was used to assist the design of intervention work at a

later date. Coaches were given instructions relating to the proper administration of the CSAI-2 (Appendix A3-A5) and the SCAT.

The CSAI-2 was completed by swimmers (n=89) eight days before and half an hour before competitive events likely to be judged equally by each of the achievement levels. For example, the national squad level swimmers (n=22) completed CSAI-2 at a counties level competition, which would not be expected to result in atypical or particularly extreme anxiety responses. Club level swimmers (n=27) completed CSAI-2 prior to an inter-club event that was assessed by coaches to represent a similar level of challenge to that faced by other levels of swimmers. Swimmers filled in the questionnaires at squad training 8 days prior to the event and at poolside half an hour prior to competition. Coaches were available throughout to assist swimmers to complete the questionnaires appropriately.

## 2.2. Results

### 2.2.1. Analysis of Variance

A total of 89 competitive swimmers (44 males, 55 females) completed the CSAI-2 and a directional scale at 8 days and at 30 minutes of a competitive event. Separate three-way analyses of variance were carried out with the data categorised into the independent variables of sex (male and female), age (under 11, 12-14 years and 15 and over) and achievement level (national, regional and county, and club swimmer), and the CSAI-2 subscales (cognitive, somatic, and self-confidence) as the dependent variables. In addition, post hoc tests (Scheffe Multiple Comparisons) were employed where significance was identified to determine the nature of the differences.

Descriptive statistics relating to mean and standard deviation scores across levels, age groups and sex were computed (Appendix 6).

For self-confidence and intensity scores there was a significant difference between achievement levels ( $F [2,87] = 3.41, p < .05$ ). A closer examination of the means (mean  $\pm$  SD) using post hoc tests revealed that national level swimmers ( $24.16 \pm 4.68$ ) and club swimmers ( $22.83 \pm 5.07$ ) were significantly different from each other ( $F [2,87] = 3.13, p < .05$ ), and regional county/level swimmers ( $24.03 \pm 4.36$ ) and club level swimmers ( $22.83 \pm 5.07$ ) were significantly different from each other ( $F [2,87] = 3.13, p < .05$ ) (Table 1).

**Table 1.** Manova for Self Confidence Intensity Scores (CSAI-2) of Male and Female Swimmers in Three Age Groups and at Three Achievement Levels for Eight Days and Half Hour Before Competition.

Source of Variation	Degrees of Freedom	Mean Squares	F Ratio	Probability
Main Effects				
Level	2	105.68	3.41	0.038
Sex	1	4.18	0.13	0.714
Age	2	72.81	2.35	0.102
Level by Sex	2	79.08	2.55	0.084
Level by Age	2	19.49	0.63	0.536
Sex by Age	2	42.94	1.39	0.256
Level by Sex by Age	1	28.04	0.91	0.344
Error	76	30.97		



Total	88			
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A significant difference was reported for self-confidence directional scores between achievement levels ( $F [2,87] = 3.19, p < .05$ ) (Table 2). Post hoc tests revealed that national level swimmers ( $26.63 \pm 4.62$ ) and club level swimmers ( $24.55 \pm 4.47$ ) were significantly different from each other ( $F [2,87] = 2.13, p < .05$ ) and regional/county level swimmers ( $26.37 \pm 4.64$ ) were significantly different from club level swimmers ( $24.55 \pm 4.47$ ) ( $F [2,87] = 1.98, p < .05$ )

**Table 2.** Manova for Self Confidence Directional Scores (CSAI-2) of Male and Female Swimmers in Three Age Groups and at Three Achievement Levels for Eight Days and Half Hour Before Competition.

Source of Variation	Degrees of Freedom	Mean Squares	F Ratio	Probability
Main Effects				
Level	2	104.97	3.19	0.047
Sex	1	0.00	0.00	0.999
Age	2	39.83	1.21	0.303
Level by Sex	2	69.42	2.11	0.128
Level by Age	2	18.45	0.56	0.573
Sex by Age	2	14.73	0.45	0.640
Level by Sex by Age	1	7.72	0.23	0.629
Error	76	32.78		
Total	88			

A significant difference was found for somatic anxiety directional scores between achievement levels ( $F [2,87] = 4.88, p < .05$ ) (Table 3).

**Table 3.** Manova for Somatic Anxiety Directional Scores (CSAI-2) of Male and Female Swimmers in Three Age Groups and at Three Achievement Levels for Eight Days and Half Hour Before Competition.

Source of Variation	Degrees of Freedom	Mean Squares	F Ratio	Probability
Main Effects				
Level	2	191.24	4.88	0.010
Sex	1	52.93	1.35	0.249
Age	2	48.46	1.24	0.296
Level by Sex	2	80.44	2.05	0.135
Level by Age	2	12.06	0.31	0.736
Sex by Age	2	69.68	1.79	0.174
Level by Sex by Age	1	29.24	0.75	0.390

Error	76	39.16		
Total	88			

Post hoc tests revealed that national level swimmers ( $25.44 \pm 5.21$ ) and regional/county level swimmers ( $23.56 \pm 5.15$ ) were significantly different from each other ( $F [2,87] = 3.12, p < .05$ ), and that national level swimmers ( $25.44 \pm 5.21$ ) and club level swimmers ( $23.15 \pm 4.69$ ) were significantly different ( $F [2,87] = 3.07, p < .05$ ).

A significant difference ( $F [1,88] = 5.47, p < .05$ ) was reported between mean scores (mean  $\pm$  SD) for male ( $23.2 \pm 5.3$ ) and female ( $24.5 \pm 4.47$ ) swimmers for the dependent variable of cognitive anxiety directional scores. There were significant interactions for level and sex ( $F [2,87] = 3.62, p < .05$ ) with males scoring lower than females in regional/county level groups and for club level groups. There was also a significant interaction ( $F [2,87] = 3.77, p < .05$ ) for sex by age and for level by sex by age ( $F [1,88] = 5.71, p < .05$ ) (Table 4).

**Table 4.** Manova for Cognitive Anxiety Directional Scores (CSAI-2) of Male and Female Swimmers in Three Age Groups and at Three Achievement Levels for Eight Days and Half Hour Before Competition.

Source of Variation	Degrees of Freedom	Mean Squares	F Ratio	Probability
Main Effects				
Level	2	93.12	2.27	0.110
Sex	1	223.98	5.47	0.022
Age	2	61.25	1.50	0.231
Level by Sex	2	148.13	3.62	0.032
Level by Age	2	26.13	0.64	0.531
Sex by Age	2	154.24	3.77	0.028
Level by Sex by Age	1	233.91	5.71	0.019
Error	76	40.95		
Total	88			

A repeated measures multivariate analyses of variance (MANOVA) test was conducted to assess significant differences between CSAI-2 scores for 8-days before and at half hour before an event. Analyses revealed a significant difference for self-confidence directional scores ( $F [1,88] = 5.30, p < .05$ ), with mean and standard deviation scores (mean  $\pm$  SD) for 8 days before ( $27.27 \pm 4.04$ ) and half hour before ( $24.43 \pm 5.51$ ).

### 2.2.2. Correlations

Pearson correlation coefficients were computed between the subscale scores for intensity and direction, half an hour before and eight days before. Strong and significant correlations ( $r > .4$ ,  $p < .05$ ) were found for; cognitive anxiety directional and intensity scores eight days before ( $r = -.54$ ,  $p < .05$ ); cognitive anxiety directional scores and intensity scores half an hour before ( $r = -.64$ ,  $p < .05$ ); somatic anxiety directional scores and intensity scores eight days before ( $r = -.56$ ,  $p < .05$ ); somatic anxiety directional scores and intensity scores half an hour before ( $r = -.62$ ,  $p < .05$ ); self-confidence directional scores and intensity scores eight days before ( $r = .58$ ,  $p < .05$ ); and finally between self-confidence directional scores and intensity scores half an hour before ( $r = .94$ ,  $p < .05$ ).

An item by item correlational analysis across all subjects ( $n = 89$ ,  $p < .05$ ) revealed that several items were correlated with one another in an unexpected direction, or strength (Table 5). Comparing the relationship of CSAI-2 items on intensity and directional scores eight days before, the following correlations were found, item #1, ( $r = .12$ ), item #16, ( $r = -.25$ ,  $p < .05$ ), item #19, ( $r = .09$ ), and item #25, ( $r = -.36$ ,  $p < .05$ ). Item #1 “I am concerned about this competition”, item #16, “I am concerned about performing poorly”, item #19, “I am concerned about reaching my goal”, and item #25, “I am concerned I won’t be able to concentrate”, should all have revealed strong negative correlations according to the normal interpretation of competitive anxiety as a debilitating emotional state. Correlations between intensity and directional scores for these items half an hour before revealed that scores had altered only slightly in favour of the negative hypothesis for competitive anxiety.

Other important correlations were identified for items #6, #14, #21 and #24. As competition neared, correlations altered in strength in the expected direction. Correlations between intensity and directional scores for item #6, “I feel comfortable”, increased from ( $r = .38$ ,  $p < .05$ ), to ( $r = .61$ ,  $p < .05$ ), item #14, “My body feels relaxed” increased from ( $r = .56$ ,  $p < .05$ ), to ( $r = .72$ ,  $p < .05$ ), item #21, “I feel mentally relaxed”, increased from ( $r = .52$ ,  $p < .05$ ), to ( $r = .70$ ,  $p < .05$ ), and item #24, “I’m confident because I

mentally picture myself reaching my goal” increased from ( $r=.47$ ,  $p<.05$ ), to ( $r=.68$ ,  $p<.05$ ) (Table 5).

**Table 5.** Correlation of CSAI-2 Intensity scores and Directional scores ( $n=89$ ) \*  $p<.05$

Item	8 Days Before	Half Hour Before	CSAI-2 Questions
1	0.12	-0.15	I am concerned about this competition
2	-0.35	-0.48	I feel nervous
3	0.35	0.57*	I feel at ease
4	-0.33	-0.45	I have self doubts
5	-0.46	-0.33	I feel jittery
6	0.38*	0.61*	I feel comfortable
7	-0.35	-0.52	I feel concerned that I may not do as well as in this competition as I could
8	-0.36	-0.38	My body feels tense
9	0.30	0.35	I feel self confident
10	-0.47*	-0.44*	I am concerned about losing
11	-0.31	-0.43	I feel tense in my stomach
12	0.62*	0.62*	I feel secure
13	-0.51*	-0.60*	I am concerned about choking under pressure
14	0.56*	0.72*	My body feels relaxed
15	0.40	0.63	I am confident I can meet the challenge
16	-0.25*	-0.35	I am concerned about performing poorly
17	-0.36	-0.34	My heart is racing
18	0.46	0.62*	I am confident about performing well
19	0.09	0.11	I am concerned about reaching my goal
20	-0.59*	-0.47*	I feel my stomach sinking
21	0.52*	0.70*	I feel mentally relaxed
22	-0.46*	-0.51*	I am concerned that others will be disappointed with my performance
23	-0.32	-0.26	My hands are clammy
24	0.47*	0.68*	I am confident because I mentally picture myself reaching my goal
25	-0.36*	-0.45*	I am concerned I will not be able to concentrate
26	-0.52*	-0.32	My body feels tight
27	0.38	0.42	I am confident of coming through under pressure

## 2.3. Discussion

### 2.3.1. *Interpretation of Components of the CSAI-2*

The finding that several items within the CSAI-2 measure appear to be interpreted differently to that intended by the questionnaires' authors (Martens *et al.* 1990) may be explained by reference to the work of Carver and Scheir (1986). These researchers have introduced the notion of functional and dysfunctional responses to anxiety; they contend that some individuals perform well under conditions of high anxiety, and importantly, that the individuals themselves are cognisant of this situation. This may allow these performers to perceive the experience of both or either cognitive or somatic anxiety as facilitative of good performance or at least, as an emotional and physical state which they interpret favourably. Further support for this interpretation is advocated by Eysenck (1984). He suggests that elevated cognitive anxiety may serve to enhance motivation in some athletes and even improve their attentional focus skills. This connects well with the much denigrated pattern of coaching behaviour, where the coach or instructor attempts to create increased anxiety in a performer through motivational talk so as to galvanise the athlete's effort and concentration. Jones *et al.* (1993), investigating the relationship between intensity and direction dimensions of competitive state anxiety and performance have suggested that whilst sports researchers (Martens *et al.*, 1980; Burton, 1988) have tended to view competitive state anxiety as a negative state, studies within the area of academic performance and testing (Huddesman and Weismer, 1978; Wine 1980) have reported both debilitating and facilitative effects in terms of performance. In terms of differences between high and low competitive performers, Jones and Swain (1992) found that low competitive athletes viewed cognitive anxiety as more debilitating for subsequent performance than a high competitive group. A further development of this approach by Jones *et al.* (1994), with elite and non-elite level athletes, revealed that the higher achievement level athletes were more likely to view cognitive anxiety as related to good performances. Of particular note, this study identifies the important role that self-confidence may have in mediating the individual athlete's perception of anxiety.

The results from this study suggest that self-confidence is closely related to competitive anxiety. It is notable that male swimmers from the national level group scored highest on self-confidence and lowest on somatic anxiety. Further, it was revealed that there were significant differences between achievement levels for self-confidence intensity scores, with national level and regional level swimmers reporting higher scores than club level swimmers. It could be that being aware that you are highly rated may enhance self-confidence, and in turn that being self-confident will assist athletes to achieve the highest levels. Of less doubt is the relationship between self-confidence and individual perceptions of anxiety. In support of Hardy and Jones (1990), clear support was found for claims that high level athletes more favourable perception of anxiety is mediated by their higher levels of self-confidence.

This study clearly identifies that across achievement levels, age groups and for both sexes, four items (#1; #16; #19; #25) in particular suggest that there may be differences between how the term “concerned”, as used within CSAI-2, is interpreted in the U.K. against North America. Further research is needed to explore why some athletes appear to be, at least, undecided about whether it is a good or bad thing to feel concerned about an important event. Whilst the CSAI-2 scoring structure implies that to feel concerned is equivalent to worry, which is something to avoid or control, UK athletes at least, may consider that not to feel concerned about an important event which you have carefully prepared for, would be more likely to cause anxiety.

A closer examination of the CSAI-2 by sub scale reveals that the correlation between items within the cognitive anxiety scale (n=9), and the somatic anxiety scale (n=9), could be improved by the removal or rewording of a number of questions. However, Martens (1990) warns against this procedure, stating that removal of two or more items from the CSAI-2 invalidates the data.

Consistent with previous studies investigating the interrelationships between each of the three sub scales within CSAI-2, this study identified several moderately strong and significant correlations. However, anomalies remain in this area, with studies (McAuley, 1985; Barnes *et al.*, 1986) reporting correlations of  $r=.21$  and  $r=.17$  respectively for cognitive and somatic state anxiety and Gould, Petlichkoff and

Weinberg (1984) and McAuley (1985) reporting correlations of  $r=.29$  and  $r=.18$  for somatic anxiety with self-confidence. Again these findings argue for the possible exclusion of a small number of items from each sub scale to improve the internal consistency and reliability of the inventory.

### ***2.3.2. Achievement Levels and Competitive Anxiety***

The need to consider achievement level or ability in studies investigating the effects of competitive state anxiety has been advocated by several researchers (Jones and Hardy, 1990; Jones *et al.*, 1994). In this study a comparison of the mean scores on the three sub scales across levels revealed that significant differences existed between achievement levels for self-confidence, and somatic anxiety directional scores, and on self-confidence intensity scores. In addition, differences as a function of sex, and interaction effects involving level, sex and age, in different combinations for cognitive anxiety directional scores, pointed to the overall importance of considering achievement level.

In agreement with recent work by Jones *et al.* (1994), this study failed to find a significant difference between swimmers at three achievement levels in terms of CSAI-2 intensity scores, for cognitive anxiety and somatic anxiety. However, analyses revealed a significant difference between achievement level groups for directional scores on somatic anxiety. This finding provides clear support for the much earlier work of Alpert and Haber (1960), Wine, (1980), and Jones and Cale (1989) and Parfitt and Hardy (1993) in the area of sport, who found that anxiety can be viewed positively by some individuals, and even be assessed as being of direct benefit to actual sporting performance. Although few studies have addressed themselves to the difficult practical issue of assessing how anxiety may be linked to performance in a facilitative as opposed to debilitating way, Gould *et al.* (1993a), and Carver and Scheir (1986) have begun to investigate this relationship in their work. Whilst Gould *et al.* (1993a) emphasised the importance of positive affective states associated with performance for groups of athletes categorised as good or poor performers, a more promising approach is that advocated by Krane (1993) investigating the ZOF hypothesis (Hanin, 1980). This avoids the temptation to classify anxiety as either positive or negative at least in terms of different intensity levels, and states that the individual's interpretation is of most

importance. Krane's (1993) study found that athletes whose cognitive anxiety and somatic anxiety intensity scores were above their individual zone of optimal functioning performed poorest. This suggests that each athlete possesses a zone within which anxiety is perceived as facilitative of performance. In viewing their anxiety levels favourably, high level swimmers in this study may be demonstrating that they are able to reconcile particular levels of anxiety and anxiety symptoms with the psychological and emotional conditions normally experienced before a good performance. It could be argued that the ability to recognise anxiety levels that are within the ZOF represents an important mental skill, and one that is more developed in elite performers than lower level athletes. In any event, the finding of directional differences between achievement levels strongly suggests that this area of anxiety research in sport is worthy of further investigation.

Gould *et al.* (1993a) investigated Hanin's (1980) Zone of Optimal Functioning Hypothesis with 11 university runners, interestingly relying on retrospective completion of the CSAI-2. Gould *et al.*, have claimed that in agreement with later work by Hanin and Syrja (1996) athletes are able to accurately recall their level of pre-competition anxiety as much as 18 days later. However, the most significant finding of this study was that multidimensional anxiety based calculations improved the strength of a correlation between anxiety and an individual's ZOF. More specifically, it is argued that cognitive anxiety and somatic anxiety are differentially related to an individual's ZOF for an athletic performance, therefore, allowing optimal somatic anxiety and optimal cognitive anxiety levels to be identified. However, whilst Gould *et al.*'s work has been offered as strong support for the multidimensional hypothesis, this is still in doubt, given that the correlation between distance from optimal zone and subjective performance was only -.30 for multidimensional anxiety, and -.24 where normal distribution inverted U notions of anxiety were used. Given the weakness of these correlations and the extremely small difference between them, it may be more reasonable to question whether Gould *et al.*, are justified in claiming that their findings lend further support to the multidimensional model of anxiety.



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### ***2.3.3. Temporal Changes***

Unlike previous studies (Swain and Jones, 1993) no significant differences were found between somatic anxiety scores and cognitive anxiety scores as time to the event decreased. Whilst this study indicated that somatic anxiety scores generally were higher half an hour before in comparison to eight days before, the difference was not significant. This finding has been reported in previous research (Matheson, 1988; Swain and Jones, 1992), and may be interpreted as evidence that state anxiety levels do not fluctuate wildly for an individual and are almost as stable as trait anxiety levels. However, a more likely explanation of the absence of a temporal change in anxiety scores is because of limitations with the CSAI-2 measure. Whilst reliability and validity (Martens, 1990) of the scale has been reported as very good, this has been challenged by Williams and Krane (1992) with their work on response distortion. Fifty-eight female golfers of University team standard completed the CSAI-2, and a scale measuring social desirability. Williams and Krane (1992) found that competitive state anxiety ( $r=.24$ ) and self-confidence ( $r=.45$ ) were related to social desirability distortion, and this has led the authors to stress the need for researchers to eliminate data from subjects who may have distorted their responses.

A further suggestion in support of this finding of no significant differences, is that there may be different temporal patterns between sports. Krane and Williams (1987) investigating the changes in cognitive anxiety, somatic anxiety and self-confidence prior to competition revealed that gymnasts and golfers have different patterns of change in the CSAI-2 sub-components. They reported a change in somatic anxiety and cognitive anxiety and a decrease in self-confidence amongst gymnasts as the event approached; golfers in contrast, reported higher levels of self-confidence, lower cognitive anxiety and unaltered levels of somatic anxiety as time to event reduced. These results suggest that sport environment, input from coaches, and the physical and psychological skills associated with the sport have an important influence on anxiety levels. In addition, Krane and Williams (1987) state that the golfers may be more aware than the gymnasts of the need to control their anxiety levels prior to competition, especially fear of failure and negative images, because a controlled mental state is accepted throughout golf as being associated with optimal performance. The situation may be less clear in

gymnastics, where athletes may have, at times received direction from coaches and others to heighten their anxiety levels in preparation to “give their all”.

From a different perspective, following Hanin’s zone of optimal functioning hypothesis which suggests that individual athletes possess their own specific band of anxiety in which best performances occur, athletes completing CSAI-2 over time, may be reporting scores reflecting their own preferred anxiety zones. For example, a swimmer may feel that her ZOF occurs with fairly high levels of cognitive and somatic anxiety, whereas, another swimmer may believe that she usually performs best when anxiety levels are fairly moderate. Therefore, the swimmers in this study may have completed the CSAI-2 to reflect the desired anxiety levels to achieve their ZOF, rather than scoring CSAI-2 in line with their actual anxiety feelings on the two separate occasions that the test was administered.

#### ***2.3.4. Sex Differences***

Although sex differences were reported in this study for cognitive anxiety directional scores, the literature does not uniformly support this finding. Where a difference between sexes has been found it has been in terms of self-confidence and competitive anxiety intensity scores, both trait and state (Segal and Weinberg, 1984; Kolt and Kirkby, 1994). Several studies have lent further support to the idea of sex differences in anxiety from a different methodological approach. For example, Jones *et al.* (1991) investigated the antecedents of cognitive anxiety, somatic anxiety and self-confidence, and found that different predictors affected male and female athletes. Whilst males and females revealed similar patterning in somatic state anxiety as competition approached, and there was a progressive increase in cognitive anxiety for females as the event neared, female athletes (n=28) identified personal goals and standards as a significant factor, and males identified winning and interpersonal comparison as more influential. This may be a more promising approach to sex differences in that the focus is concerned with explaining apparent differences rather than merely reporting the differences, most of which have not achieved significance anyway.

It could be argued that of equal importance in determining differences between males and females on competitive state anxiety, is the consideration of the type of sport. Duesing (1985) administered the CSAI-2 and the SCAT to male (n=24) and female (n=16) middle distance runners over a season. No differences were found between male and female runners on cognitive anxiety or somatic anxiety. A possible explanation of this finding may be found in Swain and Jones' (1991) study on gender role endorsement and competitive anxiety. An important finding from their work was that feminine males reported significantly higher anxiety levels than masculine males throughout the period of testing, and most interestingly, masculine females reported significantly less cognitive anxiety in the pre competition period than feminine males. From this, it could be argued that for sports such as distance running and swimming, and contact sports as a group, sex differences are effectively masked because these activities perceived as they are, as involving traditionally masculine traits for example, physical toughness and aggression, tend to attract large numbers of masculine females. In contrast, those pursuits traditionally associated with feminine traits such as rhythm, poise and aesthetic qualities, for example skating and gymnastics, may attract greater numbers of feminine females. Although focusing on injury, mood and competitive anxiety, Kolt and Kirkby (1994) identified differences between male (n= 94) and female (n=115) gymnasts for cognitive anxiety and self-confidence. These researchers suggest that their findings support the anxiety-injury link in athletes. However, the more surprising finding was that female gymnasts reported more anxiety and lower levels of self-confidence than male gymnasts who had suffered similar levels of injury. Again, rather than identifying absolute differences between male and female athletes with respect to anxiety and self-confidence, these findings may provide further support for considering the type of sport investigated in the study. It may be that female gymnasts possess a lower expectation of becoming injured through their participation in gymnastics, and therefore, the experience of injury is perceived as more traumatic. The male gymnasts in comparison may have a more realistic expectation of the possibility of injury, and are therefore better able to deal with this inevitable by-product of participation in the sport.

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### 2.3.5. *Age Differences*

Finally, the results reported that age differences of a significant level existed within the sex by age interaction effects for cognitive anxiety directional scores. A closer analysis of the data and the results of post-hoc tests suggested that statistical significance was likely achieved because of the extreme scores for the small sample (n=3) of 11 and under male swimmers in the group. Rather than suggesting that an important psychological difference has been identified, this result is more likely due to problems associated with administering the CSAI-2 to ten year old swimmers. In addition, these three individuals were already swimming at regional and county level, and again it is likely that their responses were influenced by a desire to reveal their perception of the best psychological profile, rather than revealing their own individual feelings.

These findings on the relationship between age and competitive anxiety are supported by previous research with competitive swimmers. Although relying on SCAT as a measure of competitive anxiety, research by Hogg (1982), and Nesti (1989) failed to find significant differences between competitive swimmers across different age groups. Further investigation of this area would seem desirable following research (Scanlan and Lewthwaite, 1984) suggesting that excessive competitive anxiety and pressure in age group sport causes “burn out”, and withdrawal from participation. However, the need to adapt the CSAI-2 for use with young children would appear to be necessary, before much research can be confidently pursued in this area.

Recent work by Berger *et al.* (1997) investigated swimming performance in relation to mood states in 48 young swimmers between the ages of 12 and 25 years. Although focus was on mood as measured by a shortened version of the Profile of Mood States (Grove and Prapavessis, 1992), the results revealed that decreases in scores on Tension and Depression in particular, occurred after shorter than normal training sessions. A further important finding identified that positive mood changes were not found after longer duration training, even for swimmers who had recently been successful in a prior competitive meet.

Taken as a whole, the work of Berger *et al.* (1997) seems to suggest that competitive sport is associated with anxiety, tension and even depressed mood states, at least for

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some young swimmers, because of the experience of training as well as competition. This study highlights that a more problematic and potentially damaging area of anxiety in sport may exist, and that researchers could discover that “drop out” (Scanlan and Lewthwaite, 1984) from youth sport is more linked to dislike of training than to the experience of competitive anxiety.

Researchers (Kerr and Cox, 1991) have recently begun to turn their attention towards the relationship between anxiety, performance and motivational state. It seems that in order to begin to get a clearer picture of the performance-anxiety interaction, it is necessary to understand an individual’s motivation. In terms of training and mood, it would appear that without knowledge of what motivates an athlete to train, it is unlikely that researchers will be able to begin to fully make sense of the findings reported by Berger *et al.* (1997). Kerr *et al.*’s (1997) work with archers revealed that hedonic tone may be an important and measurable factor to consider, in that it may begin to help explain why some anxiety and arousal is viewed positively whilst this same state can be viewed negatively on other occasions. Hedonic tone refers to the desirability of different arousal levels, which are associated with relaxation, boredom, anxiety and excitement.

## **2.4. Conclusion**

In conclusion, this study has highlighted the need to consider individual differences, especially in terms of how athletes view anxiety feelings and their symptoms. The CSAI has been extensively used in anxiety and sport research since its introduction in 1982; it would seem that it will continue to be well used in the future. However, there does seem to be a strong need to introduce other anxiety measures and adopt differing methodologies to enable a deeper and wider investigation of the subject. This study has suggested that several items should be removed from the CSAI-2 measure, or reworded appropriately, and that there needs to be a consideration of both intensity and direction of responses, to assist further investigation of individual interpretation of anxiety (Jones *et al.*, 1994). It could be argued that the study of individual differences in anxiety and sport research requires that greater effort be directed at studying small numbers of

individual sports performers intensively. In this way, it may be possible to determine more easily why some individuals apparently perceive anxiety favourably.

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## 3 Chapter Three: Anxiety Control in competitive Sport

### 3.1. Introduction

According to (Selye, 1980) stress management and anxiety control techniques have formed an important area of study in both clinical and academic psychology. May in his seminal text on anxiety has even suggested that: **“clinical experience has proved that to psychologists and psychiatrists alike that central problem in psychotherapy is the nature of anxiety”** (May, 1977. p15).

In the main, researchers, clinicians and others have tended to describe stress and anxiety as debilitating and involving negative emotions and responses; the assumption is generally that they should be removed or controlled to allow normal functioning to resume. Freud (1936) stated that the ego’s main role is to avoid or reduce anxiety through the use of various ego-defence mechanisms. Similarly, learning theorists Dollard and Miller (1954) refer to suppression as the act of removing anxiety-provoking thoughts out of immediate consciousness, and that the elimination of anxiety neuroses can be achieved by following the laws of learning. In contrast, behaviourists have largely ignored the concepts of stress and anxiety focusing instead on observable overt behaviour.

However, the clearest account of stress as: **“the non-specific response of the body to any demand placed upon it”** (Selye, 1974, p. 27) reaffirms the important dimension of neutrality. Indeed, Selye (1980) provides the distinction between unwanted stress or distress correctly called, and positive stress, referred to as eustress. A review of work in the area throughout the past four decades according to Selye demonstrates that stress has all too frequently been defined conceptually as a destructive and debilitating phenomenon, and, as such, as something to be avoided or managed away. In spite of these warnings against a one-sided interpretation, health professionals, therapists and clinical practitioners have largely developed programmes aimed at stress management, and the learning of cognitive and behavioural stress reduction skills.

From a different perspective, existential psychologists such as Caruso (1964), May (1977) and those adhering to broadly humanistic approaches, for example Maslow (1968) and Rogers (1961) have focused on anxiety rather than stress and have typically described the anxiety state as involving diffuse apprehension. In contrast, fear is viewed as a psychological and behavioural reaction to a specific object of danger, whilst anxiety involves a vague feeling, even though as May points out: **“anxiety may be more painful than fear”** (May, 1977, p.181). A further important distinction highlighted by the existential psychologists is between normal anxiety and neurotic anxiety. This view contends that normal anxiety is not disproportionate to an objective threat, involves little repression and can be dealt with constructively. Neurotic anxiety however is more of a problem according to this view as it involves repression, a disproportionate reaction to a threat and often results in various inhibitions and a closing up of the personality. Thus, researchers and clinicians supporting this interpretation of anxiety believe that only a particular type of anxiety, that is neurotic, is problematic for the individual. In addition, May (1977) states that neurotic anxiety occurs when a person has failed to meet the challenge of normal anxiety. This view strongly suggests that strategies and techniques should not be aimed at the removal or elimination of anxiety, as normal anxiety is healthy in that it is associated with personal growth and is something which all human beings experience.

However, in the world of sport, or at least within the official scientific and academic milieu of the sports psychologist, the important distinctions between stress, anxiety and fear have been little explored (Jones and Hardy, 1990). Further, anxiety has been almost uniformly viewed as a problem, and as such, as something to be controlled or avoided. Whilst multi-dimensional accounts of anxiety based on the earlier work of Meichenbaum (1985) and Spielberger (1966) have been utilised in sport psychology, the dominant approach has been to conceptualise all anxiety including competitive anxiety, as debilitating and likely to adversely affect performance levels. Compounding this, sports psychologists and researchers working in sport have tended to use trait approaches (Martens, 1977) following earlier work (Taylor, 1953; Spielberger, 1966) when measuring anxiety. Trait anxiety measures such as the Manifest Anxiety Scale (Taylor, 1953) as well as sport specific measures, such as Martens’ (1977) Sports Competition Anxiety Test have been used to identify anxiety as a personality



disposition. These psychometric measures allow an individual to be rated as low, medium or high anxious. Similarly, researchers and clinicians have used Spielberger's (1970) State-trait Anxiety Inventory (STAI) and Martens (1980) Competitive Anxiety State Inventory (CSAI) to measure state anxiety levels. There is ample evidence according to Spielberger that these measures are based upon the predictions of Yerkes and Dodson's (1908) early work which described the relationship between performance and anxiety in terms of an inverted U-shaped function. Against this theoretical background it is less than surprising to discover that Stress Management Training (SMT), Stress Inoculation Training (SIT) (Meichenbaum, 1985), Cognitive Behaviour Modification (Lazarus, 1990) and Anxiety Management Training (Suinn and Richardson, 1971) have been utilised both within the mainstream and in sport psychology to help individuals to ameliorate the effects of anxiety on performance.

Whilst Mace (1990) has highlighted the need to address methodological concerns relating to sample size, performance measures and the limited range of anxiety measures used in studies, they do not question the underlying assumption that stress and anxiety can be measured objectively, or that individual's may in fact interpret low anxiety and stress negatively, and associate higher levels of anxiety with optimal performance.

In adopting a more psychophysiological approach, the matching hypothesis of Davidson and Schwartz (1976) suggested that particular kinds of anxiety responded differently to certain types of stress management techniques. They revealed that cognitively based anxiety management techniques lowered cognitive anxiety scores more than where somatically based techniques were employed. Again, the dominant theme of this body of research is that anxiety is harmful, especially in relation to performance and importantly, that this is self evident to all, including athletes in sport. This final point has rarely been included as a possible explanation of the generally equivocal findings emanating from studies on intervention programmes and anxiety control in sport, although Martens (1987) has advocated that maybe radically new ways of examining stress and anxiety in sport are required.

Intervention studies aimed at stress management and anxiety control in sport have suffered from a plethora of methodological weaknesses according to Mace (1990) such

as a failure to adequately control for placebo effects, the use of invalid performance measures and the limited use of longitudinal designs. Jones and Hardy (1990) have suggested that studies need to investigate the efficacy of intervention programmes with elite level athletes as well as novices, and to consider individual interpretations and experiences.

A range of self-help manuals, audiotapes and educational packages aimed at stress management and anxiety control in sport are currently available to coaches and athletes at all level. Within the UK as the official coaching arm of the Sports Council, The National Coaching Foundation has developed a series of modules to help athletes enhance their mental skills. Booklets and accompanying tapes are available on anxiety control, mental rehearsal, goal setting and concentration training; within each, different strategies and techniques are explained and exercises are provided to assist learning. Whilst researchers such as Boucher and Rotella (1987) have suggested that pre-performance routines can assist anxiety control, and argued that goal setting can aid both motivation, self-confidence, and stress reduction, most studies in sport have relied upon the use of cognitively-based relaxation techniques (Jones, 1993).

The research discussed in this study was undertaken to begin to address some of the methodological weaknesses identified by Martens (1990), and Jones and Hardy (1990) and to test Davidson and Schwartz's matching hypothesis model. This involved designing and implementing an anxiety control programme with elite level female youth ice skaters, with the support of coaching staff and an accredited sports psychologist.

The NCF mental training programme on anxiety control was utilised within this study as it provides a clear and easy to follow format, and has been written by two experienced sport psychologists, Drs. Hardy and Fazey of the University of Wales. In addition, the package focuses on both physical and mental relaxation skills, and, as such, allows for individualised programmes to be provided to address cognitive anxiety, or somatic anxiety, separately, following Davidson and Schwartz's (1976) matching hypothesis.

## **3.2. Review of Literature**

### ***3.2.1. Stress Management***

Psychological approaches to stress management tend to be either problem-focused or follow symptom-centred lines according to Kutash and Schlesinger (1980). A broad range of therapeutic approaches has been employed to deal with stress, from psychoanalysis, and behaviour therapy, to narrower approaches, for example, stress inoculation (Ellis, 1962) and systematic desensitisation (Wolpe, 1958).

A further important area relates to the concept of coping which has been investigated both from a psychophysiological perspective (Orbist, 1981) and according to the tenets of psychoanalytic ego psychology. Interestingly, assessment and measurement of coping has replaced ego psychology with focus on traits and styles. From this development has emerged the distinction between Type A behaviour patterns and Type B (Glass, 1977). The type A pattern of behaviour involves coping with stressful situations by increasing effort and: **“struggling to achieve more and more in less and less time”** (Friedman and Rosenman, 1974, p.67). In contrast, Type B coping behaviour involves flexibility of response, and a recognition that problems are often easier to face, and perhaps solve, with others rather than alone. Trait measures have allowed researchers to study coping styles, however, these have not been without their critics. Cohen and Lazarus (1973) and Moos and Tpu (1977) for example, suggest that the unidimensional quality of most trait measures restricts attempts to identify the complex multidimensional nature of coping skills used in real-life situations.

Whilst interest in psychological stress had been given major impetus after Selye’s work, it is worth recalling that the term stress did not appear in the index of Psychological Abstracts until 1944 according to May (1977). Anxiety however, had been a central concern in most schools and traditions of psychology since the early part of this century. A review of literature in the broad area of stress, anxiety and arousal during the past forty years revealed that psychoanalytic approaches have lost ground to those therapies more clearly stressing the environmental role. However, a closer investigation of research during this period supports the contentions of sport psychologists (Jones and

Hardy, 1990) and mainstream psychologists (May, 1977), that the terms anxiety and stress have often been used interchangeably. It could therefore be argued that much of the work done on stress management and coping, at least since Selye (1956), and on anxiety control after May's (1977) seminal text addressing the meaning of anxiety, has frequently been dealing with the same topic. This can be clearly seen within the sports literature both in terms of the content and the titles of work within the area. For example, Jones and Hardy's (1990) comprehensive text on stress and performance in sport contains only 26 references to the stress concept in comparison to over 180 references on anxiety. An earlier work entitled "Coping Strategies for Competitive Anxiety in Sport" (Harris, 1980) details strategies for systematic desensitisation, biofeedback and cognitive behaviour modification, all of which have been used extensively in studies on stress management in mainstream psychology.

### ***3.2.2. Stress and Anxiety Control in Sport***

However, the considerable body of research within sport focusing on stress and anxiety reveals that competitive anxiety and stress management have been investigated both together as well as in separate studies. For example, Martin and Gill (1991) have explored the relationship between competitive anxiety and performance in high school athletes, and Gould *et al.* (1993c) have studied the sources of stress in figure skating. Research by Maynard and Cotton (1993) into the efficacy of stress management techniques on competitive anxiety and hockey performance, provides an example where stress and anxiety has been studied simultaneously. This capacity to utilise stress management techniques to control competitive anxiety within sport research may be seen as reflecting the predominantly atheoretical base of sports psychology as a discipline (Martens, 1987). According to Martens the most influential approaches in sports psychology, particularly in English speaking countries, has been cognitive psychology and trait psychology. The investigations into anxiety and sport have, as a result, most usually involved the study of groups, and the use of psychometric tests, such as the SCAT (Martens, 1977) and the CSAI-2 to measure competitive anxiety intensity. The use of idiographic approaches recommended by Jones and Hardy (1990), or studies which examine anxiety from a more clinical perspective, as has often

occurred within the mainstream, have yet to be considered in any serious way within sport research.

Cognitive-behavioural intervention programmes have received considerable interest within sport anxiety research. Mace (1990) suggests that there was a rapid expansion of the application of cognitive behaviour modification as a psychological technique in sport during the early 1980's. This may be explained, in part, as an attempt by sport to follow earlier developments in cognitive psychology (Meichenbaum, 1973) and social learning theory (Bandura, 1977) amongst other developments within mainstream psychology. These approaches were based on the view that cognitive processes and thoughts mediate anxiety, and that by control of these cognitions, an individual could reduce anxiety levels and ameliorate their effects.

Studies investigating the effect of cognitive behavioural interventions in sport and exercise have addressed issues associated with exercise and general health (Kendal and Turk, 1984), exercise adherence (Buffone *et al.*, 1984), injury (Gordon, 1986) and drug abuse in sport (Anshel, 1991). Performance sport focused research has addressed the effect of cognitive behavioural interventions on competitive anxiety and performance in tennis (Loehr, 1993), golf (Cohen *et al.*, 1990), gymnastics (Sarrazin and Hale, 1986) and squash (Mace and Carroll, 1986). According to Mace and Carroll (1986) most cognitive behavioural packages utilise either stress inoculation training (SIT), cognitive-affective stress management training (SMT), or visuo-motor behaviour rehearsal (VMBR). However, a closer examination of a number of studies reveals that sport researchers have been prepared to adopt a more flexible approach, and frequently draw upon a broad range of intervention techniques in their work. For example, Murphy and Woolfolk (1987) studied the effects of cognitive interventions on competitive anxiety and performance on a golf putting task by teaching subjects either a cognitive behavioural relaxation strategy, or a psyching-up arousal technique. Whilst a control group and the relaxation-based group improved their performance and reduced anxiety pre to post test in comparison with subjects in the arousal group, it is of interest to note that the researchers were prepared to investigate the efficacy of approaches to anxiety control and performance enhancement, other than cognitive behavioural techniques. Further, the diversity in methodology is clear even when sports researchers have

involved themselves in applied work with currently active athletes. Sarrazin and Halle (1986) used Meichenbaum's Self Instructional Training programme in their work with six adolescent female gymnasts to instruct athletes to develop adaptive responses to anxiety causing situations. The focus was on the effectiveness of one cognitive-behavioural approach and its uses as a behavioural aid. However, Weiss *et al.* (1989), again working in an applied setting with youth gymnasts, focused on the role of self-efficacy in terms of anxiety control and performance enhancement. They reported that experience, worry and self-efficacy of 22 male gymnasts related significantly to performance, and that enhancing athletes perceived competence and efficacy beliefs is a worthwhile strategy to improve performance and lower competitive anxiety. Along similar lines, work by Silvennoinen *et al.* (1985) investigated the relationship between self-esteem, parental attitudes and level of competitive anxiety. Young athletes completed SCAT, a physical self-concept scale and Rosenberg's (1965) self-esteem scale. The results revealed that competitive anxiety was negatively related to a positive parental attitude to sports training and positively related to the children's self-esteem. These research findings indicate that studies aimed at reducing anxiety levels and enhancing performance in sport cover a much more broadly conceived interpretation of intervention than that considered in the mainstream.

### ***3.2.3. The Efficacy of Anxiety Control Interventions***

It is possible to detect two quite different approaches to the consideration of competitive anxiety and its control in sport during the past two decades. Harris (1980) in her review of coping strategies for competitive anxiety focuses on a range of skills which the athlete can learn and put into practice prior to an event, or during performance itself. Self-help strategies include meditation and somatic relaxation techniques, imagery and mental rehearsal, and systematic desensitisation and biofeedback. These techniques are considered suitable for all ages and levels apparently, and can be learnt and practised alone or with the support of a coach or sport psychologist.

However, in line with the approach of advocates of psychotherapy (Fromm, 1994) and more clinically focused researchers Anshel (1995a), several studies in sport have considered the effect of self-confidence on intrinsic motivation and competitive anxiety

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(Watson, 1984) and on locus of control and competitive trait anxiety (Hanson *et al.* 1992). Whilst these studies do not involve the use of intervention techniques in themselves, their findings are explained in terms of the need to ensure that athletes participate in a supportive environment and that they have identified particular roles which coaches, parents and others need to adopt. As such, this body of work may be interpreted as being just as much about intervention in comparison to research where this focus is more explicitly expressed.

Research concerned with stress management and anxiety control within sport has tended to investigate the efficacy of intervention techniques by measuring differences between different groups of athletes. However, in their review of work done in the area, Jones and Hardy (1990) suggest that more empirical research should be directed at investigating individual differences and that single subject multiple baseline designs may need to be used increasingly. Jones and Hardy (1990) have criticised much of the early research in failing to control for placebo effects in intervention studies, for an over reliance on novice athletes, use of poorly defined performance measures lacking validity and reliability, and of ignoring the important issue of time required to learn different interventions. They could also have added that most research in sport psychology has relied on the use of questionnaires to measure competitive anxiety and that much of this work has been largely atheoretical.

The importance of pursuing studies from a theory-driven perspective has been recognised by Maynard and Cotton (1993). Following work by Martens *et al.* (1990) that recommended the use of intervention techniques to match the dominant anxiety symptoms experienced by performers, Maynard and Cotton assigned male hockey players to a cognitive anxiety (n=8) or a somatic anxiety (n=6) group and a control group (n=6). Anxiety was measured by completion of the CSAI-2 on four occasions prior to matches and a 12 week intervention programme was designed for both groups. The results suggested that following Davidson and Schwartz's (1976) Matching Hypothesis, anxiety was most effectively reduced by tailoring the intervention to meet the athlete's dominant mode of experiencing anxiety symptoms. In addition, they found that whilst somatic anxiety accounted for 22 percent of the variance in field hockey performance, no significant relationships were found between CSAI-2 sub scale scores

and performance. The work of Davidson and Schwartz has had a considerable effect upon research within the mainstream, and, in particular, has allowed research to test multimodal strategies of stress management arising out of the more clinically focused work of Meichenbaum (1975). Multidimensional conceptualisations of anxiety have received considerable attention in psychological research (Morris *et al.* 1981) and in sport research in recent years. For example, Jones *et al.* (1990) have investigated the antecedents of multidimensional competitive anxiety in a sample of 125 runners and Prapavessis *et al.* (1992) in their work on self regulation training and shooting, stressed the need to approach anxiety from a multidimensional perspective when designing and implementing intervention programmes. However, Smith (1989) has raised a number of important concerns surrounding the use of psychometric instruments to measure the different dimensions of anxiety. Whilst not questioning the delineation between cognitive and somatic anxiety conceptually, nor questioning whether these components can be measured accurately, Smith does raise the issue of the overlap observed between cognitive and somatic scales. In recognising the considerable correlation between the scales, Smith offers a possible solution in terms of improving statistical analysis by using more complex and sensitive statistical procedures. However, whilst researchers have reported results of their research in terms of Pearson product moment correlations (Williams and Krane, 1989), analysis of variance (Krane, 1993) and stepwise multiple regression analyses (Jones *et al.*, 1990), others (Gould *et al.*, 1993c) have suggested that more qualitative and individual based approaches should be employed increasingly.

#### ***3.2.4. Methodological Issues***

The importance of using qualitatively based methodologies in conjunction with quantitative approaches has been highlighted as being of considerable value where special populations and youth athletes are the concern (Gould and Petlichkoff, 1988). Silverman, (1991) assessed the validity and reliability of using structured interviews to diagnose anxiety disorders in children. She concluded that greater use should be made of more empirical methods, and that interviewers need to take greater care to consider the developmental context when interviewing children. This work has recommended that qualitative techniques continue to be used, although there is a need to standardise the interview procedures more fully, to reduce error due to interviewer variability.



Within sport, Gould and Udry (1994) have made a case for increased use of case study methodologies to help identify personality and situational factors influencing arousal regulation. According to Gould and Udry (1994), qualitative methodologies and an increased use of single subject and small sample groups will allow researchers to examine how and why anxiety control and stress management interventions work in sport. Recent work addressing anxiety reduction in youth sport (Smith *et al.*, 1995) assessed the effect of coach behaviours on trait anxiety over the duration of a playing season. Coaches were either assigned to a no treatment control group, or received training in coaching strategies that were associated with anxiety reduction. The results revealed that the youth athletes who were coached by the treatment group of coaches recorded significantly reduced trait anxiety scores over the course of the season. However, the most interesting aspect to the study was that the 152 ten to twelve year old boys in the sample were interviewed and administered SCAT pre and post season. Again, this work supports the use of assessing anxiety by both qualitative and quantitative methods together.

Gould *et al.* (1993c) used a qualitative methodology to analyse stress levels in skating. 17 National standard skaters were interviewed by phone, and transcripts were analysed using a content analysis to identify common themes. According to these researchers this approach provided rich and in depth data on competitive anxiety, stress and interestingly, the relationship of these variables with motivation. However, more traditional quantitative and empirical studies remain the dominant approach, although some researchers (Clough *et al.*, 1996) have attempted to bridge the divide by adopting both qualitative and quantitative approaches within their work. In investigating mood and psychological well being and its relationship to exercise Clough *et al.* (1996) had subjects (n=40) complete a brief diary over a 28 day period. The format allowed individuals to record different aspects of mood, such as relaxation and tension, on short self report scales and contained open-ended questions to enable participants to provide more qualitative data. This promising approach has, as yet, received little attention within anxiety research in sport, although studies in health psychology (Verbugge, 1980) have used similar methodologies.

### **3.2.5. The Matching Hypothesis**

Recent studies have begun to investigate the matching hypothesis in terms of competitive anxiety in sport. Maynard *et al.* (1995) evaluated the effectiveness of a somatic intervention technique with semi-professional footballers (n=17). Subjects were assigned to control (n=8) and experimental groups (n=9) on the basis of their intensity and directional scores on the somatic sub scale of the CSAI-2. Results revealed that somatic anxiety scores for intensity and direction had been lowered significantly compared to their levels prior to an 8 week long intervention programme. The authors have concluded that their findings provide further support for the matching hypothesis in that an appropriately tailored and compatible intervention programme proved most effective in reducing the targeted anxiety.

The work of Maynard *et al.* (1995) is important because they used the modified version of the CSAI-2 that allowed individuals to indicate how they perceived their anxiety states. However, the matching hypothesis makes no reference to the subject's perceptions of anxiety symptoms in terms of facilitative or debilitating dimensions, and interestingly both Gould *et al.* (1984) and Maynard and Cotton (1993) found some measure of support for the matching hypothesis without assessing subjects perception of their symptoms. A further problem with Maynard *et al.*'s (1995) study, was that the experimental group, although having almost identical scores for cognitive anxiety and somatic anxiety scores for both intensity and direction dimensions, was only given a somatic intervention. In addition, the composition of the control group could be questioned in that it consisted only of players who viewed their somatic anxiety levels as facilitative. Given these methodological inconsistencies, it seems unclear as to why the researchers seem so confident in reporting strong support for the matching hypothesis. Finally, the results revealed that both somatic anxiety and cognitive anxiety intensity had declined within the experimental group after the eight week somatic anxiety intervention programme.

In contrast, work by Terry *et al.* (1995) concluded that there was little support for the matching hypothesis, at least in terms of designing intervention programmes for tennis players based on their dominant anxiety symptoms as measured by the CSAI-2. He found that anxiety levels were reduced in all subjects in the treatment groups, and, of most interest, that cognitive anxiety control strategies were as effective as somatic anxiety control techniques in lowering anxiety levels in subjects whose dominant mode of experiencing anxiety symptoms was somatic. Conversely, the research revealed that somatic techniques, such as physical relaxation, had an equally positive effect on both cognitive anxiety and somatic anxiety levels. This seems to indicate that there is a close association between the two constructs and that there may be a considerable overlap.

Terry *et al.* (1995) have noted that work by Borkovec (1981) in mainstream psychology has established that activation of one modality of anxiety can lead to a similar effect in other modalities. He has proposed that this may support the converse situation, where reductions in one anxiety symptom lead to a reduction in another symptom, and that this may occur both within and across modalities.

This study has raised a number of important issues, particularly with regard to the efficacy of the interventions themselves. Terry *et al.* (1995b) used a mental rehearsal technique of fifteen minutes duration, a centring technique lasting ten minutes, and a combined intervention using both of these techniques over twenty-five minutes. The authors contend that the rationale for using such a brief intervention was to test the proposition that reductions in anxiety could be achieved quickly and without a significant time investment. However, the efficacy of short term interventions has been consistently challenged in this area of research both within the mainstream and in sport and exercise (Kirschenbaum, 1992).

Results revealed that, opposite to what might have been predicted from the matching hypothesis, centering was most effective in reducing cognitive anxiety symptoms, and mental rehearsal was most successful in lowering somatic anxiety scores. This is explained in terms of support for the crossover effect (Burton, 1990) whereby interventions to reduce cognitive anxiety also have the effect of reducing physical anxiety symptoms, and vice versa. This study utilised a large sample (n=100) of young

elite junior tennis players (mean age 13.9 years), and therefore Terry *et al.* (1995) have warned that caution should be exercised in generalising the findings to older sport participants. Finally, they concluded that at least for young tennis players there is a need to develop methodologies that will allow researchers to measure anxiety during competition. In addition, Terry *et al.*, have suggested that interventions which can be used during competitions may be the most beneficial, and that distraction techniques in particular may represent a useful strategy for some sports participants to use in match situations. Support for this approach can be extrapolated from the results of the control group; this group (n=26) completed concentration exercises aimed at attentional control. However, results revealed that cognitive anxiety and somatic anxiety were effectively reduced in the control group. The authors have interpreted this in terms of the efficacy of attention control strategies in reducing competitive anxiety although this has not always been advocated by those psychologists who have produced self-help anxiety control resources (Harris, 1984; Hardy and Fazey, 1990).

Overall, these findings seem to suggest that either the delineation between cognitive anxiety and somatic anxiety is not as strict as has been advocated by Davidson and Schwartz (1976), or that measures such as CSAI-2 are not as valid and reliable in terms of measuring competitive sport anxiety as Martens (1990) and others (Jones and Hardy, 1990) have argued. A further possible interpretation, and of increasing interest to practising sport psychologists and coaches, is that the efficacy of the intervention points to the importance of the holistic nature of anxiety as described by Fischer (1970) from a more existential - phenomenological perspective, and that athletes respond favourably to a broad range of techniques where the aim is anxiety control.

### ***3.2.6. Anxiety Control or Stress Management?***

A major difficulty in the area of competitive anxiety surrounds the confusion between stress management and anxiety control. For example, Elko and Ostrow (1991) utilised a rational-emotive stress management programme primarily focusing on self-talk strategies to reduce levels of somatic anxiety and cognitive anxiety. Interestingly, both interviews with the participants and scores from SCAT and the CSAI-2 were used to identify anxiety levels. The results revealed that although cognitive anxiety levels were significantly reduced for five of the six gymnasts, the programme had no significant impact on somatic anxiety or levels of performance. Whilst this study represents one of few to consider female athletes as a group, the small sample (n=6) is problematic in that it did not allow for a control group, or a comparison of how subjects responded to the programme in relation to their dominant mode of anxiety experience.

Research by Troup (1991) investigating the effects of relaxation and visualisation techniques on competitive anxiety levels in 26 high school age female swimmers, found that reported mood and biochemical responses had altered. Athletes completed a six week intervention programme, which according to Troup, helped reduce anxiety-induced performance disruption for all subjects involved in the study. This finding supports the use of anxiety control strategies with young athletes. However, it further undermines the propositions of Davidson and Schwartz's (1976) matching hypothesis. Again the implication seems to be that any recognised relaxation technique, if properly taught and adhered to, will lower anxiety levels and reduce the effect of anxiety on performance.

A further study by Powell and Ravizza (1984) evaluated the effectiveness of stress management sessions with a national standard female volleyball team. Anxiety levels were assessed throughout the eight session programme using the SCAT, CSAI-2 and the STAI; a personal assessment questionnaire was also included to allow subjects to provide more in-depth data, in terms of their experience of anxiety, and on the efficacy of the interventions used. Despite this, Powell and Ravizza (1984) stated that the study did not allow for a clear delineation of the impact of the intervention programme upon performance of the team. In addition, they reported that, as each match became more important, pre-competition anxiety increased correspondingly despite the anxiety

control training. These results were discussed in relation to the difficulties in separating out individual improvements within a team sport, and that female athletes respond differently to male athletes during increasingly stressful events. Later work (Freidman and Berger, 1991) assessing the effectiveness of different stress reduction techniques on male and female students (n=280), reported that women benefited more than men from a group interaction focused strategy. This can be contrasted with Powell and Ravizza's (1984) study where the interventions consisted of either relaxation training, or instruction in mental imagery skills.

Finally, evidence of the effectiveness of yet a different anxiety control intervention technique was reported by Greenberg (1995). Fifty eight young competitive swimmers were assigned to a control group, a relaxation training group, and a paradoxical treatment group. The paradoxical treatment group received the intervention of symptom prescription which involves identifying the exact nature of the anxiety symptom, and dealing with this, rather than the underlying cause. For example, where an athlete experiences rapid and irregular breathing prior to competition, an intervention would be designed to draw the individual's attention to this symptom, and direct efforts would be used to control, regulate or alleviate this. Results revealed that the paradoxical treatment group were rated as most successful in reducing competitive anxiety.

### ***3.2.7. Interventions and Individual Differences***

From a different perspective focusing on the effects of a range of interventions on competitive anxiety and performance in golf, Murphy and Woolfolk (1987) randomly assigned subjects (n=61) to one of three groups: a cognitive - behavioural relaxation group; a psyching-up arousal group, and a control group. Results revealed that only the cognitive-behavioural group reported significantly lower anxiety during performance. Further support for the efficacy of cognitive approaches to anxiety reduction with children in competitive sport is reported by Kim (1988), and Sarrazin and Halle (1986). It is interesting to note that, whilst studies have investigated competitive state anxiety levels in high school age gymnasts and collegiate golfers (Krane and Williams, 1987) and temporal changes in the anxiety levels of intercollegiate wrestlers and high school volleyball players (Gould *et al.*, 1984), there have been few attempts to focus research

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on age differences and competitive anxiety. Indeed a review of work conducted in the area to date reveals that the vast majority of studies have used collegiate athletes as subjects; relatively fewer studies have considered young children or mature adults as subjects. This is surprising given that Jones and Hardy (1990) suggest that stress management programmes should take account of both individual and situational differences. In addition, youth sport participation in particular is an area of special interest to central government, governing bodies of sport, schools, local authorities and others, such as the Sports Council. Indeed, the Training of Young Athletes (TOYA) study conducted by the Sports Council (1990) was, in part, aimed at exploring the experience of stress associated with high level youth sports training in gymnastics, tennis, football and athletics. These four sports and others, such as swimming, ice skating and ice dancing tend to train performers intensively from an early age, and statistics (Dept. of National Heritage, 1995) reveal that at least in gymnastics, skating, tennis and swimming most of the top performers in these sports in the UK are under 23 years of age, and that a significant number are between 15 and 19 years old. Research investigating competitive anxiety in sport has occasionally used young athletes as subjects. For example, Jones *et al.* (1993a) studied 48 gymnasts aged 14 - 16 years. However, comparison between ages has not received much attention.

In terms of stress and its possible effect on the health of young athletes, earlier work by Smith and Smoll (1978) investigated eating and sleeping problems associated with participation in competitive sport. Within the mainstream, considerable psychological research has been directed at stress and coronary risk behaviour in children and adolescents (Mathews and Segal, 1982), stress and child rearing practises (Main, 1977), and coping behaviour and locus of control in children (Rothbaum *et al.*, 1979). These studies have addressed stress, anxiety and coping skills in terms of their relation to health. Within the sports-based literature, studies have investigated the effects of different types of exercise on anxiety and mood state (Berger and Owen, 1988). However, whilst studies have reported a link between self-esteem and exercise in young adults (Fox and Corbin, 1989), the related literature has stated that there is no evidence that participation in physical education programmes can improve self esteem or self concept in young people. More directly related to anxiety control, the Canadian government sponsored Canada Fitness Survey (1983) revealed that for young people

aged 10-19 years, improved mood and that feeling better was identified as the second most important reason for pursuing physical activity. However, moving away from health, exercise and mood states, little has been done to explore the relationship between age, anxiety and performance in sport.

Martens *et al.* (1990) have reported comprehensive listings of CSAI-2 norms for a range of sports including swimming, athletics, volleyball, wrestling, golf, cycling and others. This data serves to highlight that considerable research has been focused on particular sports, such as golf (Williams and Krane, 1989), wrestling (Gould and Weinberg, 1985) and on a comparison between different sports, for example golf and gymnastics (Krane and Williams, 1987) and rugby union, basketball, hockey and soccer (Jones and Swain, 1992). However, there are no examples of studies comparing the efficacy of various anxiety control intervention techniques with different sports, although some work has considered differences in terms of performance levels. Jones *et al.* (1994) utilised the CSAI-2 to assess both the facilitative and debilitating dimensions of anxiety symptoms in elite (n=97) and non-elite (n=114) athletes. They found differences in terms of self-confidence with elite swimmers reporting significantly higher levels than non-elite and interestingly, results revealed that elite subjects viewed anxiety as more facilitative of performance than did non-elite athletes. In terms of intervention programmes and strategies, Jones *et al.* (1994) suggest that elite performers may be able to handle debilitating anxiety symptoms better than non-elite athletes, because they possess effective cognitive strategies to maintain self-confidence. However, beyond this their research does not really address the issue of anxiety control strategies, focusing more on assessment of anxiety.

Finally, within the sport literature the clearest investigation of the impact of anxiety control programmes between different levels of participants is reported by Jambor *et al.* (1994). This study revealed that, in terms of exercise, those subjects (n=15) exercising the most during an 8 week period reported significantly lower cognitive and somatic anxiety scores than subjects (n=15) experiencing less activity. However, Biddle and Mutrie have warned; **“that the literature on the acute effects of exercise is not sufficiently well developed to allow unequivocal conclusions to be drawn”** (Biddle and Mutrie, 1991, p.165), and that more work is required to determine precisely how



much exercise is necessary for psychological benefits to accrue and to explain the relationship between anxiety and exercise.

Anshel (1995b) investigated the effect of moderate aerobic exercise and progressive relaxation on physical, cognitive and behavioural responses to stress. The source of stress involved receiving consistently negative and unpleasant feedback for performance on a motor task over repeated trials. Results revealed that aerobic exercisers reported more positive affect, reduced systolic blood pressure and superior performance in comparison with the relaxation group. Of most interest however, relaxation reduced systolic blood pressure but had no effect on motor performance or mood scores. These findings supported the multidimensional model of anxiety in that responses in the symptoms of acute stress were not universally found. Alternatively, it could be that psycho-physiological measures are more able to detect changes in bodily states than are assessments based on self-report inventories.

In conclusion, whilst there have been several studies (Suinn, 1972; Smith, 1980; Meichenbaum, 1985) since the early 1970s investigating the usefulness of cognitive behavioural interventions in sport, little attempt has been made to consider the age and level of experience of subject. In addition, multimodal stress management strategies, and the predictions of Davidson and Schwartz's (1976) matching hypothesis have provided the impetus for further research in the area. Mace (1990) is reported as observing that, whilst there is only limited support from research for the propositions of the Davidson and Schwartz model, studies adopting the multidimensional approach to anxiety and intervention strategies, provide support for the conceptual distinction between cognitive anxiety and somatic anxiety.

### **3.3. Study 2**

### **3.4. Methodology**

#### ***3.4.1. Hypotheses***

The literature provided support for investigation of the following general hypotheses:

It was hypothesised that cognitive anxiety levels of youth skaters following Davidson and Schwartz's (1976) Matching Hypothesis would be lowered by cognitive anxiety control strategies.

It was hypothesised that somatic anxiety levels of youth skaters following Davidson and Schwartz's (1976) Matching Hypothesis would be lowered by somatic anxiety control strategies.

Further, it was hypothesised that cognitive anxiety and somatic anxiety levels of youth skaters would remain unchanged in the absence of a tailored intervention aimed at anxiety control.

#### ***3.4.2. Methods and Procedures***

##### **3.4.2.1. Subjects**

National and regional level figure skaters (n=15) from a high level county excellence squad were involved in this study. These skaters had achieved a place in this elite squad through their success in regional and national competitions, and as a result of their motivation, ability and potential to develop in competition and test skating. In most cases, skaters received instruction from squad coaches (n=5) on a daily basis. Skaters had been involved in squad training for differing durations depending upon their progress, age and achievements. This ranged from one year to five years involvement with a mean of 3 years 11 months. Female skaters (n=15) took part in the study: ages ranged from 11 years to 17 years with a mean age of 14 years and 2 months (1.4 ±SD).

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Individual competition and training programmes were regularly negotiated between coaches and their skaters; the overall squad programme was co-ordinated and managed by a head coach. All coaches were qualified to at least National silver award levels, and the Head coach was a former UK ice skating champion and national coach.

The researcher initially met with the coaches to discuss the aims and procedures associated with the study. A meeting was held with the skaters at which the Head coach and the researcher attended and explained that skaters in the squad would be given the opportunity to participate in a programme concerning sport psychology and skating.

#### **3.4.2.2. Procedures**

The CSAI-2 was administered to the skaters (n=15) 1 hour prior to a skating competition (Appendix B1). Skaters (n=15) were interviewed individually before training. These semi-structured interviews lasted between 30-40 minutes with each subject; answers to questions (Appendix B2) were recorded on audiotapes with the consent of the subjects. Confidentiality of data was assured and subjects were informed that information from interviews and questionnaires would not be conveyed to coaches or other skaters.

Transcripts of 2 interviews selected at random were completed (Appendix B3) and analysed using a phenomenological method, referred to as phenomenography. This involved looking at certain aspects of the data (i.e. those relating to anxiety) rather than allowing patterns to emerge spontaneously. In this way the data is interpreted within a preconceived conceptual overlay. The themes and issues arising from analysis of the transcripts were tabulated by the researcher and used to interpret the remaining thirteen audiotaped interviews. This involved listening to the interviews on three separate occasions, during which the researcher rated skaters according to the answers given by each individual. The data that was recorded and synthesised from the two fully transcribed interviews provided a template with which the content of the other interviews could be reliably assessed and scored.

Further data emerged from coach (n=5) and judge (n=2) ratings on skaters' somatic and cognitive anxiety levels at a simulated competitive event. Performances were videotaped

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at this event and viewed and scored independently by coaches to ensure inter-observer reliability. Finally, the skaters themselves completed a short questionnaire to describe how they felt during the event and to report experiences of anxiety (Appendix B4).

Initially, five skaters from the squad (n=15) were randomly selected to form a control group. The remaining ten skaters were subsequently assigned to one of two groups: a group for skaters experiencing the highest levels of somatic anxiety (n=5), and a group for skaters experiencing the highest levels of cognitive anxiety (n=5). The skaters were taught relaxation and anxiety control strategies appropriate to their needs based on Hardy and Fazey's Anxiety Control Mental Training Programme (National Coaching Foundation, 1990) distance learning package. Skaters were instructed in the skills by an accredited sports psychologist for a total of 8 x 45minute sessions over an eight-week period.

### ***3.4.3. Instruments***

The CSAI-2 (Martens *et al.*, 1990) was used to measure cognitive and somatic state anxiety and self-confidence. CSAI-2 is scored by computing a separate total of each of the three sub-scales; scores range from a high of 36 to a low of 9. The questionnaire contains 27 items, 9 of which relate to cognitive anxiety, 9 to somatic anxiety and 9 to self-confidence.

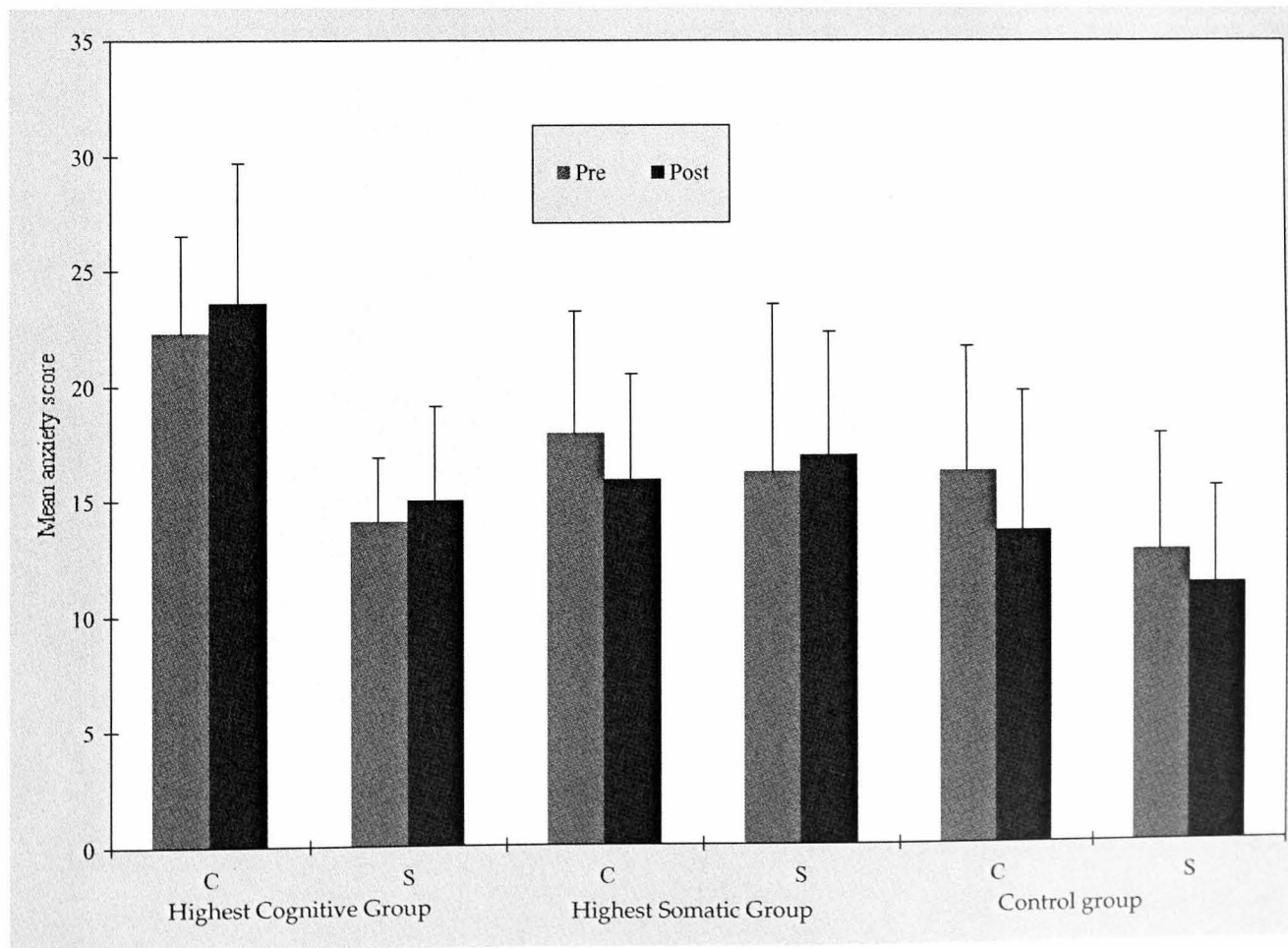
### 3.5. Results

#### 3.5.1. Quantitative

CSAI-2 scores were computed for each subject pre-intervention. Group mean scores (mean  $\pm$  SD) for the highest cognitive anxiety group (n=5) were cognitive anxiety (22.3  $\pm$  4.2), somatic anxiety (14.1  $\pm$  2.8); mean scores for highest somatic group (n=5) were cognitive anxiety (17.9  $\pm$  5.3), somatic anxiety (16.2  $\pm$  7.3). Control group (n=5) mean scores for cognitive anxiety (16.2  $\pm$  5.4) and somatic anxiety (12.7  $\pm$  5.1) were calculated. (Table 6) (Figure 1).

**Table 6.** Mean ( $\pm$ s) anxiety scores, as measured by CSAI-2, for the three groups pre and post intervention

Highest Cognitive Group (n=5)		Highest Somatic Group (n=5)		Control Group (n=5)	
Cognitive	Somatic	Cognitive	Somatic	Cognitive	Somatic
22.3 $\pm$ 4.2	14.1 $\pm$ 2.8	17.9 $\pm$ 5.3	16.2 $\pm$ 7.3	16.2 $\pm$ 5.4	12.7 $\pm$ 5.1
23.6 $\pm$ 6.1	15.0 $\pm$ 4.1	15.9 $\pm$ 4.6	16.9 $\pm$ 5.4	13.6 $\pm$ 6.1	11.3 $\pm$ 4.2



**Figure 1.** Mean ( $\pm$ s) anxiety scores, as measured by CSAI-2, for the three groups pre and post intervention

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The CSAI-2 post-intervention mean (mean  $\pm$ SD) scores were computed for all subjects by groups; for the highest cognitive group, cognitive anxiety (23.6  $\pm$ 6.1), somatic anxiety (15  $\pm$ 4.1). Mean scores for the highest somatic groups were, cognitive anxiety (15.9  $\pm$ 4.6) and somatic anxiety (16.9  $\pm$ 5.4) and the control, cognitive anxiety (13.6  $\pm$ 6.1) and somatic anxiety (11.3  $\pm$ 4.2) (Table 6) (Figure 1). The CSAI-2 self-confidence scores were not included because the matching hypothesis relates only to cognitive anxiety and somatic anxiety levels.

### 3.5.2. *Qualitative*

Prior to the intervention programme, each skater was asked a number of questions in a semi-structured interview format (Appendix B2). Focus was directed at general issues relating to motivation and skating, and questions were included to investigate competitive anxiety. Additional probe questions were used to encourage skaters to report on their experience of cognitive anxiety symptoms, somatic anxiety symptoms and self-confidence.

A hierarchical inductive analysis (Gould *et al.*, 1993) of pre-intervention anxiety data revealed four general dimensions each of which is discussed in detail below. This analysis was based on 2 tape recorded interviews which had been selected at random and later transcribed verbatim (Appendix B3).

### 3.5.2.1. Cognitive Anxiety and Somatic Anxiety

Twelve raw data themes emerged from this part of the analysis (Figure 2).

Raw Data Themes	1 <sup>st</sup> Order Themes	General Dimensions
Mood swings prior to competition	Mental worry at test and competitions	Cognitive and Somatic Anxiety due to tests and competition
Need to stay mentally absorbed on task and not be distracted		
Feeling of being out of depth at competitions		
Over Expectations		
Refusing to speak to anyone before competition		
Test make skaters nervous		
Judges make skaters worried		
Relatives make skaters tense		
	Strong physical symptoms associated with nerves	
Responding physically when upset		
Feel sick before tests and competitions		
Getting asthma attacks and breathing problems before competition		

Often cry before testing		
Shaking before get on ice		

**Figure 2.** Thematic Analysis (Cognitive and Somatic Anxiety) of Interview Data Pre-Intervention

The themes were clearly differentiated in terms of two 1st order themes; mental worry, and physical symptoms associated with nerves. Examples of physical symptoms caused by nerves, were reflected in the following comments contained in the two transcripts:

**"its really unusual for me as I'm usually like being sick all the time before I go on the ice crying and everything"**

and,

**"I got really ratty afterwards I was tired and when I went out to skate my body felt real sluggish and I wasn't nervous or anything, it was like I had no adrenaline, I started off like really good and like, my body, it just seemed so heavy, like weights pushing down on my shoulders that I couldn't lift up".**

and,

**"The first time I did it I felt nervous and I was crying but I calmed down before I went to the judges, the judges seem to make me nervous".**

Mental worry or cognitive anxiety was clearly related to expectations and mood before tests and competition. In-competition cognitive anxiety was alluded to in terms of **"need to stay mentally absorbed in the task and not be distracted"**. Finally, raw data themes reported as **"judges make skaters nervous"**, and **"Tests make skaters nervous"**, highlight the importance of significant others in the experience of cognitive anxiety. Examples of this were provided by the skaters in the following excerpts from the transcribed interview data, **"Yeah, it collapses because I'm worrying rather than thinking about what I should do"** and on a related theme, **"If I've done well I feel confident but if I don't think I've done well, I can talk myself out of it completely"**.

### 3.5.2.2. Physicality of Skating



Five raw data themes were identified from the transcribed interview data relating to the heavy physical demands of skating (Figure 3). These themes centred on tiredness, fear of falling on the ice, and the physical effort required to learn and perfect a new skill or technique such as a jump. In addition, the physical demands, duration and early scheduling of training were identified as a source of physical effort and exhaustion.

Raw Data Themes	1 <sup>st</sup> Order Themes	General Dimensions
Learning new technique is tiring	Physical effort and exhaustion	Physicality of Skating
Feel scared when fall		
Training is physically tough		
Tired when go to school		
Training times very early		

**Figure 3.** Thematic Analysis (Physicality of Skating) of Interview Data Pre-Intervention

For example one skater mentioned:

**"Yeah it is one that I've had trouble with in training. Sometimes I don't learn properly because I'm too tired to concentrate well",**

and,

**"Well, when I'm training, if something doesn't go right I get in a right bad temper like, sometimes it's very tough physically because you're tired".**

### 3.5.2.3. Importance of significant others

Eleven raw data themes emerged from consideration of this dimension (Figure 4). This theme was further subdivided into "Alienation from coaches" and "Family and social tensions".

Raw Data Themes	1 <sup>st</sup> Order Themes	General Dimensions
Fear letting coach down	Alienation from coaches	Importance of significant others
Coaches make you feel small		
Negative feedback from coaches		
Conflict with coaches		
Coach uninterested in you as a person		
	Family and social tensions	
Relations/family uninterested or over interested		
No friends outside skating		
Cost in time – no normal social time		
Family members don't understand		
Started skating for friends		
Made fun of at school		

**Figure 4.** Thematic Analysis (Importance of Significant Others) of Interview Data Pre-Intervention

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In terms of coaching issues, themes related to interpersonal conflict with coaching staff, and receiving unfair criticism from the coach. For example one respondent claimed that, **"I don't really care what my coach thinks, I know it sounds bad but I don't respect her opinions"**.

In terms of displaying an interest in the skaters away from their sports performance the following comment was made:

**"Yeah, I felt really like, confused, and as if the coaches were not really bothered about how I felt, sometimes I wonder if they actually care about us at all"**.

The important influence of family, friends and a social life beyond skating was an important theme to emerge. This was further delineated by inclusion of themes relating to lack of support and understanding from friends and family, and that skating had interfered with and even prevented the formation of friendships outside of the sport.

For example one interviewee talked about the unwanted support that she received from her immediate family, and how their lack of understanding about what was necessary to perform well in competition affected her adversely.

Another theme centred around problems at school because of jealousies, and because their dedication and heavy training schedule made them stand out from their peers and often was a source of ridicule. One girl reported that her athleticism brought derision from some at school. This was dramatically expressed as follows: **"There's this boy at school, I hate him, he's always nasty to me, taking the Mickey out of me, because I've got musclely legs and he says its not right for a girl to have musclely legs..... I was thinking of him because he punched me!"**

### 3.5.2.4. Doubts and General Volatility of Emotions

Fourteen raw data themes were included in this general dimension, and these were further differentiated to form two 1st order themes: Not confident about ability and others view of it, and, Emotions of fear and anger in competitions and training (Fig 5).

Raw Data Themes	1 <sup>st</sup> Order Themes	General Dimensions
Fearful when not feel well prepared	Emotions of fear and anger in competitions and training	Doubts and general volatility of emotions
If I think I can't do it, I won't do it		
Angry at self if fail		
Feelings of collapse when not doing well		
Mind on other things when do badly		
Like to know the place I'm skating at		
Get cross at criticism by coach and others		
Losing temper at other competitors/peers		
	Not confident about ability and other's view of it	
Concern about peer group evaluations		
Worry over comparisons with other squad members		
Feel not progressing as should		
Claim not to care what coach thinks		

Doubts about technical ability		
Don't feel powerful or strong enough		

**Figure 5.** Thematic Analysis (Doubts and General Volatility of Emotions) of Interview Data Pre-Intervention

Confidence, or more specifically self-confidence has been identified as an important factor in sporting success (Burton, 1988). The raw data themes suggested that skaters had doubts about their technical and physical ability, and were concerned with how their peers and the coaches viewed them. Given the age group of the skaters and the importance of self and peer evaluation of their skating achievements, it was of little surprise to hear the strong terms used by the skaters in relation to this. For example, one skater in describing why she wanted to change coaches said: **"Well I wasn't getting on very fast, and I began to wonder if I was any good or had it all been just beginners luck"**. Another skater expressed how she had problems with her confidence at competitions: **"I've got to watch them because if they've fallen or blown out, it makes me feel confident. I'm most confident when others around me are crap"**.

Emotional responses of fear and anger were reported frequently. These affective states arose after disagreements with other competitors, parents and coaches. Some of these experiences were described as passing moments linked to competition, but others were identified as being the result of the skating environment. Specifically, the cut throat nature of competition, and the "general bitchiness" of many of the participants was highlighted. Again, the negative role of some parents was mentioned, where some clearly took delight in seeing other performers fail, especially when their own child performed poorly.

The volatility of emotions and how mood states could be wrongly interpreted also led to problems. For example, one skater commented: **"They think I'm daft, they think I'm mean because I have a real bad skate and I come off and I'm in a bit of a mood and then I calm down and like laugh and joke with them all again"**.

Finally, one skater's detailed account of her experience at a major event revealed the association between her self-doubt and mood: **"It's really bad like when I skated at Luxembourg with M. and D. and the head coach took me to another international"**

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and I'm only a bronze and I was skating at gold standard, you think that everybody is laughing at you, I have real mood swings and each time during the competition it's different".

### ***3.5.3. Post Intervention Data***

#### **3.5.3.1. Cognitive Anxiety Group**

All five skaters in this group felt that the programme had been largely unsuccessful. They repeatedly questioned why they had been encouraged to learn techniques for which they had little motivation. This was expressed bluntly by one subject as follows: **"I know that I scored high on that anxiety questionnaire but I don't want to change, I like getting nervous and feeling all jumpy before I skate"**.

Questions about enjoyable aspects of the programme resulted in a series of largely negative responses; the only significant positive experiences that were reported related to the supportive learning environment provided by the coaches and the sports psychologist, and less favourably, that the skaters had gained a modicum of knowledge about sports psychology practice. In contrast, subjects concentrated their responses on the less well received aspects of the programme. For example, one skater stated: **"I thought that sports psychology would be different to this, my main reason for nerves is that my mum and nanna come to all my events"**. Another skater commented on their lack of interest in the techniques being learnt: **"I found them boring, it's not that I still don't get nervous, but the whole thing was not for me. I can't see how doing something like thinking about some of my good performances can really make a difference. It's OK. to be able to do it lying here in a quiet room, but there's no way I can get myself together to do it before I go on to the ice. If I could use visualisation before a test or competition, I wouldn't need it, because I'd have to be in such a chilled out state to be able to do it properly that there would be no need for it. In fact, I might even get worried again because I'm worried that I've not been able to do my visualisation exercises! It all seems a bit phoney and unreal to me"**.

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This response highlights an important issue raised by Corlett (1996) and recently picked up by Morris (1997), that mental skills training may not be quite enough on its own. Corlett (1996) in particular, has warned that mental techniques can only be learned by athletes who themselves are already psychologically healthy, well balanced and focused. The resistance demonstrated by the comments reproduced above, clearly show that especially with young athletes, the "ground" must be prepared first if adherence to mental skills training is to be effective.

In terms of improvements to the programme, four out of five skaters complained that they had had no say in which group they had been assigned to. Again, they expressed reservations about the potential efficacy of the interventions which they were learning, and questioned how sports psychologists could be sure of their effectiveness when they were impossible to see or measure. This issue concerning the validity of sports psychology's claims about its practical use emerged repeatedly during the interviews, with the skaters making unfavourable comparisons between the claims of sport psychology against physical fitness and technical skill based learning.

Finally, general comments revealed that the skaters were not motivated to learn the cognitive anxiety control techniques because they had different expectations about what applied sports psychology support would involve. It emerged that all subjects in this group would have preferred one to one counselling sessions, preferably as, and when, they required them. In addition, comments by four of the skaters identified that adherence to the programme in terms of home-based learning was a major problem. Gordon (1990) has argued that, despite considerable interest in the use of mental skills, questions remain about the level of adherence for athletes using such programmes. This dilemma was well expressed by one skater who reminded the researcher that: **"It is hard enough to find the time and motivation to do my flexibility training away from the ice, let alone find time to practice these mental skills. When I'm doing some sit-ups or stretches I can watch T.V., listen to music or talk to friends, but the psychology stuff is much harder because you can't do anything else at the same time"**.

This response was a little unexpected given that the sports psychologist had emphasised that other tasks, such as flexibility work, could be pursued simultaneously with mental

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training. However, at a different level of analysis it may be interpreted as evidence of resistance towards learning psychological techniques that had been imposed on the athletes and for which there was little interest or motivation.

### 3.5.3.2. Somatic Anxiety Group

Three out of five skaters in the somatic anxiety control group reported their strong and increasing dissatisfaction with the programme. Initially motivation for the intervention sessions was high, however, when it became clear that skaters were to be involved in group sessions rather than individually focused one to one meetings, the participants began to lose interest. This was highlighted by one skater who said: **"I found them boring, it's not what I was expecting at all. I almost fell asleep one time when we were practising the relaxation exercise, I can't see how I could use that before a competition!"**

Only one skater reported being more able to regulate her anxiety levels to the desired state as a result of the programme. Of the remainder, two individuals in particular were quite seething in their assessment of the value of the programme overall. One of the older skaters was strongly critical, stating: **"When I told my mates about it they thought it was daft. I know that Coach D. (Head coach and former National team coach) is always on about it, but it's not really what I like".**

Other skaters revealed that they understood the importance of proper mental preparation, and even talked about the need to develop themselves in this aspect of their sport. However, it became clear that all respondents had only enjoyed the assessment phase of the overall intervention study, and had not been satisfied with their involvement in the training section of the programme. It seems likely that this was primarily due to two important factors. Firstly, the use of individualised assessment had raised expectations that the intervention programme would involve individualised one to one work and counselling. This was expressed by one skater as: **"Real psychologists talk to people in private so that they can find out what makes them tick"**, and by another as: **"How do you know what we're really thinking about during the group sessions unless you talk to us as individuals and get inside our heads!"**



Secondly, four out of five skaters wondered why they were being forced to learn physical relaxation exercises when their nerves resided in their minds. Careful explanations about the value and use of somatically based anxiety control techniques seemed to have had little success in persuading the group of their value and effectiveness. In terms of improvements to the programme four out of five members mentioned that a shorter intervention period would have been more enjoyable, and practice of appropriate techniques at the ice rink or on the ice would have been more realistic and motivating.

One notable general comment from three of the skaters in this group concerned their motivation to learn only somatically based techniques. These individuals stated that they would have preferred to have been placed in the control group, or in the cognitive anxiety group because they were more interested in either learning visualisation and meditative techniques or talking for 15 minutes each week to the researcher. This sentiment was provocatively put by one skater, stating that: **"Just because I feel sick and go to the toilet a lot before a big event doesn't mean that I want to learn physical relaxation exercises. I always wanted to find out how to use meditation to help me get in the mood before tests, and yet I was put in a different group to the one I wanted!"**

#### **3.5.3.3. Control Group**

Four out of five skaters reported that they had enjoyed the programme, and believed that their confidence, anxiety control, and motivation had benefited. All five skaters identified that the opportunity to talk about skating to someone not connected to their sport lives was enjoyable. Two of the group identified the time commitment and duration of the programme as being the least liked aspect of the experience. A further two skaters identified concerns over the confidentiality aspect of the meetings with the sports psychologist. They reported a preference for greater involvement of their coaches in the process, and would have liked the sports psychologist to feed their concerns to the head coach.

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In terms of improving the content and delivery style of the programme all of the skaters mentioned that they would have liked the sports psychologist to be available at particular times only, such as, prior to competitive events or tests, and where they needed to talk to someone, "interested but not involved". In addition, the skaters indicated that they were pleased to be receiving specialist psychological support because of its great importance in skating. This was highlighted by one skater who welcomed the input from the sports psychologist, because whilst the coaches had provided fitness testing, nutritional advice and technical guidance, they had never before specifically addressed sports psychology support and at last this final piece of the jigsaw had been recognised! The skater expressed this in terms of the importance of maintaining a fresh approach to training: **"A lot of the time we just go from one day to another doing the same old things, but it gives you a lift when the coaches try to put on something different. It shows that they are not just taking you for granted but really care about how you develop. Its really good that they've got someone in to listen to us, it gives me a chance to have a good moan in private and to clear my head"**.

This rather remarkable statement is even more surprising given that no attempt was made within the control group to offer guidance or directly address psychological skills. However, the responses continued to emphasise the perceived benefits of the "intervention", even though as a control, such benefits had not been planned for. For example, one skater said: **"It would have been good fun to have had a go at the relaxation and visualisation practices with the others so that we could improve even more"**. This clearly demonstrates the difficulties associated with using an experimental design that incorporates a control group. For these young skaters that no-one had explained that as a control they would supposedly receive nothing of value, did not prevent four of the five from enjoying the experience over the eight week period!

An important and related theme was that the skaters in this group brought their own individual interpretations about the benefits that they could get from their meetings with the sports psychologist. Despite no attempt by the researcher to introduce topics such as mental training, anxiety control or goal setting, all subjects reported that they believed that they were more aware of the need to learn these techniques and to improve their psychological approach to different parts of their skating. One skater summed up this feeling by suggesting that: **"These sessions have made me think about myself and**

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**where I'm going in skating and whether I am as good as I think I am. I don't really remember what we talked about at each session, but I have started to wonder a bit more about what I really want and to think about the times that I've blown it. I always talk to my coach about how I'm doing and where I can get to with tests and competitions but I've never really asked myself these questions until these last few weeks".**

This evidence again reveals clearly the unintended effect of the control experience was that some subjects were stimulated indirectly by the sessions to develop what Corlett has called "knowledge of self" (Corlett, 1996, p.87). He has argued that this can only begin to be achieved by the individual possessing the courage to look at themselves from a broader, life context, perspective that includes the meaning sport has to the performer. This is contrasted with the notion of self-awareness (Ravizza, 1993) which involves development of an intense and narrow focus on ones cognitive skills, and emotional and physical state. Again, although no effort was directed at developing "knowledge of self", self-awareness, or psychological skills training, (PST) (Morris, 1997), some skaters indicated that they nevertheless were stimulated (albeit indirectly) by the sessions to consider their relationship to skating and broader life issues. This was succinctly expressed by one of the older members of the group in the following way: **"Sometimes something just clicks and before you know it, and you can't stop it even if you wanted to, you find yourself thinking about the real big stuff and where you fit in. I don't know whether it was caused by these meetings, or maybe it was the right time, but recently I've started looking at things differently, deeper and more real, and laughing at all of this crap, the jealousies, and sick stuff like that, and I've never felt so calm and strong".**

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## 3.6. Discussion

### 3.6.1. *The Matching Hypothesis*

The major finding of this study was that anxiety levels had not altered after an eight-week individually tailored anxiety control intervention programme. Reassessment of state anxiety levels through semi-structured interviews (Appendix B5) and completion of the CSAI-2 (Table 6) failed to support the matching hypothesis (Davidson and Schwartz, 1976). The matching hypothesis states that anxiety symptoms are most effectively dealt with where anxiety control techniques are tailored to address either somatic or cognitive anxiety. Whilst support for this position has been reported by Maynard *et al.* (1993) work by Terry (1996) with young tennis players challenges the propositions of the matching hypothesis. Of considerable importance, both this study and that of Terry (1996) involved young athletes, whilst Maynard *et al.* (1993) considered semi-professional footballers most of whom were in their twenties or thirties.

A further interesting finding emanating from this study emerged during the eight week programme and from interviews conducted with the subjects at the completion of the intervention period. Although the programme had been objectively tailored on the basis of assessment, it did not meet the subjective needs of the skaters. It became increasingly clear as the initiative developed and after completion interviews, that the skaters wanted individual tailoring in accordance with a one to one counselling situation. Whilst there is limited support for this finding from within the sport psychology literature, the position is far different in mainstream psychology and psychotherapy. Indeed, whilst some leading psychotherapists and researchers such as Fromm (1994) and Assagioli (1993) have advocated the use of physical relaxation skills, and visualisation techniques in controlling anxiety, these techniques are generally seen as only one aspect, and relatively limited at that, of an overall psychotherapeutic encounter aimed at anxiety control. Within sport, support for this is proffered by Elko and Ostrow (1991) revealing that a rational-emotive education programme significantly decreased cognitive anxiety levels in five out of six collegiate gymnasts, which they contend supports the efficacy of a broader based educational experience against a more skill focused approach.

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Although not reported within these results, another important finding was that according to the relevant coaches motivation levels had increased noticeably and pre-competition and test anxiety had been reduced in four out of the five skaters from within the control group. This is also supported by reduced mean scores for cognitive anxiety and somatic anxiety as measured by the CSAI-2 post intervention (Table 6). This group involved skaters in one to one discussions of a general nature with a sports psychologist for 15minutes each week, over 8 weeks. No attempt was made to direct the skater's attention to anxiety, motivation or any other aspect of their skating experience; the approach used by the sports psychologist followed Rogers client-centred therapy technique (1961), which emphasises amongst other things, that a non-directive approach be adopted by the therapist or psychologist. It may be argued that this study demonstrates that objective assessment techniques and distance learning packages can provide a useful framework for some athletes. In addition however, it could be that if longer-term intervention aimed at anxiety control is to be effective it must involve counselling.

### ***3.6.2. Multi-method Approaches***

The possibility that state anxiety control may be enhanced by use of a range of techniques simultaneously within a focused programme has received some support from the work of Prapavessis et al. (1992), which used a single subject research design to assess the effectiveness of a cognitive-behavioural intervention in reducing state anxiety. A six-week intensive programme was devised after assessment of the athletes' needs; relaxation training, biofeedback, coping statements, refocusing, thought stoppage and the opportunity to practice the skills in competition were covered within the programme. Cognitive and somatic anxiety decreased and performance improved after the treatment. Prapavessis et al. (1992) noted that anxiety should be considered as multidimensional, and therefore a multi-method approach is needed to deal with it successfully. Ming and Martin (1996) assessed the effectiveness of a self-talk package in figure skating. A single-subject design was used and skaters (n=4) were instructed to utilise an individualised self-talk programme which involved using key words, and walking through the desired figure skating performance off-ice with support from the researchers. Ming and Martin (1996) have claimed that the experimental design of their study and the use of objective behavioural observations confirmed that these young (11-

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13 years) novice skaters improved performance as a result of using self-talk. However, arguably the more important issue emerging from this study is that the single subject design allowed for a detailed and careful assessment of each skaters baseline data, and that the participants were selected to take part in the study because of their desire to learn the self-talk techniques over a five week period. The importance of motivation and expectation is central to all learning and, according to Deci and Ryan (1985), is especially important with children. That these participants were strongly motivated to learn contrasts with the results in this study where most skaters in the two intervention groups revealed that they were little motivated to learn the anxiety control strategies, and generally did not enjoy themselves. In addition, Ming and Martin had their skaters practice the self-talk techniques on-ice and off, where as in our study, psychological skills were practised off-ice only, although skaters were asked to incorporate them into their training and competitions where possible.

The findings can also be interpreted as providing further support for those, such as, Jones and Hardy (1990) who warn against ignoring the potential to employ more single subject designs, particularly where exploratory research is considered. Again, although focusing on stress, Gould *et al.* (1993) utilised a qualitative methodology to identify specific sources of stress in national champion figure skaters. This work following earlier studies on enjoyment and stress (Scanlan and Passer, 1979; Scanlan *et al.* 1991), used intensive in-depth interviews with 17 elite level skaters. The resulting rich data revealed that sources of stress ranged from concerns about environmental factors, for example time commitments, financial constraints and coach-athlete relationships as well as fear of failure and competitive anxiety. Given the scope of factors identified as sources of distress and anxiety, and that many of these factors are not directly related to competition per se, it may be unsurprising to find that the narrow range of anxiety control techniques used within this study proved ineffective.

### ***3.6.3. Support from Coaches***

It may be that directing attention at improving coach-athlete relationships, or assisting with training costs could have a considerable impact on reducing anxiety levels in athletes. Research by Kenow and Williams (1992) investigating the relationship between coaching behaviour, anxiety and self-confidence in women's basketball.

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revealed that athletes who scored highly in trait and state anxiety evaluated coaching behaviour more negatively. Interestingly, the athletes strongly overestimated the coach's pre-game cognitive and somatic anxiety and underestimated his self-confidence score. It could be argued that, following social learning theory (Bandura, 1977), a form of reciprocal determinism is partly responsible for these findings whereby the anxiety levels of both the coach and athletes were elevated by the perception of each in relation to the others anxiety levels. In assessing self-esteem and anxiety in young athletes, Silvernoinen *et al.* (1986) found that positive attitudes by significant others, such as fathers, towards their children's sport training was positively related to self-esteem and negatively related to their level of competitive anxiety. Kenow and Williams (1992) have suggested that their findings point to the need for coaches to be more supportive and less negative with high anxious and low confident athletes. This view has received further support after work by Parfitt (1992) which involved working with coaches and skaters in a sport psychology programme. Amongst a range of issues covered within the project, attention was directed at the need to teach coaches about psychological skills. These skills could therefore be taught by the coaches more effectively given their level of daily involvement with the skaters, and could be used by the coaches themselves to control their own anxiety, especially pre-competition.

The importance of coaches in the process of learning physical and technical skills has received much attention. However, until recently, psychological aspects have been less focused upon (Kremer and Scully, 1994). Given the importance of the coach-athlete relationship, particularly with young elite athletes, there seems to be a need to involve coaches more actively in helping athletes learn mental skills. A recent study by Smith *et al.* (1995) investigated the role of the coach in reducing anxiety in children's sport. Children (n=152) aged 10-12 years participating in Little League Baseball were involved in receiving coaching in an intervention group (one league of 8 teams) or were coached as part of a control group (10 teams from 2 further leagues). The intervention coaches had undergone a 2-5 hours Coach Effectiveness Training programme emphasising the use of positive feedback, and encouraging focus on effort, whilst discouraging undesirable behaviours, such as, excessive use of punishment. Questionnaire data and information from semi-structured interviews collected immediately after the season, revealed that children in the experimental condition

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(N=62) reported lower levels of trait anxiety over the course of the season, whilst SCAT and Sport Anxiety Scale scores for the control group remained unaltered.

However, in their extensive discussion Smith *et al.* (1995) have recognised that a further, and it may be argued more likely explanation, can be found for their impressive results. They have stated that: **“One other possibility is that the more positive children’s reactions to the trained coaches is solely the result of a Hawthorne effect created by giving these coaches “special” training and attention”** (Smith *et al.*, 1995, p.139). Similarly, the importance of the Hawthorne effect can clearly be seen in this study, where the positive perceptions and improvements of 4 skaters in the control group (n=5), suggests that young athletes at least, respond favourably to an apparently interested “expert” who adopts a non-directive style of interaction!

#### ***3.6.4. Duration of Interventions***

Whilst the coaching staff involved in this study were mostly supportive, they were not included directly within the mental skill learning sessions over the eight week period. In addition, and following other research (Kerr and Leith, 1993) athletes were instructed to practise the anxiety control skills throughout the week at training and away from the rink. However, work by Kirschenbaum (1992) on the effectiveness of weight control programmes and exercise psychology has suggested that major behavioural changes can only be expected where intensive intervention programmes are utilised. He identifies the need to provide a holistic programme that addresses social needs, time commitments, financial cost, flexibility of approach and contends that, to be effective, the frequency of sessions and duration of the programme needs to be typically much longer than is generally used in sport and exercise psychology interventions.

Beauchamp *et al.* (1995) have addressed the issue of duration of intervention by examining the effects of a 14 week cognitive-behavioural programme on golf putting performance. Again, although the golfers (n=65) represented a much older group (mean age 19.53 SD±2.62) than the skaters (mean age 14.16 SD± 1.4), in this study, this research has highlighted that typical intervention periods of 6-8 weeks may not be long enough for the desired effects to occur, especially with younger participants. Whilst putting performance was observed to improve after assessment at week 14, no similar



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improvement had been recorded at weeks 2, 6, or 10. In addition, intrinsic motivation levels had increased within the cognitive behavioural intervention group (n=17). This has been discussed in terms of Deci and Ryan's (1985) work on perceived competence. It is suggested that the content of the cognitive-behavioural programme, in emphasising self-monitoring of routines and goal setting, enhanced the golfers levels of intrinsic motivation through developing increased feelings of competence. This finding suggests that the skaters in the intervention groups in this study may have benefited more from the programme where greater attention was directed at building up levels of perceived competence towards the mental skills. However, the N.C.F. anxiety control package contains exercises designed to provide personal feedback on learning, and the work is structured progressively to assist learners to move through the material in an enjoyable and challenging way. That none of the skaters experienced the programme like this, suggests that the N.C.F. package cannot provide sufficient motivation on its own, at least for youth skaters.

### ***3.6.5. Alternative Approaches to Interventions***

According to Butler and Hardy (1992), performance profiling may be an effective technique for enhancing motivation and adherence in mental skills training. Performance profiling was introduced to sports psychology by Butler (1989) and is derived from Kelly's (1955) Personal Construct theory. This approach places a strong emphasis on the performers perceptions and which qualities they consider to be important. Jones (1993) used performance profiling to help identify an appropriate cognitive-behavioural intervention package for an elite racket sport player, and enhance adherence to the program. He reported that the use of performance profiling involved the client in the decision making process more fully than standard approaches relying on questionnaires and interviews, and directly benefited adherence to mental training.

Another approach which has been little investigated within sport psychology is that of using psychodynamic alternatives to cognitive-behavioural strategies. Eremia's (1982) work with target shooting emphasised the value of using in-depth and dynamic psychotherapy alongside hydrotherapy and mental and physical relaxation techniques to treat mental stress and anxiety. This approach may be particularly suitable for some groups, such as, young elite female athletes due to their higher levels of competitive

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anxiety than males (Kolt and Kirkby, 1994). In addition, counselling and psychotherapy have a long history of successful use within mainstream psychology and as Fahlberg *et al.* have observed in their review of exercise and existential psychology: **“the familiar behaviouristic and physiological approaches alone are no match for the complexity of exercise behaviour”** (Fahlberg *et al.*, 1992, p.173). Much the same could be said for anxiety control in sport, given the complexity of the anxiety-performance relationship and the multidimensional nature of anxiety (Martens *et al.*, 1990).

Until recently few researchers had begun to consider the possible facilitative effect of anxiety upon sport performance. Jones *et al.*'s, (1994) study revealed that elite athletes viewed cognitive and somatic anxiety as more facilitative to performance in comparison to non-elite athletes. The skaters in this study were not required to assess facilitative or debilitating dimensions of anxiety, therefore, it could be that several subjects that rated themselves high in terms of competitive state anxiety may have viewed this favourably, or at least, not pejoratively. Indeed, this emerged from the interview data post-intervention where one skater in the post-intervention group reported: **“I know that I scored high on that anxiety questionnaire but I don't want to change, I like getting nervous and feeling all jumpy before I skate.”**

It seems quite remarkable that, given the central importance that existential psychology has attached to anxiety (Fischer, 1970; May, 1977; Valle *et al.* 1989) this psychological approach has been so little used to explain research findings in stress and anxiety in sport. Martens' (1987) calls for the use of radically different approaches to investigate anxiety in sport, has as yet, remained unheeded. This may be due to the individual professional histories of most researchers involved in sport psychology research, a lack of awareness and understanding of other orientations of psychology, or because of the dominance of traditional experimental and behaviourist approaches to learning. However, it could be that the distinction between what May (1977) refers to as normal anxiety and neurotic anxiety could provide for a very different way of looking at anxiety in sport and intervention programmes.

Rather than concerning themselves with the symptoms of anxiety according to multidimensional definitions (Davidson and Schwartz, 1976), focus may need to be

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directed at the quality of the anxious experience for the individual. According to May, normal anxiety has the potential to benefit the person: **“since it is by meeting, struggling and overcoming “potentially anxiety creating situations”** (May, 1977, p. 187), that human beings learn and grow. Rank (1968) adds to this perspective, suggesting that normal anxiety arises out of separation, and where an individual faces a threat to some desired goal or achievement. In terms of the skaters in this study, their anxiety could be understood in that with varying levels of motivation it seems reasonable to suggest that all were attempting to improve their performance levels, competitive success and pass national figure skating tests. According to the existential position, not to feel normal anxiety as a result of this situation would only be possible where the athlete did not value any of the potential outcomes from their involvement in skating. Interestingly, discussion with the coaches upon completion of the intervention revealed that several of the lowest scoring athletes for both cognitive and somatic anxiety were those rated lowest in terms of motivation towards their training and involvement within the sport. Rather than “managing anxiety away”, it could be that a more complex and real life interpretation of anxiety would suggest a different approach.

Within sport, the work of Hanin (1980) and more recently Krane (1993) has gone some way to recognising that anxiety may often enhance performance levels. Hanin (1980) has postulated that athletes possess a zone of optimal functioning (ZOF) within which their best performances occur. Krane (1993) further investigated the ZOF hypothesis and identified that athletes poorest performances occurred when their cognitive and somatic anxiety levels were above their zones. Again from a more existential-phenomenological perspective, Csikszentmihalyi (1990) has identified that athletes and others perform at their best when their skills meet the demands of a task. He refers to this as ‘Flow’, and suggests that this psychological state involves absorption in the activity and the integration of anxiety into the task itself. Although adopting different approaches, these researchers are highlighting that anxiety can benefit performance and indeed that it may be counter productive and even impossible to attempt to remove normal anxiety from life and competitive sport in particular.

Neurotic anxiety in contrast should be confronted and attempts made to convert it back into normal anxiety. Again May makes the important distinction between normal and

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neurotic anxiety in that the former is associated with growth and is healthy, and the latter involves a reaction that is disproportionate to the objective danger: **“because some intrapsychic conflict is involved”** (May, 1977, p.188). This form of anxiety usually results in repression which increases feelings of helplessness, retrenchment and weakens self-confidence and esteem. Given this, it seems unlikely that instructing young athletes in various mental skills alone will be effective if they are experiencing neurotic anxiety symptoms. According to Schneider and May (1995), neurotic anxiety can only be successfully converted to normal anxiety after prolonged and in-depth psychotherapy which may or may not include limited use of mental skills techniques, such as visualisation, or meditation.

### ***3.6.6. Confidence and Coping***

The importance of self-confidence in sports performance and anxiety control has received some attention in recent years, especially given that the CSAI-2 provides a measure of self-confidence as well as state anxiety. Jones and Hardy in considering future directions for research in the area suggest that in terms of self-confidence: **“knowledge about how such variables interact with cognitive anxiety and (the perception of ) physiological arousal is urgently required”** (Jones and Hardy, 1990, p.286). However, whilst studies have used goal setting (Burton, 1990) visualisation (Orlick and Partington, 1988) and stress inoculation training (Lazarus and Folkman, 1984) to enhance self-confidence, following Bandura’s (1977) self efficacy theory, several anecdotal accounts and more qualitative studies (Scanlan *et al.* 1991) have revealed that past achievements and previous success is the major factor involved in strengthening self-confidence and reducing anxiety levels.

In addition to a failure to investigate issues surrounding self-confidence and intervention programmes, there has been an over-reliance on “one shot” assessment techniques. Whilst studies have used behavioural assessments, questionnaires and interviews (Prapavessis *et al.*, 1992) and required athletes to complete the CSAI-2 on six separate occasions during the pre-competition period (Jones and Cale, 1989), there has not been any attempt at recording anxiety, confidence and other mood states of individuals on a longitudinal basis. Whilst Jones and Hardy (1990) and Martens (1987) have suggested

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that more radical approaches are required to investigate the relationship between anxiety and performance in sport, little new direction has occurred.

Although work in the mainstream has extensively addressed the concept of coping and coping strategies, (Folkman and Lazarus, 1984; Carver and Scheir, 1986) less has been achieved within sport research. Recent attention has focused on proactive coping where effort is made prior to a potentially stressful event to prevent it from happening, or to alter its form before it occurs. In a study examining the processes associated with proactive coping and stress, Aspinwall and Taylor (1997) have suggested that psychological resilience may be strongly related to the successful use of proactive coping strategies. More precisely, their work on a proactive coping framework suggests that cognitive coping is ineffective unless accompanied by specific actions and behaviour. Indeed, they have further developed this theme, and have argued that, frequently, cognitive and emotional proactive coping techniques may even inhibit necessary action. For example, in sport an athlete may come to rely excessively on positive self-talk or imagery to help overcome repeated competitive failure. However, a closer analysis may reveal that low achievement is likely due to poor training and preparation for competition; in such cases the individual may need to recognise that poor performance is due to lack of skill, or physical fitness and less the result of underdeveloped psychological skills.

Within sport research, Anshel's (1990) research into coping with acute stress has raised a number of important concerns. In assessing the effectiveness of different cognitive-behavioural strategies to foster coping skills in tennis players, Anshel identified that most benefit was achieved where strategies met personal and situational needs. In addition, he cited locus of control as a key moderator of coping, and has suggested that internals are more likely to deal effectively with acute stress than externals. However, in terms of identifying specific cognitive techniques to enhance coping, Anshel has warned that: **“athletes should be exposed to techniques by trained personnel judiciously”** (Anshell, 1990, p.79). He has emphasised that athletes and others are generally unable to learn numerous mental techniques quickly, particularly where these are for use in complex psychologically demanding situations. Again this finding connects well with the work done with the skaters, in that the NCF package is designed

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to expose students to a broad range of mental techniques over a relatively short period of time. For example, the booklets and tape addressing anxiety control introduces the learner to progressive muscular relaxation, meditation, centring and imagery techniques all within the five 30 minute sessions of week 1!

In explaining his findings Anshel (1990) pointed to the difficulty of working with small numbers of subjects where the focus is on conducting field research with elite athletes. He further noted that his results may have been due to placebo or Hawthorne effects, and has suggested that the inclusion of a control group may have been warranted. Both of these issues emerged in this skating research, although the use of a non-involved control group may not be possible or desirable in studies of this kind. Due to ethical concerns all skaters in the squad were involved in the study from the start. This was at the insistence of coaches and parents in particular; the reality of field research in sport psychology with elite youth athletes is that it can only be carried out with the strong and full support of these important significant others. More positively, data from the inclusion of a non-intervention control, revealed that Hawthorne effects were likely evident, but in this group, rather than in the more expected intervention groups.

Finally, coping research in sport (Anshel and Kassidis, 1997) has reported that situational factors are more important than personal factors in accounting for the use of successful coping strategies. Again, the importance of control and approach and avoidance coping strategies were highlighted. This work provided further support for the importance of assessing contextual factors in research into stress, anxiety and mood in sport. Although Anshel and Kassidis's (1997) work relied solely upon questionnaires to generate data, there may be much more that can be gained by using additional data from interviews, especially where focus is on a more interactional model of coping.

A promising approach within the field of health psychology has been developed by Verbugge (1980), using diaries to provide researchers with qualitative and quantitative data simultaneously. This approach has been further developed by Clough *et al.* (1996) in the area of sport and exercise psychology. The diary method facilitates the collection of a large quantity of individualised data over a period of time and can be used additionally to provide rich qualitative data. This could assist researchers to clearly

identify baseline anxiety levels for individuals, and help to contextualise sports performance, anxiety, confidence and motivation levels, within a broader framework encompassing other important aspects of an athlete's daily life, for example, work commitments and family duties.

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## 4 Chapter Four: Experiencing Anxiety and Mood in Sport

### 4.1. Introduction

The need to consider the meaning of competitive anxiety in sport is at last becoming recognised more readily by researchers in the area. Jones (1995) and Gill (1994) have called for the greater use of combined qualitative and quantitative methodologies to facilitate investigation into the experience of competitive anxiety. This represents an important departure from earlier approaches that relied exclusively on strictly quantitative methods and data. It could be argued that this shift has occurred because of several factors, however, three stand out in comparison to others.

Despite the considerable interest in delineating the effects of anxiety upon sport performance, Jones (1995) has noted that there has been little success in predicting a substantial amount of performance variance. This has been explained in terms of the limitations involved in the use of self-report instruments to assess anxiety in sport, and that performance measures have often lacked reliability and validity (Gill, 1994). Although recent work by Parfitt and Smith (1998) lends some support to the anxiety-performance relationship by investigating the effect of anxiety direction on success in a tennis serving task, in general, little has been achieved to date. Indeed, Jones *et al.*, (1993) have advocated that intra-individual designs may be necessary to allow for examination of the hypothesised debilitating effects of anxiety on performance in sport. Parfitt and Smith (1998) reported that self-confidence appeared to play an important mediating role in the interpretation of anxiety symptoms. The relationship between confidence and anxiety has received little attention in the mainstream, where interest has been on investigating anxiety within a broader concept of mood. However, whilst studies have considered the relationship between mood and sport performance (Terry, 1995c), none have examined the anxiety sport performance relationship from within a broader framework involving mood and other emotional states.

Secondly, although there remains little interest by most sports psychologists and researchers about what other approaches to the study of anxiety have to offer, increasing numbers of mainstream psychologists are becoming more interested in the area. Within the U.K evidence of this increased level of involvement can be seen from the British



Psychology Society's (BPS) decision to establish a Sport and Exercise Section in 1993, and the recent publication of a series of B.P.S. occasional papers relating to sport and exercise psychology.

Finally, the greater acceptance of at least a need to consider alternative methodologies, may be viewed as a sign of recognition by some researchers, that more subtle and precise tools need to be utilised to match the complexity of the subject matter under investigation.

Support for the complementarity of qualitative and quantitative methods in psychology research has been offered by Osborne (1985). He has argued that this mutuality rests on the different functions that each method serves in journeying along separate paths to the same end, involving understanding and prediction. Osborne suggests that: **“Ecumenical epistemology within Western psychology seems to be increasing”** (Osborne, 1985, p.200), and that this is because qualitative methods focusing on discovery can complement quantitative methods where attention is directed at verification. The recent signs are that this message is beginning to become accepted in sport research (Hanin, 1997). In addition it is having a considerable impact on approaches to the use of new methodologies in research studies, and is even slowly affecting long held and entrenched attitudes towards qualitative research and case studies in some of the more respected academic journals and publications in the area.

Undoubtedly, an important concern associated with the use of qualitative methodologies has been that opponents have suspected that their use would prepare the way for a return to introspectionism, and unscientific formulations and procedure. Dunn's (1994) influential paper on the combined use of nomothetic and idiographic methodologies in sport psychology is important because it not only discusses the merits of such an approach, but also provides an empirical example. In this study, Dunn (1994) used the perceptual profiles of 3 ice hockey players in relation to 15 anxiety inducing situations, to assess how these perceptions compared with those of a group (n=46) of ice hockey players. The group data were compared to individual data to identify where perceptual differences existed, and the idiographic interview data were analysed to examine why these differences existed. In summing up the importance of such an approach Dunn

(1994) has stressed that it is important to reveal general patterns in behaviour where these exist, but that this must not be achieved at the expense of obfuscating important individual differences. For example, the average anxiety of a group of individuals may in fact correspond to no single individual within that group! The limited usefulness of such data in devising intervention programmes aimed at anxiety control in sport has been discussed earlier. In addition, this data on its own would seem unlikely to be able to help researchers to assess the meaning that anxiety has for an individual, and is even less likely, of being capable of identifying causal factors.

An important development in terms of providing a methodology that allows qualitative and quantitative data to be gathered simultaneously, involves the use of diaries. The diary has been recommended by psychotherapists such as Assagioli in that it: **“gives a psychological film of the dynamic development of the patient’s psychological state, of his mind stream...”** (Assagioli, 1993, p.70). Further, he suggests that the keeping of a diary provides a means of self-expression, and encourages the development of will, concentration and attention. Assagioli (1993) has also advocated that diaries can be used as an intervention technique in psychotherapy.

Within the mainstream, researchers interested in mood and emotional states have begun to utilise diary based methodologies in their work (Verbugge, 1980; Clark and Watson, 1988; Stone *et al.*, 1993). Diary approaches have recently been used by researchers investigating relationships between mood and exercise addiction (Sewell *et al.*, 1996) and the impact of exercise on mental states (Clough *et al.*, 1996). These studies used four week daily mood diaries which included analogue or bipolar scales, and short open-ended sections where subjects could provide more rich and in-depth qualitative data. According to Clough *et al.* (1996) such an approach, allows the researcher to provide ecologically valid and in-depth results, which are nevertheless amenable to quantification and rigorous analysis. In combining the strengths of strictly qualitative and quantitative methodologies, the diary-based approach facilitates group analysis and investigation from an intra-individual perspective. Calls for greater use of single subject designs (Ming and Martin, 1996) and within individual perspectives (Jones, 1995) have been made by researchers investigating stress, anxiety and competitive sport. However,

the vast majority of studies in this area continue to use quantitative methodologies and focus on group differences.

An important and increasingly influential movement within sport and exercise psychology during the past two decades has forced sport psychologists and researchers to review their work in terms of its usefulness from an applied perspective. The increasing professionalisation of sport psychology and the introduction of certification and accreditation schemes in North America, Australia and Britain continues to shape practice and research, and even impact upon the content and structure of undergraduate and postgraduate programmes. In terms of stress and anxiety in sport, applied sport psychologists are increasingly involved in instructing athletes in meditative techniques, progressive relaxation and mental rehearsal. However, Anshell (1993) has warned that clinically trained sports psychologists, especially those following the psychoanalytical tradition have frequently employed depth techniques such as hypnosis and dream analysis in their work with athletes where more straightforward approaches, for example simple goal setting, or counselling, would have been more appropriate. In contrast, sports psychologists from a physical education background are likely, according to Anshell (1993), to possess too narrow a background in psychology and tend to rely excessively on packages and techniques that lack sufficient depth and have not been tailored to meet individual requirements.

This debate about approach in applied work has been taken up by Corlett (1996) who has argued that sport psychology must beware of relying on what he calls, Sophist counselling, where athletes are taught mental training techniques to make symptoms go away. Instead, he has passionately argued that sport psychologists will often need to provide much more than this, and should be prepared to encourage the athlete to follow a process of self examination leading ultimately to self-knowledge.

Corlett (1996) has tried to distinguish between what he has referred to as Socratic counselling and Sophist approaches, by considering how each would deal with competitive anxiety. According to Corlett (1996) a Sophist sports psychologist would focus exclusively on competitive anxiety as an interfering variable the removal of which will lead to (cause) improved performance. He claims that in: “**understanding anxiety**

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as the product of high physiological arousal and negative thoughts, a sophist might routinely, successfully, and exclusively teach athletes to manage it by somatic or cognitive strategies. The intent would be not to confront or understand anxiety but to eliminate its influence” (Corlett, 1996, p.87). However, whilst this approach may work for the motivated, well clarified, focused athlete who is more or less content with life, some problems cannot be solved meaningfully by mental skills training alone. It is in such situations where the sports psychologist often needs to consider the broader social context and life experiences of the athlete. As Corlett puts it: **“Sometimes the problem at its fundamental level is not the athlete alone, but the interactions of the athlete with coaches, parents and the sport itself”** (Corlett, 1996, p.90).

It could be argued that the increasing activity of applied sports psychologists, and the beginnings of some recognition of the need to do more than consider the athlete and their sport in isolation from the rest of daily life, will give impetus to greater use of qualitative research methodologies in sport research. In addition, this shift in emphasis to consider broader life issues facing the anxious athlete, should lead to an increasing acceptance that anxiety itself needs to be interpreted in relation to an individual’s general mood states and emotion.

Parkinson *et al.* have defined mood as: **“part of a broader system of action control and is itself subject to regulation in accordance with broader concerns relating to biology, culture, relationships and social and personal identity”** (Parkinson *et al.*, 1996, p.217). In attempting to differentiate mood from affect in general, it has been argued that mood lasts longer. It is generally held that emotion and emotional states refer to acute, brief or phasic episodes in comparison to the more tonic or chronic nature of mood. Again it has been postulated that: **“mood is an undirected evaluative state which temporarily predisposes a person to interpret and act towards a wide variety of events in ways according with it’s affect content”** (Parkinson *et al.*, 1996, pp.9-10). Emotion in contrast may be understood as directed towards a specific object. This differentiation between mood and emotion connects well with the approach taken by existential - phenomenological psychology to anxiety and fear. May and Schneider (1995) have suggested that fear is an emotional state that always involves focus on a specific object of real or perceived danger. Anxiety, according to May (1977), is the

most important mood because according to existential psychology, it is an inescapable and constant feature of the human condition. However, anxiety can be generally defined as a mood, because according to existential accounts, it is experienced as a constant gnawing or feeling of uneasiness, whose exact cause is difficult to isolate clearly. Added to this, mood has been seen as continuous, however, the conscious registration of it tends to be episodic.

In terms of identifying possible precursors or events that lead to particular moods, Hatfield *et al.* have stated that: **“our moods are unlikely to have a single cause and will depend on the combination of a large number of different and often interacting factors”** (Hatfield *et al.*, 1994, p.43). Clearly any serious attempt to begin to examine mood will require a methodology which is capable of examining a range of possible causal agents, and which can begin to investigate the relationships between different mood states.

The consideration of mood and emotionality in mainstream research has resulted in studies to investigate mood and daily life events (Clark and Watson, 1988) stress, mood and coping (Stone *et al.*, 1993) and personality factors, event desirability and daily mood (David *et al.*, 1997). These studies are noteworthy because each has utilised a diary-based methodology to provide combined quantitative and qualitative data over a period of several days. In addition, positive affect (PA) and negative affect (NA) have been included as independent and negatively related mood variables (Watson and Tellegen, 1985).

Within sport and exercise psychology, studies have investigated mood, exercise, and PA/NA (Clough *et al.*, 1996) using a diary based methodology. However, as yet, most research examining mood, anxiety and sport has relied on use of questionnaires and one-shot techniques.

The Profile of Mood States (POMS) (McNair *et al.*, 1971) self-report questionnaire has been extensively used by researchers attempting to identify differences between athletes and non-athletes, and differences between different levels of athlete. Renger's (1993) review of the efficacy of POMS in differentiating these groups revealed that little had

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been achieved. Although POMS is a broad based mood inventory it is of special interest to anxiety researchers in sport because one of its six scales measures tension/anxiety. However, Renger has provided a stern warning for anyone considering using POMS in sport and anxiety research. In concluding his review paper he forcefully states that: **“it is recommended that future research, attempting to identify personality characteristics that reliably differentiate athletes of differing levels of ability, abandon the POMS”** (Renger, 1993, p.83).

However, Terry (1995c) has suggested that POMS has largely failed to identify an unequivocal relationship between mood and sport performance because of methodological weaknesses in many of the studies in the area. He has identified problems with the type and duration of the event used, use of poor performance measures and a failure to control for homogeneity of skill and fitness levels of subjects. In proposing a conceptual model to explain the relationships between mood and performance, Lane and Terry (1997) have suggested that depression plays a key role in the regulation of other moods. They have argued that depressed individuals will tend to interpret tension/anxiety as debilitating, leading to lower performance.

Jones *et al.* (1996) have examined mood and anxiety in sport in terms of PA and NA by administering the Competitive Trait Anxiety Inventory-2 and the Positive and Negative Affect Schedule (Watson *et al.*, 1988). However, somewhat differently to Lane and Terry's (1997) findings, Jones *et al.* (1996), found that levels of PA were more strongly related to directional interpretations of anxiety than NA. This seems a surprising finding in that the NA scale includes the items, “distressed”, “afraid” and “nervous”, which taken together, seem to relate conceptually very closely to the construct of depression. Obviously much remains to be done to achieve consistent findings in this relatively new area of research on mood, anxiety and sport. However, the fact that researchers in sport psychology are beginning to consider broader and unfamiliar constructs such as depression and affect is to be welcomed. Jones *et al.* seem in no doubt that a consideration of PA and NA as individual difference variables, represents the way forward and that their: **“findings demonstrate the growing need to distinguish between intensity and direction of multidimensional competitive**

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**anxiety in sport psychology research, and for the need to examine individual differences in these responses” (Jones *et al.*, 1996, p.113).**

This more promising development in recent studies investigating competitive anxiety in sport, has unfortunately not been extended to research where the focus is on those involved in sport occupying a non-playing role. Whilst most interest has been on the athlete as would be expected, the role of the coach and parents has received little attention. This seems to represent a significant blind spot in the literature, especially where the coach typically has a powerful influence and very close relationship with the athlete as is often the case in elite level individual sports such as gymnastics, swimming and athletics. Further, little attention has been directed at the role of parents from a psychological perspective. Clearly, this area is particularly important with the dramatic rise in after school sport programs. Although at a very early stage, some research (Taylor and Daniel, 1988) has been carried out into psychology and officiating.

There seems little doubt amongst the media, sports National Governing Bodies and others, that those charged with officiating in sport and at all levels, are increasingly being put under the “spotlight”. The reasons behind this situation are many and complex. However, some of the most important arguably relate to the increasing professionalisation of several sports, greater financial rewards, increased media interest, and that permissive, liberal and hostile attitudes to authority are more prevalent than before. Although there have been relatively few empirical studies investigating stress and officiating, several anecdotal accounts attest to its prevalence at least in North America. For example Zoller (1985) in discussing findings from several case studies, suggests that stress in officiating occurs because refereeing is an avocation, or a hobby, and that this must be pursued successfully alongside other life demands, such as a full-time job. In addition, he suggests that officials reported that their stress was not restricted to the match alone, but resulted from dealing with crowds, coaches and travel demands.

An interesting feature of the empirical studies in the area is that stress rather than anxiety has dominated the research. For example, Taylor and Daniel (1988) investigated sources of stress in soccer officiating, examined perceived stress and

burnout in sports officials, and Anshel and Weinberg (1995) studied sources of acute stress in basketball referees. The majority of these studies have utilised questionnaire based methodologies, rather than case studies and more qualitative approaches.

It could be argued that use of more purely qualitative, or combined qualitative and quantitative methodologies, would allow researchers to begin to identify the broader range of variables affecting referees to which anecdotal accounts have alluded. For example, given that most officials are, on average, older than sports participants, it may be that their family responsibilities and involvement in the community is far greater, and as such, represents an additional source of stress. Of course, from an existential psychology perspective, and according to Selye's (1956) view of stress, an increase in the sources and magnitude of stress does not in itself say anything about the individual interpretation of this. It may be that greater family and community responsibilities are perceived favourably by an individual, and may be associated with feelings of positive stress, or eustress (Selye, 1956) and reduced anxiety.

Research in stress and officiating has failed to consider related constructs such as motivation, mood and emotional states such as anxiety and depression. Whilst these variables are increasingly being considered in research with athletes, there is an urgent need to investigate them in relation to the work of officials and referees. However, it could be argued that the importance of taking a more complete, or psychologically holistic view with these studies is because for most referees, even at the highest levels, the match represents a relatively small segment of their total emotional life. Because of this, it may be that the mood of a referee prior to a match could be much more related to their life experiences in the preceding few days, rather than the result of cognitions about the game itself. Indeed, it might not be unexpected to find that individuals approaching a match in a state of negative affectivity will also perceive their role negatively, and that where a referee experiences positive affectivity in the days before, he will perceive any pre-match anxiety favourably. This type of normal, "healthy" anxiety may involve feelings of excitement and mild or quite strong fear; this anxiety is differentiated from neurotic anxiety (May, 1977) where the individual is unable to move forward to engage in an event, and in a sense feels paralysed. In addition, greater use of qualitative methodologies may reveal that competitive anxiety



for referees and others is more prevalent after a match, especially where they perceive, or are aware of, important errors in their decisions.

Finally, the referee tends to operate alone whereas most sports performers are part of a team or can achieve some feelings of support from other competitors. The “man or woman in the middle “ dresses differently, is frequently older than the players and has no group of supporters cheering him or her on! These differences and the other sources of stress mentioned earlier, make comparison with the experiences of others involved in sport likely to highlight the particular pressures that face referees. In addition, the greatest number of referees are male, and therefore comparison of their experiences against female sports participants, may reveal further differences where gender appears to be an important variable.

The findings of these studies may begin to throw light upon the complex and dynamic relationship between mood, anxiety and behaviour for those involved in sport. However, it may be that for a more complete understanding of events, performance and mental states, a totally different approach is needed. In terms of anxiety, as has been discussed throughout, the body of research and ideas contained within existential psychology might provide sport researchers with an approach that is more able to accommodate contentious issues surrounding the meaning of anxiety and its possible effect on performance.

There is little doubt that most sports anxiety research proceeds from a philosophical position and practical credo which advocates that anxiety is an undesirable emotion and should be removed if possible (Corlett, 1996). Although Jones *et al.* (1994) has questioned whether some sports participants do not, in fact, view anxiety positively, this line of research has had little to offer in terms of providing an explanation for different individual interpretations. Recent work has suggested that individuals who view anxiety as facilitative tend to have different personality characteristics and use different strategies and skills to athletes who view anxiety debilitatively. Whilst an interesting finding, this can be criticised for once again relying on the CSAI-2 to measure anxiety pre-competition. As has been discussed earlier, there is considerable doubt that the CSAI-2 addresses anxiety, instead focusing on the symptoms of anxiety following the

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multidimensional model (Spielberger, 1966). In addition, factor analysis of the CSAI-2 (Lane *et al.*, 1999) appears to question the factor structure of the inventory, suggesting that a reduced 18 or 19 item scale is warranted.

Although broadening sport anxiety research to encompass mood, PA, NA, life events, social context and the like should improve matters considerably, there remains a need to reconsider what researchers are referring to where they focus on competitive anxiety and stress. Much confusion in the literature could be avoided if researchers relied upon the original and arguably best account of psychological stress provided by Selye, and began to consider anxiety according to May as; **“the apprehension cued off by a threat to some value that the individual holds essential to his existence as a personality”** (May, 1977, p.205). Such a powerful and rich account of anxiety helps explain the existence of this phenomenon across a disparate set of situational domains. For example, it explains how the same individual may experience identical emotions before giving a presentation to his peers, and in very different circumstances, before teeing off in front of friends at a social golf match! In these cases the affective sensations and cognitions may not be very similar, and yet, from a phenomenological perspective, the individual may experience the feeling of disintegration, fear and desire. This anxiety during both experiences may last throughout the event, or may dissipate as soon as activity is commenced. However, according to the existentialists, it is a normal, and indeed unavoidable aspect of life. More controversially as far as all other schools of psychology and sport psychology are concerned, this form of anxiety is considered healthy and should be sought out and not avoided!

Combined qualitative and quantitative methodologies according to Fischer (1970) and Caruso (1964) are able to build on the genuine and worthwhile findings of more traditional approaches, and accommodate much of the vigour and vitality of data that emerges from completely qualitative approaches. This integrated approach must not be simply defined as “eclectic” according to Assagioli (1993), but represents a new organic synthesis, where unity and fidelity to both traditions are the goals. An integrated approach holds out great promise in the field of research, if it can achieve a creative and meaningful reconciliation of two antithetical positions: on one hand, the apparent duality of the self, and the real unity and uniqueness of the self on the other. However,

away from this, integrated approaches which seek to overcome the artificial split between positivistic, reductionist, natural science psychology, and descriptive, interpretative and anti-positivistic psychology, have much to recommend them. In terms of sport anxiety research, any approach that emphasises the importance of meaning, choice, decision and responsibility, and affords anxiety a central place in its exegesis, should be graciously received and considered seriously.

## 4.2. Review of Literature

### 4.2.1. *Investigating Anxiety in Sport*

In his review of research developments and issues in competitive anxiety in sport, Jones (1995) highlighted the need to use different approaches in the study of anxiety in sport. According to Jones, qualitative methodologies have been little used by researchers in the area; it is suggested this is unfortunate given that qualitative approaches may provide a more complete method for examining the social context within which competitive anxiety is experienced. Jones has gone further in suggesting that self-report measurements such as the CSAI-2 (Martens *et al.*, 1990) have largely failed to facilitate the precise measurement of anxiety. This situation, it is argued, is due to the difficulty of assessing a psychological state solely from the measurement of cognitive and somatic symptoms. In addition, Jones and other researchers (Swain, 1992) have identified a further weakness of current self-report anxiety measures, in that they cannot be used “in vivo” to assess anxiety levels during competitive performance. This has led researchers (Terry, 1995b) to suggest that new and shorter self-report measures need to be developed, and that greater use should be made of physiological and behavioural assessments during the sporting performance. However, it does appear doubtful that physiologically based measures will be able to do much more than record arousal levels. Earlier research in the area investigating physiological arousal in parachutists (Fenz and Epstein, 1967) and arousal, stress and motor performance (Oxendine, 1970; Neiss, 1988) was unable to clearly identify the exact aetiology of the symptoms, and could not adequately overcome the fundamental conceptual problem of relying on objective arousal measures to assess the essentially subjective psychological state of anxiety. That the major approach to the study of competitive sport during the past ten - fifteen years has been that of trait psychology, owes much to Martens’ development of the SCAT (1977) and the CSAI-2 (Martens *et al.*, 1980). However, researchers (Gill, 1994; Jones *et al.*, 1996) have increasingly called for the inclusion of emotion and mood to be considered in work on both stress and anxiety in sport. This represents recognition as Fisher (1970) has argued, that the study of anxiety cannot be advanced by the continued acceptance of a dualistic Cartesian metaphysics which separates meaning from affect.

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This development may assist researchers to better explain the role of anxiety in sport. However, according to May (1977) great care must be taken to avoid identifying an emotion with a neurophysiological process or vice versa. Again, this example of the metaphysical mind - body problem facing research in psychology must be confronted according to Martens (1987) by developing alternative methodologies. From an existential psychology perspective, Caruso has pointed out that much of modern psychology has; “**suffered from a peculiar psychophobia**” (Caruso, 1964 p.8.), whereby affective states and emotions have been ignored, ostensibly because they can neither be reliably measured, nor experimentally repeated.

#### ***4.2.2. Mood and Affect***

Within mainstream psychology, studies have begun to address the importance of emotions, affective states and mood in relation to sleep deprivation (Hendrech and Lilley, 1970), personality (Borgatta, 1961) and happiness and well being (Costa and McCrae, 1980). Watson and Tellegen’s (1985) research has helped to draw attention to the need to develop reliable and valid measures of mood, especially, if as they have argued, affect is re-emerging as an important concept in psychological thinking. Amongst the problems faced in this area, Watson and Tellegen (1985) have suggested that the failure of researchers to narrow down the number of factors necessary for an adequate description of mood state, has made comparison between different studies difficult, and at times, quite impossible. They have suggested, after a reanalysis of a number of mood studies, that 2 independent and uncorrelated bipolar dimensions, which they have termed Positive Affect and Negative Affect, provide a conceptually robust structure to explain mood. Their research concluded that mood is characterised by these two high order dimensions which correlate strongly with several lower order factors, such as, interest, anger, fear and guilt. In addition, they discovered that whilst some mood terms are clearly associated with Positive Affect or Negative Affect, other terms represent a mixture of the two.

Later work by Watson *et al.* (1988) sought to develop a brief self report, the Positive Affect Negative Affect Scale (PANAS), to measure Positive Affect (PA) and Negative Affect (NA). Strong correlations were revealed between the PA and scores on the STAI (Spielberger 1970) ( $r = -0.35$ ) and NA and scores on the STAI ( $r = .51$ ). Whilst PA and

NA as measured by the PANA scale represent mood state dimensions according to Watson *et al.* (1988), they are related to trait dimensions of negative and positive emotionality. Tellegen (1984) has further argued that PA is broadly related to the personality factor of extroversion and NA relates to anxiety neuroticism. Tellegen (1984) has also suggested that low PA and high NA are major features of depression and anxiety respectively. An interesting and potentially useful aspect of PA and NA is that the terms can capture the complexities of mood structure in a way which has intuitive appeal, as well as scientific rigour. For example, an individual experiencing high PA and low NA would be feeling very energetic, and alert, whilst being in a state of calmness and serenity. In contrast, a person in a high PA and high NA state would be feeling very alert, focused, and energetic, and yet may also be feeling angry, nervous and fearful.

A closer examination of the relationship between mood or what Clark *et al.* (1995) refer to as Negative and Positive Affectivity and anxiety, revealed that high NA and neuroticism is related a range of mood disorders. In their work Clark *et al.* (1995), have described NA or neuroticism, and PA or extroversion as stable personality traits. Problems remain with this classification of moods however in that Depue *et al.* (1987) have argued that mood disorders generally result from excessive variability or volatility in the system, and that the precise disorder depends more closely on this, than on the actual level or intensity of the affective state. This research points to the importance of mood regulation in affective disorders such as anxiety and depression. However, Clark, *et al.* (1995), have suggested that autonomic arousal may be related to anxiety sensitivity and as such present as a personality dimension strongly related to anxiety vulnerability. In terms of interventions or treatment to address anxiety, it has been proposed by Clark *et al.* (1995), that it may be more worthwhile to convince the person that they must accept their “fate” as being high in Negative Affect / Neuroticism and learn to live with this unhappy situation. Again, although stressing the inherited trait-like qualities of mood and temperament, this research connects well with existential psychology approaches to psychotherapy where the person is encouraged to confront normal anxiety and use it for growth and learning (deCarvalho, 1996).

From a different, and yet related, stand point Thayer (1994), has investigated the strategies that can be used to alter and regulate moods. Although Watson and Tellegen (1985) have warned against equating PA with good mood and NA with bad mood, Thayer (1994), evaluated the strategies people used to alter a bad mood into a good mood. The study involved 308 respondents in completing a questionnaire that asked questions about the strategies they typically used to alter and regulate mood states. Interestingly, exercise was cited as the most effective agent of mood regulation and was strongly associated with PA. In addition, social behaviours were reported as among the most frequently used to change negative moods, whilst distracting activities, such as, reading and work, featured much less. A closer examination of the results revealed that whilst exercise was rated as the most effective strategy for mood self - regulation, it was less favourably ranked in terms of reducing tension. This finding seems to suggest that high levels of tension and normal anxiety may be viewed quite favourably, or at least accepted, where the activity is freely chosen, self-regulated and challenging, as is the case for most sports and exercise. Finally, this study identified a further two important issues. In terms of individual differences, gender was highlighted as the most important individual difference variable to emerge from Thayer's (1994) study. Men were more likely to use active strategies such as seeking pleasurable activities and using alcohol or drugs to reduce tension; in contrast, women used more passive strategies such as talking with friends and eating. These differences were reported for enhancement of PA and reduction of NA. The second major finding of this study was that negative mood is best changed through participation in exercise. This tends to support the view that mood should be understood from a more integrated and holistic perspective, given that exercise, which involves physical, cognitive and affective domains, was the most frequently suggested strategy for changing bad mood.

### ***4.2.3. Mood, Anxiety and Sport***

Within the sport and exercise based literature several studies (Berger and Owen, 1992; Pierce and Pate, 1994; Terry, 1995c) have begun to consider stress and anxiety from within the broader construct of mood. Snow and LeUnes (1994) analysed articles from a total of 74 journals in which the Profile of Mood States (POMS) (McNair *et al.*, 1971) was used to measure mood states in sport and exercise domains. They revealed that

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almost 90% of studies were published between 1981 and 1990, and that female only samples were significantly under-represented.

However, whilst narrow sampling and a general failure to consider a wide range of individual differences is evident in the sport and exercise research, it may be argued that the almost exclusive use of the POMS to measure mood in this area has retarded consideration of important and new theoretical and conceptual developments emanating from the mainstream. Recent work by Terry (1995c) has questioned the efficacy of mood profiling in sport. Results revealed that mood profiles are of little use in differentiating between sports participants and non-participants and that they are unable to separate athletes of quite distinctly different ability levels. This finding is supported by earlier work by Renger (1993). This involved a review of studies in which POMS had been utilised to predict sporting success and achievement level. Renger (1993) has suggested that there is some evidence that POMS has led to the identification of the so-called Iceberg profile typically possessed by elite level athletes. The Iceberg profile refers to the pattern of low scores on tension, depression, anger, fatigue and confusion and high score on vigour measured by POMS. The Iceberg Profile was associated with superior athletes and high level sports performance. However according to Renger, POMS has not assisted researchers in identifying the personality characteristics that differentiate athlete from non-athlete. Nevertheless, POMS continues to be well used by researchers interested in studying the effects of exercise based programmes on mood. Berger and Owen (1988) utilised POMS to measure alteration in mood in 87 college students in swimming and yoga classes. Findings revealed that swimming and yoga were equally efficacious in decreasing debilitating mood states, and anxiety levels based on the State-Trait Anxiety Inventory also declined. They have used this finding to suggest that aerobic exercise is not required to facilitate an alteration in mood. This is supported by further studies, according to Biddle and Mutrie (1991), where a range of aerobic and largely non aerobic exercise interventions have been shown to be effective in improving mood and self esteem, and reducing anxiety and stress.

Considerable attention has recently been devoted to assessing the impact of exercise on mood and anxiety in older adults and women. It could be argued that this increase in interest in these two groups is due to the paucity of research directly focusing on women



and the elderly in the last fifteen years (Snow and LeUnes, 1994), and that during this period there has been a considerable increase in sport and exercise participation amongst these groups.

In reviewing the research on exercise, mood and psychological well-being, Snow and LeUnes (1994) concluded that, despite consistent results and lacking objective evidence of change, older adults tend to perceive improvements in mood and other related psychological variables following regular exercise. This finding again highlights a major methodological concern evident in much of the mood literature, in that subjects' appraisal of the benefits of exercise is not adequately captured by one shot questionnaires or behavioural and physiological correlates of mood. However, studies continue to report improvements in mood and anxiety where aerobic exercise is a feature (Pierce and Pate, 1994) and where this aspect of an activity programme is absent. Interestingly, Pierce and Pate's (1994) work investigated the impact of line dancing on global mood using an abbreviated version of POMS; significant differences were found pre and post test on mood scores. However, whilst the researchers have focused upon the importance of aerobic exercise in explaining their results, it could be argued that mood benefits were more likely due to involvement in line dancing itself. It may be that a more complete understanding of mood change as a result of line dancing, should focus on the exact nature of the activity in terms of opportunities for participants to feel self-determined in their behaviour (Deci and Ryan 1985), perceive competence (White, 1959) and use skills to meet a challenge. Indeed, a deeper consideration of motivational states and their relationship to mood and anxiety has been advocated by Kerr and Cox (1991) and from a more existential-phenomenological perspective, by Csikszentmihalyi (1990). Both emphasise that the flow state, where action merges with awareness (Csikszentmihalyi, 1975), or the paratelic state where the person is interested in an activity for its own sake (Kerr and Cox, 1991), represent moments of sheer enjoyment, and as such, may enhance mood states, post experience of this kind.

In an effort to consider the effect of sport and exercise on the mental health of individuals Gleser and Mendelberg (1990) have identified physical activity as an effective treatment modality. Their review of the literature on mood elevation, anxiety, and self-esteem in relation to exercise revealed that explanations for the positive

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benefits of sport activity and exercise emphasised the psychological, social and physical benefits that were available. This finding highlights the importance of adopting broader and more integrated conceptualisations of mood and anxiety, and supports the earlier work of Pistacchio *et al.* (1989) which reported that positive attitudes towards physical activity and sport were strongly related to reduced anxiety and positive mood states.

In terms of women and mood and anxiety and depression, research by Monck *et al.* (1994) from a psychiatric perspective focused on the background factors associated with these states in a sample of 529 teenage girls. Qualitative research methods centering on in-depth interviewing of a control group (n=74) and a high self-report group (n=69) revealed that mood disorder was closely connected to the quality of relationships within the family. In addition, maternal distress and the quality of the mother's marriage were identified as important factors associated with mood and anxiety disorders. This work is important in that mood and anxiety are considered in relation to individuals social context, personal histories and life events. A further feature which distinguishes Monck *et al.*'s (1994) study from much of the work in this area is that data were collected by means of various self-report questionnaires and through in-depth interviews. In comparison, much of the mood and anxiety-based literature in sport is clearly rather restricted in terms of methodology, and is limited through its consideration of a more narrow range of concepts and theories that it is prepared to offer to explain its findings. For example, work by Meyers *et al.* (1994) assessed the psychological skills and mood profiles of forty five world ranked female tennis players. Surprisingly, findings revealed no significant difference between the highest, middle and lowest ranked groups of players in relation to POMS scores and mental skills, as assessed by the Psychological Skills Inventory for Sports. The authors found that the tennis players possessed similar mood profiles and psychological skills to other sports performers. Both of these findings, however, do not link well to anecdotal accounts from sport, or psychological theory such as self-actualization (Maslow, 1954), achievement motivation (Nicholls, 1974) and intrinsic motivation (Deci and Ryan, 1985). In addition research investigating mental links to excellence in sport (Orlick and Partington, 1988) has identified several psychological skills such as imagery, goal setting and arousal control, which the very best athletes use optimally. More likely Meyers *et al.*'s (1994) findings

are due to a failure to use in depth qualitative methods, and an over reliance on the POMS scale and mood profiling which Terry (1995c) has subsequently criticised.

POMS has been useful in sport and exercise research where researchers have primarily concerned themselves with experimental and quasi-experimental manipulation of mood states. For example, work by Reilly and Piercy (1994) examined the effect of partial sleep deprivation on weight lifting performance. POMS scores for the eight male subjects revealed that the sleep deprivation experience affected mood states of confusion, vigour and fatigue, however, they reported no significant effect of sleep loss on anger, tension and depression. In justifying the study, Reilly and Piercy (1994) suggest that sleep loss and problems with sleeping represent an important source of stress for many athletes. In addition their work demonstrated that exercise had little effect in improving mood states associated with vigour, confusion or fatigue. The clear message from this research to coaches and others involved in training athletes seems to be that exercise may negatively effect mood and anxiety levels in some circumstances; a strong and aerobically fit athlete with mood problems may be less likely to achieve success than a less physically prepared but more emotionally content individual.

A further promising approach to mood and anxiety research in sport is the interest in emotional responses to injury. For example, Kolt and Kirkby (1994) assessed 115 gymnasts using the POMS Bipolar Form and the CSAI-2. The results revealed that cognitive anxiety and POMS scores for composed-anxious, and energetic-tired factors were the best predictors for differentiating between gymnasts with four or more injuries and those with less than four. The POMS Bipolar form measures six mood states: composed-anxious; agreeable-hostile; elated-depressed; confident-unsure; energetic-tired, and clear headed-confused. Surprisingly, correlations between CSAI-2 cognitive anxiety scores and the POMS composed-anxious scale were only moderate ( $r = .39$ ). However, the study revealed that female gymnasts could be clearly discriminated on the basis of their CSAI-2 self-confidence scores and their POMS confident-unsure scores. Again, this finding is well supported by earlier work (Segal and Weinberg, 1984) that reported female athletes as more anxious and less self-confident than their male counterparts.

Other sport based research has investigated the type of sport played and mood (Kerr and Svebak, 1994) and the effect of game outcome on mood and stress (Kerr and Van - Schaik, 1995). This latter study is of particular interest in that mood states of fifteen male rugby players were assessed by the Telic State Measure, and the Stress Arousal Checklist. Whilst the major finding of this work, that winning lowered stress levels significantly and that arousal levels were elevated significantly could have been anticipated, the introduction of reversal theory (Apter, 1982) in discussing this and other findings is both novel and illuminating. Although Kerr (1990) has claimed that reversal theory has been involved with sport from the beginning, this is not always clear from the sheer volume of studies which have addressed mood, anxiety, and motivation in sport without any reference to this theory.

The importance of being able to predict successful performance in sport has been greatly valued by coaches, team selectors and the athletes themselves throughout sport. However, as Martens (1987), Burton (1990) and others have observed, the pressure to succeed at all levels of sport has increased in recent years, and nowhere is this situation more apparent than in youth and age group competitive sport (Gould *et al.*, 1993a). Against this background, studies have considered the broad personality characteristics of elite sports performers (Morgan and Johnson, 1978) and others have focused more on the relationship between mood profiles and success (Renger, 1993; Rowley *et al.*, 1995). However, it can be argued that two studies in this area stand out in comparison to most others, in highlighting important weaknesses associated with the use of POMS in sport research. Friend and LeUnes' (1990) research attempted to formulate a performance prediction system for baseball players through use of POMS and a sport locus of control scale (LOC). Although the initial results from the two psychological measures were of limited value in predicting performance success, analysis revealed that players with scores within a range of one standard deviation above or below the mean on the POMS and LOC measures were the most consistent players. This finding suggests that stability of mood state rather than absolute levels is possibly of greater importance in identifying successful sport performers.

The second study that deserves special scrutiny is that of Terry and Youngs (1996) which investigated the effectiveness of the CSAI-2 and POMS in helping to predict

selection during elite level hockey trials. Multivariate analysis of variance revealed no significant differences between selected and non selected players on pre-performance mood or anxiety measures. However, in discussing the results Terry and Youngs have postulated that, **“the inability to discriminate selection significantly in field hockey is consistent with the notion that discriminate effectiveness is reduced in interactive team sports of long duration”** (Terry and Youngs, 1996, p.375.). This is supported according to Terry and Youngs by the failure of mood and anxiety self-report measures to discriminate performance significantly in studies assessing netball (Miller, 1986) and cricket (Terry, 1994). In other words, these findings taken together, seriously question the validity of using mood and anxiety inventories to assist player selection in team sports due to the influence of other more important variables, such as tactical awareness. In addition, in sports of longer duration mood and anxiety levels may be less important than physical fitness, skill and playing ability, because of the tendency for these psychological factors to dissipate over time.

A further development within the sport psychology literature has been the inclusion of Positive Affect and Negative Affect in studies investigating mood, anxiety and coping strategies. Crocker and Graham (1995) evaluated the coping patterns of 235 female and male competitive athletes which involved assessing mood on the Positive Affect Negative Affect Schedule scale (Watson *et al.*, 1988). The procedure required each athlete to write about a game or practice in which they experienced performance difficulties. The athlete was then instructed to identify their performance goal and indicate the type of coping strategy used to deal with the situation, and identify the affective states experienced. Analysis of the data revealed that problem focused coping strategies were strongly correlated with positive affect, and that emotion-focused and social support coping variables were strongly correlated with negative affect. Again the findings provided evidence that males and females use different coping strategies in dealing with PA and NA. Female athletes reported using higher levels of social support, in comparison to males. Crocker and Graham (1995) have warned however, that this finding may be a reflection of the type of stressors that women athletes face as a group, rather than being due to real differences between sexes.

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An important difficulty with research of this type is that, given the generally fluctuating nature of mood and emotion, a retrospective design which relies upon recall of affective experience is problematic. Crocker and Graham (1995) have stressed that there is a great need to develop various methods and instruments to gain a more complete understanding of mood and coping in athletic settings. This study highlighted the importance of recognising that emotion and meaning are intrinsically linked, and that a change in one effects an alteration in the other. Finally, this work discussed the coping process in relation to PA and NA following the work of Watson *et al.* (1988). Positive Affect was closely associated with problem-focused coping strategies. This tends to reinforce the view that in sport at least, active, focused, and enthusiastic behaviours are commonly related to helpful emotional states, and are valued by coaches and athletes alike. An explanation of this finding suggests that even when all of an individual's performance goals are not achieved, positive affect may still be experienced where the athlete strives hard, and does not resort to wishful thinking or behavioural and cognitive disengagement.

A further attempt to investigate PA and NA in a sports setting was concerned with the relationship between mood and the intensity and direction dimensions of multidimensional competitive trait anxiety. Jones *et al.* (1996) administered the PANA schedule scale and a modified version of the CSAI-2 to 309 undergraduate students. Interestingly, the results showed that NA was more important in mediating the intensity of cognitive and somatic anxiety. In contrast, PA was more important than NA in terms of how the athletes interpreted their individual levels of both cognitive and somatic anxiety. However, whilst this research represents a considerable development in considering PA and NA in relation to competitive anxiety in sport, it has provided little in terms of beginning to understand the relationship between mood and anxiety for individual athletes. For example, one athlete may experience PA both prior to, and during a sporting activity because of factors which lie well outside of the sport experience, such as having had a good week at work. In addition, the reliance on "one shot" scales as employed in the Jones *et al.* (1996) study does not allow the researchers to identify baseline measures; these may be of vital importance if, as Depue *et al.* (1987) have suggested, emotional volatility and mood regulation are more consistent predictors of performance success.

Returning to the influence of environmental factors and coping skills on mood, Griffin *et al.* (1993) studied the effect of environmental demands on the health practices of seventy-nine students during periods of low and high academic pressure. The main finding was that PA was positively related to exercise, nutrition and health care practices and that this relationship emerged more strongly during the time immediately post the most stressful academic period. This suggests that proactive behaviours such as exercise, maintaining a healthy diet, and getting enough sleep are important coping skills for mood regulation and are usually associated with positive affect.

Research with special populations, however, continues to question the validity of the various self-reported mood measures such as the POMS and PANA schedule. Denollet's (1991) study considered the coping style of 178 male cardiac patients during rehabilitation. Unsurprisingly, subjects who were categorised as high on Negative Affect reported significantly more negative mood states than did both low NA and repressive coping subjects. However, the more interesting finding was that repressive coping subjects, that is those individuals who used a variety of strategies to underplay the discomfort and pain associated with their symptoms, had a significantly lower score with respect to coronary prone behaviour than did the high and low NA subjects. Once again, this finding seems to suggest that the amount of negative affect experienced by an individual is less important, at least in terms of influencing actual behaviours, than the ability to regulate mood, even where this involves some form of repression. It seems likely that the form of repression referred to in Denollet's (1991) study, owes little to Freudian notions of this concept, involving intra-psychic conflict between the id and the ego. More likely, repression is being described from a largely existential phenomenological psychological position, involving the person in denying full consciousness to particular experiences and feelings of which they are largely aware. According to May (1977) this type of repression is not to be confused with the usual negative meaning of the term, employed in most of psychology. More positively, this strategy it is argued relies on constructive development and the capacity to face anxiety courageously, rather than retrenchment into neurotic defence mechanisms such as wishful thinking, total behavioural withdrawal or compulsive behaviours.

An important concern raised by Krause (1990) and Prapavessis and Grove (1994) relates to the need to consider life events in research into mood and anxiety. Krause (1990) focused on the relationship between stress and the stressors that exist in social roles. This research has suggested that a closer investigation of the types of social roles which an individual identifies with, and the quality of stress associated with each role will lead to a more comprehensive understanding of psychological well-being. Whilst not directly addressing mood or anxiety, this work has highlighted the need for other studies to adopt methodologies that will facilitate a closer examination of life events and experiences. Prapavessis and Grove (1994) studied the relationship between personality and mood of 121 competitive shooters, by getting subjects to complete an abbreviated version of POMS prior to three important competitive events. Subjects were also required to respond to a battery of sport specific inventories designed to measure personality in terms of anxiety, motivation and confidence variables. The results revealed that, trait-sport-confidence emerged as the most important single mediator of pre competitive mood. In addition, those subjects with high sport-confidence and a process goal orientation reported significantly higher state confidence than those subjects with a win orientation or with low trait sport-confidence. This research, which is supported by Kerr and Van Schaik's (1995) work addressing Reversal theory and emotion, has stressed the need to consider motivational orientation in studies investigating the effect of mood on competitive sport performance. Prapavessis and Grove's (1994) findings are both consistent with Cognitive Evaluation theory (Deci and Ryan, 1985) and Reversal Theory which suggest that, where the sports performer is focusing on the task rather than the outcome, and is subsequently caught up in a deeply absorbing "play-like" state, strong positive affect will be experienced. A further important finding was that no relationship was found between trait anxiety (SCAT) and mood states prior to competition. Whilst the researchers indicated surprise at this situation, they have attempted to explain it with support from previous studies (Maynard and Howe, 1987) which suggested that SCAT was not a statistically significant predictor of either cognitive anxiety or confidence. They have gone on to hypothesise, that the failure to find any evidence of a link between mood states and tension prior to competition is most likely because of a failure to precisely operationalise emotion. However, as the researchers have later concluded, a major issue which urgently needs to be addressed is that of assessing the other non-sport specific variables which could be



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important mediating factors affecting competitive mood pre, during, and post sport competition.

#### ***4.2.4. Methodological Issues***

Although the issue has been discussed within the sports literature (Jones and Hardy 1990) little has been done to utilise anything other than psychometric instruments to measure mood and emotion in competitive sport. Whilst Gould *et al.* (1993c) used interviews and analysed data using an inductive methodology to assess the meaning and sources of stress in skaters, research investigating competitive anxiety in sport has been dominated by the use of sports specific inventories (e.g.: CSAI-2, and SCAT.). Within mainstream psychology, there is evidence that researchers are beginning to consider approaches to the measurement of mood other than complete reliance on POMS or physiological recordings of arousal. One such study by, Maruff *et al.* (1994) has looked at the use of visual analogue mood scales in assessing the mood states of 64 HIV positive individuals. The important issue for the study was to assess the validity of a mood measure which could be completed rapidly; ease and speed of completion were identified as of particular importance given the general physical and psychological difficulties facing this population group. Subjects completed the Spielberger State-Trait Anxiety Inventory (STAI) and the Centre for Epidemiological Studies (CES)-Depression scale (Spielberger *et al.*, 1970); two analogue scales assessing anxiety and depression were completed by all subjects. The median time for completion of the analogue scales was 65 seconds, compared with a median time of seventeen minutes to complete the two inventories. The results revealed strong significant correlations between, state anxiety and analogue anxiety ( $r=.86$ ) trait anxiety and analogue anxiety ( $r=.58$ ), and CES - Depression with analogue depression ( $r=.78$ ). These results are clear evidence according to Maruff *et al.* (1994) that the analogue scales can provide valid measures of anxiety and depression, at least with HIV patients. They have interpreted their findings in terms of providing strong support for the use of easy-to-understand and quick-to-complete analogue scales, to measure mood where time is severely restricted. However, it could be argued that, given the typical incidence of incorrectly completed questionnaires and the number of inventories that subjects may be required to fill in many studies, anything which can begin to address these procedural difficulties would be helpful.

Further work addressing mood and health by Olson and Sneed (1995) investigated different approaches to anxiety reduction, and evaluated the efficacy of three different self report measures of mood and anxiety. Strong, although non-significant, correlations, were reported between POMS, STAI, and a visual analogue scale measuring anxiety. Again, this research provided further support for the use of brief and easy to administer analogue scales, in studies addressing mood and anxiety, although, these results are rather weak because they were not significant.

Further recognition of the need to provide quick, and still reliable and valid measures of mood has emerged from the research of Prapavessis and Grove (1994). In their work investigating the antecedents of pre competitive mood in sport, they postulated that almost all of the previous research in sport and exercise had relied upon the full sixty-five item POMS inventory to assess mood state. However, they have challenged this situation in suggesting that: **“the pre competitive period in sport may be one situation where greater economy of assessment is desirable”** (Prapavessis and Grove, 1994, p.87.). This in turn led Prapavessis and Grove (1994) to utilise a reduced thirty-five item scale in an attempt to half the completion time for POMS from an average of six minutes to just over three minutes. Nevertheless, the full version of POMS continues to feature prominently in studies addressing mood in sport and exercise. Rowley *et al.* (1995) examined studies from 1971-1992 in sport where POMS had been utilised to measure mood state. Thirty three studies were analysed to assess the predictive power of the Iceberg profile, which depicts elite athletes as scoring low on depression, confusion, anger, fatigue and high on vigour. However, Rowley *et al.* (1995) reported little support for the existence of a meaningful difference between elite and non-elite athletes for POMS scores. They have suggested that the relatively poor predictive power of POMS in identifying sporting success strongly questions the validity of the iceberg profile model. These findings have not been discussed in terms of the need to substantially alter POMS, and to use substantially different methodologies to those which have dominated most sport research into competitive anxiety and mood during the past twenty five years.

Surprisingly, research investigating well-being, mood and anxiety of special populations in sport has remained attached to the dominant trait based methods so prevalent in the sports psychology literature. Campbell (1995) studied psychological well-being in sports performers with congenital and acquired disabilities using POMS, STAI, and Rosenberg's (1965) Self-Esteem scale. Although results revealed that sports participants with acquired disabilities reported a more positive general mood than the group with congenital disabilities, Campbell (1995) has identified that researchers need to investigate why this is the case. However, this important issue has been reiterated throughout the literature in sports psychology, and largely to no obvious effect, if the continued failure to address the meaning of particular findings, is considered. In addition, and in agreement with other studies (Krause, 1990; Prapavessis and Grove, 1994), Campbell has advocated that researchers need to consider a much broader range of possible influencing variables to gain a fuller and more meaningful understanding of the differences between the groups.

Whilst more use of qualitative approaches to the study of anxiety, mood, and stress in sport should assist researchers to explore meaning, there remains the problem of finding a suitable way to measure the dynamic quality of psychological states. Krane's (1994) research, investigating competitive state anxiety in college athletes, has argued strongly for the need to use less intrusive measures of competitive state anxiety than Martens *et al.*'s (1990) CSAI-2. Krane has stated that coaches and athletes are frequently unable or unwilling to complete questionnaires immediately prior to competition, and that, the CSAI-2 and SCAT are very difficult to use during most sports events. In her work in relation to competitive anxiety, Krane (1994) assessed the validity of the Mental Readiness Form (MRF) by asking 209 male and female athletes to complete the CSAI-2 and the MRF 30 minutes, and one hour prior to competition. The MRF contains three items consisting of a bipolar scale and a ten centimetre line on which respondents enter a mark corresponding to how they feel, in terms of, confidence, cognitive anxiety, and somatic anxiety. Results revealed that the MRF was adequately related to CSAI-2, although correlations between CSAI-2 and trait anxiety were more supportive of theoretical predictions. This study also tried to address the issue of the correct completion of the MRF by replacing the original bipolar analogue scales with Likert scales. The results revealed that seventeen subjects who used the original MRF, had to

be removed from the data set for incorrectly completing the form. In comparison, the Likert - scaled MRFs were all completed correctly. Krane (1994) has argued that the inclusion of Likert scales may also assist the subject where the MRF is being completed on numerous occasions. It has been suggested that the Likert - type scale should help the athlete to remember exactly where they had previously rated themselves, and therefore facilitate a more accurate recording of their current state. However, this could present a problem which Krane (1994) appeared to have overlooked, where respondents may not wish to change from an earlier response. Krane (1994) has added that the analogue scale MRF does possess the major advantage of allowing far greater variability in the data because of its much greater range of scores. This quality of the MRF should, it is argued, assist the detection of subtle alterations in anxiety and mood over a period of time. Finally, Krane (1994) suggests that the MRF has the characteristics to allow for its use immediately before or after competition, and could be quite easily used during short breaks or intervals in play. This information could then be used to design an individualised anxiety control strategy when considered in conjunction with other relevant data.

Another approach to overcoming some of the methodological weaknesses associated with questionnaire based studies has been suggested by Clough *et al.* (1996). They utilised a diary methodology to investigate the impact of exercise on the mental states of 40 undergraduate students. This work, which was part of a larger study on mood and behaviour, required subjects to complete a short diary that included a simple analogue scale measuring mood states derived from Watson and Tellegen's (1985) Positive Affect and Negative Affect conceptualisation of mood. In addition, subjects recorded the amount of time spent on hobbies, exercise, and socialising using a second analogue scale in the diary. The diaries were completed for 28 days; this allowed identification of an individual's base line scores for a particular variable. Clough *et al.* (1996) have suggested that this methodology allows the researcher to obtain repeated measures of mood and anxiety that are both rigorous and detailed. They have argued that this methodology allows for data to be explored from an intra-individual perspective, and that this is of considerable importance in teasing out the relationship between mood and anxiety fluctuation and particular behaviour. In addition, the diary approach facilitates the consideration of a much broader range of variables, so that an individual's

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psychological states can be interpreted within the context of an individual's life experiences.

#### ***4.2.5. Sport Officiating; Anxiety Stress and Mood***

It could be argued that whilst the athlete's experience of pre competition anxiety, mood state and stress levels have been extensively studied, in contrast very few studies have looked at the psychological experience of other important participants in the sporting process. Research addressing motivation, enjoyment and "dropout" from sport (Scanlan and Lewthwaite, 1984; Duda, 1987) and sources of stress in sport (Gould *et al.*, 1993c) has identified the important role played by parents, coaches and other support team members in mediating athletes anxiety and motivation. However, to date, very few studies have directly addressed themselves to the anxiety, mood fluctuations, and motivation of the parents, coaches and important others in sport. Researchers have recently begun to consider the psychological pressures facing officials and referees at sports events. Predictably, much of this work has focused on sources of stress (Taylor, 1987; Rainey, 1994), although a closer examination of these studies reveals that the issues of motivation and anxiety have featured prominently in the discussions.

Taylor (1988) were concerned with identifying why there was such a high turnover rate of sports officials in soccer. Questionnaires addressing stress, burnout, satisfaction and intention to withdraw from refereeing were completed mid season and upon completion of officiating duties for the year. The findings suggested that stressful perceptions were related to burnout and dissatisfaction and that if unchecked, these feelings could lead to dropout.

Goldsmith and Williams (1992) have followed up this earlier finding by investigating perceived stressors for football and volleyball officials at different levels of officiating. The results revealed that football officials reported significantly more fear of physical harm than volleyball officials and, as hypothesised, that interscholastic officials perceived more fear of failure than officials operating at intramural levels. However, the results showed that none of the perceived stress factors were rated as important factors in officials overall stress from officiating. This finding suggests that the revised version of the Soccer Officials Stress Survey (Taylor and Daniel, 1988) is lacking in

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internal validity and reliability, and that other methods may need to be used to measure stress in officiating. In addition, Goldsmith and Williams (1992) have offered that if, as seems obvious, officials do experience stress, then greater attention needs to be given to an increased range of possible sources of stress. In responding to this call for a broader approach, Wilkins *et al.* (1991) used video to analyse the activity levels of referees (n=4) and linesmen (n=6) at four university hockey matches. Heart rates were recorded for each official every five seconds; heart rates were above 70% of maximum for 70% of the time and were much greater than expected for the level of physical activity engaged in by the officials during the matches. The authors have concluded that the psychological stress associated with officiating represented a major factor in producing such unexpectedly high heart rate recordings. Kaissidis and Anshel (1993) have extended research in this area in attempting to record the personal interpretations of stressful incidents experienced by basketball referees. Stressors which ranked the highest concerned fear of physical abuse, verbal abuse from coaches, and making a poor decision. This finding has received support from Rainey (1994). Fear of failure, fear of physical harm, interpersonal conflict with coaches and others, and time pressure were identified as the most important sources of stress experienced by baseball and softball umpires. In addition, Rainey (1995) has suggested that stress management interventions could be taught to what he described as the small number of officials who perceive stress as a significant issue worthy of consideration.

However, Stewart and Ellery (1996) surveyed a large sample (n=353) of high school officials in volleyball and concluded that stress was not a significant concern for most participants at this level. The Mean score of 2.3 for the self-report sources of stress questionnaire indicated that officials experienced “very little”, or “a moderate amount” of stress during events. This finding is largely in agreement with the work of Rainey (1994) which involved a survey of 782 baseball and softball umpires to assess how much stress they experienced while officiating. This work sought to examine the amount of stress experienced by officials in contrast to other studies (Taylor *et al.*, 1988) where interest has been directed at the perceived sources of stress. The results revealed that officials only experienced mild to moderate amounts of stress whilst officiating, although a small minority (4.5%) did report experiencing very high levels of stress. Rainey (1994) postulated that the low ratings of stress may have been due to the

reluctance of officials to admit that they suffered from high levels of stress, in what for most is a freely chosen and supposedly recreational pursuit. In addition, as amateur officials working at relatively low levels of sport they may feel that it is inappropriate for them to experience negative stress, as this is something which would usually become a factor when officiating very high level or professional sport.

This study has been supported by the work of Rainey and Winterich (1995) investigating stress in basketball referees. Results revealed that only 4% of referees reported experiencing high levels of stress; the majority reported ratings of “very little” or “moderate amounts” of stress. Of importance, female referees had significantly higher stress ratings than men. Both studies suffered from a rather important methodological weakness, in that stress levels were recorded after completion of the season; Rainey (1994) has stated that gathering data during the season or immediately after several different types of matches may provide a more valid and reliable account of the source of stress and its magnitude. Finally, these studies have argued that further measures of stress should be used to supplement the data emerging from surveys and questionnaires.

In summary, although Rainey has highlighted that, **“There has been little research examining stress among sports officials”** (Rainey, 1994, p.25), there has been a complete absence of studies on officiating investigating the effects of anxiety, or the broader construct of mood. Within the mainstream, studies have examined the relationship between decision making and anxiety (Wine, 1980). However, Hanin (1989) has observed that until sport psychology begins to consider both negative and positive emotion, research will remain largely atheoretical, and will be unable to provide truly meaningful accounts of issues, such as, the effect of mood and anxiety on performance.

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### **4.3. Study 3**

#### **4.4. Methodology**

##### **4.4.1.**

##### **4.4.2. *Methods and Procedures***

###### **4.4.2.1. Subjects**

County standard female Netball players (n=8), and Senior Rugby Football League (RFL) Referees (n=19) were included in this study. Several of the Netballers (N=5) had represented their country at full or junior international level. All 19 Rugby League referees were currently officiating at RFL Division I and Rugby League Super league levels. Eight referees were Grade I qualified RFL officials and eleven were Grade II RFL qualified. Three referees had more than 10 years experience; nine referees had between 5 - 10 years experience; seven referees had less than 5 years experience as first class referees.

##### **4.4.3. *Procedures***

###### **4.4.3.1. Netball**

Netball players (n=18) forming the Yorkshire County Senior Squad 1996 were involved in a mental skills and sport psychology programme as part of their pre-season training. Prior to working with individual athletes on their psychological needs in netball, all squad members completed the Psychological Skills in Sport Inventory (PSSI) (Mahoney, 1985) and volunteers (n=8) agreed to take part in the diary-based study. These subjects attended a separate briefing session at which a full explanation was provided on how to complete the diary entries each day. The subjects were informed of the complete confidentiality of all diary data and questionnaire results. In addition, they were informed that the diary data would be reported as part of a broader research study in the area of sports psychology. Coaches (n=2) were in attendance at the briefing, and requested that the players followed the diary completion procedures with care and discipline to provide accurate and meaningful data. The coaches offered further support by reminding players that this was the first occasion the squad had been involved in sport psychology support, and therefore, the opportunity should not be missed to benefit as much as possible, from the programme.



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Weekly Diaries (Appendix C1-C2) were distributed to the players at the end of the briefing session; players were reminded to complete all sections daily, if possible, last thing at night. New diaries were forwarded to each player towards the end of the week, for a period of four weeks. Subjects were given a self-addressed envelope to return completed diaries immediately. Follow up calls were made by the researcher and coach where returned diaries were delayed. Clough *et al.* (1996) in their study on exercise and mental states, have claimed that the validity of the data in diary methodologies is greatly affected by the compliance of subjects to the instructions for completion of the diaries. However, they suggested that compliance is best achieved by ensuring that the task of filling in the diary is relatively easily and briefly accomplished. In addition, he has highlighted that rewarding the subjects, for example, through use of feedback on the data, may encourage greater compliance. These issues were addressed in the study by using a short open-ended section and a small number of self-report scales within each diary, and through including the data as part of a broader based sport psychology support programme (Appendix C3).

#### 4.4.3.2. Rugby League

Referees (n=19) were requested to complete the CSAI-2 and an additional facilitative / debilitating scale based on Jones *et al.*, (1994). CSAI-2 was completed half an hour prior to refereeing a Super League, Division I or Division II match and at half time. A subjective performance appraisal form (Appendix C8 and C9) was also completed by each referee at half time and within half an hour from the end of the match (Appendix C4). These data were collected as part of a planned sport psychology education programme which would be made available to referees (n=19) identified by the R.F.L.. This ensured that full support could be provided by the R.F.L. Controller of Referees for the more in-depth longitudinal diary study.

The R.F.L. Controller of Referee's identified a smaller number (N=8) of subjects for the diary based part of the study. These individuals represented the top eight Super League referees in rugby league in terms of experience, match appraisal ratings and potential development.

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The RFL. Controller of Referees and his staff provided full support for the study and ensured that all subjects were aware of the need to comply with the data collection procedures. The referees were informed that feedback on results of the study would be offered when the analysis was completed, and that where appropriate, a sports psychology programme would be made available, addressing some of the issues covered in the research. The RFL. headquarters distributed questionnaires and diaries to the referees and ensured that these were completed correctly and returned without delay. Packs sent (Appendix C5-C7) to referees contained instructions on how to complete both the diaries and the CSAI-2.

Finally, referees (n=8) on the diary study were encouraged to contact the researcher by telephone throughout the study should they require further clarification on how to enter diary data during the 4 weeks of the data collection period.

#### ***4.4.4. Instruments***

The Competitive State Anxiety Inventory-2 (CSAI-2) (Martens *et al.*, 1990) and an additional facilitative/debilitative scale was used to assess intensity and direction of cognitive anxiety, somatic anxiety and self-confidence.

A short daily diary (Appendix C5) was used for subjects to record mood states and behavioural events. This consisted of three main elements: daily measurements of mood; a description of positive and negative events and a rating of sleep quality, exercise and other factors. Subjects were required to mark themselves on a line to indicate how they felt (i.e.: mood) at this moment, and to perform the same operation on scales measuring daily behaviour in relation to their normal everyday experiences. Finally, a brief open-ended section allowed respondents to describe any significant positive or negative events which had occurred that day.

The diaries identified the following behavioural factors: sleep quality; exercise; eating; mental workload, physical workload; time commitments. For data analysis purposes, these factors were collapsed into four main factors: sleep quality; exercise, workload; time demands.

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Mood was measured in terms of Positive Affect (PA) and Negative Affect (NA) (Watson and Tellegen, 1985). Following this, mood items were collapsed into three broad measures:

Weariness = Energetic / Weary + Tired / Alert. = NA  
Anxiety = Anxious / Calm + Relaxed / Tense. = NA  
Cheerfulness = Cheerful / Miserable + Depressed / Elated. = PA

Diary data on eating was not included in the study because food consumption cannot be interpreted as either a positive or negative behavioural feature, whilst the other behavioural factors could be interpreted as clearly beneficial or potentially debilitating.

## 4.5. Results

The use of diaries allows the researcher to obtain baseline measures relating to individuals normal level of particular moods and identify how volatile their mood states are. All netball subjects (n=8) returned fully completed diaries. All RFL referees diaries (n=8) were returned, however, 2 diaries contained entries for 26 days and not 28 days as instructed, and 1 referee diary was incorrectly filled in and was removed from the study.

### 4.5.1. Correlations

Correlations (n=15) between sleep, exercise, work load, time constraints, and mood states (Table 7) revealed that only 1 strong and significant correlation existed between mood state and behavioural measures for weariness and work load ( $r = .60, p < .05$ ), and 3 significant behavioural correlations were found for exercise and work load ( $r = .70, p < .05$ ), exercise and time pressure ( $r = .70, p < .05$ ) and between work load and time pressure ( $r = .87, p < .05$ ).

**Table 7.** Correlation matrix of the dependent variables for all subjects (n=15). \* indicates  $P < 0.05$

	Anxious	Cheerful	Exercise	Workload	Time pressure	Sleep
Weary	-0.26	-0.19	0.28	0.60*	0.29	-0.55
Anxious		-0.28	-0.34	-0.15	-0.02	0.15
Cheerful			0.12	-0.11	-0.16	0.19
Exercise				0.70*	0.70*	-0.17
Workload					0.87*	-0.34
Time pressure						-0.11

However, consideration of differences between Netball players as a group (N=8) and Rugby League Referees (N=7) revealed that significant correlations were found between weariness and cheerfulness ( $r = -.84, p < .05$ ), work load and time pressure ( $r = .94, p < .05$ ), for netball players (Table 8) and between weariness and sleep ( $r = -0.75, p < 0.5$ ), exercise and work load ( $r = .77, p < .05$ ), and exercise and time pressure ( $r = .76, p < .05$ ) for rugby referees (Table 9).

**Table 8.** Correlation matrix of the dependent variables for netball players (n=8).  
 · indicates  $P < 0.05$ . ^ indicates  $p = 0.06$

	Anxious	Cheerful	Exercise	Workload	Time pressure	Sleep
Weary	0.58	-0.84*	-0.12	0.27	0.22	0.07
Anxious		-0.74^	-0.51	-0.02	-0.04	0.02
Cheerful			0.17	-0.46	-0.44	-0.2
Exercise				0.73	0.65	0.05
Workload					0.94*	-0.32
Time pressure						-0.24

**Table 9.** Correlation matrix of the dependent variables for rugby league referees (n=7). \* indicates  $P < 0.05$

	Anxious	Cheerful	Exercise	Workload	Time pressure	Sleep
Weary	-0.29	-0.11	0.54	0.69	0.10	-0.75*
Anxious		-0.10	-0.26	0.10	0.23	0.14
Cheerful			0.07	0.02	0.01	0.34
Exercise				0.77*	0.76*	-0.39
Workload					0.73	-0.48
Time pressure						0.07

Interestingly, correlations approaching significance were revealed between anxiety and cheerfulness ( $r = -.74$ ,  $p = .06$ ) for netballers, and between work load and time pressure ( $r = .73$ ,  $p = .06$ ) for referees. These differences between the groups were masked where the data for all subjects ( $n = 15$ ) (Table 7) was considered. That the netballers reported strong negative correlations between cheerfulness and weariness, and cheerfulness and anxiety may be due to sex differences between the groups, or could be evidence of age differences, with the younger netball group displaying more volatility of mood than the older and more stable rugby referees. Again, the strongly negative correlation found between sleep quality and weariness for the referees, may point to the greater importance of quality rest for older sports participants and older people in general.

The diary-based methodology additionally facilitates investigation of an individual's change in mood state. Table 10 presents a series of correlations between four behavioural measures and three measures of mood state for each subject ( $n = 15$ ).

**Table 10.** Correlations between participation in exercise based activities, workload, time commitment, sleep quality and mood states. (n=15, subjects 1-8 Netball, 9-15 Rugby League referees. (\*indicates P<0.05)

	Subject	Exercise	Workload	Time	Sleep
Weary	1	0.09	-0.01	0.05	-0.47*
	2	-0.04	0.27	0.2	-0.50*
	3	-0.15	0.37*	0.04	-0.17
	4	-0.29	0.07	-0.02	-0.35
	5	-0.11	0.55*	-0.49*	-0.31
	6	-0.35	-0.08	-0.31	-0.25
	7	-0.04	0.39*	0.12	-0.63*
	8	0.41*	0.57*	0.36	-0.12
	9	0.09	-0.08	0.36	0.04
	10	0.21	0.11	0.17	0.08
	11	0.25	0.14	-0.21	-0.32
	12	-0.23	0.12	0.51*	-0.69*
	13	-0.01	-0.33	-0.02	0.03
	14	-0.30	0.44	0.31	-0.09
	15	-0.30	-0.21	0.22	-0.01
Anxious	1	-0.14	-0.37*	-0.33	-0.56*
	2	-0.48*	0.32	0.33	-0.55*
	3	-0.14	0.53	0.33	-0.36
	4	0.15	-0.02	-0.05	-0.08
	5	-0.01	0.55*	0.52*	-0.17
	6	-0.16	0.14	-0.41*	-0.43*
	7	0.13	0.51*	0.17	-0.33
	8	-0.15	0.07	0.26	-0.08
	9	-0.50*	-0.58*	-0.60*	-0.53*
	10	0.04	0.20	0.15	0.56*
	11	-0.2	0.16	0.36	0.20
	12	-0.15	0.32	0.26	-0.43*
	13	-0.02	0.07	0.09	0.22
	14	-0.26	0.25	0.15	0.13
	15	-0.26	0.06	0.48*	-0.11
Cheerful	1	0.18	0.35	0.33	0.59*
	2	0.59*	-0.15	-0.11	0.64*
	3	-0.01	-0.54*	-0.39*	0.14
	4	0.15	0.01	0.04	0.30
	5	-0.03	-0.64*	-0.55*	0.24
	6	0.33	-0.11	0.30	0.29
	7	0.06	-0.14	-0.09	0.37
	8	0.06	-0.01	-0.17	-0.11
	9	0.28	0.28	0.24	0.35
	10	0.28	0.23	0.32	-0.06
	11	0.39	-0.02	-0.33	-0.17
	12	0.15	-0.39*	-0.69*	0.64*
	13	-0.03	0.18	-0.01	-0.22
	14	0.32	-0.18	-0.18	0.09
	15	0.26	-0.01	-0.40*	0.04

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From this extensive data set it can be seen that for a majority of subjects, (n=12) anxiety and exercise are only weakly negatively correlated, and that whilst very few individuals (n=4) report feeling mildly cheerful about their work pressures, one referee recorded amongst the strongest negative correlations reported in the data for the relationship between anxiety and work pressure ( $r=-.58$ ,  $p<.05$ ) (Table 10). This result highlights the need to consider individual data even where group differences point to commonly expected relationships between particular variables. For this individual, it may be that the stress of the work place has a beneficial effect on their anxiety levels. It could be that for him, the experience and meaning of stress and anxiety may be quite separate, and that insufficient stress or little pressure at work might be associated with under stimulation, leading to anxiety. Again, correlations for each individual allow patterns to emerge. For example, subjects 1,2 and 12 reported strongly significant ( $p<.05$ ) and negative correlations for sleep and weariness ( $r=-.47$ ,  $r=-.50$ ,  $r=-.69$ ) and sleep and anxiety ( $r=-.56$ ,  $r=-.55$ ,  $r=-.43$ ) and strong positive correlations for sleep and cheerfulness ( $r=.59$ ,  $r=.64$ ,  $r=.64$ ). For these netball players (n=2) and rugby league referee, mood states appear to be most affected by quality of sleep, and the data suggested that sleep rather than exercise, time pressures or work load, was the most important variable associated with Positive Affect (cheerfulness) (Table 10). The data also revealed that subject #2 (netballer) was the only individual in the group (n=15) who reported the hypothesised significant and strong correlations between exercise and NA (anxiety) ( $r=-.48$ ,  $p<.05$ ) and exercise and PA (cheerfulness) ( $r=.59$ ,  $p<.05$ ). Considering this data in terms of the group revealed that only 2 subjects reported significant correlations between anxiety and exercise and 1 subject reported a positive significant relationship between exercise and cheerfulness (Table 11). The data summarised in table 11 revealed that the most consistent finding across the group (N=15) related to anxiety and quality of sleep. One third of all subjects reported strongly significant negative correlations between sleep and anxiety. Sleep quality emerged as the most important group variable in that in total 9 significant and negative correlations were reported between sleep and PA (cheerfulness) (Table 11). Apart from sleep quality, the next most important behavioural variable was workload. Four significant and positive correlations were identified between weariness and workload, and 3 significant and negative correlations were found for cheerfulness and work load. Group data revealed that

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for the mood measure of anxiety, 17 significant correlations were reported. In comparison only 11 significant correlations each were identified for weariness and cheerfulness (Table 11). This result suggests that feelings of anxiety or its lack, are more important and noticeable to sports participants, and that the concept of anxiety may be easier to understand in daily life, than less clear and more vague mood states such as weariness and cheerfulness.

**Table 11.** Summary of significant correlations ( $P < 0.05$ ) between exercise, work, time, sleep quality and mood states.

		Weary	Anxious	Cheerful
Exercise	All	1 +ve	2 -ve	1 +ve
	Netball	1 +ve	1 +ve	1 +ve
	Rugby League	none	1 -ve	none
Workload	All	3 +ve	3 +ve 2 -ve	3 -ve
	Netball	4 +ve	1 -ve 3 +ve	2 -ve
	Rugby League	none	1 -ve	none
Time	All	2 +ve	2 +ve 2 -ve	4 -ve
	Netball	1 +ve	1 +ve 1 -ve	2 -ve
	Rugby League	1 +ve	1 +ve 1 -ve	2 -ve
Sleep	All	4 -ve	1 +ve 5 -ve	3 +ve
	Netball	3 -ve	3 -ve	2 +ve
	Rugby League	1 -ve	1 +ve 2 -ve	1 +ve

A further breakdown of the data set (Table 11) revealed that Netball players reported a total of 13 significant and positive correlations and 13 significant and negative correlations. From the table it can be seen that the referees reported 9 significant and negative



correlations and only 4 significant and positive correlations. This suggests that the netball players experienced a greater level of mood volatility than the referees. In addition, the greatest difference between groups is in terms of the effect of workload on mood states. The data revealed that only 2 referees reported significant correlations between mood and workload, whilst 10 netball players reported significant correlations between all three mood measures and workload. The data in table 11 showing significant correlations between sleep and weariness for netballers (n=3) and for referees (n=1), may suggest that sleep quality is a more important issue for netballers. This finding identifies the importance of considering data from an intra-individual perspective as group data for referees (n=7) reported in table 9 revealed a strongly negative correlation ( $r=-.75$ ,  $p<.05$ ) between weariness and sleep in comparison to a non-significant and weak correlation ( $r=.07$ ) for netballers as a group. Closer investigation of the data set in table 10 clearly shows that netballers (subjects 1 - 8) are more effected by sleep quality than are referees (subjects 9 - 15).

## 4.5.2. Time to Event and Mood Changes

### 4.5.2.1. Raw Scores

Table 12 reveals changes in raw data scores for mood measures and behavioural variables during 3 days prior to refereeing a rugby game (n=14) or playing in a netball match (n=19). Whilst the data reveals an increase in anxiety during the 3 days prior to the match, and suggests that subjects were most cheerful the day before the event it is argued that little can be read into these results without knowing the baseline levels of each variable.

**Table 12.** Changes in mean raw scores over three days prior to match. (n=33, 19 Netball matches, 14 Rugby League matches). Day 4 is match day.

Day	Anxiety	Cheerfulness	Exercise	Work Load	Sleep Quality	Time Pressure	Weariness
1	1.94	3.59	3.2	3.13	2.86	3.27	3.39
2	2.06	3.44	3.09	3.37	2.28	3.44	3.43
3	2.15	3.62	2.77	2.85	2.57	2.47	3.44
<b>4 (Game)</b>	2.24	3.51	4.16	3.93	2.81	3.33	3.58

#### 4.5.2.2. Z-scores

The use of Z-scores allows the identification of an individual's baseline and reveals where an athlete is more or less affected for a particular mood, than their norm.

**Table 13.** Changes in individual z scores over three days prior to match. (n=33, 19 Netball matches, 14 Rugby League matches). Day 4 is match day.

Day	Anxiety	Cheerfulness	Exercise	Workload	Sleep Quality	Time Pressure	Weariness
1	-0.14	0.07	0.11	0.02	0.10	0.14	-0.12
2	-0.08	-0.13	0.08	0.27	-0.31	0.36	-0.15
3	0.33	0.04	-0.11	-0.08	-0.12	-0.21	-0.16
4 (Game)	0.22	0.09	0.79	0.70	0.06	0.27	0.03

Data in table 13 reveals that subjects (n=15) experienced lower than normal levels of anxiety at 2 and 3 days prior to a match, and higher than normal anxiety only on the day prior to the match and on the day of the match. This final result was largely unexpected, because subjects completed their diaries at the end of day 4, and therefore it represents a measure of post-match mood state. Interestingly, Z-Scores for cheerfulness (Table 9) revealed that subjects were more cheerful than normal one day prior to the match and after the match on day 4. However, that subjects were less cheerful than normal 2 days prior to the game may be partially explained by Z-Scores for time demands and work load both of which were higher than normal 2 days before. This suggests that life-factors other than participation in sporting events have a greater impact on pre-match mood states, during all but the final day before the game.

**Table 14.** Changes in individual z scores over six days prior to match. (n=13, 7 Netball matches, 6 Rugby League matches). Day 7 is match day.

Day	Anxiety	Cheerfulness	Exercise	Workload	Sleep Quality	Time Pressure	Weariness
1	-0.07	-0.25	-0.18	-0.44	-0.21	-0.46	0.07
2	-0.04	0.06	0.12	0.51	0.37	0.16	-0.34
3	-0.09	0.01	0.23	0.30	-0.30	0.31	0.01
4	-0.02	0.14	0.18	-0.01	-0.08	0.23	-0.25
5	-0.18	-0.17	0.21	0.09	-0.22	0.13	-0.21
6	0.20	-0.06	-0.33	-0.06	-0.50	-0.33	-0.02
7 (Game)	0.40	-0.11	0.89	0.85	0.48	0.57	0.18

Changes in Z-Scores over 6 days prior to rugby refereeing or participation in a netball match revealed that the highest levels of exercise, largest work load, most time demands, greatest weariness and best sleep quality were all experienced on match day! (Table 14). However, whilst anxiety remained mostly stable and around normal levels between 4-7 days prior to the match, it reached its highest level post match on day 7. This suggests that anxiety after competitive matches may be high where subjects are unhappy with their performances and the match result, or this could provide evidence that anxiety may have been confused with excitement by some respondents. Z-Scores for cheerfulness revealed that subjects were slightly lower than their normal levels on match day; this lends further support to an interpretation of the anxiety score on match day as being a negative emotional state, possibly associated with real or perceived poor match performance. Possibly the most interesting result was that sleep quality prior to the match was much less than normal, and sleep quality immediately post-match was the highest score of the 7 day period.

Investigation of changes in Z-Scores three days prior to the match and three days post match revealed that anxiety levels were highest on the day before the match, and that these fell away during the three days after (Table 15). Once again the Z-Score for the variable work load on match day was the highest by a large difference, during the seven day period. This seems to suggest that perception of the physical and mental demands of playing and refereeing matches is considered much greater than those perceived by most subjects in their work places. Again, this provides further evidence to suggest that anxiety is not always associated with higher than normal work loads, and as the data in Table 15 reveals, may be associated with higher than normal ratings of cheerfulness.

**Table 15.** Changes in individual z scores over three days prior to match and three days post match. (n=25. 14 Netball matches, 11 Rugby League matches). Day 4 is match day.

Day	Anxiety	Cheerfulness	Exercise	Workload	Sleep Quality	Time Pressure	Weariness
1	-0.11	0.05	0.11	0.15	-0.01	0.29	-0.10
2	-0.06	-0.11	0.06	0.26	-0.36	0.43	-0.22
3	0.36	-0.05	-0.17	0.01	-0.23	-0.15	0.08
4(Game)	0.09	0.22	0.80	0.73	0.22	0.35	-0.09
5	0.24	-0.16	0.08	-0.22	0.47	-0.09	0.12
6	0.04	0.03	0.06	0.12	0.31	-0.02	-0.16
7	-0.09	0.10	-0.20	-0.09	0.01	-0.07	-0.13

Consideration of changes in Z-Scores six days prior to the match and three days post-match revealed that anxiety levels were highest the day after the match (Table 16).

**Table 16.** Changes in individual z scores over six days prior to match and three days post match. (n=11, 6 Netball matches, 5 Rugby League matches). Day 7 is match day.

Day	Anxiety	Cheerfulness	Exercise	Workload	Sleep Quality	Time Pressure	Weariness
1	-0.10	-0.28	-0.13	-0.49	-0.44	-0.68	0.22
2	-0.16	0.07	0.03	0.42	0.36	0.12	-0.38
3	-0.06	-0.10	0.18	0.14	-0.20	0.19	0.13
4	-0.05	0.18	0.12	-0.12	0.03	0.22	-0.18
5	-0.13	-0.17	0.33	0.17	-0.23	0.12	-0.32
6	0.32	-0.14	-0.30	0.09	-0.58	-0.20	0.11
7 (Game)	0.20	0.20	0.84	0.87	0.69	0.55	0.05
8	0.43	-0.07	-0.16	-0.48	0.81	-0.12	0.02
9	0.20	0.06	0.39	0.15	-0.07	0.02	-0.36
10	-0.03	0.13	0.07	-0.10	0.23	-0.07	-0.27

Whilst no obvious pattern emerged for PA and NA mood scores, the data revealed a clear finding that match days during the ten day period were associated with the highest scores for exercise, work load, and time demands. These results indicate that a diary methodology relying on subjects completing analogue scales provides accurate and reliable raw data. In addition the expected high behavioural Z-Scores on match day, and the correspondingly low mood scores approaching baseline, suggested that PA and NA are little affected by anticipation of a match.

#### 4.5.3. Analyses of Variance

Analyses of variance were used to investigate the following null hypotheses:

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No significant difference is expected between diary mean scores of rugby league referees and netballers as a group at two match levels and between 3 days pre-match and 3 days post-match for NA (anxiety), or for PA (cheerfulness).

No significant difference is expected between means of rugby league referees and netballers as a group at two match levels and between 6 days pre-match and 3 days post-match for NA (anxiety), or for PA (cheerfulness)

Matches were identified as either high level (n=16) or low / intermediate level (n=18). For netball players high level referred to county or regional level matches (n=10), and low level to club (n=9). For rugby league referees high level referred to Super League Premier Division / Televised matches (n=6) and low level referred to R.F.L. Division I and II and R.F.L. Youth Academy matches (n=9).

No significant differences ( $p < .05$ ) were found between match levels and pre and post-match mean scores for NA (anxiety) (Appendix C13.1-13.2). No significant differences were found between match levels and pre and post-match mean diary scores for PA (cheerfulness) (Appendix C13.3-13.4).

#### ***4.5.4. Intra-Individual Analysis***

Data recorded in the diaries allowed for an analysis of changes in an individual's Z-Scores pre-match and post-match. The diary methodology facilitated the collection of daily qualitative data which could be interpreted alongside corresponding Z-Scores for mood and behavioural measures.

**Table 17.** Changes in individual z-scores and qualitative data three days prior to match. Example 6 – Rugby League referee.

Day	Positive affect/Negative affect				Behavioural Factors			Sleep Quality
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	
1	1.17	-0.10	0.11		1.45	1.30	0.89	-1.57
	<i>Enjoyable training session, car broke down, problems at garage, difficult time at work</i>							
2	-1.60	-1.53	1.80		0.38	0.38	0.52	1.66
	<i>Had a lot of work on, something in evening and managed a swim with family - very enjoyable</i>							
3	0.35	-0.99	0.78		-1.49	0.49	-0.78	0.14
	<i>Long day at work, but very slow and easy pace</i>							
4 (Game)	0.64	-0.82	0.99		1.34	0.71	1.55	-0.12
	<i>Refereed important match, performed well, long journey to match - not enjoyable</i>							

From table 17 it can be seen that PA (cheerfulness) and NA (anxiety) followed a fairly consistent pattern between day 2 and match day (day 4), with Z-Scores revealing higher than normal cheerfulness and lower than normal anxiety. However, the qualitative data revealed that the least cheerful and most anxiety prone mood state was recorded on day 1 when car problems and work difficulties for this individual were identified. In addition the strongest PA score was recorded on day 2 when despite a qualitative entry identifying a high work load, evening and family activities appeared to be most salient in accounting for mood state.

Data in table 18 for a netball player three days prior to a match, revealed that the most important mood change occurred between day 3 and day 4, particularly in terms of PA and NA scores. Whilst starting a holiday from work on day 3 was associated with the highest score on PA (cheerfulness), the highest scores on NA (anxiety and weariness) were clearly associated with the loss of an important match on day 4. For this individual, pre-match anxiety appeared to be less of a problem with cheerfulness levels returning to just below baseline, and the highest score on weariness being recorded post-match on day 4.

**Table 18.** Changes in individual z-scores and qualitative data three days prior to match. Example 12 – Netball player.

DAY	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	0.17	-0.47	0.09		0.24	-1.70	0.09	0.17
	<i>No significant event</i>							
2	0.49	-0.14	-0.01		0.21	0.92	0.92	0.21
	<i>No significant event</i>							
3	-0.40	-0.40	1.06		-0.05	-0.05	-0.05	-0.06
	<i>Broke up from school for half-term - very pleased about this</i>							
4 (Game)	0.67	0.18	-0.06		1.35	1.41	0.55	0.12
	<i>Regional match v Lancashire. Lost match therefore feel negative. Match targets</i>							
	<i>generally not achieved personally, or as a team</i>							

The data presented in tables 17 and 18 helps to account for the changes in mood states and behavioural variables 3 days prior to and immediately after the match, however, consideration of a longer pre-match period may reveal further patterns and relationships.

**Table 19.** Changes in individual z-scores and qualitative data six days prior to match. Example 6 – Rugby League referee.

DAY	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	1.02	0.77	-0.92		-1.36	0.77	1.45	0.39
	<i>Return to work - lot to catch up on - very difficult. RFL informed me have to go to IEF this coming week - very disappointed</i>							
2	-0.87	-0.99	0.74		1.45	0.80	-1.06	0.80
	<i>Training went well and good day at work</i>							
3	-1.22	-1.85	1.85		1.29	1.35	0.47	0.03
	<i>Hard day at work - negotiations but outcome excellent. Had training at RFL H.Q. Excellent. Passed major academic qualification</i>							
4	-0.85	-1.10	0.84		1.28	0.28	-1.16	0.41
	<i>Went training. RFL awarded me ref for top game due to other IEF injured</i>							
5	0.46	-1.13	0.53		-1.46	-1.6	-1.52	-0.4
	<i>Good quiet day at work, went shopping and socialising at night</i>							
6	-0.26	-0.33	0.09		-0.79	-0.79	-0.79	0.03
	<i>Watched rugby, went shopping - worked hard - very tired</i>							
7 (Game)	1.22	1.22	1.74		1.28	0.22	1.03	-1.55
	<i>Refereed div 1 match - was bored - pace of game much slower than expected, game poor and two yards slower than prem div. Frustrations with poor recognition from RFL</i>							

From table 19 it can be seen that there is little evidence of an increase in NA and a decrease in PA as the match day (day 7) approaches. However, the most positive overall mood state (highest PA and lowest NA) occurred on day 3 which was also when the highest Z-Score was recorded for work load. It can be argued that these results can only be understood by considering the accompanying qualitative data which suggested that successes in academic qualifications, work and training had an important bearing on PA /NA scores on day 3. Interestingly, anxiety scores generally did not show any discernible pattern during the 6 days prior to match day. However, this rugby league referee experienced the greatest level of NA (anxiety and weariness) post-match on day 7 although cheerfulness was well above baseline. Again the qualitative data seems to account for this not in terms of perceived or actual poor refereeing performance, but because of boredom. This connects well with Csikszentmihalyi's Flow theory which states that boredom is often related to anxiety in the same way that excessive stress can lead to anxiety.



**Table 20.** Changes in individual z-scores and qualitative data six days prior to match. Example 11 – Netball player.

DAY	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	0.26	-0.11	-0.12		-0.12	0.18	0.48	-0.12
	<i>Return to school</i>							
2	-0.91	0.07	0.57		0.57	0.49	0.99	0.01
	<i>Training with county squad. List of fixtures given afterwards</i>							
3	0.85	-0.23	-0.11		-0.46	0.19	0.67	0.01
	<i>No significant event</i>							
4	0.30	-0.46	0.37		0.11	0.12	0.11	0.11
	<i>No significant event</i>							
5	0.65	0.31	-0.54		0.08	0.08	0.08	0.08
	<i>Car stolen tonight</i>							
6	0.58	1.02	-0.73		0.14	0.33	0.08	-0.29
	<i>Car returned - a wreck</i>							
7 (Game)	-0.03	-0.09	0.35		0.48	0.22	0.36	-0.55
	<i>National Netball league match - won. Feel positive about it</i>							

In contrast the data in table 20 identifies an individual with a fairly consistent pattern of behaviour in terms of exercise, work load, time demands and sleep quality. Over the 7 day period, scores for the 4 behavioural factors ranged from a high of 0.67 to a low of -.55 in relation to baseline. Mood scores are mostly contained within a narrow range, with the exception of day 6, where the highest anxiety and lowest cheerfulness scores are recorded. Again, the qualitative data seems to provide an explanation of the day 6 mood scores in identifying the return of a stolen car in a wrecked state.

The data reported in tables 21 - 24 reveal mood and behavioural changes in individual Z-Scores 3 days pre-match and 3 days post-match. These data were included to allow for investigation of patterns in mood states in the days following refereeing, or playing in a competitive match.

**Table 21.** Changes in individual z-scores and qualitative data three days prior to match and three days post match. Example 2 – Rugby League referee.

DAY	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	0.03	-1.13	1.06		0.03	0.22	1.64	-1.26
	<i>Very successful business meeting. Took Referees examination today</i>							
2	0.47	0.98	-0.85		-1.28	-1.29	-0.13	1.54
	<i>Major domestic problem at home</i>							
3	-0.66	-1.59	1.28		0.03	0.03	-1.22	1.59
	<i>Much important paperwork cleared and appointments organised at work</i>							
4 (Game)	-0.47	0.59	-0.01		0.06	0.06	1.72	1.71
	<i>Referee at Rugby League match</i>							
5	0	1.25	0.36		-0.01	0.33	0.33	0.82
	<i>Attend conference on Rugby and have three important meetings</i>							
6	-0.04	-0.98	1.1		-0.04	-0.04	-0.04	-0.04
	<i>Cooked meal for important formal meeting at home</i>							
7	0.78	-0.63	0.64		1.7	-0.77	-0.06	-0.06
	<i>Very difficult day at work. Went out to see film at night</i>							

Table 21 revealed that for this rugby league referee, mood scores for anxiety and cheerfulness were closest to baseline on match day. In contrast, the highest score on PA (cheerfulness) and the lowest score on NA (weariness and anxiety) occurred on day 3 when work demands were successfully met. In addition, the second highest score on anxiety and the lowest score on cheerfulness was recorded on day 2; qualitative data identified that this referee experienced a severe domestic problem during this day. Interestingly, anxiety levels were highest on day 5 some 36 hours after the match, although the qualitative data does not really assist interpretation of this score. Work load, sleep quality and time demands Z-Scores for day 5 are either close to baseline, or are unremarkable. These scores can be compared to the day before the match (day 3) where anxiety was recorded at its lowest level, and cheerfulness at its highest for the 7 day period.

**Table 22.** Changes in individual z-scores and qualitative data three days prior to match and three days post match. Example 7 – Rugby League referee.

DAY	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	0.72	-0.49	0.15		-0.04	0.01	-0.13	0.15
	<i>Back to work (school)</i>							
2	0.43	-0.24	-0.04		-1.50	-0.11	-0.17	-1.59
3	0.98	-0.46	-0.26		-1.63	0.22	-1.63	-1.70
	<i>Very busy day at work</i>							
4 (Game)	0.61	0.04	0.66		1.40	1.35	1.30	0.16
	<i>Refereed match</i>							
5	1.1	0.44	-0.79		0.15	0.7	1.35	0.05
	<i>Car broke down, heavy work load, stuck in traffic jam</i>							
6	0.73	0.42	-0.57		0.03	0.54	1.10	-0.07
	<i>Stand in for ill colleague at work, work in evening, attend swimming gala</i>							
7	-0.12	-0.12	-0.12		-1.56	-0.04	-0.04	-0.04

Z-Score data for another rugby league referee (Table 22) revealed that pre-match anxiety for days 1 - 3 was below baseline, and only slightly above baseline immediately post-match on day 4. In terms of cheerfulness, the highest score in the 7 day period occurred on match day. In addition, although this referee was at work for days 1 - 6, the highest score for work load was recorded for the match day. This data suggested that the type of work and its meaning for an individual is more important than the quantity of work. The score for sleep quality on the day before the match was recorded as the lowest of the 7 day period, however, this did not appear to be associated with low scores on cheerfulness or high scores on anxiety on the match day.

**Table 23.** Changes in individual z-scores and qualitative data three days prior to match and three days post match. Example 7 – Netball player.

DAY	Positive affect/Negative affect					Behavioural Factors		
	Weariness	Anxiety	Cheerfulness			Exercise	Work Load	Time Demands
1	0.90	-1.18	1.17		-0.10	0.63	1.37	-0.04
	<i>New working groups went well. Other work demands put me under time pressure.</i>							
	<i>played socialsport match - well beaten</i>							
2	0.98	1.26	-0.88		0.09	0.15	1.40	-1.63
	<i>Very bad dental problem requiring antibiotics. Worry about health prior to holiday.</i>							
	<i>Major dispute at work - difficult confrontation to handle</i>							
3	0.04	0.98	-1.34		0.16	-0.21	-1.41	-1.41
	<i>Dental problems causing much discomfort. Worried that treatment not effective</i>							
	<i>Socialising at night - not enjoyed due to pain</i>							
4 (Game)	0.83	-1.24	1.15		1.42	0.19	1.48	0.05
	<i>Won National League match. Played well.</i>							
	<i>Out for celebrations in evening, Very good fun</i>							
5	-0.50	-1.18	0.24		-1.55	-1.68	-1.80	1.29
	<i>Relaxing day at home, minor domestic disputes</i>							
6	-0.04	0.26	-0.19		-0.19	0.7	-0.27	-0.41
	<i>Went to team training session - not well attended. Worried about visit to dentist - will pain clear up before holiday ?</i>							
7	-0.21	-0.35	-0.70		-1.60	-0.07	-0.14	0.07
	<i>Dental surgery unsuccessful - need to re-visit after holiday, toothache still sore.</i>							
	<i>Project at work went according to plan</i>							

In terms of netball players, Z-Score data (Table 23) revealed that health problems were associated with higher than baseline anxiety 2 days prior to the match, and lower than baseline cheerfulness scores. The reversal of these mood states on the match day seemed to suggest, that winning an important match may help an individual to temporarily overcome negative mood states, at least where the causal agent of the earlier moods is not too severe. This data again supported the validity and reliability of a diary methodology in that behavioural Z-Scores closely corresponded to the qualitative accounts. For example, exercise scores on day 4 were the highest of the week, and this has been explained by participation in a major match. The lowest Z-Score for exercise and the lowest Z-Score for anxiety occurred on day 5, the player having identified this as, “a relaxing day spent at home”. A behavioural measure referring to health, or general well being, may have helped to provide further support for the importance of this variable in terms of mood states. However, the data in table 23 does not provide support for the predicted elevation in NA

and lowering of PA prior to a competitive match. This clearly suggests that information about other factors in an individual's life for each day is more likely to explain daily mood states, than are explanations based on the hypothesised effects of some future sports event. This important point is reinforced by consideration of the data recorded by another netball player over the same period (Table 24).

**Table 24.** Changes in individual z-scores and qualitative data three days prior to match and three days post match. Example 8 – Netball player.

DAY	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	0.90	-1.18	1.17		-0.10	0.63	1.37	-0.04
	<i>No significant event</i>							
2	0.98	1.26	-0.88		0.09	0.15	1.40	-1.63
	<i>Major meeting at work on important issue - surprisingly went well.</i>							
	<i>Major domestic difficulties of friend - try to assist.</i>							
3	0.04	0.98	-1.34		0.16	-0.21	-1.41	-1.41
	<i>Console friend on domestic problems - up most of night</i>							
4 (Game)	0.83	-1.24	1.15		1.42	0.19	1.48	0.05
	<i>Achieved good personal performance and won top county match</i>							
5	-0.50	-1.18	0.24		-1.55	-1.68	-1.80	1.29
	<i>No significant event</i>							
6	-0.04	0.26	-0.19		-0.19	0.7	-0.27	-0.41
	<i>No significant event</i>							
7	-0.21	-0.35	-0.70		-1.60	-0.07	-0.14	0.07
	<i>No significant event</i>							

It appears that for this individual the highest NA (anxiety and weariness) Z-Scores and lowest PA (cheerfulness) Z-Scores occurred on the day before the match, as predicted by pre-competition mood state research. However, the qualitative information on day 3 suggests that the mood scores and the low sleep quality scores were more likely due to a major domestic crisis, rather than the result of pre-competition anxiety. Once again it is difficult to identify a pattern to mood state scores and behavioural factor scores, without reference to accompanying qualitative data. The importance of qualitative data for this individual is most evident on day 4 where low anxiety and high cheerfulness Z-Scores have

been recorded by the subject after having played well and having won an important high level match.

**Table 25.** Changes in individual z-scores and qualitative data six days prior to match and three days post match. Example 4 – Rugby League referee.

Day	Positive affect/Negative affect				Exercise	Behavioural Factors		
	Weariness	Anxiety	Cheerfulness			Work Load	Time Demands	Sleep Quality
1	1.64	-1.41	1.64		1.40	0.45	-1.50	-1.50
	<i>A good day - all went to plan on ski trip</i>							
2	1.77	-0.81	0.87		1.51	1.45	-1.58	-1.59
	<i>Had to take ski casualty to hospital for emergency operation - went well</i>							
3	1.35	-0.53	0.59		1.48	0.35	-1.67	-1.60
	<i>Minor problem at work - most of day went according to plan</i>							
4	1.47	-0.60	0.84		1.41	0.41	-1.60	-1.53
	<i>All events under control again</i>							
5	1.25	-1.52	1.39		1.45	0.46	-1.66	-1.60
	<i>Long journey home across Europe - went well</i>							
6	0.73	-0.46	0.43		-0.89	-0.89	-0.89	-0.89
	<i>Returned home from ski trip</i>							
7 (Game)	1.60	-0.22	0.34		1.60	1.54	-0.04	1.54
	<i>Refereed important match - performed well</i>							
8	1.49	-0.06	0.29		-0.06	-0.13	-0.34	1.56
	<i>Tested in training - performed well</i>							
9	0.57	0.20	0.12		0.27	0.27	0.27	0.27
	<i>No significant events</i>							
10	0.61	0.19	0.13		0.28	0.28	0.32	0.31
	<i>No significant events</i>							

Data in tables 25 - 28 contains Z-Scores for a 10 day period in order to detect patterns in mood state by considering a longer period of time. It is argued that the Z-Score data in table 25 would be considerably more difficult to interpret without accompanying qualitative information. For example, this individual has presented an unusual pattern of mood scores over the 10 day period that can not be really understood without considering scores on the behavioural measures and qualitative data. He has rated anxiety at well below or very close to baseline levels throughout the 10 days; cheerfulness scores are generally well above baseline, and weariness scores are likewise very high and well away from baseline levels. Time demands and sleep quality, at least until day 6 /7 are generally well below baseline, presenting a very confusing and apparently contradictory data set. However, the high scores

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for exercise and mostly low scores for work load prior to match day (day 7) suggested that this referee's positive mood state was associated with a relatively easy week at work, and that the high scores on weariness were related to the generally high level of exercise taken over this period. It would seem reasonable to suggest that the combination of less work, and plenty of exercise were associated with the low levels of anxiety and high levels of cheerfulness. This does not adequately explain the full data set as weariness scores were high and sleep quality was low, both of which are usually associated with high scores on anxiety and low levels of cheerfulness. A more complete explanation is only possible where the qualitative data is included in the analysis. This revealed that the high score on weariness was most likely related to enjoyable exercise, and poor sleep quality was related to the considerable socialising experienced on a school skiing holiday!

Qualitative data may not always assist an understanding of the quantitative data, especially where little, badly written or superficial information has been offered by the subject. From table 26 it can be seen that this Rugby League Referee rated himself as above baseline for cheerfulness, and mostly well below baseline for anxiety over the 10 day period. This consistent response pattern is associated with mostly very low and close to baseline Z-Scores for the 4 behavioural measures. Taken as a whole, the data set in table 26 revealed a stable, consistent and conservative series of responses, which may indicate that this subject is of a generally stable emotional disposition, and leads a predictable, cautious and balanced life. However, the brief and uninformative qualitative data provided by the subject may be interpreted as evidence that little attention has been devoted to entering data into the diary. This data set may more likely be due to the subject's lack of interest in completing the diary, and because of socially desirable responding.

**Table 26.** Changes in individual z-scores and qualitative data six days prior to match and three days post match. Example 4 – Rugby League referee.

Day	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	0.15	-1.49	0.64		0.01	0.01	0.01	0.01
	<i>No significant events</i>							
2	-0.92	-1.59	1.26		0.18	0.08	0.18	0.18
	<i>Enjoyable family day</i>							
3	0.47	-1.10	1.69		0.20	0.20	0.20	0.20
	<i>Enjoyable family day</i>							
4	-1.17	-1.28	0.75		0.25	0.25	0.25	0.25
	<i>No significant events</i>							
5	1.57	-1.75	1.65		0.22	0.22	0.22	0.22
	<i>No significant events</i>							
6	-0.11	-1.49	0.84		-0.04	-0.04	-0.04	-0.04
	<i>Attended rugby conference</i>							
7( Game)	0.36	-0.98	0.98		0.15	0.16	0.16	0.15
	<i>Match day - refereed semi final, very big crowd</i>							
8	1.49	-0.40	1.61		1.48	0.72	0.03	0.03
	<i>No significant events</i>							
9	0.83	-1.53	0.89		-0.01	-0.01	-0.01	-0.01
	<i>Trainings and attended meetings</i>							
10	1.59	-1.70	0.73		1.35	0.67	-0.07	-0.01
	<i>No significant events</i>							



In terms of mood states prior to playing in a competitive match, one netball player revealed that anxiety levels actually fell steadily in the four days prior to an important match (Table 27). A possible explanation of this result can be seen from the decline in Z-Scores for work load and time demands over three days before the match, and a corresponding increase in sleep quality over this period. Again, some of the highest scores for PA (cheerfulness) occurred on days where despite a high work load, work went well and was enjoyed. Significantly the lowest score for PA was recorded immediately post-match on day 7 after having experienced an important defeat.

**Table 27.** Changes in individual z-scores and qualitative data six days prior to match and three days post match. Example 9 – Netball player.

DAY	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	0.30	-0.98	0.96		-1.10	0.42	0.45	0.51
	<i>No significant event</i>							
2	-0.66	-0.09	1.17		-0.94	1.03	0.75	1.52
	<i>Junior side that I coach won, beat division leaders. Excellent meeting at work in very difficult circumstances</i>							
3	1.50	-0.96	-0.25		-0.82	1.23	1.44	-0.96
	<i>No significant event</i>							
4	0.21	-1.06	0.99		-1.42	0.63	1.06	0.14
	<i>No significant event</i>							
5	1.48	-1.87	0.57		-1.80	-0.19	-0.09	1.20
	<i>No significant event</i>							
6	0.43	-0.98	-0.79		-1.35	0.12	0.06	0.12
	<i>Loss roses match by big margin to Lancashire. Team member has equipment stolen.</i>							
	<i>Good night out</i>							
7 (Game)	0.78	-1.16	0.78		0.33	-0.57	-0.89	-0.70
	<i>No significant event</i>							
8	-1.25	-0.67	1.17		-1.75	0.25	1.17	0.25
	<i>No significant event</i>							
9	1.00	-0.56	1.15		-1.56	0.15	0.22	0.43
	<i>Important meeting, new staff - went well, quite nervous</i>							
10	0.90	-1.18	1.17		-0.11	0.64	1.38	-0.04
	<i>Work meetings continued to go well although unexpected</i>							

Similarly, anxiety levels broadly declined and cheerfulness increased over 3 - 4 days prior to an important netball match (Table 28). For this particular netballer, returning to work after a vacation was associated with the highest anxiety levels.

**Table 28.** Changes in individual z-scores and qualitative data six days prior to match and three days post match. Example 10 – Netball player.

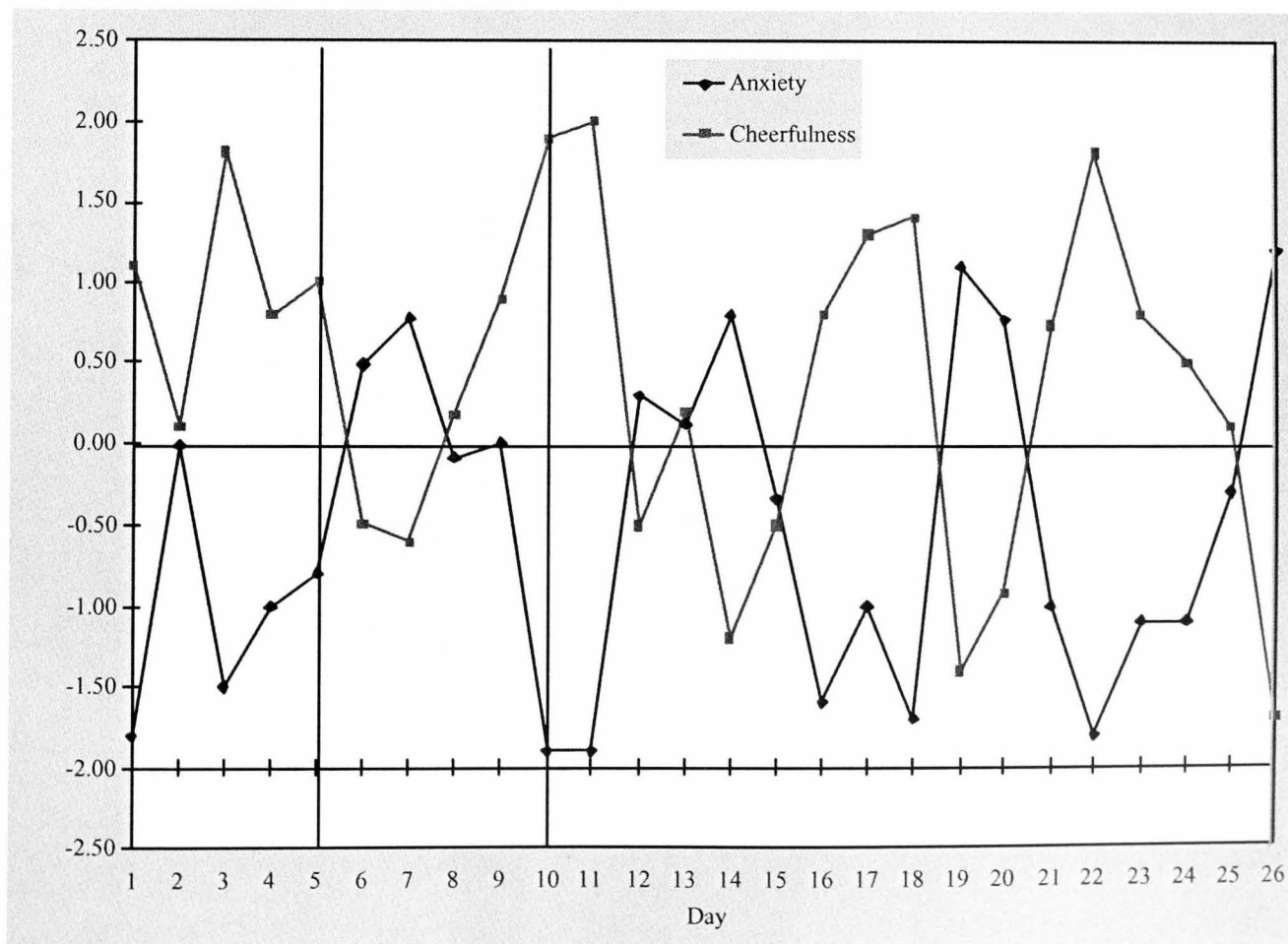
DAY	Positive affect/Negative affect				Behavioural Factors			
	Weariness	Anxiety	Cheerfulness		Exercise	Work Load	Time Demands	Sleep Quality
1	-1.60	-1.54	1.57		0.01	-1.60	0.07	1.57
	<i>Good ski holiday - last day</i>							
2	1.13	0.49	0.56		0.37	1.45	1.71	0.37
	<i>Return to work</i>							
3	0.25	-0.19	0.42		0.08	0.88	1.39	-1.33
	<i>No significant event</i>							
4	0.08	-0.11	0.21		0.14	1.02	1.64	-1.42
	<i>OFSTED inspection at work - in week ahead - increase in work pressure</i>							
5	0.93	-1.12	0.93		0.16	0.93	1.58	0.16
	<i>No significant event</i>							
6	-0.53	-1.47	1.47		0.03	-0.59	-1.78	-0.03
	<i>No significant event</i>							
7 (Game)	1.09	0.09	-0.72		1.46	1.47	0.15	0.09
	<i>Lost match with county team</i>							
8	0.65	0.19	0.52		0.65	0.92	0.13	0.19
	<i>No significant event</i>							
9	-0.10	-0.63	0.26		0.03	0.49	0.06	-0.01
	<i>No significant event</i>							
10	0.66	-0.16	0.15		0.02	0.97	1.48	0.02
	<i>Training at work in preparation for OFSTED inspection</i>							

#### 4.5.5. Correlations between mood measures and correlations between behavioural measures and mood for individual netballers, and referees.

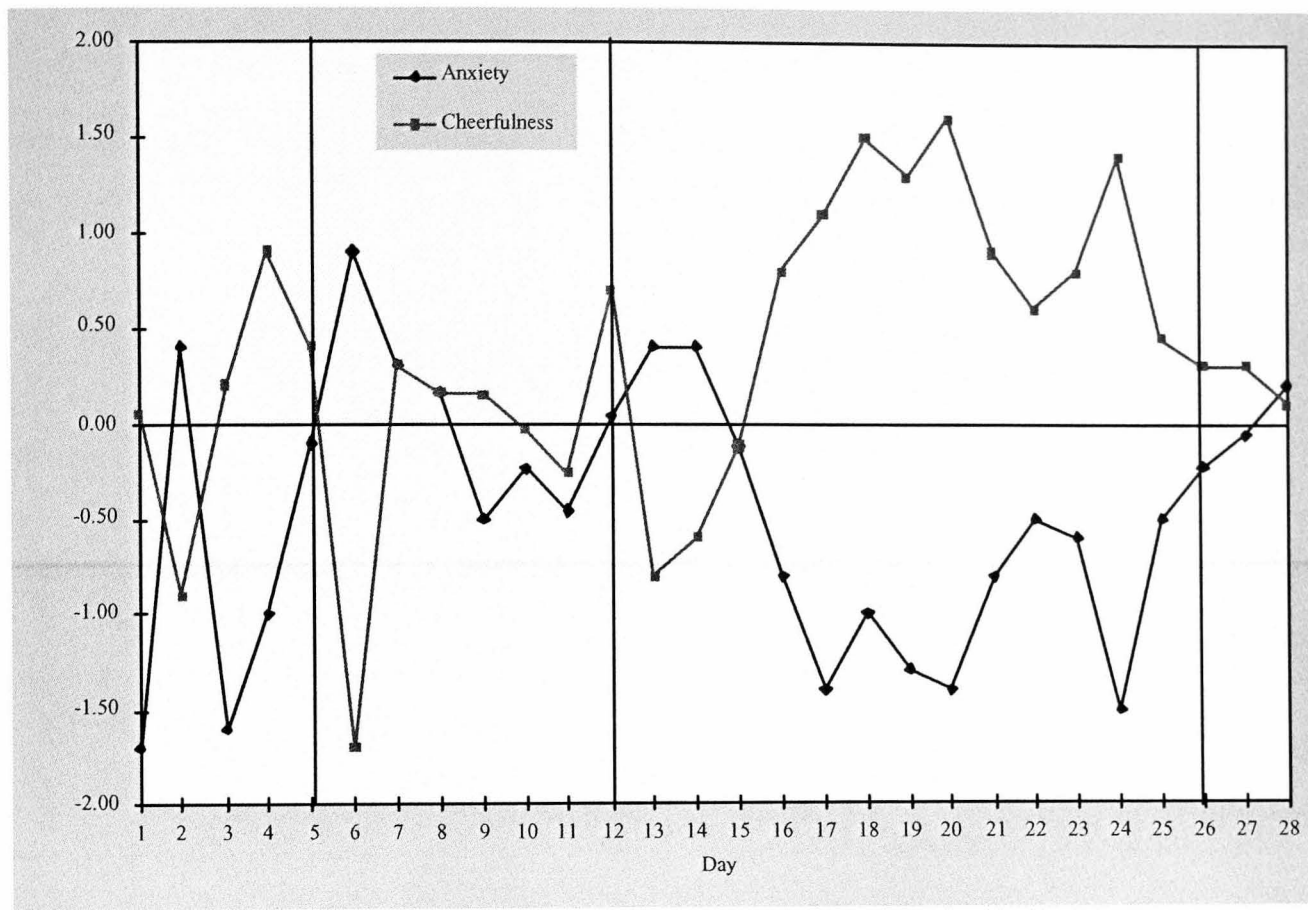
Data sets were selected for illustrative purposes from the group (N=15) to enable a comparison of subjects Z-Scores on mood measures and behavioural measures.

##### 4.5.5.1. Anxiety and Cheerfulness.

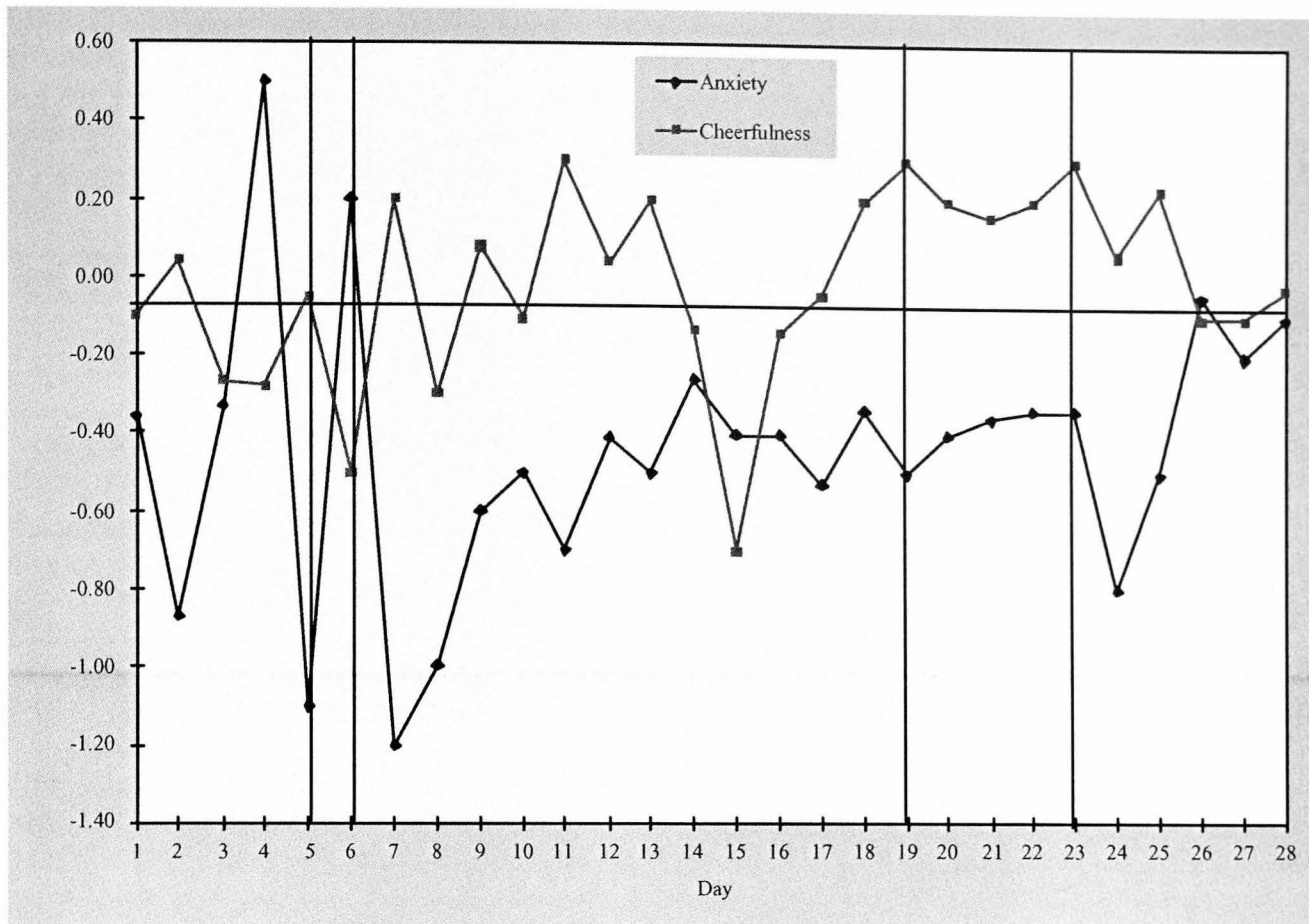
Tables 29 - 32, (Figures 6-9) revealed that a general pattern of negative correlations between anxiety and cheerfulness measures was more pronounced for rugby league referees (Tables 29, 30) than for netballers (Tables 31, 32). High levels of anxiety generally correlated with low levels of cheerfulness, and high levels of cheerfulness correlated strongly with low levels of anxiety. This relationship was seen with all 4 subjects, although the magnitude of the relationship differed across subjects.



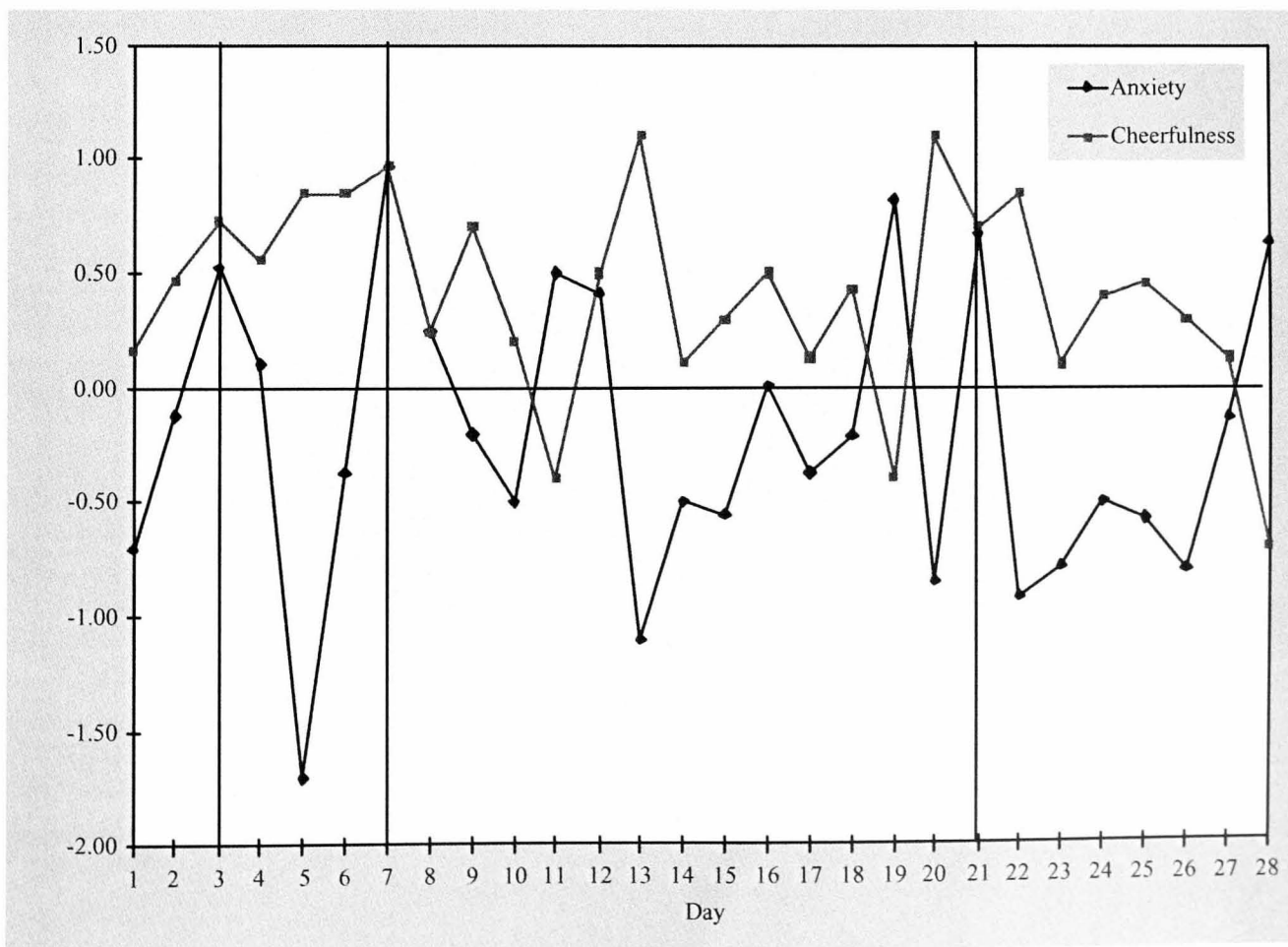
**Figure 6.** Changes in daily z-scores for anxiety (NA) and cheerfulness (PA). Example 1-Rugby League referee



**Figure 7.** Changes in daily z-scores for anxiety (NA) and cheerfulness (PA). Example 2-Rugby League referee



**Figure 8.** Changes in daily z-scores for anxiety (NA) and cheerfulness (PA). Example 3- Netball player



**Figure 9.** Changes in daily z-scores for anxiety (NA) and cheerfulness (PA). Example 4- Netball player

**Table 29.** Changes in daily z-scores for anxiety (NA) and cheerfulness (PA). Example 1-Rugby League referee

Day	1	2	3	4	5	6	7	8	9	10	11	12	13
Anxiety	-1.80	-0.01	-1.50	-1.00	-0.80	0.49	0.78	-0.08	0.01	-1.90	-1.90	0.30	0.12
Cheerfulness	1.10	0.11	1.80	0.80	1.00	-0.49	-0.60	0.18	0.90	1.90	2.00	-0.50	0.19
					*					*1			
Day	14	15	16	17	18	19	20	21	22	23	24	25	26
Anxiety	0.80	-0.34	-1.60	-1.00	-1.70	1.10	0.77	-1.00	-1.80	-1.10	-1.10	-0.30	1.20
Cheerfulness	-1.20	-0.50	0.80	1.30	1.40	-1.40	-0.92	0.74	1.80	0.80	0.50	0.10	-1.70
													*2

\* = match day, 1 = live televised game abroad, 2 = lower level division 1 game

**Table 30.** Changes in daily z-scores for anxiety (NA) and cheerfulness (PA). Example 2-Rugby League referee

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Anxiety	-1.70	0.40	-1.60	-1.00	-0.10	0.90	0.30	0.16	-0.50	-0.24	-0.46	0.04	0.40	0.40
Cheerfulness	0.05	-0.90	0.20	0.90	0.40	-1.70	0.30	0.16	0.15	-0.04	-0.26	0.70	-0.80	-0.60
					*							*		
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Anxiety	-0.12	-0.80	-1.40	-1.00	-1.30	-1.40	-0.80	-0.50	-0.60	-1.50	-0.50	-0.23	-0.06	0.20
Cheerfulness	-0.12	0.80	1.10	1.50	1.30	1.60	0.90	0.60	0.80	1.40	0.45	0.30	0.30	0.10
												*		

\* = match day

**Table 31.** Changes in daily z-scores for anxiety (NA) and cheerfulness (PA). Example 3-Netball player

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Anxiety	-0.36	-0.87	-0.33	0.50	-1.10	0.20	-1.20	-1.00	-0.60	-0.50	-0.70	-0.41	-0.50	-0.26
Cheerfulness	-0.10	0.04	-0.27	-0.28	-0.05	-0.50	0.20	-0.30	0.08	-0.11	0.30	0.04	0.20	-0.13
					*	*								
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Anxiety	-0.40	-0.40	-0.53	-0.34	-0.50	-0.40	-0.36	-0.34	-0.34	-0.80	-0.50	-0.04	-0.20	-0.10
Cheerfulness	-0.70	-0.14	-0.04	0.20	0.30	0.20	0.16	0.20	0.30	0.06	0.23	-0.10	-0.10	-0.02
					*				*					

\* = match day

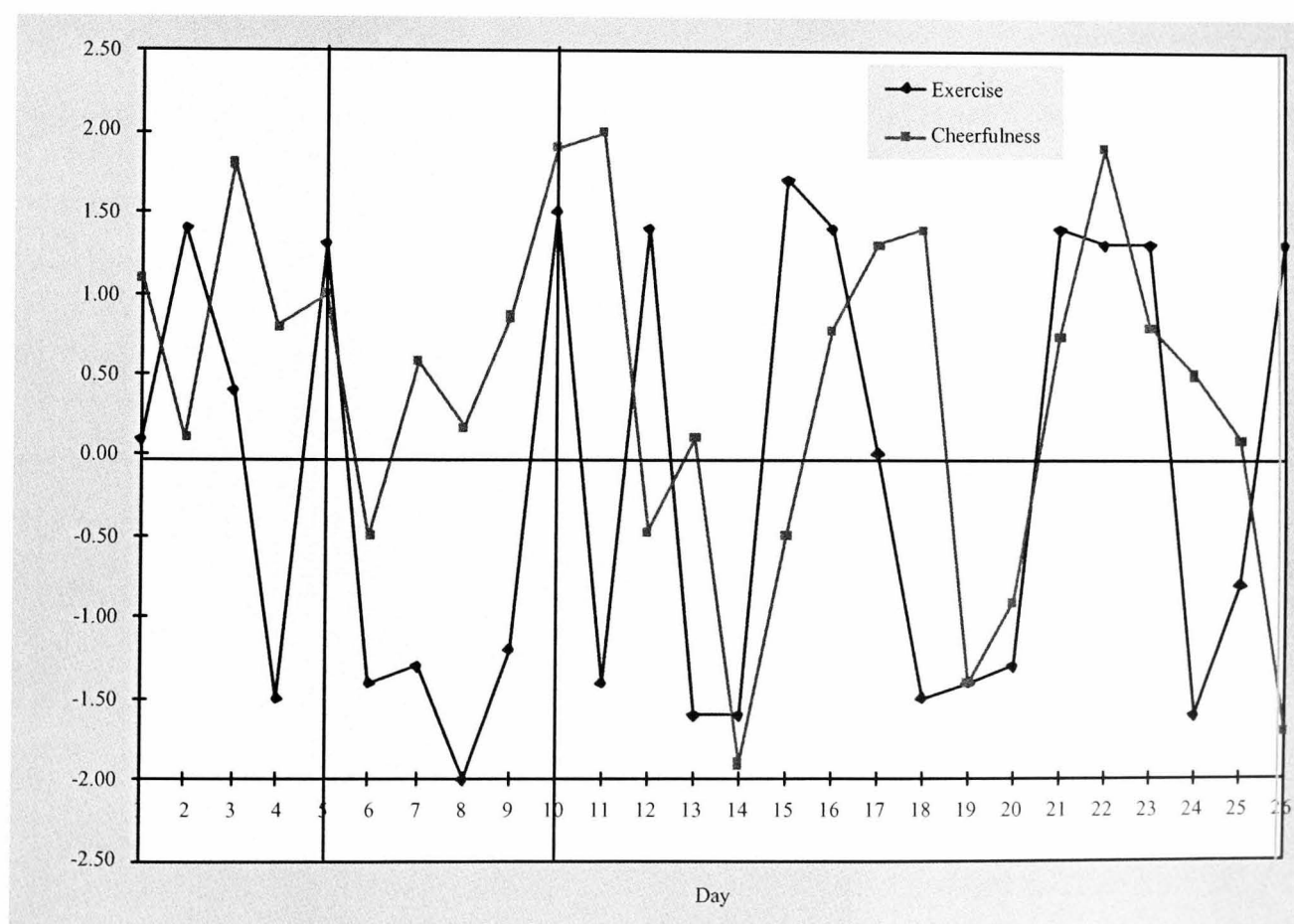
**Table 32.** Changes in daily z-scores for anxiety (NA) and cheerfulness (PA). Example 4-Netball player

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Anxiety	-0.70	-0.12	0.52	0.10	-1.70	-0.37	0.97	0.25	-0.20	-0.50	0.50	0.41	-1.10	-0.50
Cheerfulness	0.17	0.47	0.73	0.56	0.85	0.85	0.97	0.25	0.70	0.20	-0.40	0.50	1.10	0.11
			*				*							
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Anxiety	-0.56	0.01	-0.38	-0.21	0.82	-0.85	0.67	-0.91	-0.78	-0.50	-0.57	-0.80	-0.13	0.64
Cheerfulness	0.30	0.50	0.13	0.43	-0.40	1.10	0.70	0.85	0.10	0.40	0.46	0.30	0.13	-0.70
							*							

\* = match day

#### 4.5.5.2. Exercise and Cheerfulness.

Tables 33-36 (Figures 10-13) revealed that there is little evidence of a clear relationship between cheerfulness and exercise. From table 35 it can be seen that the strongest indication of a relationship between exercise and cheerfulness occurred from day 21 to day 28 where the incidence of an injury that prevented participation in exercise (training) seemed to be associated with correspondingly low scores for cheerfulness. However, a closer examination of data for day 17 - day 20 revealed that low scores for exercise were associated with high scores for cheerfulness. This result suggests that it was the injury, rather than the lack of exercise, which more likely caused the low scores for cheerfulness.



**Figure 10.** Changes in daily z-scores for Exercise and cheerfulness (PA). Example 5-Rugby League referee

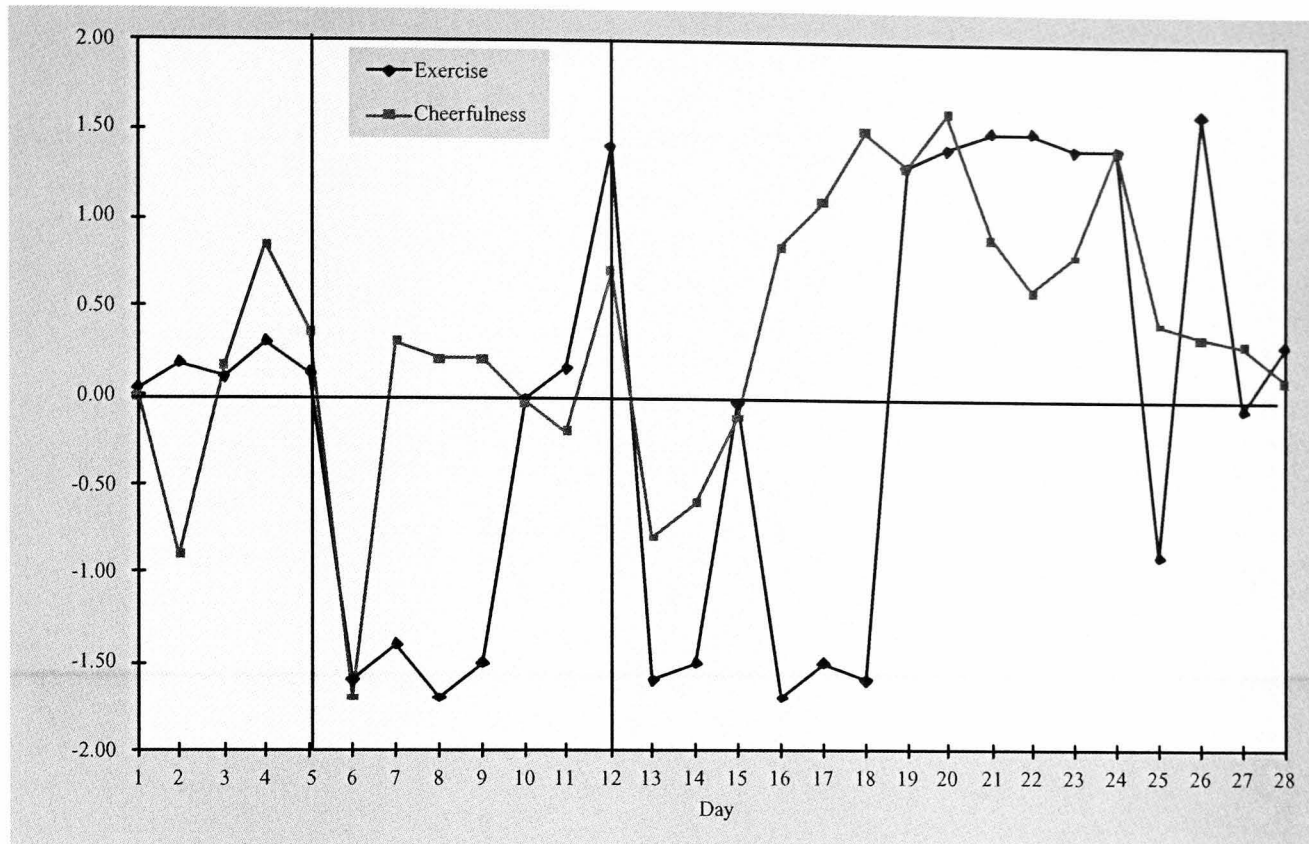


Figure 11. Changes in daily z-scores for Exercise and cheerfulness (PA). Example 6-Rugby League referee

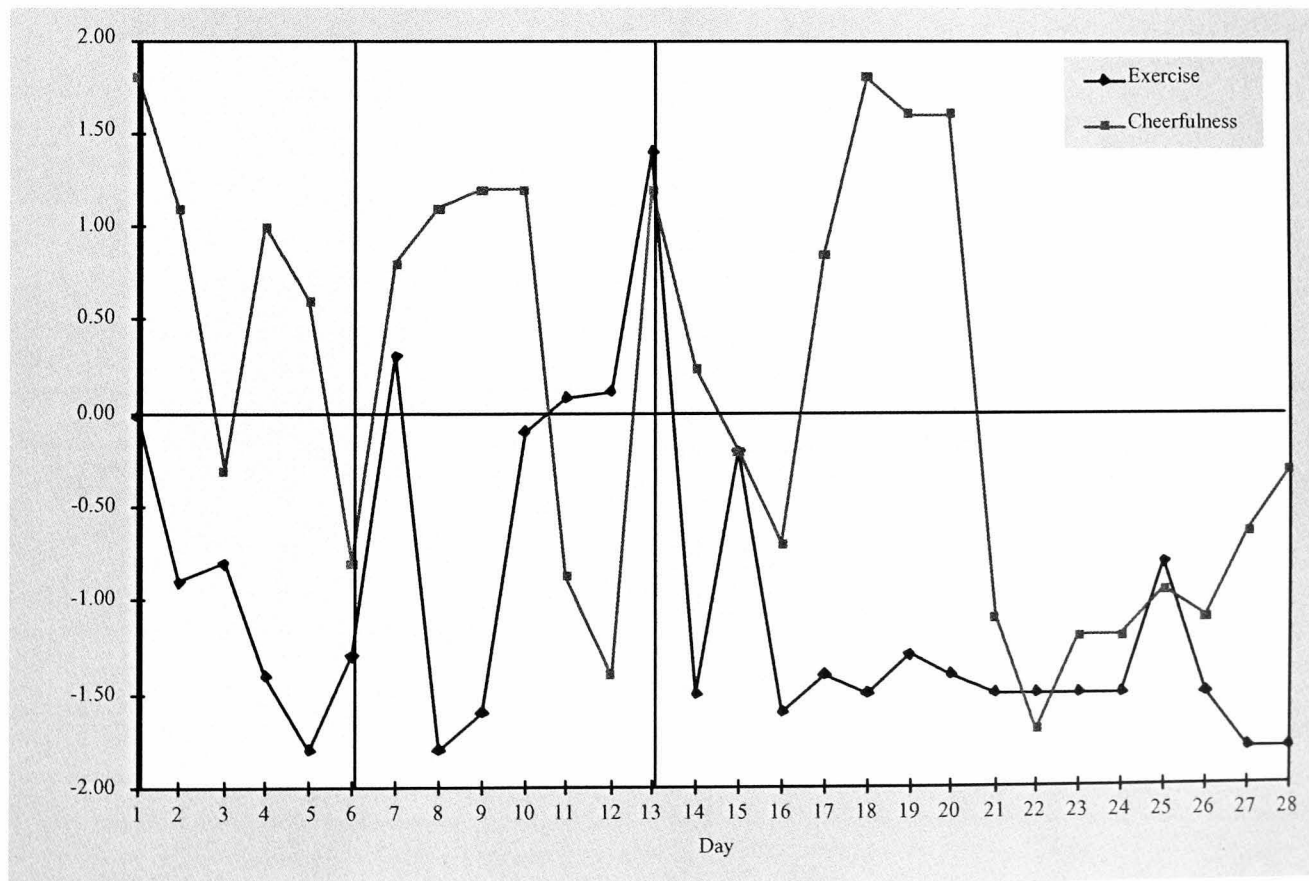
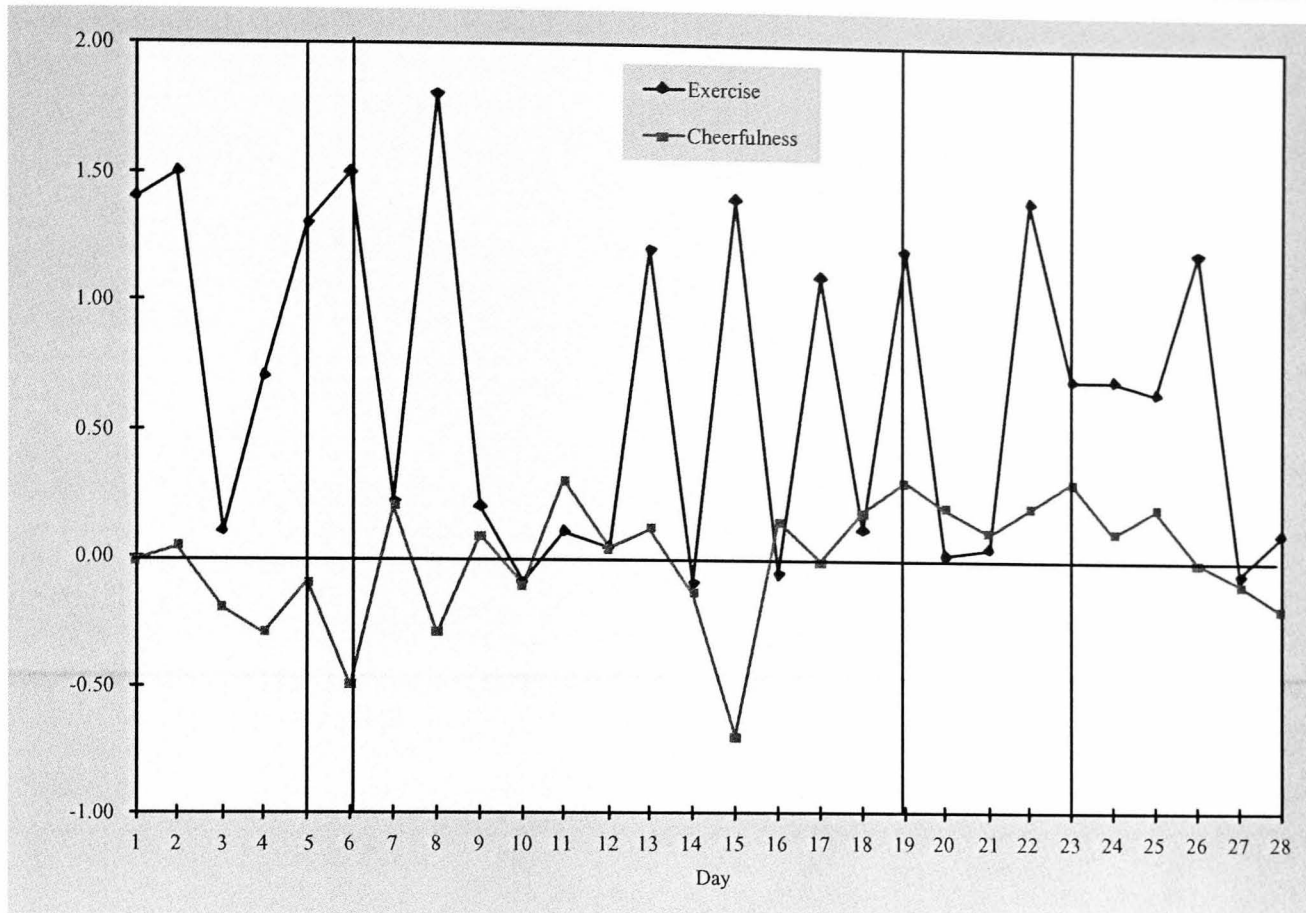


Figure 12. Changes in daily z-scores for Exercise and cheerfulness (PA). Example 7-Netball player





**Figure 13.** Changes in daily z-scores for Exercise and cheerfulness (PA). Example 8-Netball player

**Table 33.** Changes in daily z-scores for Exercise and cheerfulness (PA). Example 5-Rugby League referee

Day	1	2	3	4	5	6	7	8	9	10	11	12	13
Exercise	0.10	1.40	0.40	-1.50	1.30	-1.40	-1.30	-2.00	-1.20	1.50	-1.40	1.40	-1.60
Cheerfulness	1.10	0.11	1.80	0.80	1.00	-0.50	0.58	0.17	0.86	1.90	2.00	-0.47	0.11
		^			*					*			
Day	14	15	16	17	18	19	20	21	22	23	24	25	26
Exercise	-1.60	1.70	1.40	0.01	-1.50	-1.40	-1.30	1.40	1.30	1.30	-1.60	-0.80	1.30
Cheerfulness	-1.90	-0.50	0.78	1.30	1.40	-1.40	-0.91	0.74	1.90	0.80	0.50	0.10	-1.70
		^	+					^	^	^			*

\* = match days, ^ = training days, + = other

**Table 34.** Changes in daily z-scores for Exercise and cheerfulness (PA). Example 6-Rugby League referee

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Exercise	0.04	0.18	0.10	0.30	0.13	-1.60	-1.40	-1.70	-1.50	-0.02	0.15	1.40	-1.60	-1.50
Cheerfulness	-.04	-0.90	0.17	0.85	0.36	-1.70	0.30	0.20	0.20	-0.04	-0.20	0.70	-0.80	-0.60
	+				*									
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Exercise	-0.04	-1.70	-1.50	-1.60	1.30	1.40	1.50	1.50	1.40	1.40	-0.90	1.60	-0.06	0.30
Cheerfulness	-0.12	0.85	1.10	1.50	1.30	1.60	0.90	0.60	0.80	1.40	0.42	0.34	0.30	0.10
					+	+	+	+	+	+		*		

\* = match days, ^ = training days, + = other

**Table 35.** Changes in daily z-scores for Exercise and cheerfulness (PA). Example 7-Netball player

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Exercise	-0.02	-0.90	-0.80	-1.40	-1.80	-1.30	0.30	-1.80	-1.60	-0.10	0.08	0.11	1.40	-1.50
Cheerfulness	1.80	1.10	-0.30	1.00	0.60	-0.80	0.80	1.10	1.20	1.20	-0.87	-1.40	1.20	0.24
	*					*							*	
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Exercise	-0.20	-1.60	-1.40	-1.50	-1.30	-1.40	-1.50	-1.50	-1.50	-1.50	-0.80	-1.50	-1.80	-1.80
Cheerfulness	-0.20	-0.70	0.85	1.80	1.60	1.60	-1.10	-1.70	-1.20	-1.20	-0.95	-1.10	-0.63	-0.30
							+	+	+	+	+	+	+	+

\* = match day, + = injured and unable to compete

**Table 36.** Changes in daily z-scores for Exercise and cheerfulness (PA). Example 8-Netball player

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Exercise	1.40	1.50	0.10	0.70	1.30	1.50	0.21	1.80	0.20	-0.10	0.10	0.04	1.20	-0.10
Cheerfulness	-0.01	0.04	-0.20	-0.30	-0.10	-0.50	0.20	-0.30	0.08	-0.11	0.30	0.03	0.11	-0.14
	^	^			*	*			^					
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Exercise	1.40	-0.06	1.10	0.11	1.20	0.01	0.04	1.40	0.70	0.70	0.65	1.20	-0.06	0.10
Cheerfulness	-0.70	0.14	-0.01	0.18	0.30	0.20	0.10	0.20	0.30	0.10	0.20	-0.01	-0.10	-0.20
	^				*			^	*		^			

\* = match days, ^ = training days

#### 4.5.5.3. Exercise and Anxiety.

Data in tables 37 and 38 (Figures 14 and 15) did not reveal a strong and consistent relationship between exercise and anxiety. The clearest example of the anticipated strong negative relationship between the variables, occurred on day 6 to day 10 for the netball player (Table 38). Interestingly, in 8 out of 9 days when both of these subjects were involved in training, there was a strong negative relationship between anxiety and exercise. This result seems to suggest that where exercise is experienced in a training session, rather than during a match, or as habitual activity, it is associated with positive mood states for sports participants.

**Table 37.** Changes in daily z-scores for Exercise and Anxiety (NA). Example 9-Rugby League referee

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Exercise	-1.30	-1.20	0.10	0.06	1.60	-1.10	-1.00	-1.50	-1.30	1.60	1.80	1.60	-0.01	-1.30
Anxiety	-1.30	-1.30	-0.04	0.42	-1.70	-1.00	0.90	0.10	-0.41	0.30	-0.90	-1.30	-1.00	-0.90
											^	^		
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Exercise	-1.20	1.80	1.50	0.11	1.40	1.60	0.03	-1.30	0.02	0.06	0.00	-0.03	1.70	-1.40
Anxiety	-0.12	-1.10	0.50	0.43	-0.80	0.70	-1.10	0.98	-1.60	0.60	1.20	-1.00	-0.62	-1.20
		^								*			^	

\* = match days, ^ = training days

**Table 38.** Changes in daily z-scores for Exercise and Anxiety (NA). Example 10-Netball player

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Exercise	1.50	-0.10	-0.04	0.14	1.30	1.30	1.50	1.90	1.50	1.20	0.15	-0.03	-0.08	-0.13
Anxiety	-0.30	-0.40	-1.20	-1.20	0.40	-1.00	-1.00	-1.00	-1.50	-1.20	-1.10	-1.00	-0.40	-0.50
					*			^		^				
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Exercise	-0.20	1.50	-0.16	0.05	-0.09	0.08	1.40	-0.09	-0.09	-1.70	-0.86	1.30	-0.20	0.04
Anxiety	-1.10	-0.20	-1.10	-0.72	-0.50	-1.00	-1.10	-0.80	-0.16	0.45	-0.70	-1.20	-1.30	-0.50
		^					^					^		

\* = match days, ^ = training days

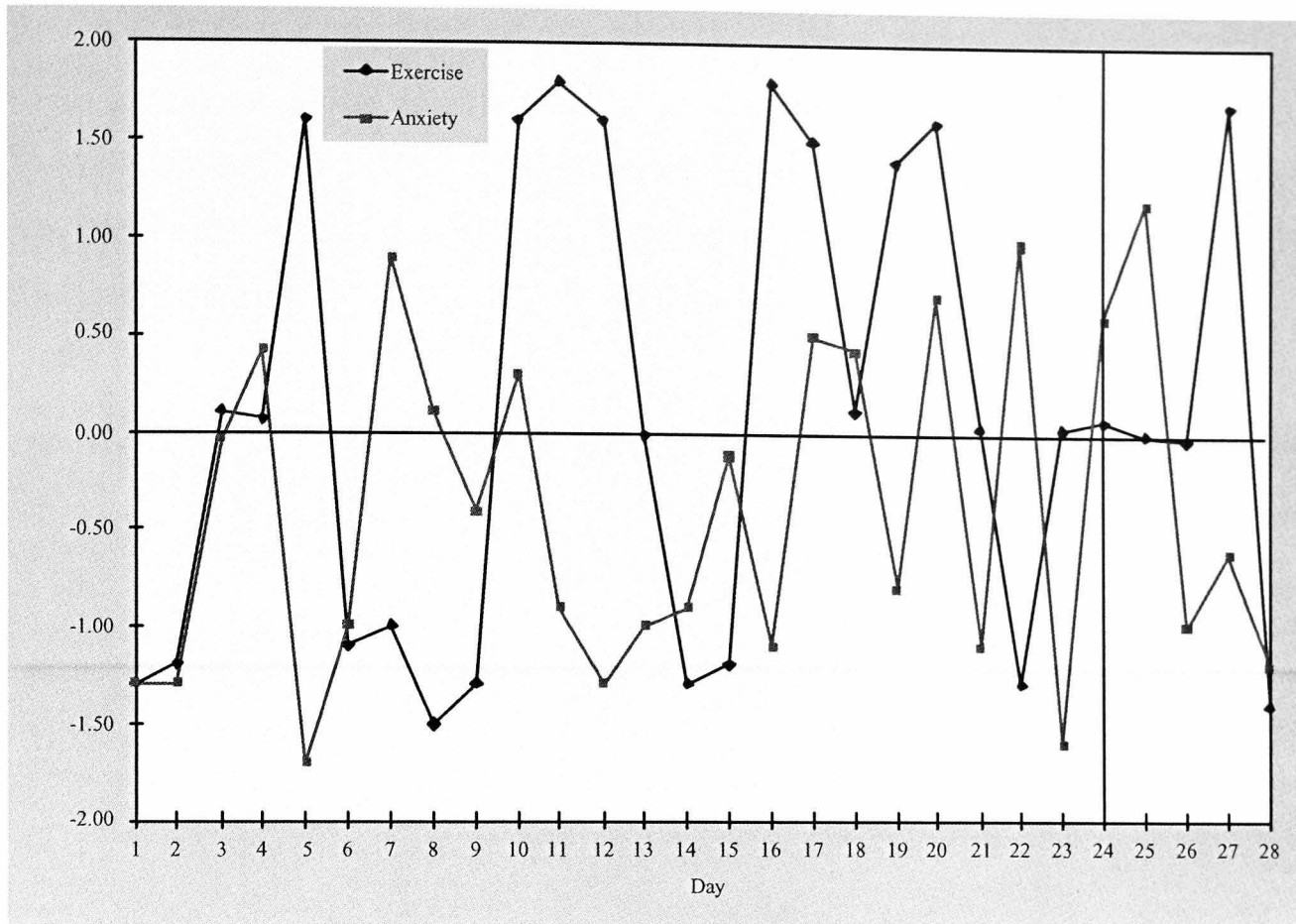


Figure 14. Changes in daily z-scores for Exercise and Anxiety (NA). Example 9-Rugby League referee

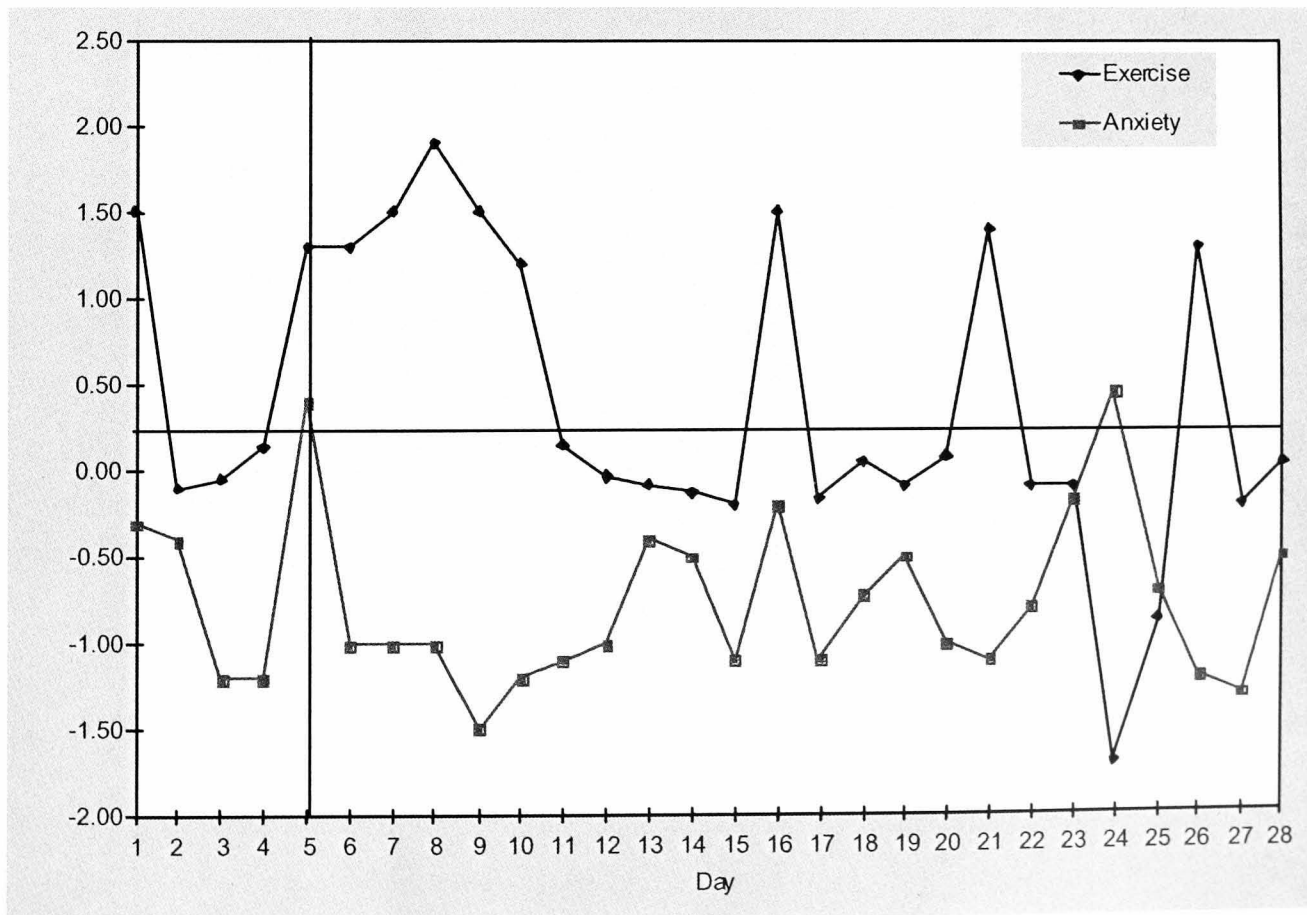


Figure 15. Changes in daily z-scores for Exercise and Anxiety (NA). Example 10-Netball player

#### 4.5.5.4. Time demands and Anxiety

No clear pattern can be seen between time demands and anxiety (Tables 39 and 40) (Figures 16 and 17). However, there were several examples of high scores on time demands being associated with lower than baseline scores on anxiety (Table 38, days 3,4,9,10,11, and 17).

**Table 39.** Changes in daily z-scores Time Demands and Anxiety (NA). Example 11-Rugby League referee

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Time pressure	0.04	1.60	2.30	1.90	-1.40	0.30	-1.00	0.40	1.70	1.40	1.70	0.04	0.05	0.05
Anxiety	-1.80	-1.80	-1.50	-1.60	-1.80	-1.70	-1.60	-1.60	-1.20	-1.20	-1.70	-1.50	-1.40	-1.60
				*						*	*			
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Time pressure	0.18	0.14	1.30	0.40	-1.00	-1.10	-1.10	0.09	0.34	0.06	0.16	0.30	0.40	0.50
Anxiety	-2.20	-1.00	-1.50	-1.10	-1.60	-1.70	-1.40	-1.50	-1.10	-1.50	-0.90	-0.90	-1.80	-1.90
			*	*								*		

\* = match day

**Table 40.** Changes in daily z-scores for Time Demands and Anxiety (NA). Example 12-Netball player

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Time pressure	0.18	1.20	0.40	0.20	0.14	-1.10	-0.80	0.60	-0.11	-1.10	-0.19	-1.60	-1.80	-1.40
Anxiety	-1.60	-1.60	0.17	0.14	0.01	0.56	-0.40	-0.16	1.00	1.90	0.10	-0.78	-1.20	-1.10
						*							*	
Day	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Time pressure	-1.50	-1.30	-1.00	-1.60	-1.10	-1.70	-1.60	1.10	1.40	-0.20	-0.36	-1.00	0.40	-0.50
Anxiety	-1.60	-1.30	-1.10	-1.00	-1.00	-1.30	-1.10	0.70	0.40	-0.30	-0.20	-0.90	-1.20	-0.40

\* = match day

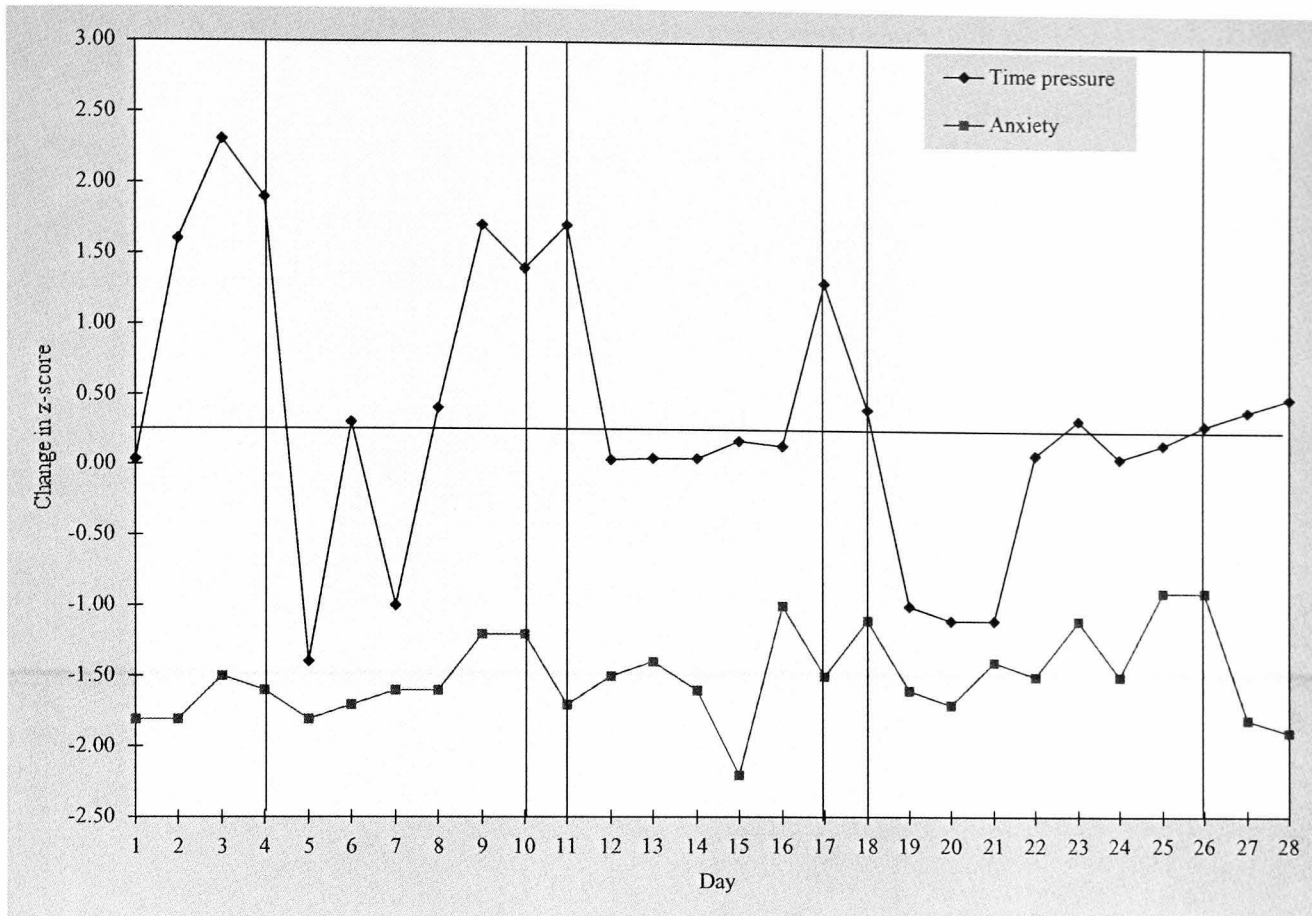


Figure 16. Changes in daily z-scores for Time Demands and Anxiety (NA). Example 11-Rugby League referee

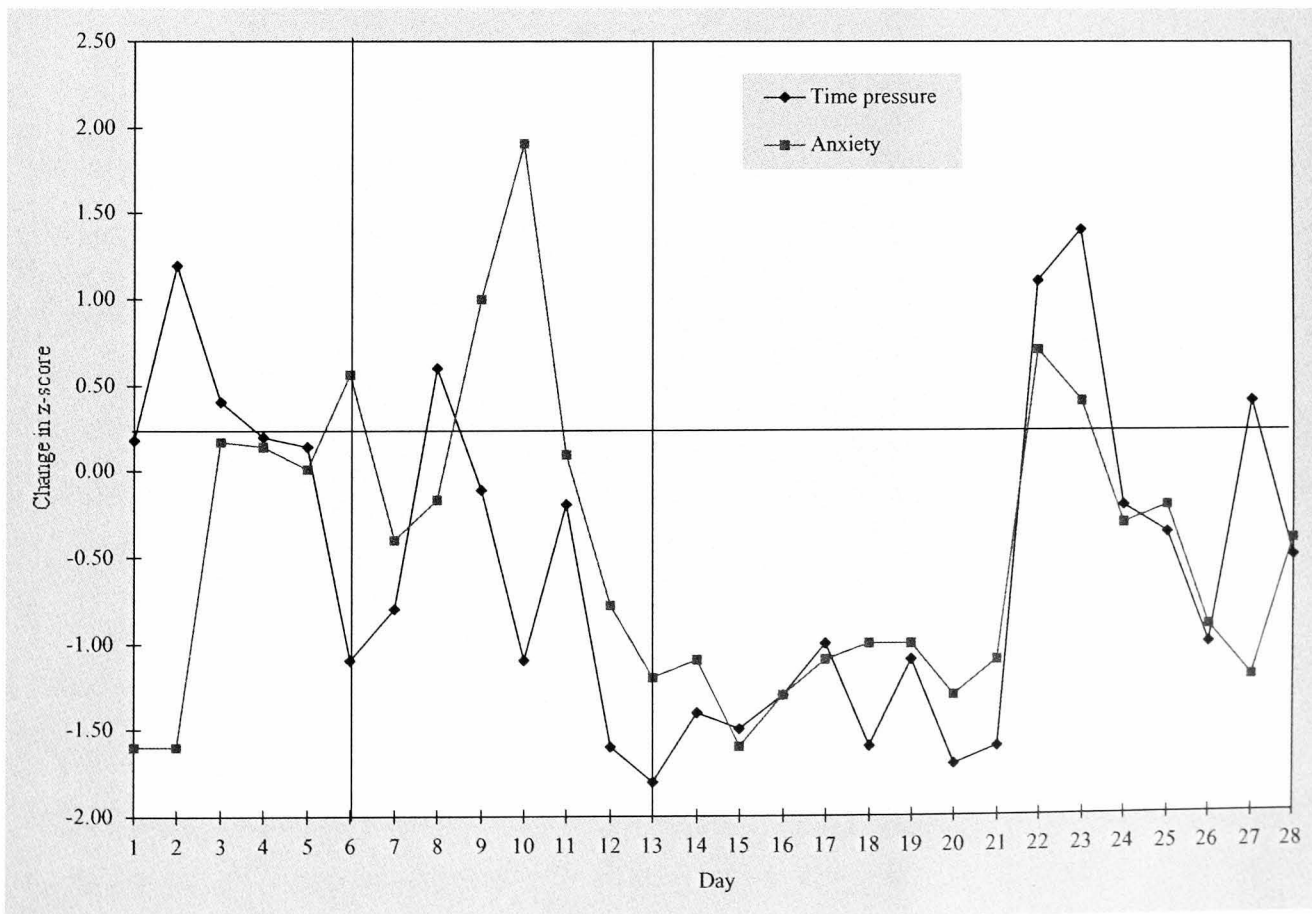


Figure 17. Changes in daily z-scores for Time Demands and Anxiety (NA). Example 12-Netball player

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#### 4.5.6. Summary of the Main Findings

1. Group differences were reported between Netballers (n=8) and Rugby League Referees (n=7) for several correlations. . Most interestingly, netballers as a group, reported a strongly significant negative correlation between weariness and cheerfulness ( $r = -0.84$ ,  $p < .05$ ), and for anxiety and cheerfulness ( $r = -0.74$ ,  $p = 0.06$ ). In contrast, the only significant correlation involving a mood state measure for referees as a group, was reported for weariness and sleep ( $r = -0.75$ ,  $p < .05$ ).
2. Sleep quality emerged as the most important behavioural variable in relation to anxiety and mood, with 9 significant ( $p < .05$ ) and negative correlations reported between sleep and PA (cheerfulness) across the group (n=15).
3. Group (n=15) data revealed that for the mood measure of anxiety, 17 significant ( $p < .05$ ) correlations were reported with other mood or behavioural measures. This compares to 10 for weariness, and 11 for cheerfulness.
4. Anxiety scores for referees and netballers were marginally below baseline at 3 and 2 days prior to a match, but were very slightly above baseline at 1 day before and up to 10 hours after the match. Considering Z-scores for anxiety over a 7 day period leading up to a match, the subjects revealed their highest levels post match at the end of day 7.
5. Z-scores for the sleep quality revealed that this was well below baseline immediately prior to the match and that the highest scores for sleep quality were immediately post-match on day 7.
6. Analyses of variance revealed that no significant differences were found between high level or low/immediate level matches for PA (cheerfulness) or NA (anxiety) scores. No significant differences were found between pre and post-match mean diary scores for PA (cheerfulness) or NA (anxiety).

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7. Diary Z-scores and associated qualitative data revealed that mood and anxiety fluctuations were more clearly associated with important life events rather than matches. The major exception to this occurred where match performance was considered poor or when matches were lost. In these situations, not infrequently, Z-scores furthest from baseline were recorded.
  8. The highest Z-scores for exercise, workload and weariness were often recorded post-match. This provides some support for the external validity of the daily diary method. Again, a close correspondence could be observed throughout the data between Z-scores for anxiety and mood and the details of events recorded in the qualitative (self-report) section of the diaries.
  9. Analyses of individual Z-scores revealed that in general, well above baseline scores for anxiety were associated with low levels of cheerfulness, and that well above baseline scores for cheerfulness were correlated with low levels of anxiety.
  10. Whilst there was little evidence of a clear relationship between exercise and PA (cheerfulness), or between exercise and NA (anxiety), there were several subjects for whom anxiety was negatively correlated with exercise. The data seemed to suggest that there was a strong negative relationship between anxiety and exercise only where exercise is experienced as part of a training session rather than during a match, or as habitual physical activity.



## 4.6. Discussion

### 4.6.1. *Important Inter-Individual findings*

The most important results of the study were that there was little evidence of a steady and consistent elevation in anxiety prior to competition, and that consideration of an individual's life events appeared to explain mood changes better, in comparison to focusing on the match alone. A considerable body of research (Mahoney and Avener, 1977; Burton, 1988) has reported that performers experience a steady increase in anxiety up to, and sometimes during performance. However, more recent studies investigating anxiety from a multidimensional perspective have suggested that cognitive anxiety is generally elevated and fairly stable several days before the event, whilst somatic anxiety tends to rise immediately prior to competition. In addition, Jones *et al.* (1991) and Jones and Cale (1989) have reported that sex differences exist, with female athletes experiencing greater levels of cognitive anxiety in the days preceding competition.

Sex differences of this type were not found in this study, and anxiety levels did not follow the pattern suggested by earlier research using the CSAI-2. It may be that this was because of a failure to differentiate between cognitive anxiety and somatic anxiety, although, it seems more likely that this finding was partly due to the effects of the diary based methodology. The use of diaries that measured several mood states and behavioural factors, may have helped to place anxiety in a much broader and more realistic life context. Unlike research relying on the CSAI-2, this study could have helped subjects to consider their anxiety levels as an integral part of their overall mood states, and therefore, help them to differentiate more clearly between anxiety, tension, weariness, depression and the other mood factors listed in the diaries. It seems likely that where the CSAI-2 has been used in isolation in several studies (Jones and Cale, 1989), the effect has been to force respondents to report their overall PA and NA mood states in terms of anxiety symptoms (not even anxiety itself) alone, and even then, only in terms of pre sports competition anxiety. Such an artificial and narrow approach seems unlikely to be able to capture meaningful data on whether an individual is really anxious, depressed or excited, and is incapable of identifying

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other, potentially more influential causal agents, such as falling out with the coach, recognition of having not trained hard enough, or worries about a deteriorating injury!

The use of a diary based methodology enabled anxiety and mood to be interpreted within a broader context, and results strongly suggested that mood fluctuated in response to significant events in an individual's life, whether sport related or not. For example, PA levels were most closely associated with the scores for mental and physical work load, and sleep quality was clearly the variable that was most strongly related to PA for both netballers and referees. There was evidence that a closer study of sleep quality in sport participants may be important, given that the lowest scores for this variable were usually found on the day before a match, and generally the highest scores occurred immediately post-match. Support for this finding can be found in Reilly and Piercy's (1994) study on the effects of sleep deprivation on weight lifting performance and mood. They reported that lack of sleep affected mood states of confusion, vigour and fatigue.

It can be argued that the combined use of qualitative and quantitative methods facilitated a more valid interpretation of the data. For example, high scores on anxiety and low scores on cheerfulness were frequently accompanied by a brief report indicating that a major social, work based, or domestic problem had been encountered that day. Whilst these statements cannot be relied upon as conclusive proof that negative mood states were the result of important non-sport related events in an individual's life, they do at least merit serious consideration as possible causes. In general, for both netballers and rugby league referees, the qualitative data suggested that Z-scores for PA and NA were most fully explained by considering significant life events. Interestingly, the match was rarely mentioned by any subject until it had taken place. Subjects tended to identify the match as a significant daily event only when performance had been considered poor or very good, or where the match had been identified as being of great importance. This finding can be interpreted in a number of ways. However, two explanations seem most likely. It may be that the subjects are thinking about their forthcoming matches, although the results suggested that even at typically 12 - 15 hours before the game (i.e.: the night before) very few subjects recorded this event in their diaries. Alternatively, the failure to identify

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forthcoming matches as significant events could be because for high level netball players and elite level rugby league referees, other life events are considered more important. Of course, it may also be because they do not wish to consider the match as a significant event because this may lead to negative thoughts and worry.

Research (Anshel and Weinberg, 1995) investigating stress in basketball refereeing reported that referees experienced moderate levels of stress in officiating. In addition, Anshel and Weinberg (1995) found that fear of failure or worry about performance was not an important source of stress in the 132 officials surveyed. However, partial support was found for the findings of previous studies (Goldsmith and Williams, 1992), which reported that high acute stress in officials was associated with fear of physical and verbal abuse from players, coaches and spectators. The rugby league referees (n=7) considered in this study officiated within the professional game, often at the highest level, and therefore it would seem unreasonable to suggest that only moderate amounts of stress were experienced in this situation. Most research in stress and officiating has focused on the experiences of low or medium level referees. In addition, interest has been on sources of stress (Anshell and Weinberg, 1995), and not anxiety or mood. This makes comparison with the extensive body of research in competitive anxiety and sports performance difficult to achieve. The generally low anxiety scores recorded in the diaries on the night prior to match, cannot be taken as further evidence that the stress associated with sport officiating, especially at the highest level, is moderate or low. However, this finding may be more accurately interpreted as suggesting that most individual referees do not usually experience anxiety levels well above baseline in response to the very considerable stresses (which have been anecdotally reported) involved in officiating in sport at the highest level. Once again, the need for conceptual clarification between anxiety and stress called for by Jones and Hardy (1990) appears to be necessary to advance research investigating the experiences of both players and non-players involved in sport.

Recent work by David (1997), suggested that the effect of situational factors, such as major and minor daily events, would be more fully understood by considering an individual's personality disposition. Their study involved 96 subjects completing mood diaries for 8

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consecutive nights. Neuroticism and Extroversion were assessed using the Neuroticism Extroversion Orientation Personality Inventory (Costa and McCrae, 1985). Participants completed their diary entries each night at bedtime and rated their moods on a 6 point scale and also rated the desirability or undesirability of daily events. One important finding was that the valence of daily events rather than the frequency of events, had more impact on daily mood. In addition, undesirable events played a major role in negative affect, and desirable events assumed the major role in positive affect. These findings lend support to the results of this study, where it can clearly be seen that infrequent and yet positive events such as the start of a holiday or passing an exam are associated with high levels of PA and negative daily events, for example, the onset of illness or relationship problems, impact on NA. David (1997) reported that across the sample, desirable events related to leisure activities, work, family and friends, and undesirable events most usually related to work, and domestic situations. Again this pattern of results was found with the netballers and rugby league referees, although, as has been reported earlier, positive and negative match outcomes also appeared to influence PA and NA on match day. In terms of personality, David (1997) identified that neuroticism was associated with both positive and negative daily mood, whereas extroversion was only associated with positive mood. Their results however, strongly suggested that daily events had an impact on mood independent of personality disposition and this supports the validity of the diary based methodology used within this study involving netballers and referees.

#### ***4.6.2. Important Intra-Individual Findings***

Unlike most studies in the area, the quantitative data were transposed from its raw state into Z-scores. The use of Z-scores importantly allowed for comparisons to be made between and within individuals in relation to their baseline scores. It has been argued by Clough *et al.* in their study on mood and exercise, that: **“if individuals baseline states are not measured the conclusions one can draw are limited”** (Clough *et al.*, 1996, p.26). In addition, whilst purely qualitative methods relying on in-depth interviews such as those employed by Monck *et al.* (1994) investigating mood, anxiety, and depression in teenage

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girls can provide a fuller account of the relationship between these factors and an individual's personal history and life events, with such an approach it remains difficult to identify patterns or trends that explain behaviour over time. As much of the research in competitive anxiety in sport has focused on temporal issues (Swain and Jones, 1992) and the motivational antecedents of competitive anxiety (Swain *et al.*, 1990; Hall and Kerr, 1997) it seems that a more promising approach would be to utilise a methodology which provided a way to record mood and anxiety volatility over a considerable period of time.

Although the Z-scores for the group (n=15) in terms of anxiety did not reveal a pattern of elevation as the competitive match neared, there was evidence that some anxiety scores were well above baseline on the night before a match, and were elevated immediately post-match. However, a closer examination of this data from an intra-individual perspective revealed that heightened anxiety levels in the day before were often associated with undesirable non-sports related significant events, which were reported in the qualitative section. Furthermore, well above baseline anxiety levels on match day were most usually associated with poor performance, or defeat in an important match.

The value of using Z-scores and qualitative data in studies addressing mood, anxiety and sport seems clear when the limited successes of other approaches are considered. For example, in the area of mood, Renger (1993) has concluded in his review of studies investigating the prediction of athletic success, that POMS should be abandoned by researchers examining personality characteristics that differentiate athletes of differing ability levels. This is an important and controversial statement, not least because POMS has been, and continues to be used (Terry *et al.*, 1996; Lane and Terry, 1997) to measure tension, depression and other factors as they relate to athletic performance and success. In recognising the need to interpret group data, using an abbreviated version of POMS, against normative data for different groups, Lane and Terry's (1997) work indicated that differences between adult and child sport participants needed to be considered if progress was to be made. Although moving in the right direction, Lane and Terry's (1997) work may still be unable to begin to fully unravel what a particular score, or set of scores means for an individual, given that it remains wedded to the traditional nomothetic approach to the

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subject. Findings from this diary based study suggest that group differences for mood between netballers and rugby league referees existed at the margins, but arguably of much more importance, was that far greater differences were found between each of the 15 individuals considered in the study.

The diaries each provided an average of 214 data points over the 28 day period of the study, and qualitative data identifying significant events was mostly recorded on each day alongside the numerical data. Analysis of mood and behavioural scores from an intra-individual perspective revealed a number of important findings which would be obscured by considering inter-individual differences only. For example, one referee experienced their highest level of NA immediately post-match. This might normally be interpreted as evidence of poor performance, either real or imagined. However, the qualitative data revealed that the referee's anxiety was most likely associated with the match experience itself, rather than as had been a consistent feature of this study, due to the existence of other non-sport related significant events. A closer investigation identified that anxiety and weariness were well above baseline levels because this referee found the Division 1 match to be totally unfulfilling, and in his own words, "at least two yards slower than what I'm used to!" NA for this individual was more related to lack of challenge and boredom rather than excessive stress and over arousal. This finding has been supported by the extensive phenomenological based studies on Flow theory and optimal performance by Csikszentmihalyi and colleagues, during the past 20 years.

A further important example of the value of adopting an intra-individual approach to data analysis occurred where, as predicted by sport competition anxiety research (Burton, 1988), the highest score for anxiety occurred 12 hours prior to the match. In addition, the lowest NA score and the highest PA score for this individual was recorded on match day, after experiencing an important win. This connects well with competitive anxiety research and test anxiety studies where anxiety would be expected to be elevated prior to an important competitive event, and to fall dramatically and immediately after success in such a situation. However, a closer examination of scores for behavioural factors such as sleep quality and time demands, and consideration of the qualitative data, suggested that this

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large shift over a 24 hour period in anxiety scores from well above to well below baseline levels, was likely due to experiencing a major domestic crisis on the day before the match. Jones (1995) has suggested that a more complete understanding of the intensities and antecedents of anxiety could take place where researchers begin to consider the role of control and confidence in their work. The findings discussed here suggest that this development is unlikely to prove sufficient, and that as Jones (1995), Gill (1994) and others (Gould *et al.*, 1993c) have argued, qualitative methodologies which consider stress and anxiety in a broader social context are urgently needed to make further headway.

### ***4.6.3. Methodological Issues***

The findings of this study go even further than this, in suggesting that without adoption of a methodology that allows for both an intra-individual and inter-individual analysis of data, and includes consideration of mood, behaviour and anxiety within an individual's life context, little real progress will occur. As long ago as 1970, Fischer in his thorough review of the theories of anxiety, warned that the study of anxiety could no longer be advanced where researchers continued to separate meaning from affect. In calling for a radical psychology of sport, Salter has stated that: **“There is a need to move away from the false certainty of “hard data” and towards an approach that allows us to capture and work with the difficult to articulate, yet essential, aspects of sporting performance”** (Salter, 1997, p.249). However, whilst those such as Salter (1997) and Corlett (1996) advocate greater use of inductive approaches and increased attention to belief, meaning and broader life contexts, research in the mainstream apparently continues along traditional lines. For example, Hall and Kerr's (1997) study investigating pre competitive anxiety in youth sport utilised the CSAI-2 to assess the relationship between goal orientation and achievement anxiety. Their article seems to capture nicely the impossible situation facing researchers in the area. Having stated that sport psychologists have thus far failed to develop: **“a sound theoretical understanding of the psychological processes underpinning competitive anxiety”** (Hall and Kerr, 1997, p.25), they proceed to report that perceived ability was found to be the most important predictor of state anxiety in their study of 111 junior fencers. However, they conclude with an astonishingly naive and

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optimistic observation on future research directions, claiming that: **“Only when our measurement technology allows us to understand the moment by moment specifics of behavioural change will we be able to account for greater proportions of variance in athlete’s pre competitive anxiety”** (Hall and Kerr, 1997, p.38). The continued use of psychometric instruments such as the POMS and the CSAI-2 in mood and anxiety research in sport, suggests that in practice, most researchers seem unprepared to investigate new approaches, or try out alternative methodologies.

One of the important strengths of using a diary-based methodology is that it allows both qualitative and quantitative data to be gathered. The findings of this study identified that qualitative data can be used alongside quantitative data to provide a more complete account of a series of events, behaviours, or mood states. However, as the results demonstrated, the most useful qualitative data were information rich, detailed and focused on important daily events. Whilst diary based studies have not been undertaken in mood and anxiety research in sport, researchers (Ekland *et al.*, 1993) have begun to study group and individual differences together, at least in elite level sport. Ekland *et al.* (1993) investigated the psychological factors influencing wrestling excellence at the Olympics by conducting in-depth interviews with 6 medal winning athletes. The aim of the study was to demonstrate that more valuable insights could be gained into excellence and wrestlers by considering nomothetic data and individual differences together. This was achieved by initially considering the results of a previous study (Gould *et al.*, 1993b) that had revealed group differences between successful and non-successful wrestlers. A sample of 6 winning medallist wrestlers was selected from the group of 20 winning wrestlers. Taped interviews were transcribed verbatim and subjected to a thematic analysis. Ekland *et al.*'s. (1993) work produced rich and in-depth material, which helped to highlight differences between group and individual data. This approach represents a welcome development in sport psychology research, although as Clough *et al.* have warned: **“classical qualitative methods are not the only ones to produce a rich and in-depth data set”** (Clough *et al.*, 1996, p.27). In addition, problems remain with perceived subjectivity and bias, and the difficulties of structuring qualitative data. In deriving both qualitative and quantitative data, the diary method represents one way of combining both nomothetic and idiographic approaches.

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#### ***4.6.4. Other Important findings***

The strong correlations between mean diary measures for NA and CSAI-2 cognitive anxiety and somatic anxiety scores, suggested that this inventory could be more accurately described as a trait measure, rather than a state measure of anxiety. Recent work by Annesi (1997) on state anxiety recall seems to provide further support for this finding. Annesi (1997) used the CSAI-2 to test anxiety levels of 34 young gymnasts and hockey players one hour prior to competition and 48 hours post competition. Subjects were instructed to complete the CSAI-2 at 48 hours after competition, by considering how they felt 1 hour prior to competition. Significant correlations were found for CSAI-2 scores between 1 hour pre and 48 hours post competition. However, stronger correlations were found where anxiety was measured by the State-Trait Anxiety Inventory. Nevertheless, it does seem from Annesi's (1997) work that the CSAI-2 can be used to recall an anxiety state which was experienced 2 days earlier. It can be argued that if an anxiety measure can be used with little adaptation to identify actual state anxiety levels which occurred 48 hours earlier, and before competition, then the distinction between whether this is a trait or a state measure is considerably obscured.

Finally, the rugby league referees and netballers diary data revealed that several previously reported relationships were found at group and individual level. For example, following work by Jones *et al.* (1996), PA (cheerfulness) was strongly negatively correlated with NA (anxiety), although, NA (weariness) did not correlate with scores on anxiety or cheerfulness. The intra-individual analyses revealed that exercise did not correlate strongly with PA, or with reduced anxiety levels. Whilst most studies continue to report positive relationship between various measures of mood and anxiety and exercise (Kerr and Vlaswinkel, 1993), others (Berger and Owen, 1992) have warned that the intensity of the exercise and issues of control are important mediators in determining the effects of exercise on mood. Again the diary methodology facilitated a closer inspection of this, and provided some evidence to suggest that exercise was associated with higher scores on PA and reduced NA, only where it formed part of training for a specific event such as, playing

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netball or refereeing matches. This finding seems to suggest that it may not be the exercise itself that produces positive mood states. Instead the instrumental value of exercise, especially for high level sports participants, may provide a better explanation of the frequently reported positive effects of exercise on mood.

## 4.7. Conclusion

### 4.7.1. Introduction

In his comprehensive and impressive review of competitive anxiety research in sport over the last 2 decades, Jones has offered the following observations; **“Like anxiety researchers in other areas of psychology, sport psychologists have wrestled with the conceptual and methodological dilemmas surrounding examination of the anxiety response itself,”** (Jones, 1995, p.450) and, **“research into the anxiety sport performance relationship, in particular, has served to increase knowledge of a complex phenomenon which has sometimes proved somewhat elusive to examine in some other situational contexts”** (Jones, 1995, p.450).

Taken together, the above statements by one of the most prolific researchers of anxiety and sport in recent years, seem, to suggest that research in this area has built up a solid body of work based on conceptual clarity, and has provided a more complete understanding of the phenomenon of anxiety. However, this level of optimism is not shared by all especially those such as Fahlberg *et al.* (1992) who have pointed out that the dominant reductionistic paradigm of general psychology has held an exclusive and almost unassailable position in sport psychology. This situation, they have argued, has led to a narrow focus where psychological investigation has been solely concerned with identifying causes of behaviour, and has eschewed any interest in exploring the meaning associated with such behaviours. The practical effects of this are clearly evident in the dearth of studies that have investigated the meaning of anxiety for an individual athlete, and the few attempts (Kerr and Cox 1991; Gould *et al.*, 1993c) at using qualitative methodologies, or alternative approaches in the study of stress, motivation and anxiety in sport.

### 4.7.2. New and Combined Approaches

From a slightly different perspective, Dunn (1994) has advocated that sport psychology researchers must begin to combine nomothetic and idiographic methodologies in the same studies, to gain a greater understanding of the phenomena being studied. His suggestion

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that this development has been held back because some researchers have considered the idiographic approach to be unscientific and subjective in comparison to nomothetic approaches, tells only part of the story. Even where researchers may feel that research using a combination of approaches, or more qualitative and idiographically focused studies, are beneficial, the publishing criteria of many academic journals in sport psychology have until very recently, been heavily weighted against acceptance of non-traditional, qualitative and idiographic research. For example, in the U.K. the premier journal in sport sciences, The British Journal of Sports and Exercise Science, does not accept ideographic or purely qualitative studies for publication, although the abstracts of qualitative studies, which have been presented at the British Association of Sport and Exercises Sciences annual conference, are printed.

Jones' (1995) observation that sport psychologists and researchers have tried to clarify the exact nature of anxiety, that is to conceptualise it, seems rather surprising given that as Jones has later added, **“more work needs to be carried out to examine both the concept and the construct of competitive anxiety”** (Jones, 1995, p. 469). However, a thorough review of the sports anxiety literature clearly reveals that stress, arousal and even fear and threat have been confused with anxiety, and that until Jones and Swain's work (1992) almost all sport research described anxiety as a negative phenomenon. The roots of this particular one-sided account will be discussed later. However, the effect of this, it could be argued, has resulted in a plethora of studies aimed at investigating stress management and anxiety control techniques and group differences. These developments seem to run contrary to earlier attempts which conceptualised stress as an essentially neutral phenomenon (Selye, 1956) and defined anxiety as: **“the way an individual relates to stress, accepts it, interprets it”** (May, 1977, p. 113). Again, sports psychology texts and articles have tended to examine anxiety in terms of trait approaches; following Spielberger (1966) sport anxiety research has sought to measure state and trait anxiety prior to competition. There is much evidence that rather than increase and further develop knowledge about anxiety, research into the anxiety sport performance relationship has borrowed heavily from the test anxiety and academic achievement literature. In addition, it is difficult to find much support for Jones' (1995) confidence in the success of sport research in providing fresh insight into the

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anxiety and performance relationship in comparison to other anxiety research, not least because as Jones and others (Martens *et al.*, 1990) have noted, most sport anxiety research has failed to use reliable, sensitive, ecologically valid and meaningful performance measures. A more fundamental problem facing research in this area is that increasingly there appears to be a development of a two culture approach to the science of psychology within sport psychology in general, following the earlier pattern of mainstream psychology. In terms of sport anxiety research this is reflected in the failure by researchers to consider anything beyond behaviourist and cognitive approaches in their work. Increasing numbers of sports psychologists involved in consultancy with athletes are suspected of largely ignoring the findings from sport research, and may be beginning to draw upon the work of psychotherapists and other practically-focused researchers in the mainstream. According to Corlett (1996) this situation is inevitable given the paucity of research in sport which utilise methodologies and approaches that are appropriate to the complexities of the subject matter under study! In terms of anxiety, psychotherapists in the mainstream such as Rank, Adler, Sullivan, Kelly, Fromm and Freud, have according to May (1977), provided most of the important data on anxiety because of their clinical methods. Such methods allow for an intensive study of the individual and typically consider the whole personality in their analyses, rather than narrowly focusing on one aspect of an individual's psychological life.

#### ***4.7.3. Criticisms of the CSAI-2***

A major concern raised by Dunn (1994) is that by relying heavily on nomothetic approaches in competitive anxiety research, statistical analyses are used which may result in an average or mean anxiety score that does not actually represent any athlete in the study. This weakness has been pointed out by Martens (1987) especially in relation to the use of personality inventories in sport research. Nevertheless, the problem remains, although researchers using SCAT and CSAI-2 in their studies (Swain and Jones, 1993) claim that these measures are valid and reliable because they are "contextualised" and situation specific.

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The limited usefulness of these measures though can best be seen by considering the meaning of the sport specific norms for CSAI-2 scores reported by Martens *et al.*, (1990), for an individual athlete, or even group of athletes. To note that elite athletes score significantly lower than non-elite athletes on a cognitive anxiety dimension could be interpreted in a large number of ways. However, such findings are rarely reported as being very likely due to socially desirable responding (although recent work by Krane *et al.*, [1994] does highlight this possibility). This suggests that as Kroll (1970) has stated, many sport psychologists adopt a credulous attitude to personality research employing questionnaires because this gives at least, the appearance of neatness, precision, and scientific rigour. The shortcomings of a vast body of sport literature which fails to consider the social context within which competitive anxiety occurs, and largely ignores the individual's understanding of the anxiety experience has recently been pointed out (Corlett, 1996; Jones, 1995). However, researchers continue to rely almost exclusively on questionnaires that are unable to tease out contextual, situational, and individual meaning in any real sense. Although Jones and Swain (1994) have developed an additional scale to measure facilitative and debilitating dimensions of anxiety, this is still locked into the CSAI-2, and is therefore unlikely to overcome the traditional limitations of questionnaires already discussed.

What has been portrayed at least in the U.K. as a much needed improvement to the CSAI-2 (Maynard *et al.*, 1995), has only recently received attention from North American researchers (Krane *et al.*, 1994). This seems to confirm that much sport psychology research in anxiety and sport, at least in North America, is moribund at least in terms of developing improved measures of competitive anxiety, and researching new approaches to the area. Again, the reasons for this situation may not be entirely clear. However, the marked dominance of reductionist, quantifiable and positivistic approaches to sport psychology research have according to Fahlberg *et al.* (1992), retarded the development of research that might be able to tell us something which we did not already know!

Contrary to assertions by Martens (1987), Jones (1995) and others, sport psychology research, including those studies addressing competitive anxiety, has rarely created for itself

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genuinely new ways of investigating psychological phenomena. Indeed, all the evidence suggests that sport anxiety research has borrowed heavily and freely from the mainstream, albeit that a large number of studies conducted by sport researchers frequently highlight in the conclusions the need to develop more sport specific approaches and methods. However, given that the parent discipline has had at least a one hundred year start (approximately) on sport psychology, and that in numerical terms, those involved in sport and exercise psychology represent a very small body of researchers compared to those involved in the mainstream, it seems unrealistic, and even unnecessary to expect sport psychology to be much more than another area of study in psychology.

#### ***4.7.4. Implications for Applied Sports Psychology***

It could be argued that, as a relatively young area of research, anxiety and sport cannot be expected to have reached the same stage as other more established fields such as educational psychology, occupational psychology, and clinical psychology. However, although not fully developed itself, sport psychology is part of a well established extended family, and it can only be hoped that, at least in sport anxiety research, studies will begin to draw on a much broader range of approaches and traditions to begin to close the credibility gap fast expanding between sport psychology research and applied work.

Although focusing on the professional practice of sports psychologists, both Anshel (1993) and Corlett (1996) have made a telling contribution to the issue of breadth of approach in sport psychology research and consultancy. Anshel's (1993) forceful criticism against the certification of sport psychology consultants in the U.S. raises some important points of a more general nature. For example, he points out that licensed clinical psychologists without an academic sport qualification cannot be certified under the American Association of Applied Sport Psychology accreditation criteria. This situation, he has argued, restricts exposure to alternative approaches and methodologies in research and practice and cannot be justified because of the skills and not infrequently, extensive experience that many mainstream psychologists possess of working with athletes. However, Anshel (1993) has stressed that the profession of sport psychology should be less concerned with gaining the

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respect of the parent discipline and instead should devote more to developing its own unique area of expertise. This rather contradictory position advocated by Anshel (1993) at least has the virtue of keeping alive a debate which many (Zaichkowsky and Perna, 1992) wish would go away.

From a different perspective, Corlett (1996) is quite clear about the function of sport psychologists (and by association sport psychology) and from where this knowledge base has directly evolved. In his article on professional practice that divides sport psychologists into either practitioners of Sophistry, or those who rely upon Socratic dialogue, the first two sentences succinctly describe the role of sport psychologists; **“Sport Psychologists counsel athletes. In doing so they rely upon knowledge that has emerged in the last century”** (Corlett, 1996, p.84).

As the discussions in the article later confirm, the knowledge base is assumed to be the parent discipline of psychology, and sport psychology counselling is described as more of an approach than a technique, and as something which is outside of the clinical realm. However, the most radical and refreshing discussion contained within the article focuses on the difference between what Corlett (1996) refers to as Sophist technique, and the Socratic perspective. According to Corlett (1996), the Sophist philosophy of Ancient Greece was devised by a group of humanistic teachers, who believed that each individual's assessment of right action was the correct basis for personal conduct. They rejected the notion of universal truth, or absolutes, as useful guides, instead preferring to teach a utilitarian philosophy which emphasised the importance of technique and skills over values, morals and belief. In contrast, Socrates propounded a totally different philosophy which stressed that whilst skills were essential, of more importance was knowledge of self, and recognition that the search for the ultimate good, the absolute, and values, was mankind's most important function. Corlett (1996) has argued that often the problems facing the sport psychologist cannot be addressed by use of various mental skills techniques, and that whilst referral may be appropriate on occasion, more usually the athlete requires Socratic counselling where the focus is on helping an individual towards a deeper level of self-awareness through a process of self-examination. Such a view strongly supports the

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findings of this study taken as a whole, and in particular, it provides a further explanation of why most of the young female skaters failed to benefit from the mental skills training programme compared to those experiencing something akin to broad based counselling. Again, Corlett's (1996) work is supported by the diary-based research with the Rugby League Referees and the Netballers, in that the data strongly suggested that anxiety and other mood states were likely much more influenced by a broad range of life experiences, rather than being solely the product of an individual's relationship to the sport event. Simply put, the evidence strongly suggests that a narrow focus on a singular cause of negative affect, or of anxiety, is unlikely to yield an adequate answer. More likely the current approach to anxiety in sport research and the practical support that follows, often leads to superficial findings and solutions (Corlett, 1996) which are either largely ineffective, or only work in the short-term.

#### ***4.7.5. Anxiety Control and Intervention***

Although most studies in anxiety and sport are concerned with differences between groups, and typically focus on correlational relationships between anxiety and other related concepts, the approach is somewhat different in work (Crocker *et al.*, 1988) more directly concerned with investigating the efficacy of stress management and anxiety control techniques. In addition, few published studies on competitive anxiety in sport, fail to conclude that their results suggest that specific behavioural or more clearly psychological techniques can be used by athletes to overcome the potentially adverse effects of anxiety on performance even where there is little empirical support for this. Having started off in a modest fashion to explore group differences and report interesting correlations, it seems rather surprising and flagrantly unscientific to specify particular cures where cause and effect has not been "proved" or subjected to any real scrutiny! Fortunately, there are some important recent examples of where this pitfall has been avoided (Gould *et al.*, 1993c); these studies tend to leave the issue of interventions and cure alone, and focus more properly on attempting to describe the experience of stress and anxiety for individual athletes or groups of athletes. An important example of this approach is the work of Ekland *et al.* (1993), which advocated that focusing on general principles across groups in

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combination with an idiographic approach to identify individual idiosyncrasy, was preferable to relying on either approach alone. They revealed that whilst elite Olympic wrestlers shared a number of characteristics which differentiated them from lesser performers, they displayed considerable differences in other domains. For example, some athletes experienced negative stress due to their performance expectations, whilst for others this was a source of positive energy. Again, whilst all subjects reported using mental readiness strategies prior to competition, the “content” differed greatly, from those following a fairly carefully planned and predictable strategy, to those whose strategy amounted to a deliberate avoidance of any mental techniques or prescribed approach. For one such athlete, this involved being surrounded by relaxed and easy going people, and nothing else! Ekland *et al.* (1993), have suggested that their work reveals that individual uniqueness and common and more general, shared characteristics of athletes is not a contradiction, or an impossibility, and that their approach draws its strength from the best features of group and single subject methodologies.

A related concern that has been discussed by Milne (1997) and Progen and DeSensi (1984) is the value of qualitative and quantitative approaches in sport and exercise psychology. Milne (1997) reviewed twenty-one articles evaluating mental training in sport using both qualitative and quantitative criteria, and has suggested that this represents a more rigorous approach to the reviewing of sport psychology literature. This novel approach to literature review can be contrasted with traditional quantitatively focused reviews where researchers tend to list studies chronologically or by themes, and focus on reporting the methodology used, design, and results.

#### ***4.7.6. Combined Methodologies***

Progen and DeSensi’s (1984) investigation into the value of different theoretical frameworks for exploring the subjective dimension in sport, raised the important issue of matching the research approach to the content being studied. In comparing Buber’s (1958) I-thou theory and Csikszentmihalyi’s (1990) flow model, both of which concern the qualitative dimension of the “lived moment”, not to utilise qualitative approaches in their

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study would be to ignore the need to use a qualitative strategy to investigate a qualitative phenomenon. However, they have argued that both flow studies and I-thou research could be enhanced by the development of; **“a systematic blend of the two approaches (i.e.: qualitative and quantitative) including interviews, analytical and speculative techniques, inventories and observations....”** (Progen and DeSensi, 1984, p.87). This apparently generous interpretation lends further support to the idea that there are few if any psychological areas that cannot be sensibly studied by a combination of qualitative and quantitative methods, and that this overall strategy may provide for more rigorous and yet meaningful research results.

Why then does there apparently appear to be such resistance towards fulfilling this laudable aim, given that so many within the research community seem to support the need to develop alternative approaches and methodologies? Whilst the practical problems associated with this type of research, such as resources, expertise and skill, are surmountable, there must be a more fundamental reason or set of obstacles which keep this aspiration as largely no more than that to date. Again, in the U.K., Jones and Hardy (1990) have called for a much greater use of alternative methodologies in the study of competitive anxiety and stress in sport, and yet their extensive and highly respected work in the area throughout the past seven years significantly fails to address this issue. As has been argued earlier, in terms of providing for sound and clear conceptual distinctions between anxiety and stress, the answer may be in revisiting older and more developed schools of psychological theory, especially those with definitions and descriptions of anxiety and stress which provide clear and unambiguous differentiation between these two concepts. To understand why such an apparently fruitful approach to sport anxiety research has not even reached the stadium yet, let alone got out of the starting blocks, requires a brief account of psychology in the English speaking world.

#### ***4.7.7. An Existential View of Anxiety***

Psychology has, according to Osborne (1982), been dominated by a natural science orthodoxy since its earliest days. Particularly in the field of learning theory, but also in

much of experimental psychology, the discipline has modelled itself on the methods of physics. He argues that it has been an often unwitting supporter of a rationalistic, materialistic and Lockean view of the world, where the person is viewed as exclusively a product of the environment. According to Fisher (1970), both psychoanalysis and behaviourism share a common view of the human organism as a determined being for whom the notions of freedom, responsibility, anxiety, and courage are meaningless terms.

Existentialism is the name given to a formal philosophical school (Valle and King, 1989), which seeks to understand an individual's concrete, lived situation; to achieve this, focus is directed at the meaning that an event has for an individual person. The apparent fuzziness of the terms used in existential-phenomenological psychology in particular (Osborne, 1982), and that the philosophical roots are to be found in mainland Europe, especially in Germany and France during the nineteenth century, goes some way to explaining why little was known of this approach to psychology in North America until May introduced it in 1950 (deCarvalho, 1996). May's PhD. dissertation on *The Meaning of Anxiety*, considered the subject by drawing on theory from a number of schools of psychology, however, it was the first time that an American had provided an in-depth account of anxiety from an existential psychology perspective.

Although May has been included alongside Maslow and Rogers as a major representative of a "third force" in psychology (deCarvalho, 1996), this tends to obscure the very considerable differences between humanistic psychology, and the much older philosophy of existentialism. Indeed, in so far as modern existential psychology has its roots in the metaphysics and theological work of Saint Thomas Aquinas in the thirteenth century and Soren Kierkegaard in the nineteenth, its avowedly Christian foundations stand in stark contrast to the atheistic humanism of most Humanistic psychology (Kingston, 1961). Whilst both traditions emphasise the importance of notions such as freedom, and responsibility, they differ markedly in their metaphysical assumptions. For example, the existentialists such as Mascall from Christian traditions and non-Christian's such as Sartre and Camus recognise that hope and despair are inseparable from and are intrinsic to human nature and life. In opposition to this, the Humanistic psychologists, especially Rogers and

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his followers, contend that evil, despair and distraction are extrinsic to human being, and are therefore largely relative and outside of the individual. However, as Kingston (1961) has argued an important theme of Christian existentialism is that love, joy, and in a deeper sense, success, can only be experienced and achieved, if at all, through and alongside suffering. It seems plausible to suggest that this “suffering” is in fact, for the large part, the normal anxiety people experience in their daily lives, and that to meet this with hope and courage and to progress through this experience, is to live fully. This description of the successful life is quite different to that of the Humanistic psychologists where suffering, anxiety and responsibility are not considered necessary, although the fully functioning self-fulfilled person may have encountered these experiences along the path to self-actualisation.

A major misunderstanding, it has been argued (Valle and King, 1989), has held back the acceptance of existential psychology into the mainstream. Existential psychology is not purely subjective or introspectionist, and according to Valle and King, it represents more of a middle ground between purely objective and purely subjective approaches. The major interest of existential-phenomenological psychology is to reveal the meaning of form, or expressed differently, to investigate the structure of experience. Within sport psychology, the few largely qualitative studies in stress and anxiety (Scanlan *et al.*, 1991; Ming and Martin, 1996) are typically less interested in the structure or meaning of these terms for individual athletes. For example, Gould *et al.* (1993c) used a qualitative methodology to inductively analyse interview transcripts of seventeen skaters to identify sources of stress in skating. However, although this research avoided excessive focus in the results upon a quantification of the themes that emerged from the interview data, there was little, if any, attention directed at analysing what these thematic terms were actually describing. This suggests, as Valle and King (1989) have pointed out, that qualitative research in psychology often remains attached to the philosophical assumptions of the dominant natural scientific orthodoxy of mechanical determinism, where all events are viewed in terms of a strict cause-and-effect relationship. This bias, although rarely reflected upon openly in most sport psychology research, can even be clearly discerned within apparently radical and alternative research methodologies, such as those relying on single subject designs. Ming and Martin’s (1996) study on the use of self-talk packages in skating, revealed that a single

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subject design utilising objective behavioural observation and self-reports enabled the researchers to confirm that self-talk was used by skaters to improve performance. In supporting this finding, Ming and Martin have claimed that their; **“experimental design indicates that the improvement was due to the treatment package and not to some uncontrollable variable”** (Ming and Martin, 1996, p.235). However, such dogmatic and absolutist confidence in the power of traditional experimental studies in being able to isolate cause and effect, is rarely to be found even in modern physics according to Giorgi (1985). Indeed, in calling for a more phenomenologically based approach to psychology, Giorgi has suggested that the rigour of natural science may be more apparent than real when the underlying metaphysical and technical assumptions are exposed. In calling for a “human science” approach to psychology, he has advocated that the excessive and almost blind adherence to natural science approaches is unlikely to furnish any truly important or significant findings, especially given that humans are always both the objects and the subjects of inquiry.

The hegemony of the natural science approach to psychology (Osbourne, 1982; Rennie, 1994) both in research and practice, has as yet been largely unrecognised in sport psychology, although Fahlberg *et al*'s. (1992) work in exercise psychology has begun to address some related issues. The fracture between the findings of most sports psychology research into anxiety, and the everyday understanding of the experience of anxiety and performance in sport, may not be healed by persisting with an approach which seems to have very rarely offered any new and exciting discoveries. In his assessment of the psychology of learning, Colaizzi (1979) makes several observations that could conceivably be applied to most sport psychology research into anxiety and sport. He contends that “the they” (referring to “what is commonly believed”) constantly; **“bombard us with the usually irresistible opinion that the ever increasing accumulation of factual data and information, especially that generated by technologico-explanatory approaches, is the mark of education, wisdom and learning”** (Colaizzi, 1979, p.133). He goes on to describe how “the they” continue to build up a mountain of facts, most of which have little or nothing to do with our personal existence, or self-knowledge, and pass these off as genuine learning, whilst dismissing any efforts at attempting to investigate such apparently

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impractical, intangible and worthless projects as the structure of experience or the meaning of anxiety. However, Colaizzi (1979) provocatively suggests that if the test of authentic learning is that it is never boring, although it can of course be difficult, then much of what is paraded as learning is mere information acquisition! Such a criticism, levelled at one of the longest established research areas in psychology, if justified, reverberates warning signals for younger areas of enquiry, such as sport psychology.

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#### ***4.7.8. Anxiety and its Meaning***

By investigating the meaning of anxiety in sport, rather than trying to identify its cause or supposed effect on performance, researchers may be able to develop links with other related and important topics in sport psychology. For example, both Csikszentmihalyi's (1990) work on the Flow model, and Kerr *et al*'s (1997) research on metamotivational state and anxiety and arousal, bring anxiety and motivation together, by focusing on how these constructs influence and shape one another. That this dynamic and broader view of anxiety is presented in Csikszentmihalyi's (1990) work, has much to do with the phenomenological, and at times existential focus, of Flow theory.

Earlier work by White (1959) on the concept of competence described how researchers from experimental laboratory based psychology, and those espousing psychoanalytic ego psychology, concluded that anxiety reduction was the central motive in the development of an effective ego. However, White's (1959) work challenged the ascendancy of this view, and suggested that rather than avoiding anxiety and novelty, much behaviour is motivated by an attempt to experience raised tension, stimulation and variety. In practical life, this "master motive" which produces feelings of efficacy in an individual, can be seen in the exploratory play of children, and adult engagement in challenging and goal directed behaviour such as competitive sports and exercise programmes. Although the main focus of his work was to question the supremacy of drive-reduction theory and psychoanalytic instinct theory, the implications for anxiety research were considerable. Taken as a whole, White's (1959) important work on motivation highlights that there are instances where anxiety is actually sought out, and that as Kierkegaard (1944) has argued, anxiety becomes the great teacher!

Returning to the issue of anxiety and research in existential psychology within North America and the U.K., May and Schneider (1995) have pointed out that relatively little has been achieved thus far. However, at least two journals now exist devoted to publishing research and papers particularly where these focus on counselling psychology. The Review of Existential Psychology and Psychiatry, and the Journal of the Society for Existential



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Analysis, have been established as a forum for this research, and articles on existential-phenomenological psychology regularly appear in the *Journal of Humanistic Psychology*. Nevertheless, the influence that existential psychology could have upon the study of anxiety in sport is fortunately less dependent upon the status of this approach in North American academic and professional settings, because of the substantial amount of European literature on this particular topic. Kierkegaard has been highlighted by Fischer (1970) as the person most often identified as the father of modern existential philosophy and psychology, and the first to consider the nature of anxiety in his book, *The Concept of Dread* (1844). Of major significance to sport psychology, Kierkegaard maintained that anxiety is both part of and a requirement of growth as a person, or as he terms it, a self. He advocated that by facing up to and moving through anxiety, the individual is better prepared to face the experience of anxiety again. As this process is repeated throughout life, individuals teach themselves faith and courage, and will be able to face their freedom and life, rather than devoting their energies to evading anxiety experiences. This description of anxiety explains why, according to the existentialists, anxiety can have a positive function, and that anxiety accompanies life where the person accepts personal responsibility for their decisions and actions. Although, this notion of personal responsibility has been interpreted in a totalitarian way by Sartre and Camus when they claim that people have complete freedom to determine their being, Kierkegaard, Mascal, and other Christian existentialists have rejected the notion of unconditional freedom, by emphasising that our essential nature is a given, although how we develop this in life constitutes the true realm of freedom.

#### ***4.7.9. Anxiety as a Positive Emotion***

As has been discussed in relation to the findings of the three studies presented here, anxiety was not uniformly viewed as a negative phenomenon by the swimmers, skaters, referees and netballers, and was apparently valued positively in certain circumstances. Whilst the facilitative /debilitative scale developed by Jones *et al.* (1994), and some of the more qualitative work by Gould *et al.* (1993c) is evidence of a more balanced and ecologically valid approach to the study of anxiety in sport, most research continues to start with the assumption that anxiety is worthy of study because of the perceived negative effects that it has on sport performance. That very little empirical evidence exists to support this idea seems to have had little effect on the determination of scientists to investigate the area. Interestingly, it appears that rather than accepting the findings of studies reporting no negative effects of anxiety on performance in sport, researchers continue to search for proof for their prejudice. It may be that this situation has arisen in sport anxiety research paradoxically and somewhat unscientifically, because of anecdotal accounts by some athletes, and because of the modern culture of sport. For example, the increase in the sources of stress in most professional sports caused by media interest, huge financial rewards, short-term contracts and many other factors, may be expected to lead to increased anxiety in athletes. However, that this anxiety seems to galvanise certain individuals, teams and even nations to produce successful and heroic performances has been largely ignored, in favour of focus on where anxiety is thought to have been associated with (or directly caused!) unsuccessful performance. The relatively rare occasions in sport where it appears that anxiety is the key culprit in performance failure has not stopped an almost breathtakingly one-sided and totalitarian view from emerging, that anxiety in sport is the enemy, and that it must be massaged away or avoided. This narrow view becomes easier to understand in terms of the structure of some sports events and activities themselves, particularly where winning or losing often turns on one or two key moments, such as missing a penalty, or planting an easy volley into the net. However, in most team sports and events of a long duration it seems very doubtful that competitive anxiety can significantly influence performance, excepting those situations where the flow of activity is

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broken and the actions of team members or individual athletes are thrown into the glare of the spotlight. Work by Terry *et al.* (1996) has suggested that anxiety is most likely to negatively affect performance in short duration events, or where athletes are engaged in execution of a closed skill such as a golf shot. Whilst Terry *et al.*'s (1996) research seems to explain in part the nervous penalty miss, double fault serve, or poorly played opening shot of the innings, it surely cannot account for the well reported experience of sprinters, short course swimmers, and downhill skiers amongst others, where the very briefness of the event and the "all out" nature of the activity, allows little time for thinking, let alone worrying!

#### ***4.7.10. Flow theory and Anxiety in Sport***

In many sporting activities, it is this very experience of focused behaviour and complete concentration and absorption in the task, that athletes frequently cite as one of the most enjoyable feelings. Csikszentmihalyi's (1990) research on optimal experience and flow in leisure pursuits identified that autotelic activities, where the reward is intrinsic to the activity itself, are most often those involving active rather than passive pursuits. Later research revealed that sports activities were most often highlighted as the activity most likely to produce feelings of flow, that is the total involvement and absorption in the task and a complete absence of anxiety which occurs where an individual has the appropriate skills to meet moderate or high challenges.

However, whilst Csikszentmihalyi (1990) has used a systematic phenomenology to help him to investigate the psychological structure of enjoyment and happiness, his work has built on the earlier work of Maslow and Rogers in particular. Although the Flow concept appears closely related to humanistic psychology's description of peak experiences, Csikszentmihalyi (1990) has, in common with existential psychologists, been critical of self-actualization theory and the rather naive optimism of humanism regarding self-fulfilment and human progress. Nevertheless, the Flow model, as a purely psychological account of the experiential state that accompanies optimal performance, could provide a much needed change in direction for sport anxiety research. As has been argued throughout this series of studies, much more focus should be directed at studying the experience of

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anxiety, and approaches and models which explain anxiety in both positive and negative terms should be welcomed.

#### ***4.7.11. Measuring Performance in Sport***

One of the most remarkable series of inconsistencies evident in much of the sport psychology research on competitive anxiety, is that performance is most usually defined in outcome terms. Whilst researchers, (Krane, 1992; Jones, 1995) have questioned the validity of some of the performance measures used in sport anxiety studies, this has tended to focus on the need to provide easier-to-measure output variables, and the importance of utilising objective criteria in establishing performance success. However, researchers (Hardy *et al.*, 1986; Whitehead, 1986) investigating goal setting and sport have repeatedly stressed that mere outcome and output measures fail to capture the totality of what is involved in successful performance, and that process goals are a necessary part of good goal setting. The conclusion that could be drawn from these findings is that without a much broader definition of performance to include process variables, it seems unlikely that researchers will ever be able to offer anything worthwhile on the anxiety-performance relationship in sport. In addition, for most athletes final performance is the end point in a process that may have lasted for a whole tournament, five game series, a season, or even several years (e.g. Olympics); that this situation is a special feature of sport can be gleaned from newspaper reports, coaching manuals and even the advice of sports psychologists where athletes are reminded that, “delivering the goods at the end of the day is really all that matters!”

#### ***4.7.12. Values and Anxiety in Sport***

The responses from the skaters, referees and netballers in this study offers much support for the idea that participants expect to experience anxiety in sport, and that they still compete and achieve success from time to time, is evidence of their capacity to meet anxiety and stress and manage an effective way through them. One interpretation of this universal and pervasive experience, may be, that rather than viewing anxiety as a multidimensional

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construct (Davidson and Schwartz, 1976) composed of cognitive anxiety symptoms and somatic anxiety symptoms, it is more useful to follow May's distinction between normal anxiety and neurotic anxiety. Interestingly, and in keeping with the major theme of this work, May was; **“critical of the role of psychology, behaviourism in particular, as a science of human nature ..... He thought that behaviourism's reductionistic gospel of technique, obsession with objective testing and the control and prediction of isolated behaviours were an integral part of the human dilemmas associated with living an authentic existence in an age of anxiety”** (deCarvalho, 1996, p.12). According to May (1977), the way to successfully confront anxiety is to develop an inner centre of values and goals.

The mention of values may seem an anathema to those brought up to believe that a strictly rationalistic, positivist and reductionist approach to the science of psychology is the only acceptable way. Such a viewpoint, as Giorgi, (1985) has pointed out of course, amounts to a value position in itself. However, if May is correct in suggesting with the existentialists that anxiety arises because the human is a valuing being, then the implications for sport anxiety research are considerable. For example, if values can assist the individual to stand firm during the anxiety of the competitive climax, do those athletes with poorly developed or inadequate and immature values, lose their capacity to act positively when faced with the moment of anxiety? A closer examination of the proposed link between anxiety and values will help to clarify what values May in particular was considering, and how these could be understood within sport.

It seems that May's (1977) account of values includes a maturation process whereby the needs and values of the healthy individual are transformed continuously until they take on a largely symbolic character. Mature values according to May, are those that the person has wrestled from life themselves; they may for example consist of a belief in freedom, or a commitment to God or the full equality of mankind. These values, no matter how deeply held, are constantly under threat and are always subject to change. However, for May, Kierkegaard and others, anxiety is described as a threat to those values which one holds dear and that in one sense, form the centre of a person's self. The truth in this statement

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can be seen where a person is prepared to forgo wealth, power, status and even accept death rather than abandon their own deeply held values! Of course, that very few people, at least in Western societies seem prepared to face anxiety and remain true to their value systems is indicative, according to all of the existential psychologists of this century, of the disintegration, self-alienation and large scale individual neurosis of our time.

Existential psychology has identified two dysfunctional ways by which individuals can respond to normal anxiety. They have argued that a person often attempts to escape from normal anxiety by either conforming to the view of others, or by crystallising one's values into rigid dogma. Both of these strategies have the effect of closing off the self and restrict opportunities for growth and change. According to May (1977), neurotic anxiety (which is a reaction that is disproportionate to the threat ) occurs where the person fails to meet the challenge of the normal anxiety which accompanies the threat to their values.

The importance of values as a strategy for successfully meeting competitive anxiety in sport seems a rather unlikely possibility, at first. However, that such a statement sounds strange may be more to do with the fact that psychology has traditionally been conceived of as, the science of behaviour, and as somehow magically separate from values, subjectivity, and even the mind (Caruso, 1964)! As the famous physicist, chemist and social scientist Polyani (1958) has stated, psychology is increasingly out of step with the other (natural) sciences, such as physics, which have long since accepted that pure objectivity, and strict cause and effect relationships are an impossibility, and that the scientist's work is laden with their own values and those of science.

#### ***4.7.13. Confronting or Avoiding Anxiety Experiences***

The implications of all of this for the studies considered here are many, however, two issues seem most important. The skaters in the second study reported being dissatisfied with the anxiety control intervention programme. Criticism focused on the lack of motivation towards learning the mental skills and the boring nature of the tapes, booklets and training sessions. Colaizzi (1979) has argued, genuine learning can never be boring (although it may

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be hard) because it is about our self, and in one sense, our value system. Material which is not related to our existence (i.e. existentially irrelevant abstractions), Colaizzi has called information acquisition, which is quite different to learning, in that it is easily forgotten or ignored and seems to the learner to be about other people and not intended for them alone. It may have been that several of the young skaters were in need of some kind of support to encourage them to confront anxiety positively, however, they might have viewed the intervention programme as an abstraction and not really aimed at them personally. In this, of course, they were right, as Cortlett (1996) has explained, techniques are not really about the person, but are for the person (to use). An older, more “respectful” group of athletes may have joined in the charade with more conviction, not wishing to seem incapable of learning such valuable mental skills, and if only to please the sports psychologist. The Hawthorne effect is remarkable both for its longevity and vigour in explaining many of the findings in mainstream psychology; unfortunately, few in sport psychology seem aware of or prepared to discuss this effect, which has come to assume the status of a law in other areas of study.

A major consequence of the existential approach for those involved in therapy, is that the goal should not be to free the clients from anxiety, but rather to help them overcome neurotic anxiety and to learn to face normal anxiety constructively (May and Schneider, 1995). This view of anxiety is diametrically opposed to the position adopted by most practitioners and researchers in sport psychology, where a range of stress management strategies and anxiety control techniques have been advocated and studied. Apart from the rather confusing picture that emerges whereby researchers have focused on stress management techniques to deal with anxiety prior to competitions (as Jones’ (1995) comprehensive review demonstrates), few studies have even considered that athletes may view anxiety positively (Jones *et al.*, 1994), and no-one has advocated that athletes are right to consider anxiety favourably. The findings from the diary-based study lend some support to this idea, although it is recognised that a much fuller qualitative account is necessary to strongly support this view. That several referees and netballers clearly enjoyed their performances even where they were apparently very anxious and tense, suggests that at least, enjoyment and anxiety are not necessarily opposites. In addition it would seem

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reasonable to suppose that enjoyable matches are usually those where good performance occurs. This again, may be evidence that the existential psychologists are much nearer the mark in their assessment of normal anxiety as something which helps to bring out the best in an individual, where they confront it with courage and hope. In terms of values, May and others following the existential approach contend that; **“the firmer and more flexible one’s values, the more one will be able to meet his anxiety constructively”** (May, 1975, p.247).

#### ***4.7.14. Advantages of Diary Based Approaches***

The diary-based study attempted to broaden the focus of this work by including several other constructs related to anxiety. The most important of these was depression. Jones *et al.* (1996) have questioned whether anxiety will ever be able to predict performance variance, or whether other emotions are more important. Lazarus’ important work in the mainstream focusing on stress has increasingly widened its scope, and recent studies (Lazarus, 1990) have moved to consider emotion as the central concern. From a different perspective Kremen (1996) has argued that whilst depression and anxiety are conceptually and clinically separable, they are less easy to differentiate psychometrically. Kremen (1996) has argued that the attempt to conceptualise anxiety and depression in terms of state and trait like features, has overlooked a more important issue, that it is likely that both share very similar cognitive-affective structures. However, an interesting difference has been reported by Clark and Watson (1988) in relation to positive affect and negative affect. They have argued that while negative affect accompanies both depressed and anxious mood states, depression also involves a large component of low positive affectivity which is not found in anxious mood states. Again the diary methodology seems more able to tease out this relationship than traditional psychometric approaches. This finding has considerable implications for sport anxiety research in that anxiety may be differentiated from other constructs, such as depression, because of its relation to positive affect. It could be argued that the correlation of positive affect and anxiety indicates that individuals are capable of distinguishing between anxious feelings that often accompany challenging and exciting



events, and the less enjoyable anxious experiences which can occur where the individual faces an event that they would rather avoid.

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#### ***4.7.15. Need for Conceptual Clarification***

The study by Kremen (1996) relied upon a qualitative and quantitative methodology; a wide range of experimental measures, self-report scales and observer-based data were used to assess anxiety and depression. However, this work, although emerging from a more cognitive-affective perspective, highlighted the importance of distinguishing between anxiety as an affective state which leads to feelings of incoherence and fragmentation, and anxiety as a response to various structural and structuring deficits. In sport officiating for example, this issue could be investigated in terms of whether poor pre-match preparation and bad decisions during the game lead to greater post-match anxiety. Alternatively, it could be that there is evidence that anxiety in the lead up to a match may result in poorer performance, but only where the individual considers this anxious experiencing as being a negative mood state. Although the diary study of rugby league referees and high level netballers provided some support for this interpretation, this methodology proved incapable of fully differentiating between what Fischer (1970) refers to as anxious experiencing, and the experience of the other-being-anxious. This important distinction is probably best understood by considering the physiological approach to the study of anxiety. The psychophysiological perspective typically follows the natural science approach which denies the value of reports provided by the subject, instead seeing them as subjective and untrustworthy. The focus is totally on the other-being-anxious (Fischer, 1970), and more problematic interest in meaning and cognitive processes is replaced by a strict natural scientific outlook which views the subject as a passive response mechanism. This approach arguably can be used to measure arousal. However, if as May (1977) has claimed, it remains unable to differentiate adequately between fear and anxiety, then it cannot be used in isolation to measure a concept which is more properly defined in terms of meaning and subjectivity.

Early research in sport tended to ignore conceptual distinctions between anxiety, stress and arousal and fear, and, in most cases, seemed unwilling to accept that these terms were not interchangeable, or that they existed because they referred to quite separate and distinct entities. This remarkable lack of scientific rigour shown by researchers can only be excused

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because of the relative youth of sport psychology. However, given that much of the early work was based on physiological approaches and neo-behaviourist learning theory, both of which had a long history in mainstream psychology research, suggests that many in sports research grasped at the nearest thing to hand. That this approach bore few results of any major importance in sport stress and anxiety research is difficult to argue against, given the way in which researchers in sport largely abandoned this line of work rapidly, when Martens' SCAT and CSAI-2 inventories became available!

It may be suggested that, rather than follow Martens' (1980) ultimately limited and narrow approach to competitive anxiety research, a much better response would have been to return to the much earlier and more comprehensive theories of anxiety provided by Freud, Jung and the existential psychologists. That these different psychologies and traditions consider anxiety as of considerable importance can be gauged from Freud's comments that: **"the problem of anxiety is a nodal point at which the most various and important questions converge, a riddle whose solution would be bound to throw a flood of light upon our whole mental existence"** (Freud, 1991, p.393).

#### ***4.7.16. Future Directions for Sports Anxiety Research***

Freud, it seems, considered anxiety to be something experienced by all human persons, and was interested in explaining why some people suffered more of it than others. His interest and that of his followers was on identifying the causes of anxiety. This he did by reference to underlying energy systems, and by describing the tensions arising out of the interplay between the three psychic processes of the id, ego, and superego and the external world. However, in keeping with the natural scientific model, little attention was directed at the meaning of anxiety.

In contrast, and in radical opposition to this, existential psychologists following Kierkegaard and May have been almost exclusively interested in the individual's experience of anxiety, and largely uninterested in its causes. Although still one-sided in its focus, following this approach to anxiety would have likely resulted in research findings of

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a more practical and applied significance in sport, and helped to clarify the structure of competitive anxiety. For example, surely the fact that so many sports performers at all levels talk about the need to feel “psyched up” prior to an event, is often another way of expressing that certain types of anxiety feelings are believed to be associated with good performances. That very few, if any, sport anxiety studies have explicitly reported this finding suggests that most have been more interested in measuring anxiety symptoms with questionnaires, or neurophysiological equipment, rather than looking at meaning.

Fischer (1970) has pointed out that the existential approach to anxiety could provide a more complete account of the phenomenon by including descriptions of the visible symptoms and behaviour of the anxious individual. This approach has been used recently in sport studies (Males and Kerr, 1996) where the subject has been shown a filmed recording of their performance and questioned on how they felt at different junctures. Although not addressing anxiety and performance exclusively, this approach could have considerable potential in sport research especially where studies are focusing on in-competition anxiety and its relationship to performance. For example, May’s (1977) description of anxious experiencing describes how anxiety involves the experience of the catastrophic situation where an individual feels as though they are going to pieces. In addition, he has stated that we are able to observe certain changes in the physiognomy of a person experiencing anxiety, however, identification of causes can only begin to be achieved with any real accuracy by getting the subject to identify which causal agents made them feel anxious at any particular moment. In sport, a performer watching a recording of their own performance, may be able to explain that when they missed the penalty shot, contrary to what might normally be expected, there was a sense of relief that their turn was over, and that having done their best as a defender it was now up to the strikers and attacking midfielders to make certain! In contrast the striker may feel confident and largely anxiety free before his attempt and yet, upon scoring, start to experience anxiety because he has broken the flow, and has now become aware of the importance of what he has just achieved (and consequently, what could have happened should he have missed). Alternatively, he may now experience intense competitive anxiety after his successful performance in relation to the performance of others (i.e. his team mates). An existential psychology based

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interpretation of this might focus on the distinction between successfully meeting a potentially anxiety-filled situation where the choice of action and responsibility was accepted. In contrast, where responsibility and control of events fall outside of an individual's influence, even though they have an acute and personal interest in the outcome, these may be occasions for the most debilitating and negatively perceived anxiety experiences.

The example of the football player taking an important penalty has been neatly addressed by May in claiming that: **"When there is great stress, there may be freedom from anxiety"** (May, 1977, p.112). This can be understood outside of sport and even at a community level. For example, it is commonly reported that the high stress experienced during the Blitz in the war was associated with a reduction in free floating normal anxiety. Indeed old soldiers surprisingly often mention their "war years" as the most exciting and happiest of their lives although they experienced the very real stresses of combat fatigue, physical hardship and extreme personal danger. The inadequacy of most sports research in using the terms stress and anxiety interchangeably is sharply evident from these examples, and yet this loose thinking appears undiminished.

Although Martens expressed his: **"grave doubts about the utility of laboratory research for most of sport psychology"** (Martens, 1979, p.94), and wondered aloud why sports psychology has had very little influence on the world of sport, little has altered in terms of the dominant paradigms in the area. Even after this criticism, Martens himself produced the CSAI-2 and has gone on to co-author the main text on competitive anxiety in sport, which was published in 1990, neither of which in any way challenges the accepted trait dominated approach to anxiety in sport. It is worth mentioning what the "Father" of Western sport psychology, and the most quoted researcher on anxiety in sport has to say in 1979 when assessing the need for change in the subject area: **"If we continue to follow the traditional path so deeply cut by our graduate programs, the major journals of our related fields, and our borrowed research paradigm, it will result in a sport psychology of predictive impotence and theoretical irrelevance. Certainly today sport psychology trades more on promise than on performance"** (Martens, 1979, pp. 96-97) And yet almost 20 years

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later Jones (1995) in his review of anxiety research in sport managed to put up a spirited defence of narrow and positivistic models such as catastrophe theory (Thom, 1975) chiding Krane in the process and reminding readers that: **“Sport psychology is not merely about ‘practical issues’”** (Jones, 1995, p.469) That his article concludes by highlighting that there has been a relative failure in efforts aimed at predicting performance variance from pre-competitive anxiety measures may be interpreted in two ways. It could be taken as yet further evidence that existing approaches to the study of anxiety in sport lack ecological validity and are incapable of identifying this important relationship. However, equally likely, it may be that no such clear relationship actually exists, and that as Gill (1994) has argued, a much broader range of constructs need to be considered if researchers are to be able to even begin to seriously address this issue.

The answer would seem to already lie elsewhere, and yet sport psychology appears determined to follow approaches that have been of little success in the mainstream in the past. One notable and disturbing example is the recent interest shown in psychophysiological approaches to anxiety in sport (Gill, 1994). Jones (1995) has advocated that this approach is worthy of being pursued, although May (1977), the first researcher in English speaking countries to receive his doctorate for investigating the meaning of anxiety, warned many years earlier that without an integrating theory of mind-body three common errors would continue to plague research in this area: **“The first is the error, on one side, of identifying an emotion with a neurophysiological process. The second is the error in the middle of “neurologizing tautology” (e.g.: merely describing sympathetic activity as the neurophysiological aspect of anxiety). And the third error on the other side of assuming a simple dichotomy between neurophysiological and psychological processes”** (May 1977, p.94).

In conclusion, sport anxiety research has witnessed considerable activity in the past 20 years since the introduction of the SCAT in 1977 and the CSAI-2 in 1982. This development undoubtedly gave impetus to sport psychology research in the area of competitive anxiety and led to numerous studies, especially in terms of investigating the performance-anxiety relationship. However, that very little new or interesting and unexpected findings have

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been reported during much of this period, seems due to the over-reliance on limited and narrow approaches to the topic. In order to rescue research in sport and anxiety from the theoretical cul-de-sac it now seems to occupy, much greater attention should be devoted to considering older and much more complex accounts of anxiety. In practical terms, it may mean that researchers will need to redirect their focus away from the aridness of much North American sports psychology research largely based as it is on the tenets of behaviourism, neo-behaviourism and trait psychology, and turn towards more fruitful, rich and subtle European approaches to an understanding of anxiety. For sports anxiety research, the choice must be made. It is either more of the same, or a way forward that seeks to study anxiety rather than merely its symptoms, and which is prepared to consider anxiety as something all people experience which can nevertheless be associated with growth and success, or fear and failure

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## 5 Chapter Five: An Investigation of Anxiety, Mood and Sports Performance

### 5.1. Introduction

Gill (1994) has suggested that a much broader approach is required to begin to investigate more fully the relationship between anxiety and sport performance. Others (Jones, 1995) have called for further developments, such as, the use of more ecologically valid measures of performance, the consideration of mood alongside anxiety, and designs which allow in-depth intra-individual analysis. A diary-based methodology according to Nesti and Sewell (1999) meets several of these requirements and facilitates the collection of a large data set which can be analysed both at the inter-individual and intra-individual levels.

Undoubtedly, a major difficulty with research in the area has been the use of inappropriate measures of performance. Successful sports performance, especially at the higher levels of achievement depends on a range of factors. However, applied sport research (Gould and Kane, 1992) has argued that psychological skills such as arousal control, and the ability to concentrate and focus attention appropriately are the most important factors affecting performance outcome. Anecdotal accounts abound in the literature on emotion and sport (Kerr, 1997) of where poor performances have been explained in terms of mood, arousal and motivation problems. In addition, coaches and athletes talk about being “psyched out” by the opposition, or the need to, “stay relaxed and focus on your own performance”. However, research investigating the relationship between mood, arousal, anxiety and performance in sport has largely failed to produce clear unequivocal results. Jones *et al.* (1997) has argued that this situation has arisen because of the limitations of pre-performance measures. Most research investigating the relationships between emotions and performance has utilised methods to collect data prior to the event. However, as Krane *et al.* (1994) have observed it is most likely that changes in anxiety, arousal, and other states during an event itself will have the greatest impact upon performance. Jones *et al.*'s (1997) study with climbers has demonstrated that within performance measures can be taken, at least in some sports activities. In their study, Jones *et al.* had participants complete the Perceived Stress Index at two different points on a climbing wall. Interestingly, they found that whilst the group that had

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received mental rehearsal training recorded lower stress levels than the control group immediately prior to the climb there were no differences between groups for stress levels during the climb. Rather than focus on the effects of the intervention programme, Jones *et al.* (1997) discussed their results in terms of the need to recognise that pre-performance emotional states are not valid predictors of emotional states during performance. This work represents an innovative attempt at measuring emotion within sports performance. Nevertheless, the limitations with such an approach are considerable. For example, this data collection method can only be used where there are natural breaks in the performance such as time-outs in basketball, half-time or between bouts. In addition, it could be argued that such a method could be more easily used in self-paced closed skill activities such as golf, shooting, archery and bowling, than in sport activities of a more continuous nature, like football, swimming and sprinting.

Although focusing on reversal theory, studies by Omodei and McClennan (1994) and Males *et al.* (1997) have utilised video assisted recall which involves showing performers film of past events and asking them to describe their feelings and emotional state at the key stages of the performance. This approach seems an improvement on the current over-reliance on the CSAI-2 and other questionnaires used to record anxiety and mood pre-performance. However, a major problem with video-assisted recall is that the accuracy of the data depends upon the memory of the athlete, and their ability to describe complex experiences in clear terms. Nevertheless, when combined with other methods or where longitudinal data is collected throughout the season as Males and Kerr (1996) managed in their study of 9 elite level canoeists, it represents a promising new development.

Males and Kerr's (1996) work is additionally interesting because the data were analysed using both inter-individual and intra-individual approaches. Through the calculation of performance and mood Z-scores for each individual over a number of races in a season and through analysis of interview data, the main finding was that elite canoeists maintained a stable pattern of pre-performance moods. In addition, a closer analysis revealed that there were no significant differences between any of the 16 emotion scores before best and worst performances. This finding appears to have been largely ignored if

the continued plethora of studies investigating anxiety, mood and performance in sport and considered.

There have been few attempts to consider post performance mood states and the anxiety experiences of sport participants. This may prove to be a fruitful area of research, given that a key role for coaches and sports psychologists is to help athletes maintain motivation and confidence after heavy defeats and poor performances. Annesi (1997) has investigated the validity of using the CSAI-2 as a measure to recall competitive anxiety several days after sport performance, however the focus was on confirming that the CSAI-2 is actually a trait and not a state measure.

Finally, studies in the area of mood, anxiety and performance continue to ignore the social and the situational context within which sporting events take place. Further there seems to be little interest in considering an athlete's mood and anxiety experiences in sport in relation to their life viewed as a whole. This is unfortunate given that for non-professional athletes in particular, work related concerns, relationship issues and family commitments may have a much greater impact than participation in sport on their mood and anxiety states.

## **5.2. Study 4**

### **5.3. Methodology**

#### ***5.3.1. Methods and Procedures***

##### **5.3.1.1. Subjects**

Rugby League players (n=19) representing the Great Britain Student Squad were included in this study. All players had played representative student rugby league for the four home nations and several were involved with senior professional clubs (n=6), although none were regular first team players. All subjects were currently pursuing undergraduate degrees at universities in the U.K.

##### **5.3.1.2. Procedures**

An initial meeting was organised four weeks before the GB Students Rugby League Tour to discuss possible psychological support that could be made available to interested players. The Head coach was particularly keen to include sport psychology as an element of his overall work with the team and was committed to providing his players with an opportunity to access expertise in this area. The players were informed that as part of this process they would be requested to provide data relating to their psychological states and their match performances during the forthcoming international tour. Players were told that whilst the data would be used for research purposes and to provide general feedback, confidentiality was assured and no individual would be identified as part of this process.

Subjects (n=19) were requested to complete the CSAI-2 10 minutes prior to a match against an international Regional Select team and 10 minutes before an international Test Match. Performance rating questionnaires (Appendix D3) were completed by subjects immediately after each match. These questionnaires asked subjects to score their own performance, the team performance, and to rate the performance of each individual member of the team on a 7 point Likert scale from very weak to excellent.

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Instructions to ensure accurate and correct completion of the CSAI-2 and the performance rating inventories were included on each form, and the Head coach was thoroughly briefed beforehand. The Head coach and the team manager administered the questionnaires at the international venues and ensured that the correct procedures were followed.

Subjects (n=19) agreed to complete daily diaries relating to mood, anxiety and behavioural events. The subjects were fully briefed on how to complete the diary entries each day. Instructions relating to completion of diaries (Appendix D1 and D2) were made available to each player. Coaches (n=2) and team manager attended the briefing session to encourage the players to adhere closely to the data collection procedures, and to provide as much information as they could within their daily diaries. Finally players were reminded to complete all sections last thing at night, and to ensure that data for the full 12 day period was recorded.

The daily diary used in this study was based on an earlier version by Clough *et al.* (1996), in their work on exercise and mental states. In addition, findings from study 3 with Rugby League referees and netballers suggested that further amendments were required to improve the validity and reliability of this method of data collection.

Following Watson and Tellegen (1985) mood was measured in terms of Positive Affect (PA) and Negative Affect (NA):

(NA) Weariness = Energetic / Weary + Tired / Alert.

(NA) Anxious = Anxious / Calm + Relaxed / Tense.

(PA) Cheerfulness = Happy / Unhappy\* + Depressed / Elated.

*\*Watson and Tellegen's original bipolar mood item Cheerful / Miserable was dropped and replaced with Happy / Unhappy because of much greater use of these terms in the descriptive diary data in study 3.*

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In addition, descriptive diary data from study 3 suggested that a further three bipolar mood scales were required to enhance the internal validity and external validity of Watson and Tellegen's conceptualisation of mood. The additional scales included were as follows: Distracted / Focused; Excited / Bored; Worried / Confident. Following this, mood items were collapsed into 6 broad measures:

(NA) = Distracted / Focused

(NA) = Worried / Confident

(PA) = Excited / Bored

(NA) Weariness = Energetic / Weary + Tired / Alert

(NA) Anxious = Anxious / Calm + Relaxed / Tense

(PA) Cheerfulness = Happy / Unhappy + Depressed / Elated

Separate behavioural measures relating to sleep quality, sleep quantity, work pressure, time commitments, rest and training were included in the diaries. Again, these differ from those items used in study 3 in that two separate measures of sleep were included, mental work load and physical work load were replaced by work pressure, and eating and exercise were replaced by rest and training.

Finally, an open-ended section allowed subjects to describe any significant events that influenced their mood that day, whether related to Rugby League, or life in general. These instructions were considerably different to those provided in study 3 where respondents were requested to mention significant events that occurred and whether these were interpreted as positive or negative.

Data from the CSAI-2, the performance rating questionnaires, and the daily diaries, were used to provide feedback to the players alongside data from the Group Environment Questionnaire (Gould and Weinberg, 1996) (Appendix D4). A mental skills training programme was offered to the players based on this data, and one to one counselling sessions were made available for those individuals (n=4) that wished for more in-depth support. This work highlighted the importance of ensuring that subjects in applied sport

psychology research are offered something in return for their efforts to provide data. In addition, such an approach is vital to guaranteeing full support from the coaching staff regarding data collection, and indeed may be essential when trying to work with elite level athletes during important competitions.

The completion rate for the daily diaries was affected by a range of personal and situational factors, such as, how organised individuals were, their motivation towards the proposed sport psychology programme, perceived and real psychological needs, and the time consuming nature of filling in diaries late at night. As a result, only 11 fully completed diaries were submitted, 3 diaries were returned with large sections of data missing including several days with no entries, and 5 subjects did not complete the exercise at all.

In conclusion, the diary based methodology used in this study was used to capture qualitative and quantitative data over a 12 day period involving two international matches. Subjects (n=19) were instructed to start their diary entries 2 days before their international tour began in order to establish baseline mood and anxiety scores. Diaries were then to be completed throughout the next 5 days during which time the 2 matches were played. Finally, players were requested to complete diaries for a further 5 days after the tour had ended.

Involvement with the coaching team and squad of players was considered a necessary part of this study. Therefore, whilst the longitudinal diary data and questionnaire results related to a relatively brief 12 day period, the work prior to this part of the study, and the support programme offered after the tour matches required a six month commitment from March to August (Appendix D7).

## 5.4. Results

### 5.4.1. Match Performance Data

Considering data for both matches combined (Appendix D5), a paired t-test revealed a significant difference between means (mean  $\pm$  SD), for others score ( $4.8 \pm .5$ ) and self score ( $4.3 \pm .8$ ) paired  $t(33) = 3.92$ ,  $p = .001$ ., and a significant difference between self score ( $4.3 \pm .8$ ) and mean score awarded to other players ( $4.8 \pm .3$ ), paired  $t(33) = -3.30$ ,  $p = .002$ . A difference approaching significance was found for team scores ( $4.4 \pm .6$ ) and mean score awarded to other players ( $4.8 \pm .3$ ) paired  $t(33) = -5.29$ ,  $p = .06$ . No difference was found between team score ( $4.4 \pm .6$ ) and self score ( $4.3 \pm .8$ ), paired  $t(33) = 0.42$ ,  $p = .67$ , ns. (Table 41) (Figure 18).

**Table 41.** Mean ( $\pm$ s) scores for match performance data (both matches combined).

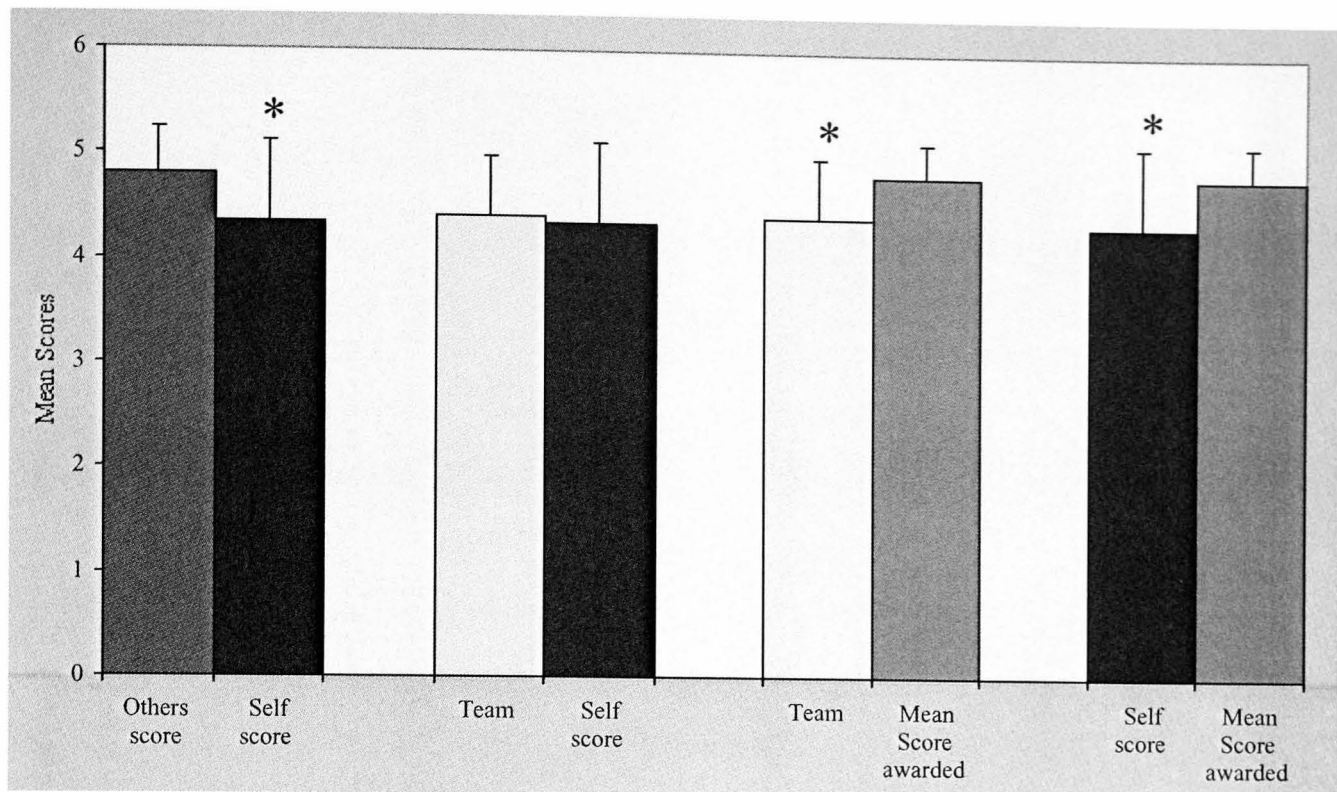
	Self Score	Team Score	Others Score	Mean Score Awarded
Mean	4.35	4.41	4.80	4.81
s	0.78	0.57	0.45	0.33

*Self Score* = How a player rated their own match performance overall.

*Team score* = How player rated the overall performance of the team in the match.

*Others Score* = An average score based on how each individual member of the team rated this player.

*Mean Score Awarded* = An average score based on how player rated each individual member of the team.



**Figure 18.** Mean ( $\pm$ s) scores for match performance data (both matches combined) \* indicates  $P < 0.05$

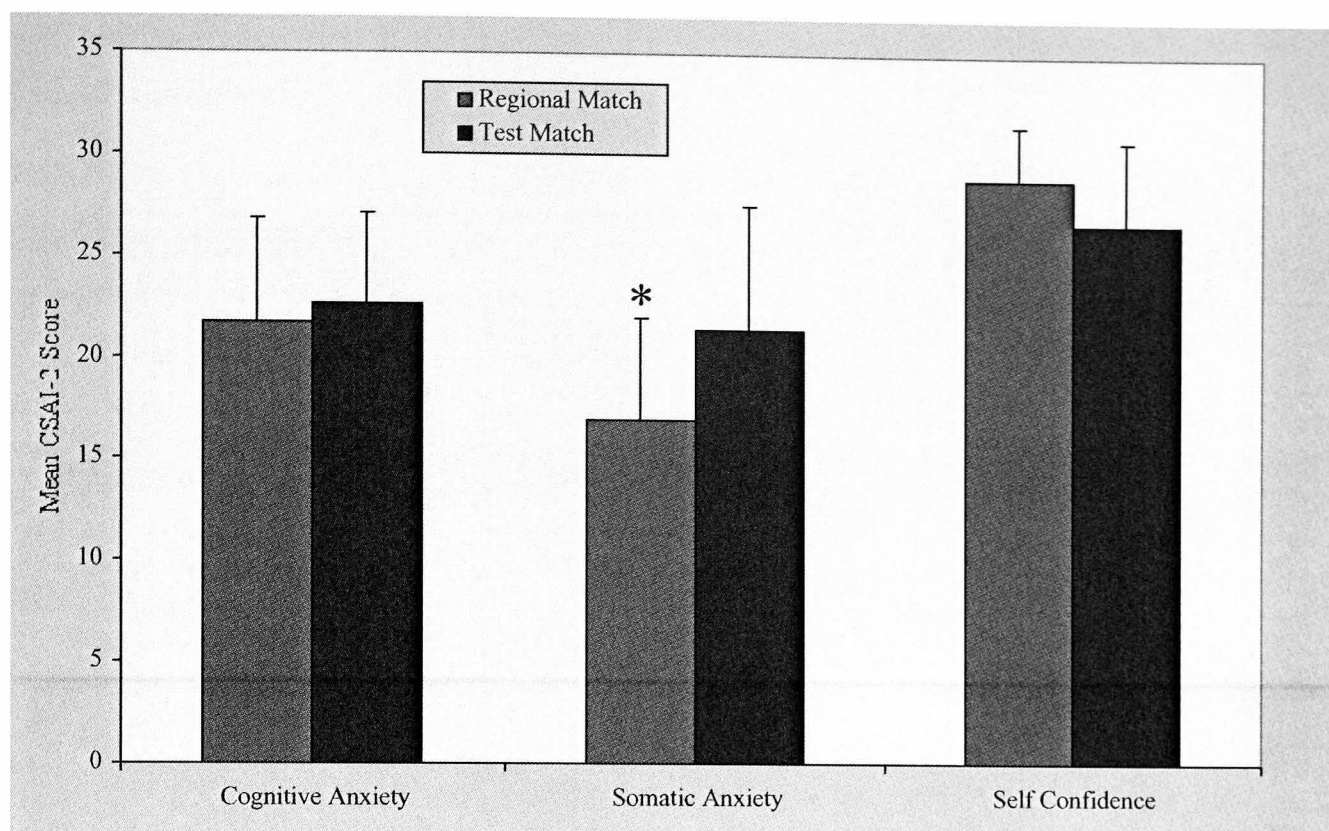
### 5.4.2. Competitive State Anxiety

A paired t test revealed a significant difference for somatic anxiety scores pre ( $M_s = 16.9$ ) and post, ( $M_s = 21.4$ ) paired  $t(14) = -4.28, p = .001$ . The mean scores for somatic anxiety post ( $M_s = 21.4$ ) and pre ( $M_s = 16.9$ ) represented the only significant difference reported between samples using the CSAI-2, although a mean difference for self-confidence pre ( $M_s = 28.8$ ) and post ( $M_s = 26.6$ ) approaching significance was found, paired  $t(14) = 1.95, p = 0.07$ . (Table 42) (Figure 19).

**Table 42.** Mean ( $\pm$ s) CSAI-2 Scores for the Regional Match and the Test match

		Regional	Test
Cognitive Anxiety	Mean	21.67	22.60
	s	5.09	4.47
Somatic Anxiety	Mean	16.93	21.40
	s	5.02	6.13
Self Confidence	Mean	28.87	26.67
	s	2.64	4.17





**Figure 19.** Mean ( $\pm$ s) CSAI-2 Scores for the Regional Match and the Test match \* indicates  $p < 0.05$

### 5.4.3. Correlations

#### 5.4.3.1. Match Performance data and CSAI-2 scores

Pearson correlation co-efficients were computed for pre (Regional match) (Table 43) and post (Test match) (Table 44) separately, and for both matches combined (Table 45). Performance total indicates the combination of the score awarded and self score, score awarded is the mean score awarded by other team members.

The strongest significant correlations were reported for; mean score awarded by other team members and combination of score awarded and self score for, matches combined ( $r=.98, p<.05$ ), first match ( $r=.98, p<.05$ ) and second match ( $r=.99, p<.05$ ).

Significant correlations were found for score awarded self and combination of score awarded and self score for, combined matches ( $r=.66, p<.05$ ), and for the second match ( $r=.77, p<.05$ ). Further strong correlations were reported for score awarded self and mean

score awarded by other team members for, combined matches ( $r=.59, p<.05$ ) and for the second match ( $r=.76, p<.05$ ).

**Table 43.** Correlations between CSAI-2 scores and match performance data for the regional match

Performance Total	.0173				
	P = 0.948				
Self Confidence	-.2896	.4407			
	P = 0.260	P = 0.077			
Score Awarded	-.0284	<b>.9858</b>	.4558		
	P = 0.914	<b>P = 0.000</b>	P = 0.066		
Self Score	.3139	.3937	-.0067	.2756	
	P = 0.220	P = 0.118	P = 0.980	P = 0.284	
Somatic Anxiety	<b>.6782</b>	-.1327	<b>-.6671</b>	-.1779	.0660
	<b>P = 0.003</b>	P = 0.612	<b>P = 0.003</b>	P = 0.495	P = 0.801
	Cognitive Anxiety	Performance Total	Self Confidence	Score Awarded	Self Score

**Table 44.** Correlations between CSAI-2 scores and match performance data for the test match

Performance Total	-.2970				
	P = 0.247				
Self Confidence	-.3467	.4000			
	P = 0.173	P = 0.112			
Score Awarded	-.3348	<b>.9920</b>	.4323		
	P = 0.189	<b>P = 0.000</b>	P = 0.083		
Self Score	-.1497	<b>.7747</b>	.3713	<b>.7671</b>	
	P = 0.580	<b>P = 0.000</b>	P = 0.157	<b>P = 0.001</b>	
Somatic Anxiety	<b>.6394</b>	-.2193	<b>-.6212</b>	-.2555	-.3960
	<b>P = 0.006</b>	P = 0.398	<b>P = 0.008</b>	P = 0.322	P = 0.129
	Cognitive Anxiety	Performance Total	Self Confidence	Score Awarded	Self Score

The expected strong correlations for somatic anxiety and cognitive anxiety were found for matches combined ( $r=.60, p<.05$ ), first match ( $r=.67, p<.05$ ) and second match ( $r=.63, p<.05$ ). In addition, self-confidence was found to be strongly negatively related to somatic anxiety scores for both matches combined ( $r=-.67, p<.05$ ), the first match ( $r=-.67, p<.05$ ) and for the

second match ( $r=-.62, p<.05$ ). However, self-confidence and cognitive anxiety scores were significantly correlated only for both matches combined ( $r=-.35, p<.05$ ).

**Table 45.** Correlations between CSAI-2 scores and match performance data for both matches combined

Performance Total	-.1172				
	P= 0.509				
Self Confidence	-.3525	.3914			
	P = 0.041	P = 0.022			
Score Awarded	-.1665	.9878	.4068		
	P = 0.347	P = 0.000	P = 0.017		
Self Score	.1010	.6665	.1619	.5975	
	P = 0.576	P = 0.000	P = 0.368	P = 0.000	
Somatic Anxiety	.6007	-.1322	-.6784	-.1567	-.0270
	P = 0.000	P = 0.456	P = 0.000	P = 0.376	P = 0.881
	Cognitive Anxiety	Performance Total	Self Confidence	Score Awarded	Self Score

The expected strong correlations for somatic anxiety and cognitive anxiety were found for matches combined ( $r=.60, p<.05$ ), first match ( $r=.67, p<.05$ ) and second match ( $r=.63, p<.05$ ). In addition, self-confidence was found to be strongly negatively related to somatic anxiety scores for both matches combined ( $r=-.67, p<.05$ ), the first match ( $r=-.67, p<.05$ ) and for the second match ( $r=-.62, p<.05$ ). However, self-confidence and cognitive anxiety scores were significantly correlated only for both matches combined ( $r=-.35, p<.05$ ).

Interestingly, whilst somatic anxiety and cognitive scores did not produce significant correlations with match performance data, self-confidence scores for both matches combined correlated significantly with mean score awarded by other team members ( $r=.40, p<.05$ ), and with combination of score awarded and self score ( $r=.39, p<.05$ ).

It should be noted that the strong and significant correlations reported between performance total and score awarded, and for performance total and self score, are largely due to the effect of including a combination score with its constituent.

## 5.4.3.2. Diary Correlations

**Table 46.**Correlations between diary mood states, anxiety, behavioural variables and match performance scores for both games combined. Bold text indicates significant correlation,  $P < 0.05$

1- Cheerfulness	-.40													
2-Distraction	.29	-.19												
3-Excitement	-.28	<b>.66</b>	-.30											
4- Performance total	.30	.12	.21	.01										
5- Rest	-.12	-.33	-.26	.01	-.06									
6- Score Awarded	.23	.16	.26	.02	<b>.99</b>	-.16								
7- Self Score	.32	.14	-.04	-.03	<b>.71</b>	.03	<b>.61</b>							
8- Sleep Quality	-.40	.40	-.33	<b>.75</b>	.14	.21	.16	.06						
9- Sleep Quantity	<b>-.57</b>	.40	-.45	<b>.62</b>	.12	.26	.15	.09	<b>.87</b>					
10- Time Constraints	.21	.13	-.35	.46	-.01	-.21	.01	.13	.49	.38				
11- Training	-.09	-.21	-.33	.19	.01	.22	.03	-.25	.36	.36	.27			
12-Weary	.17	-.14	.44	<b>-.53</b>	-.23	-.31	-.23	-.10	<b>-.79</b>	<b>-.67</b>	<b>-.54</b>	<b>-.63</b>		
13- Work Pressure	.37	-.37	-.24	-.01	-.05	.42	-.10	-.08	.07	.08	.23	.29	-.14	
14- Worried	.48	<b>-.82</b>	.09	-.37	-.14	.28	-.22	.10	-.30	-.37	.11	.05	.02	.30
	Anxiety	1	2	3	4	5	6	7	8	9	10	11	12	13

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Correlations between diary data for anxiety and mood variables, behavioural variables and match performance ratings were computed for both matches combined. Again, no significant correlations were found between anxiety and mood scores and match performance scores, or between behavioural variables and performance scores.

Strong significant correlations were found for; sleep quantity and anxiety ( $r=-.57, p<.05$ ), sleep quantity and excitement ( $r=.61, p<.05$ ) sleep quantity and sleep quality ( $r=.87, p<.05$ ), sleep quality and excitement ( $r=.75, p<.05$ ) and sleep quality and weariness ( $r=-.67, p<.05$ ).

Cheerfulness was significantly correlated with excitement ( $r=.65, p<.05$ ) and negatively correlated with worry ( $r=-.82, p<.05$ ).

Interestingly, weariness was the mood variable which reported the greatest number of correlations with other mood or behavioural variables. Strong significant correlations were reported for weariness and excitement ( $r=-.53, p<.05$ ), weariness and sleep quality ( $r=-.79, p<.05$ ), weariness and sleep quantity ( $r=-.67, p<.05$ ), weariness and time commitments ( $r=-.54, p<.05$ ) and weariness and training ( $r=-.63, p<.05$ ). (Table 46).

The diary based methodology allows for a series of correlations to be computed between mood, anxiety and behavioural variables for each individual ( $n=11$ ). Tables reported in Appendix D6 present the data set for each player who completed diaries for the full 12 day period. Whilst a total of 141 significant correlations ( $r=.4, p<.05$ ) are reported across all subjects ( $n=11$ ) as a group, no clear pattern can be discerned in most cases. Important individual differences have been found throughout the data set, although there are several strong significant correlations reported for some mood states and behavioural variables that reveal a uniformity of understanding. In terms of individual differences the following correlations are important. Subject 8 reported a strong positive correlation for anxiety and cheerfulness ( $r=.60, p<.05$ ) and subjects 2 ( $r=-.80, p<.05$ ), 5 ( $r=-.74, p<.05$ ) 6 ( $r=-.95, p<.05$ ) and subject 9 ( $r=-.69, p<.05$ ) reported strong negative correlations for anxiety and cheerfulness. Correlations for worried and anxiety revealed that strong significant relationships were found in the following data sets; subject 2 ( $r=.77, p<.05$ ), Subject 4

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( $r=.76, p<.05$ , Subject 6 ( $r=.75, p<.05$ ), and subject 10 ( $r=.87, p<.05$ ). Interestingly, of the 7 remaining subjects, only subject 5 reported a result approaching significance ( $r=.52, p=.07$ ) for anxiety and worried. The strongest positive correlation between mood variables across the entire data set, was reported for subject 7 for excitement and cheerfulness ( $r=.89, p<.05$ ), however only 1 other subject (2) reported a significant correlation for these variables ( $r=.61, p<.05$ ). The strongest negative correlation between mood variables was reported in the data set for subject 6 for anxiety and cheerfulness ( $r=-.95, p<.05$ ). Subject 4 reported a total of 10 significant correlations for; anxiety and rest ( $r=-.80, p<.05$ ), anxiety and sleep quality ( $r=-.75, p<.05$ ), anxiety and sleep quantity ( $r=-.77, p<.05$ ), anxiety and training ( $r=-.70, p<.05$ ), anxiety and weariness ( $r=.65, p<.05$ ) anxiety and worried ( $r=.76, p<.05$ ), cheerfulness and sleep quality ( $r=.66, p<.05$ ), cheerfulness and sleep quantity ( $r=.67, p<.05$ ), cheerfulness and training ( $r=.73, p<.05$ ), and cheerfulness and work pressure ( $r=.73, p<.05$ ). In contrast subject 11 reported no significant correlations for either anxiety or cheerfulness with any of the other mood or behavioural variables. Further analysis of the 141 significant correlations from the daily diaries data (Table 47) revealed that all subjects ( $n=11$ ) reported strong and significant correlations for sleep quality and quantity, and that 7 significant positive correlations were found for work pressure and time commitments.

In terms of correlations between mood, anxiety and behavioural variables, 6 subjects reported strong positive significant correlations between excitement and training, and 4 subjects reported strong negative significant correlations between training and distracted. (Table 47).

**Table 47.** Summary of significant correlations ( $r > .4$ ,  $P < 0.05$ ) between diary mood states, anxiety and behavioural variables for all subjects completing diaries ( $n=11$ )

1- Cheerfulness	4-ve 1+ve												
2-Distraction		1 -ve											
3 -Excitement		2+ve	6-ve										
4- Rest	1+ve 1-ve	2-ve		1-ve									
5 - Sleep Quality	2-ve	2+ve	2-ve	2+ve	1-ve 1+ve								
6 - Sleep Quantity		2-ve	2-ve	1-ve	1-ve 1+ve	11 +ve							
7 - Time Commitment	1-ve	1+ve	1-ve	2-ve		1-ve 4+ve	1-ve 3+ve						
8 - Training	1-ve	3+ve	4-ve	6+ve	1-ve 1+ve	2+ve	1+ve						
9 -Weary	1-ve 1+ve	1-ve	3+ve	3-ve	1+ve	2-ve	2-ve	3-ve	2-ve				
10 - Work Pressure		1+ve	2-ve	2+ve	1-ve	1+ve		7+ve	2+ve	3-ve			
11- Worried	4+ve	4-ve	4+ve	1-ve	1-ve 1+ve	2-ve	2-ve	1-ve	1-ve 1+ve	1+ve			
	Anxi ety	1	2	3	4	5	6	7	8	9	10	11	

Interestingly, no significant correlations were found for anxiety and excitement. In contrast 6 subjects reported significant negative correlations between excitement and distraction.

No significant correlations were found for anxiety and distraction, however 4 subjects reported significant positive correlations for worried and distraction.



Excluding the 11 correlations between sleep quality and sleep quantity, the sleep variables combined accounted for 38 of the 141 total number of significant correlations reported. This represents approximately 30% of all significant correlations reported in table 47.

#### ***5.4.4. Intra-individual analysis***

The diary methodology allows for a combined qualitative and quantitative analysis of an individual's data set. A series of Z-scores for psychological mood data and behavioural data may be more fully explained after consideration of qualitative accounts relating to significant daily events and activities which have been recorded simultaneously.

##### **5.4.4.1. Mood, Anxiety and Performance**

All subjects (n=11) provided qualitative data in their diaries throughout the 12 day period, however, the level of detail varied considerably. The results reported in the tables relate to an analysis of the Z-scores, qualitative data, and performance ratings of the most comprehensive, detailed and complete daily diaries (n=6).

Subject 12 (Table 48) played in the first match only, and received the lowest overall performance rating (4.18) in the team. Z-scores for this subject can be more fully explained alongside the qualitative data provided. The generally stable pattern of anxiety and mood states on day 2, with the exception of cheerfulness (-1.93), related to being, **“Stuck on a coach somewhere in France, feeling frustrated with no real food, not sure whether we’ll eat when we get to the hotel or not, and need something to distract me from negative thoughts about the match”**. However, on day 3 the mood profile altered dramatically, most strikingly seen in Z-scores for cheerful (3.13) and distracted (-2.43). Again the qualitative data helps to explain this shift to a positive affect profile, **“After a nightmare journey the early morning training session was just what was required. It went really well and lifted my spirits making it easier to focus on the job in hand. Feel everything positive now, the coach journey seems like it was days away.”**

**Table 48.** Changes in daily diary z-scores over 12 days for mood anxiety and behavioural variables (Subject 12) (TC = Time Commitment) Match Day – Day 4.

Day	Weary	Anxious	Cheerful	Excited	Distracted	Worried	Sleep Quality	Sleep Quantity	Work Pressure	TC	Rest	Training
2	0.11	0.06	-1.93	-0.05	0.93	0.00	0.00	0.00	-1.52	0.22	1.83	-1.74
3	-2.37	1.34	3.13	2.30	-2.43	-1.55	0.11	0.11	1.92	-1.31	0.08	2.34
4	<b>0.34</b>	<b>-0.67</b>	<b>-1.93</b>	<b>-0.33</b>	<b>0.23</b>	<b>2.41</b>	<b>1.22</b>	<b>2.27</b>	<b>0.00</b>	<b>0.05</b>	<b>0.08</b>	<b>-1.04</b>
5	-0.34	-0.43	1.04	0.19	0.06	-1.17	-1.33	-1.16	-0.24	-0.16	0.24	-0.99
6	-0.06	1.71	-2.38	0.10	-0.35	-1.94	1.12	-0.05	0.08	0.66	-2.39	2.14
7	2.26	0.79	0.52	-2.25	2.67	2.02	-1.22	-1.32	-2.08	-2.03	2.15	-2.59
8	-0.11	-2.68	0.82	-0.05	-0.23	-0.16	2.55	2.64	0.00	-0.05	-0.08	-0.05
9	-0.85	0.12	0.52	0.33	-0.93	-1.55	0.11	-0.16	0.08	0.05	0.02	0.20
10	-1.13	-0.06	0.60	0.05	0.00	-0.08	-0.43	-0.21	0.16	1.37	-2.00	0.10
11	0.23	0.06	-0.37	0.96	0.06	0.54	-0.90	-1.00	0.00	-0.11	0.08	-0.10
12	0.45	2.07	-1.12	-1.05	0.81	1.24	-0.11	0.05	0.00	-1.15	1.91	0.10

The player's mood and anxiety profile on day 3 leading up to the first match on day 4 is very positive, however, this did not prevent the player from having a poor match by his own admission, and achieving the lowest performance rating (Appendix D5). The impact of this poor performance in the match is most clearly seen with his Z-scores for worried (2.41) and cheerful(-1.93) on day 4. Z-scores on day 5 revealed that mood and anxiety states had improved (Cheerful, 1.04, worried, -1.17) only to drop again on day 6 (anxiety 1.71, cheerful -2.38) after not being selected to play in the test match. This decline into negative affect continued on day 7 due to having time to dwell on negative thoughts by being, **“Stuck on the coach again for another nightmare journey”**.

Finally, there seems to be some evidence that the variables of anxiety and worried were interpreted quite differently by this subject. Whilst conceptually there appears to be a close positive relationship between anxiety and worried, this was often not evident from the Z-scores, most notably during periods immediately before and after matches. For example this can be viewed by comparison of Z-scores for anxiety in days 3 (1.34), 4 (-.67), 6 (1.71) and Z-scores for worried in days 3 (-1.55), 4 (2.41), 6 (-1.94). A further important result highlights the intricate relationship between cheerfulness and anxiety. Z-scores for anxiety on day 3 (1.34) and day 6(1.71) and cheerful on day 3 (3.13) and day 6 (-2.38) can only be more fully understood by use of the diary qualitative data, which clearly states that the

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positive profile on day 3 relates to anticipation anxiety about the match on day 4, and that the Z-scores for day 6 relate to disappointment anxiety at not being selected to play in the test match.

In terms of behavioural variables Z-scores for sleep quality (1.22) and sleep quantity (2.27) reported on day 4 were the highest of the 12 day period. The lowest z-scores for sleep quality (-1.33) and second lowest for sleep quantity (-1.16) were entered on day 5, this being a record of sleep during the night immediately after the first match. Again, this suggests that the positive mood profile of day 3 was associated with excellent sleep on the night prior to the match, and that the negative affect mood profile after playing poorly in the match, was associated with the worst combined sleep scores for this player over the 12 day period.

Subject 5 (Table 49) was not selected to play in the first match, however, he played in the Test match against France and was officially awarded, “man of the match”. Z-scores for day 3 indicated that combined scores for sleep quality and sleep quantity were the lowest experienced on tour. The diary data helps to explain this by referring to “**good socialising at night**”, and by the entry, “**Bus journey was horrible so far, and although good socially because the lads are getting on well, but not looking forward to night ahead**”. The most dramatic change in mood profile occurred on match day (day 4), when the lowest Z-scores for cheerful (-3.33) and highest Z-scores for distracted (2.15) and worried (2.54) were recorded. Again the qualitative diary data provided a rich and detailed account of the players mood on match day, “**Dropped out of the “17” for the game. I am gutted and really annoyed. I know I will not play at all now on tour and am frustrated. I feel as if I have not earned my kit, and I am not part of the side, even though socialising was very good. Very bitter and just want to go home and get away from it ALL!**”. However, two days later the player was selected to play in the test match and achieved the second highest performance total score (Appendix D5) and , man of the match, despite being on a losing side. Interestingly, Z-scores for anxiety were much lower pre-match (-1.01) than post-match (0.40), and z-scores for cheerfulness were surprisingly similar pre-match (2.12) and post-match (1.56). Again a closer investigation of the qualitative diary

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data suggested that this player possessed emotional resilience and used appropriate coping strategies to reverse the largely negative affect mood profile of day 4. This can be seen clearly from the diary entry on day 5, **“Trip to Perpignon was really good. We had a good laugh and trained for a couple of hours on the beach. Although resigned to not playing, there is a small hope of a position on the bench for tomorrow’s test match, however small it is. Looking forward to going out tomorrow night”**.

**Table 49.** Changes in daily diary z-scores over 12 days for mood anxiety and behavioural variables (Subject 5) (TC = Time Commitment) Match Day – Day 6

Day	Weary	Anxious	Cheerful	Excited	Distracted	Worried	Sleep Quality	Sleep Quantity	Work Pressure	TC	Rest	Training
2	0.00	1.01	0.64	-2.56	0.88	1.07	0.70	0.75	0.37	-0.76	-1.22	-2.45
3	-1.03	1.11	0.00	2.42	-1.59	-1.07	-2.02	-1.57	-0.29	0.87	-0.07	2.14
4	-0.96	0.91	-3.33	-0.64	2.15	2.54	2.02	1.82	0.07	-1.09	1.56	-1.65
5	0.59	-1.01	2.12	-0.07	-1.36	-1.07	0.88	1.08	-0.15	-0.11	0.95	-0.06
6	<b>-0.37</b>	<b>0.40</b>	<b>1.56</b>	<b>1.21</b>	<b>-0.72</b>	<b>-1.86</b>	<b>-2.11</b>	<b>0.08</b>	<b>0.52</b>	<b>3.04</b>	<b>-2.57</b>	<b>0.61</b>
7	2.14	-2.73	-0.57	-2.99	-0.80	-0.68	-0.79	-2.98	-0.52	-3.26	0.07	-1.10
8	-2.14	1.31	-0.85	1.78	1.12	1.17	2.46	2.32	2.14	0.87	1.89	0.00
9	1.70	0.81	-0.85	-0.14	1.99	1.37	-1.67	-0.25	-0.66	-0.54	0.00	0.06
10	-1.99	-1.42	0.71	0.14	-1.59	-0.88	1.49	0.17	0.59	2.28	0.41	-0.06
11	-0.37	0.71	-0.07	1.49	-1.59	0.29	-0.09	-0.08	0.37	-1.09	-0.47	2.26
12	0.37	0.30	0.14	-1.49	1.43	0.59	0.35	0.17	-0.37	0.11	0.34	-2.32

A further interesting daily profile of z-scores was recorded on day 8 after the tour had ended. A fairly high Z-score for excited (1.78) was recorded alongside comparatively high scores for anxiety (1.31), distracted (1.12) and worried (1.17). In addition these mood and anxiety scores were noted after having experienced the soundest sleep (2.46) and longest sleep (2.32) of the 12 day period, and at the end of the most restful day (1.89).

This series of Z-scores can be more fully understood by referring to the qualitative data for day 7 which revealed that whilst the journey was tiring and unsettling, upon reaching home early evening, the player experienced an event that may have impacted upon his mood profile the following day. He described the event as follows: **“Bus journey home was very tiring, but I can’t wait to play again. Watched a Super League Rugby League match on T.V. and my team won so I’m well pleased. Watching that and**

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**remembering my game on tour makes me determined to get fitter and improve my game”.**

Unlike most players, Subject 13 (Table 50) rated his own performance in both matches above the score awarded to him by the other players. An interesting feature of this data set is that the large and frequent changes in mood and anxiety profiles throughout the 12 day period suggested that strong emotional lability represented the usual state for this individual. Again the qualitative data supported this. For example, the strong negative affect and weak positive affect profile on day 2 was accompanied by the following description: **“The coach journey was boring and depressing, everyone is down”**. The strong positive affect and weak negative affect profile on day 9 (Table 50) was accompanied by the following qualitative data: **“Had a long lie in bed and a restful full day in the house. Today I have no pressures what so ever.”** Given that considerable mood and anxiety lability represented a general feature with subject 13, it is easier to understand that the low Z-scores for pre-match anxiety (-1.67) and worried (-1.83) on day 3, and the high Z-scores for pre-match anxiety (2.15) and worried (1.83) on day 5 appeared to have had little effect on match performance rating (first match total score 4.41, test match total score 5.03). In addition the high anxiety and worried Z-scores before the Test match were associated with a small improvement in performance in comparison to the first match, where anxiety and worried scores recorded for the night before the game were well below baseline levels.

**Table 50.** Changes in daily diary z-scores over 12 days for mood anxiety and behavioural variables (Subject 13) (TC = Time Commitment) Match Day – Day 4 & 6

Day	Weary	Anxious	Cheerful	Excited	Distracted	Worried	Sleep Quality	Sleep Quantity	Work Pressure	TC	Rest	Training
2	1.17	1.43	-1.69	-0.85	2.00	1.30	-0.18	-0.15	-0.10	-1.92	1.95	-2.51
3	-0.64	-1.67	1.16	2.05	-1.60	-1.83	0.72	0.50	-0.05	1.55	-1.07	2.58
4	-0.64	-0.32	0.53	-0.06	-0.07	0.78	1.26	1.20	0.00	0.37	-0.79	-1.00
5	-0.85	2.15	-0.53	0.40	-0.13	1.83	-0.84	-0.70	0.00	-0.37	1.11	-1.15
6	0.00	-0.56	0.89	-0.11	0.13	-0.13	0.06	0.15	0.15	0.42	-1.30	0.86
7	2.03	0.88	-2.85	-2.34	2.00	0.26	-0.90	-1.15	-0.20	-2.02	2.04	-1.29
8	0.21	-0.56	1.60	0.34	0.40	-0.26	-0.30	0.00	0.05	-0.05	0.09	0.07
9	-2.45	-2.23	1.78	1.99	-1.60	-1.83	1.32	1.90	0.00	0.00	-2.50	-0.07
10	1.81	0.08	-0.18	-1.42	0.40	0.52	1.20	0.65	0.00	2.30	0.19	0.00
11	-1.28	1.83	-1.25	0.51	-0.27	1.30	-0.36	-0.35	2.44	0.00	-0.05	1.65
12	-0.96	-0.95	1.07	1.37	-1.67	-1.83	0.72	0.25	0.30	-0.09	-0.09	-1.29

Subject 2 (Table 51) recorded a strong negative affect profile on day 2 prior to the match. Z-scores for weariness (3.48) sleep quality (-2.54), sleep quantity (-2.61) and rest (-3.0) all reveal the effects of the journey to France the previous day. However, Z-scores for anxiety (2.97) distracted (2.35) and worried (1.55) are all well above baseline and the qualitative diary data suggested that this was due to, worrying and negative thoughts about the match and the player's preparedness for this event. However, a performance rating total score of 4.65 (Appendix D5) which placed the player in the mid-range of scores overall for the team, and that the match was won, was associated with an almost complete reversal of mood, anxiety and behavioural scores on day 3. Interestingly, Z-scores for weariness (-4.19) and excited (3.87) reached their lowest and highest levels respectively on the tour for this individual, after having played and won a difficult first match. The well below baseline scores for anxiety (-3.66) worried (-2.69) and distracted (-3.20), and the high score for cheerful (3.74) (Appendix D5) after the match on day 3 suggested that relief and happiness were the main feelings associated with the positive outcome of the game.

In contrast, mood and anxiety scores recorded late at night on day 4 prior to the Test match revealed that Z-scores had returned to around baseline levels. Defeat in the Test match on day 5, even though subject 2 improved his performance rating (Appendix D5), was

associated with high Z-scores for anxiety (1.66) distracted (1.76), and the worst sleep quantity (-1.84) and sleep quality (-1.78) z-scores, recorded during the period of the tour.

**Table 51.** Changes in daily diary z-scores over 12 days for mood anxiety and behavioural variables (Subject 2) (TC = Time Commitment) Match Day – Day 3 & 5

Day	Weary	Anxious	Cheerful	Excited	Distracted	Worried	Sleep Quality	Sleep Quantity	Work Pressure	TC	Rest	Training
2	3.48	2.97	-1.63	-1.69	2.35	1.55	-2.54	-2.61	-1.64	-2.14	-3.00	-2.75
3	<b>-4.19</b>	<b>-3.66</b>	<b>3.74</b>	<b>3.87</b>	<b>-3.20</b>	<b>-2.69</b>	<b>3.05</b>	<b>3.12</b>	<b>1.96</b>	<b>2.67</b>	<b>3.77</b>	<b>3.17</b>
4	2.22	0.07	0.07	0.00	-0.07	0.08	0.32	0.25	1.88	-0.32	-1.89	0.07
5	<b>-0.08</b>	<b>1.66</b>	<b>-1.90</b>	<b>-1.76</b>	<b>1.76</b>	<b>2.12</b>	<b>-0.95</b>	<b>-0.89</b>	<b>-0.94</b>	<b>1.60</b>	<b>-1.11</b>	<b>-1.69</b>
6	0.08	-0.07	-0.54	0.21	-0.52	0.41	-1.84	-1.78	-2.11	-2.89	0.43	-1.41
7	-0.24	-0.97	0.61	-0.56	1.37	-0.16	1.91	1.84	2.11	1.39	1.29	1.62
8	-0.16	0.34	-0.27	0.35	-0.07	0.08	-1.33	-1.46	-0.31	0.86	0.09	-0.07
9	0.16	0.34	0.20	-0.07	-0.59	-0.49	0.38	0.51	-0.63	-0.75	-0.60	0.07
10	-0.32	0.28	-0.14	0.07	0.26	0.73	0.00	0.13	-0.23	0.00	-0.34	-0.21
11	0.40	0.14	0.14	-0.14	0.00	-0.24	-0.06	-0.13	0.23	-0.53	0.09	0.21
12	0.47	0.41	0.20	0.21	-0.39	0.08	-0.06	-0.13	0.00	0.11	0.09	0.00

Two of the more detailed daily diaries were submitted by players who had not been selected to play in the tour matches. The impact of not being chosen can be seen for subject 18 (Table 52). Z-scores recorded on the night prior to the match day on day 4 revealed that after, **“Two good team training sessions”** Z-scores for anxiety (-.93) worried (-1.27) distracted (-2.24) and wearied (-2.58) were below baseline, and excited (1.72) and training (2.47) were well above baseline. However, being left out of the team on day 4 was associated with a complete reversal of the largely positive affect profile recorded for day 3. Z-scores on day 4 for anxiety (2.53), distracted (2.29) and worried (2.76) were well above baseline, and Z-scores for cheerful (-1.76) and excited (-1.95) were below baseline. The qualitative data provided further explanation of these Z-scores on day 4. The player stated, **“I wanted a run out against the regional side and I get left out. Put a lot of doubts into my mind about my ability and what the coaching staff thought of me”**.

**Table 52.** Changes in daily diary z-scores over 12 days for mood anxiety and behavioural variables (Subject 18) (TC = Time Commitment) Match Day – Day 4 & 6

Day	Weary	Anxious	Cheerful	Excited	Distracted	Worried	Sleep Quality	Sleep Quantity	Work Pressure	TC	Rest	Training
2	0.52	0.07	-0.25	-1.41	2.20	1.10	-2.00	-2.02	-2.31	2.09	0.15	-2.58
3	-2.58	-0.93	0.25	1.72	-2.24	-1.27	2.00	2.02	2.31	-0.10	-2.37	2.47
4	1.75	2.53	-1.76	-1.95	2.29	2.76	0.04	0.04	-2.31	-2.51	2.37	-2.47
5	-0.41	-0.73	2.14	0.39	-1.17	-1.22	0.04	0.04	1.37	1.47	-1.04	1.45
6	-0.57	0.60	-2.89	-0.08	0.19	0.22	-0.88	-0.86	-1.32	1.15	-1.38	-1.34
7	1.80	-1.60	1.26	-1.87	0.98	-0.22	-1.13	-1.20	0.00	-0.05	2.37	-0.11
8	-2.53	2.80	1.51	1.48	-0.05	1.22	0.00	0.00	0.00	-1.10	-0.05	0.22
9	2.58	-1.73	-2.14	0.16	-0.09	-1.22	0.00	0.04	2.26	1.10	-2.22	-0.05
10	-1.29	-0.13	1.51	0.08	-0.89	-0.11	2.04	2.06	-2.26	-2.51	2.32	-0.22
11	-1.34	-1.00	0.38	1.87	-1.22	-1.44	0.08	0.09	1.23	1.36	-1.23	1.40
12	1.24	0.13	0.38	-1.64	-0.05	0.00	-2.09	0.00	0.00	-0.05	0.15	0.11

Interestingly subject 18 recorded a much more positive affect profile on day 5 prior to the test match on day 6, with the Z-scores for cheerful (2.14) and anxiety (-0.41) contrasting sharply with day 4 Z-scores for cheerful (-1.76) and anxiety (2.53) when the player was not selected for the first match. Mood and anxiety z-scores for day 6, when the player was left out of the Test team, were close to baseline with the exception of cheerful (-2.89). This pattern of Z-scores can be more fully explained by the qualitative diary data noted by the player on day 5. He stated that he had **“Got my head together, thought a lot through since yesterday and have thought a lot of positives. Basically have stopped being mad! which was my problem yesterday”**. Again, this suggested that the player had attempted to cope with his disappointment at not being selected for the first match. He had also tried to control his mood and anxiety in an attempt to reduce the volatility of his emotional response pre-match on day 5, and on day 6, when he was informed by the coach that he had failed to make the test side.

Subject 19 (Table 53) was not chosen to play in either the first match or the Test match, however, his data set revealed a constant negative relationship between the bipolar mood variables of excited - bored, and distracted - focused. For example Z-scores on day 2 were: excited (-2.02) distracted (1.05), day 3 excited (2.09) distracted (-1.42), day 4 excited (-0.61) distracted (1.35), day 5 excited (1.35) distracted (-2.02), day 6 excited (-0.67)



distracted (0.75) and day 7, excited (-2.43) and distracted (2.32). In that this player did not take part in either of the tour matches, other data from the diary offered an explanation of these Z-scores. The qualitative data identified that training took place on day 3 and day 5, and scores for training revealed that Z-scores, well below baseline for training (day 2, day 4, day 7) were associated with well above baseline Z-scores for distracted, and below baseline Z-scores for excited. This suggested that the behavioural event of training helped this player to become more focused than normal, and was an important source of excitement, even for an individual experiencing the considerable disappointment at not being selected to play in either match.

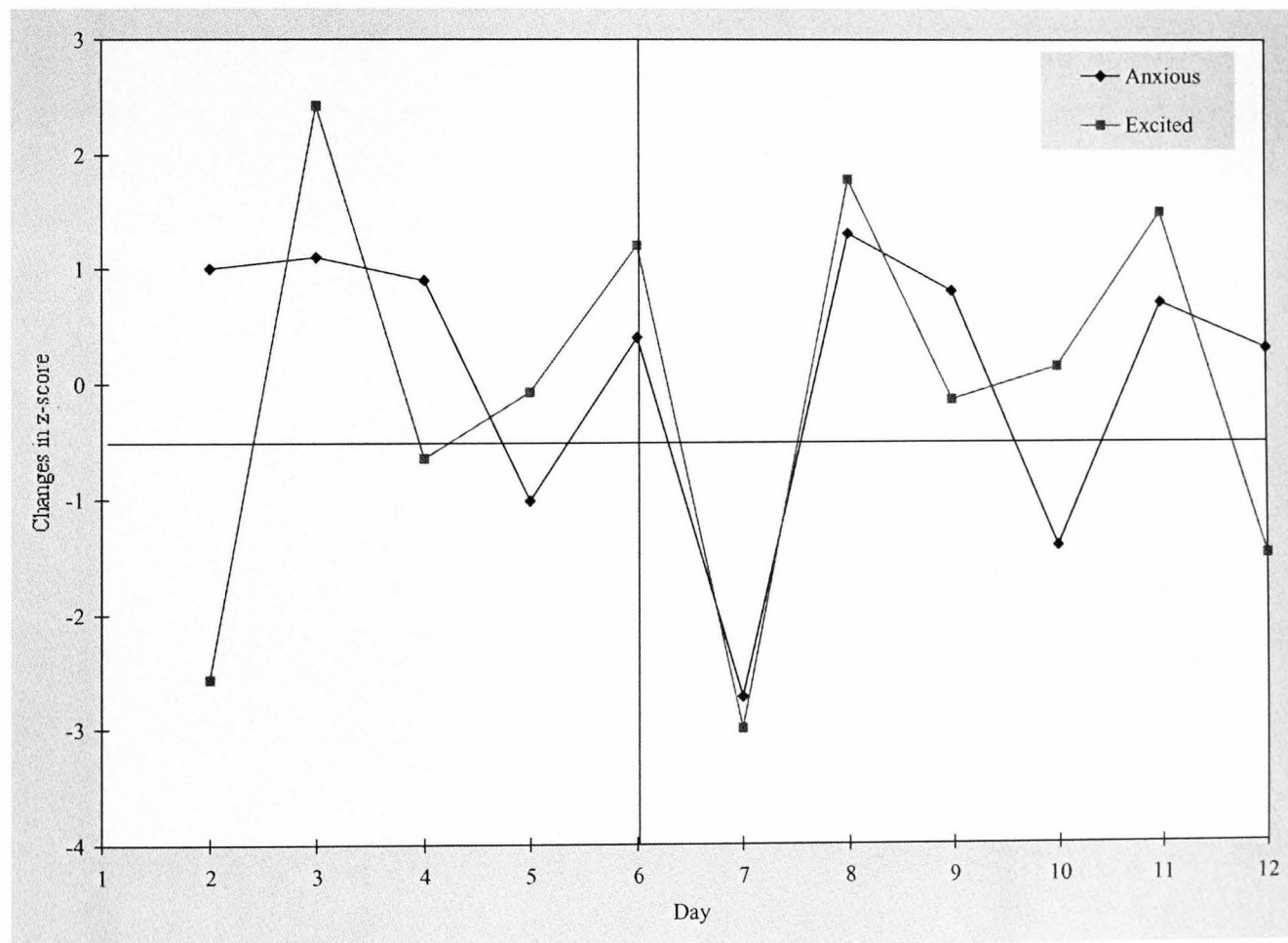
**Table 53.** Changes in daily diary z-scores over 12 days for mood anxiety and behavioural variables (Subject 19) (TC = Time Commitment) Match Day – Day 4 & 6

Day	Weary	Anxious	Cheerful	Excited	Distracted	Worried	Sleep Quality	Sleep Quantity	Work Pressure	TC	Rest	Training
2	0.74	2.03	-1.16	-2.02	1.05	1.12	-0.84	-0.71	-2.22	-2.12	0.69	-1.38
3	-1.99	-1.67	0.51	2.09	-1.42	-1.12	0.06	1.69	0.99	2.05	-0.83	2.55
4	<b>0.00</b>	<b>1.76</b>	<b>-1.96</b>	<b>-0.61</b>	<b>1.35</b>	<b>1.63</b>	<b>1.95</b>	<b>0.11</b>	<b>0.74</b>	<b>-0.40</b>	<b>0.28</b>	<b>-1.03</b>
5	-0.25	-0.53	0.58	1.35	-2.02	1.12	-0.06	0.00	-1.72	1.19	0.07	1.03
6	<b>0.31</b>	<b>0.26</b>	<b>-0.73</b>	<b>-0.67</b>	<b>0.75</b>	<b>0.17</b>	<b>0.00</b>	<b>-0.27</b>	<b>1.48</b>	<b>-0.59</b>	<b>0.07</b>	<b>0.00</b>
7	2.11	-0.09	0.29	-2.43	2.32	-1.03	-1.95	-1.64	-1.36	-2.38	-2.36	-2.62
8	0.37	-1.67	1.74	1.21	-0.07	-0.77	0.06	0.00	-1.36	0.59	0.00	0.00
9	-0.25	-0.44	-0.07	1.42	-2.02	0.09	1.95	2.95	2.34	-0.40	2.36	0.96
10	-0.93	0.09	0.44	-0.27	-0.22	-0.26	0.33	-0.60	-0.49	0.99	0.49	0.76
11	-0.25	0.09	0.07	0.67	-0.45	-1.12	-0.33	-0.33	1.11	0.66	0.28	0.21
12	0.43	0.35	-0.15	-0.67	0.97	1.03	0.22	0.22	0.00	0.00	-1.04	0.00

### 5.4.5. Correlations between mood and anxiety measures and between mood and anxiety and behavioural measures for individual rugby league players (n=11).

#### 5.4.5.1. Anxiety and Excitement

Profiles of Z-scores for anxious and excited for at least 4 subjects (Figures 20-23) revealed that a quite clear pattern emerged which reflected the positive correlation between these 2 variables. No clear pattern could be discerned for 4 subjects (Figures 24-27), however, for 3 subjects (Figures 28-30), a clear negative relationship was reported between Z-scores for anxious and excited. Interestingly, anxious and excited z-scores were of very similar levels on match days for 7 players (Figures 20,22,23,24,26,27,30).



**Figure 20.** Changes in daily diary z-scores for anxiety and excitement (subject 5)

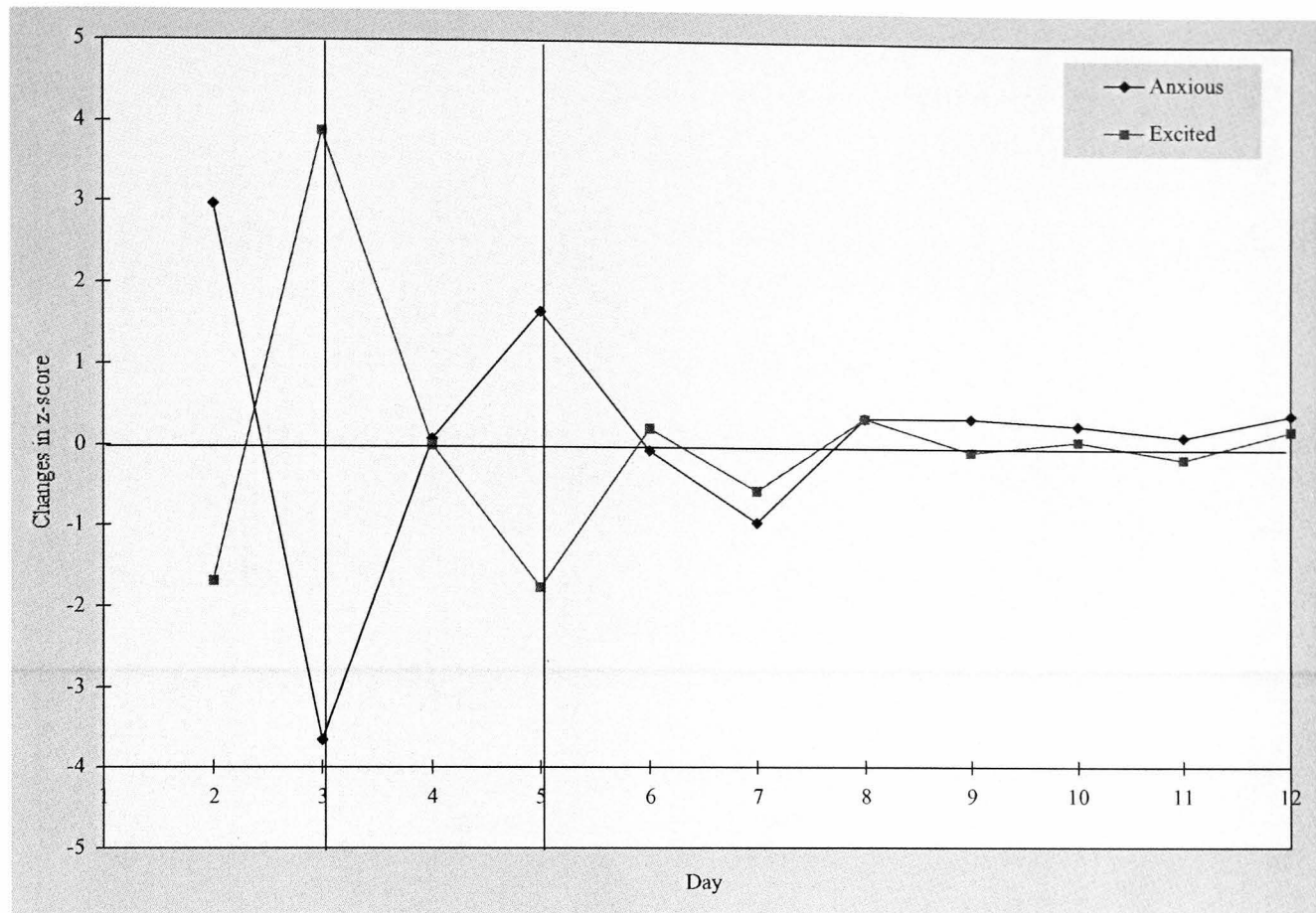


Figure 21. Changes in daily diary z-scores for anxiety and excitement (subject 2)

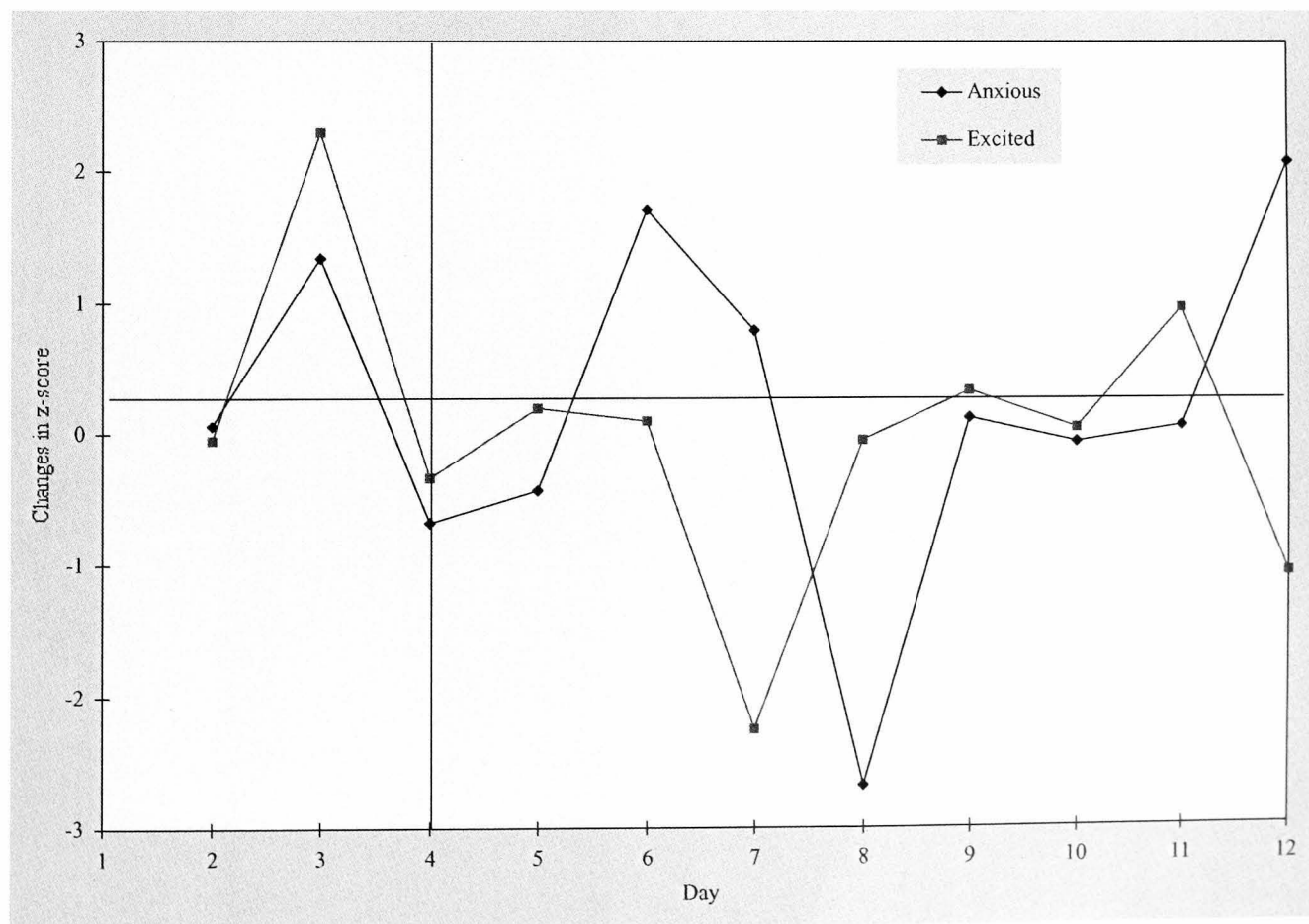


Figure 22. Changes in daily diary z-scores for anxiety and excitement (subject 12)

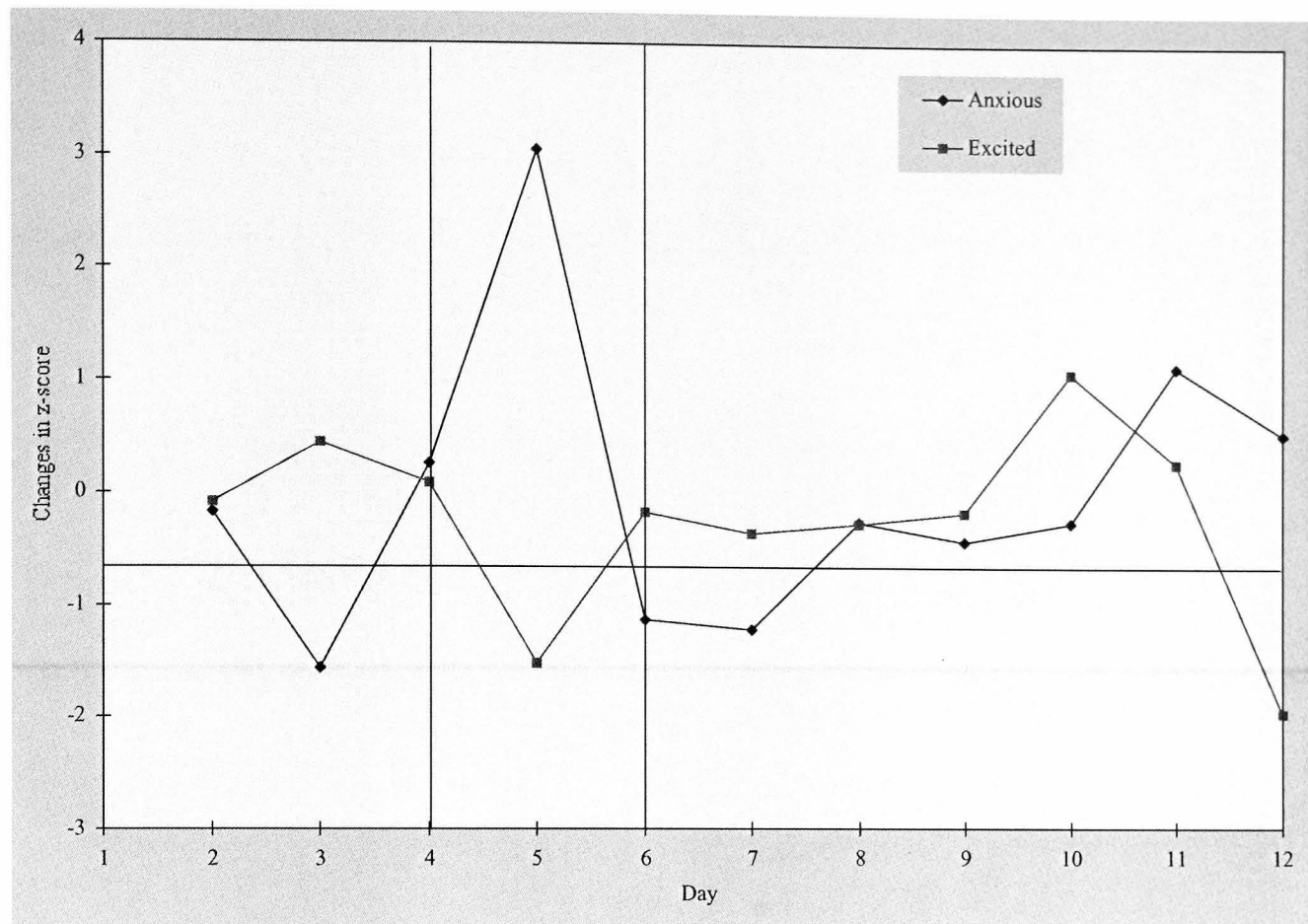


Figure 23. Changes in daily diary z-scores for anxiety and excitement (subject 6)

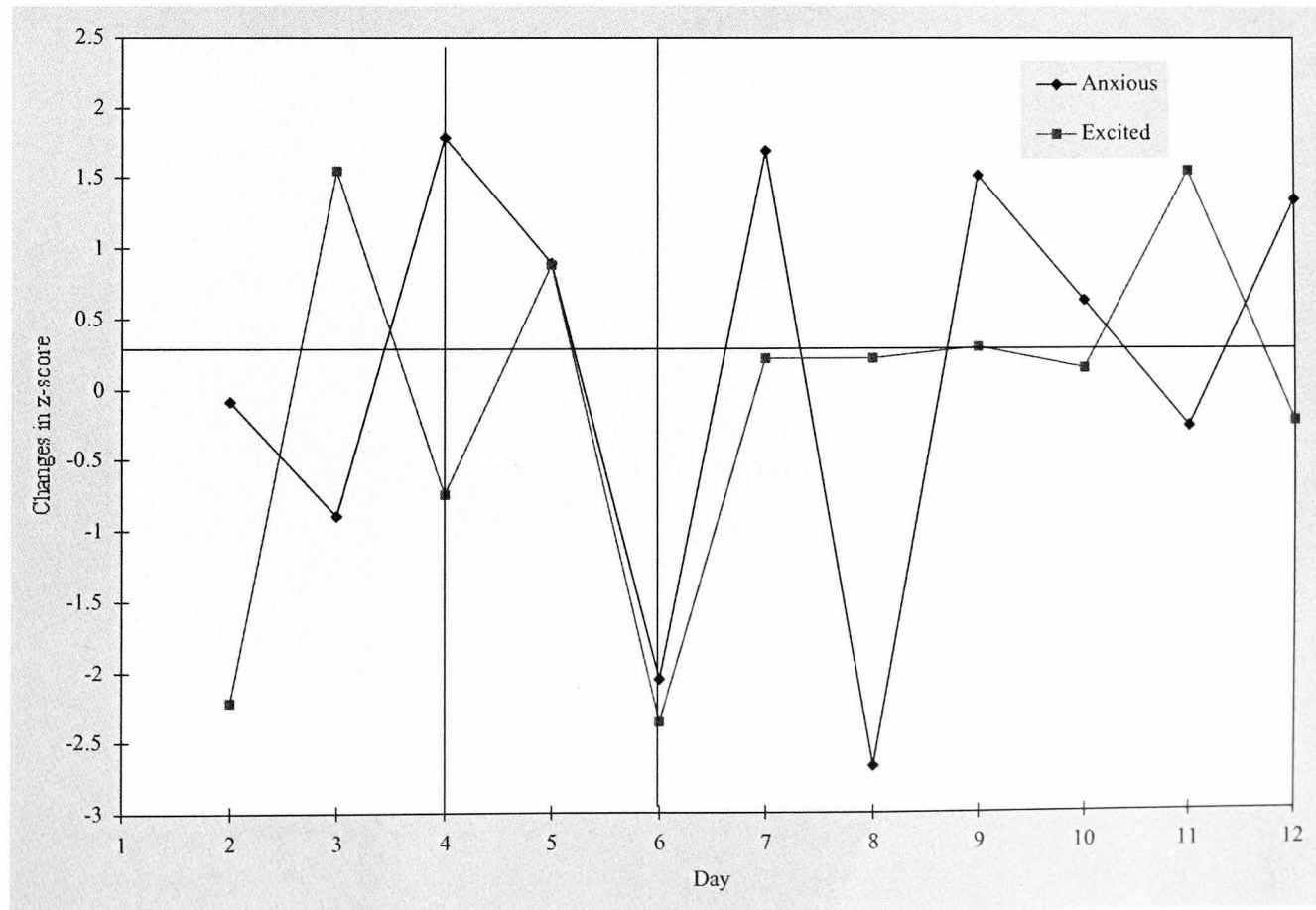


Figure 24. Changes in daily diary z-scores for anxiety and excitement (subject 8)

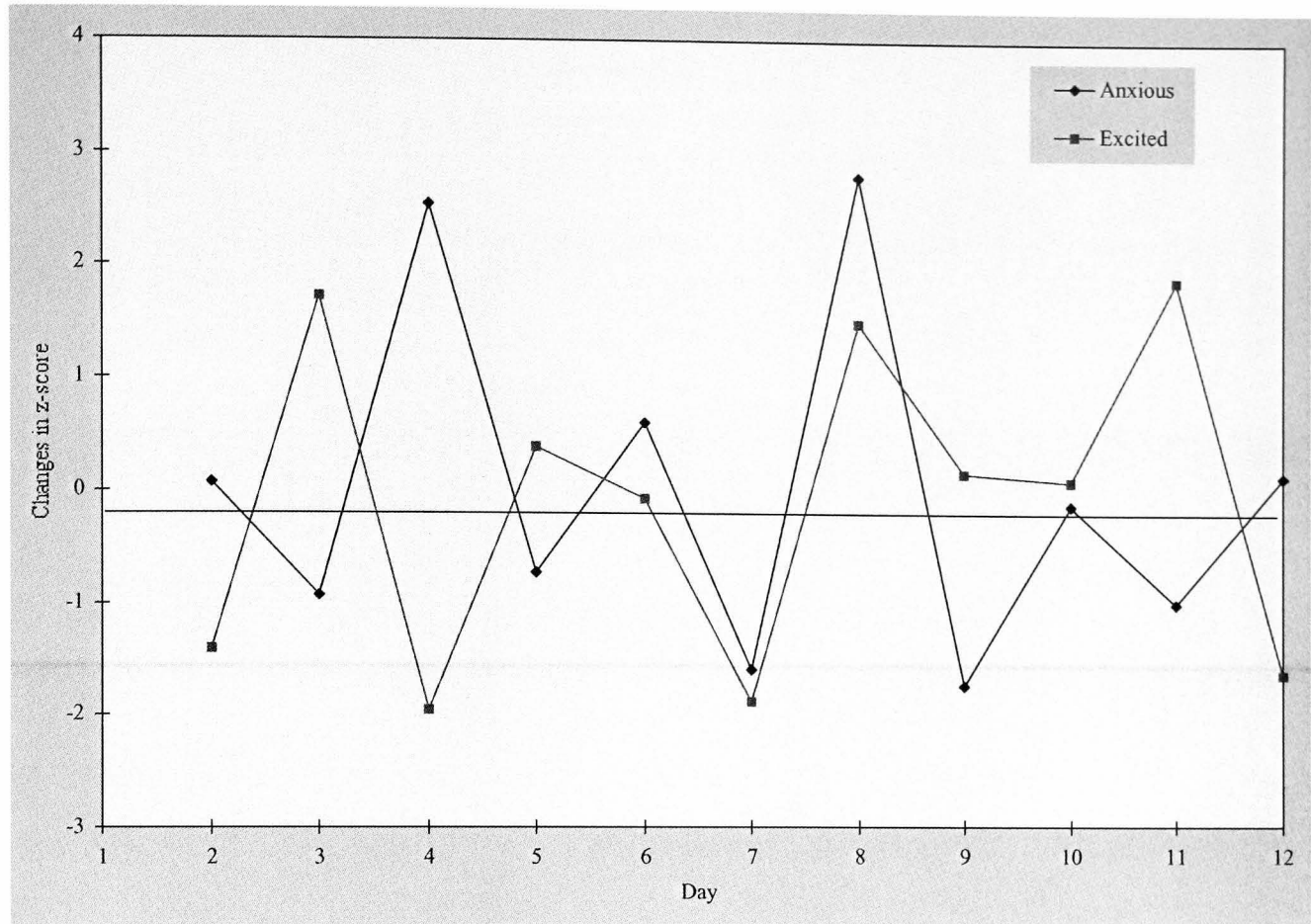


Figure 25. Changes in daily diary z-scores for anxiety and excitement (subject 18)

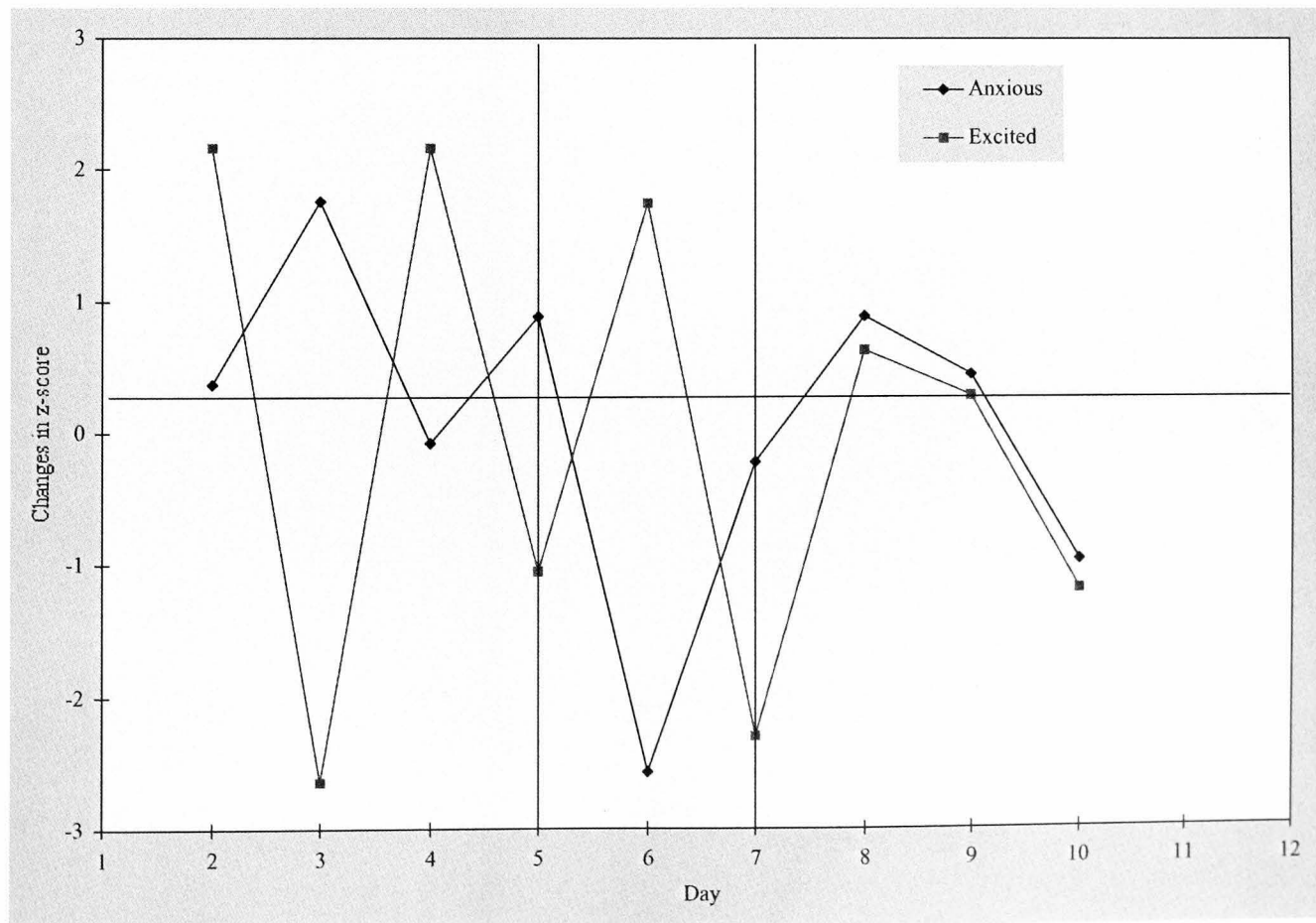


Figure 26. Changes in daily diary z-scores for anxiety and excitement (subject 15)

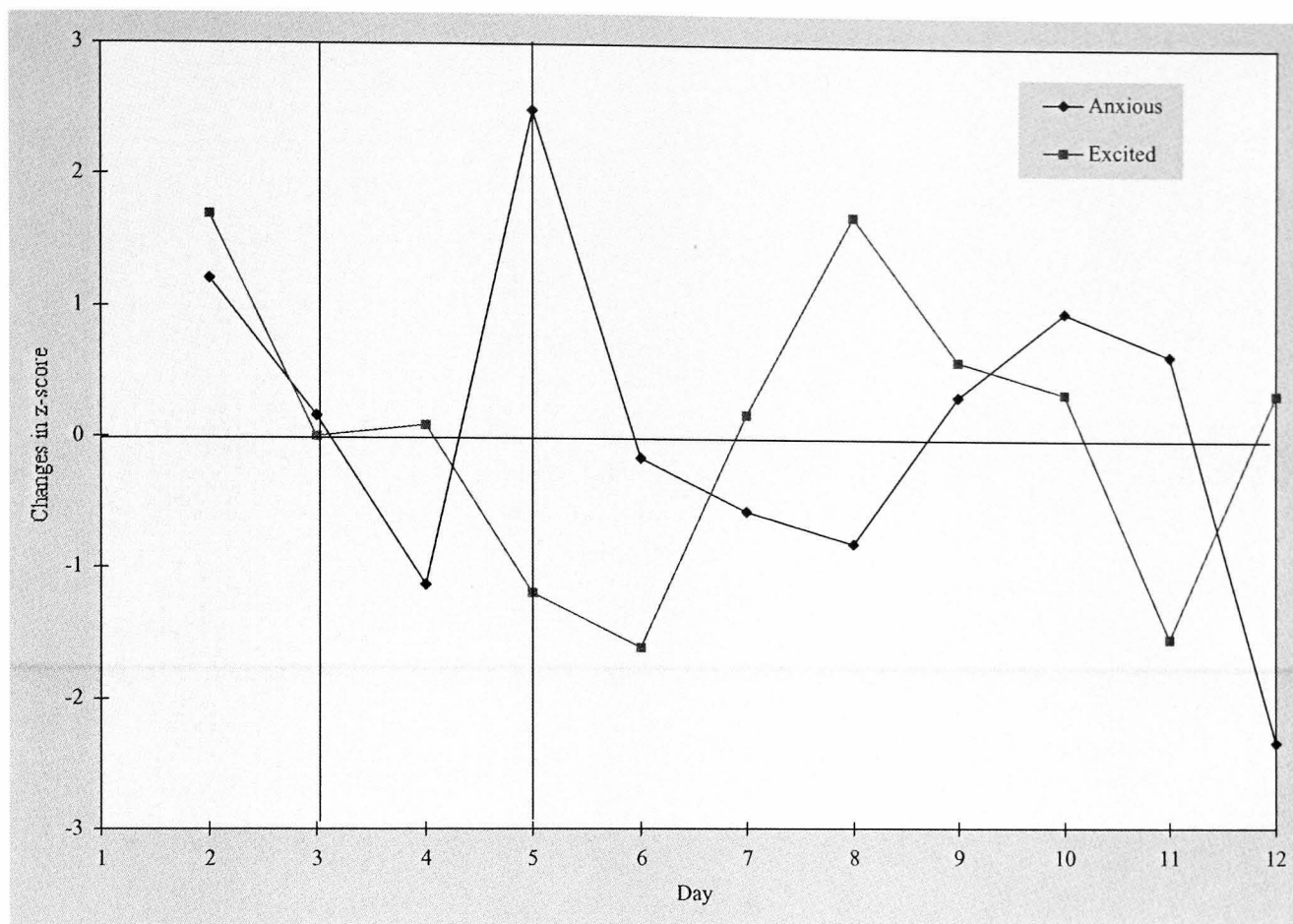


Figure 27. Changes in daily diary z-scores for anxiety and excitement (subject 16)

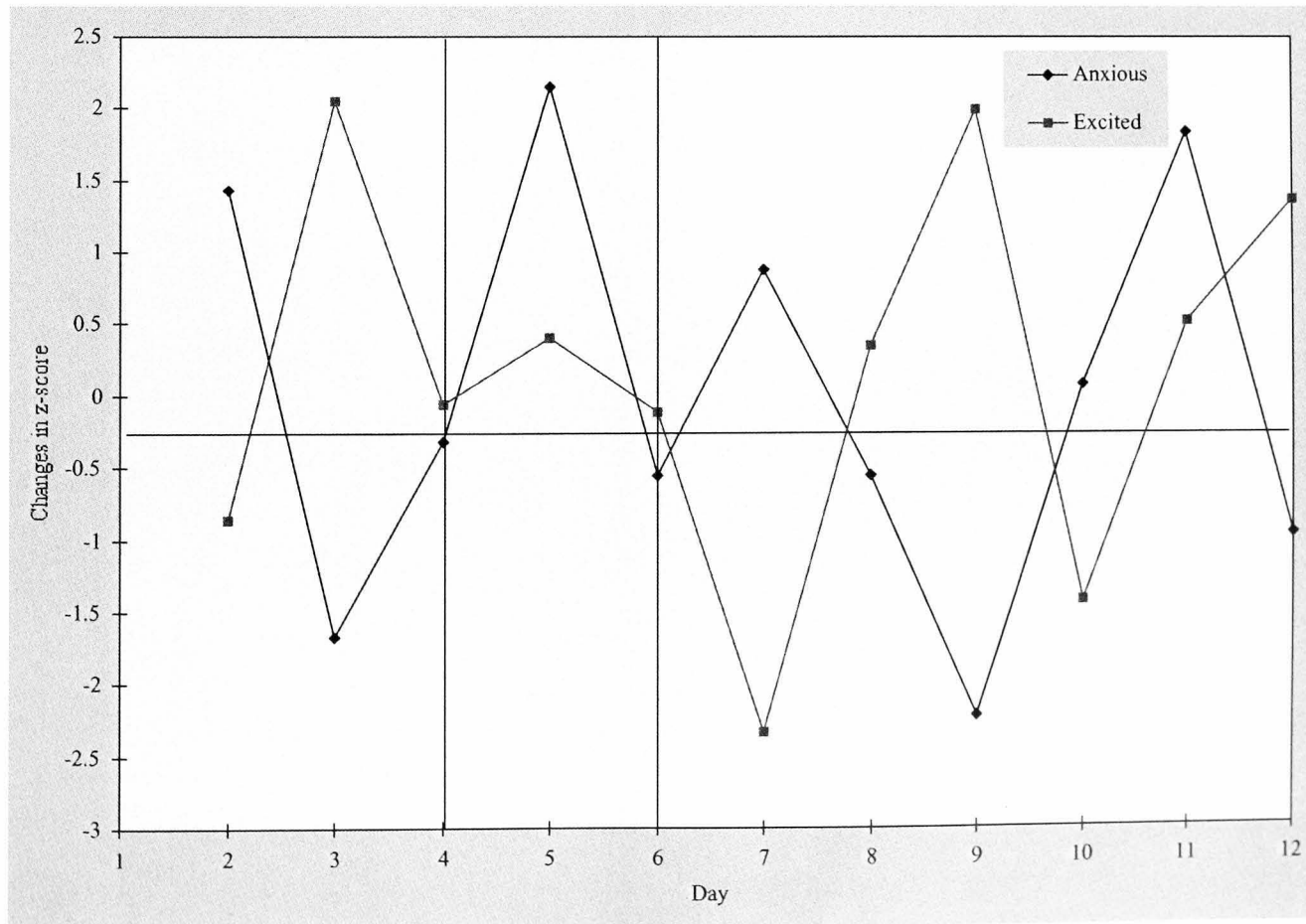


Figure 28. Changes in daily diary z-scores for anxiety and excitement (subject 13)

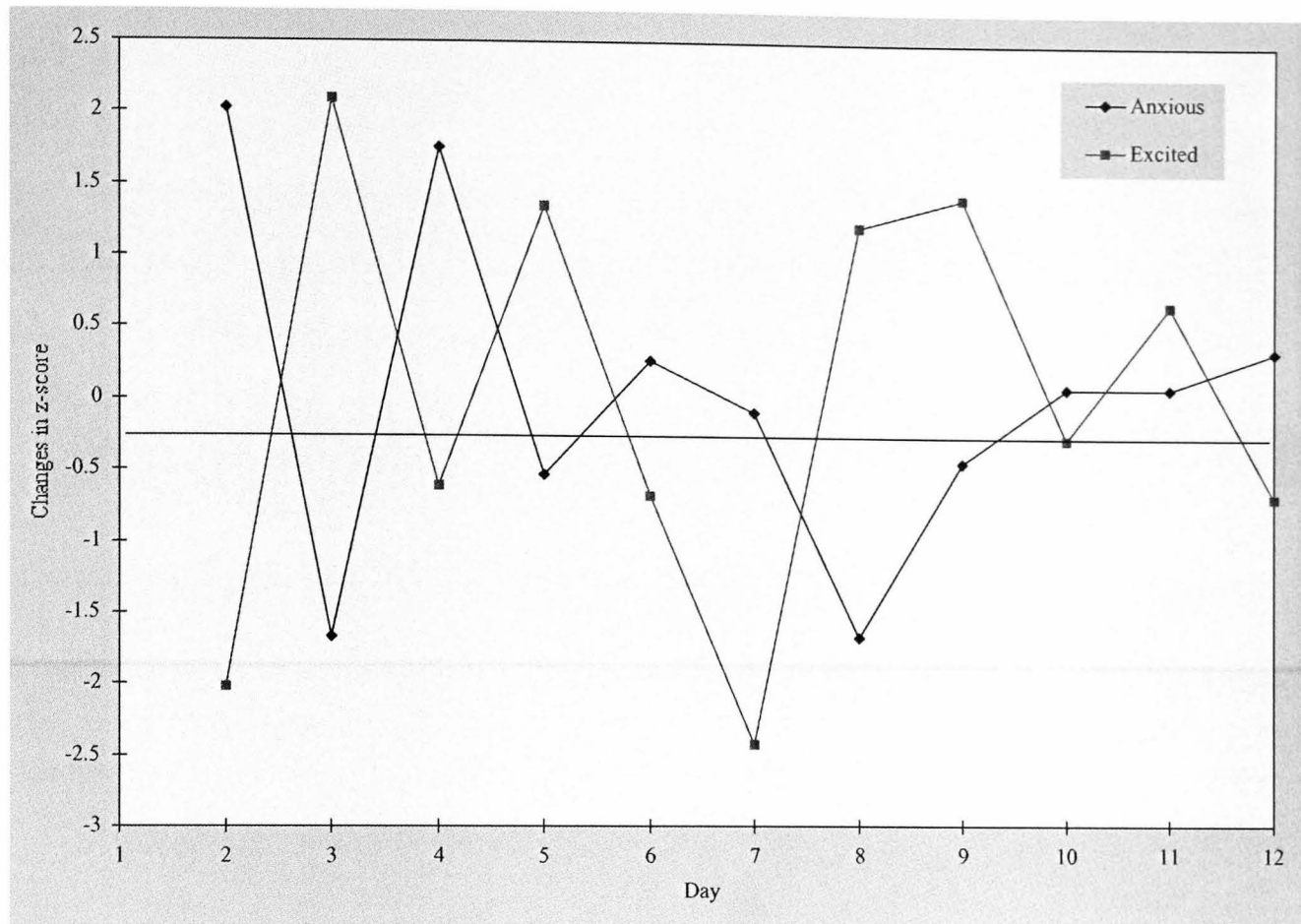


Figure 29. Changes in daily diary z-scores for anxiety and excitement (subject 19)

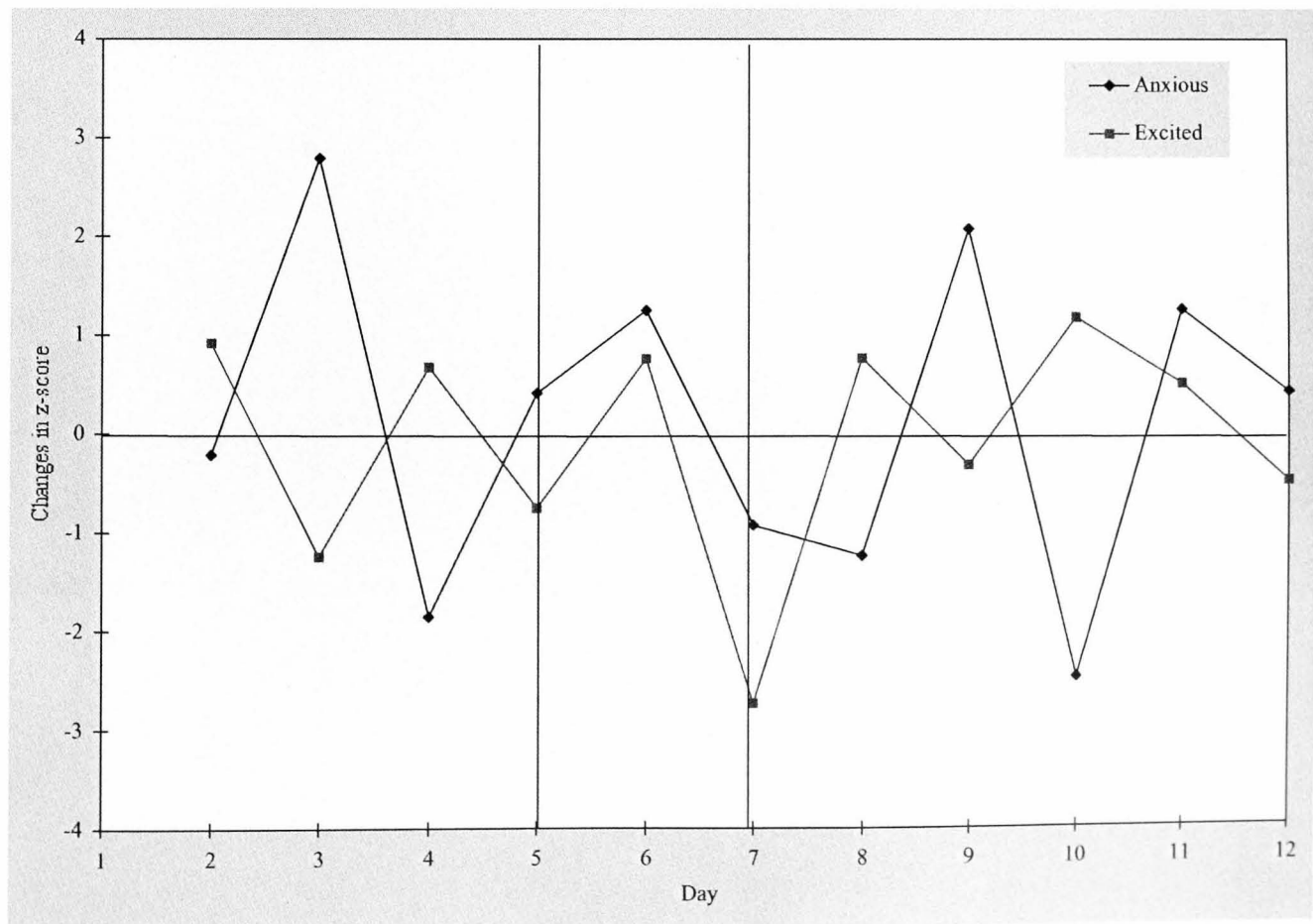
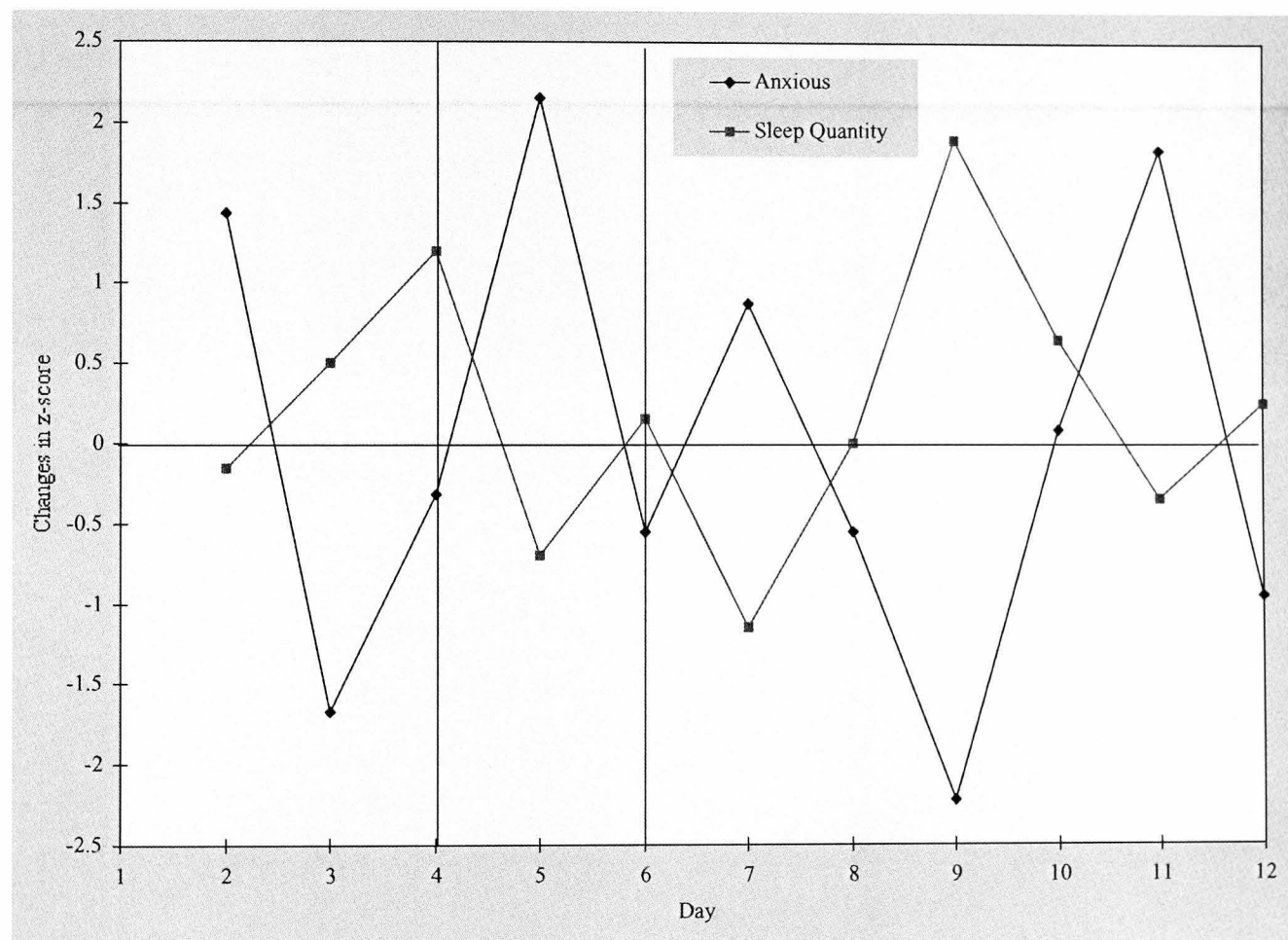


Figure 30. Changes in daily diary z-scores for anxiety and excitement (subject 17)

### 5.4.5.2. Anxiety and Sleep

Two subjects recorded Z-scores of 0.75 above baseline for measures of anxiety and sleep quantity on the same day, however profiles for most remaining subjects (n=9) (Figures 31-38) revealed that there was in general, a clear negative relationship between sleep quantity and anxiety.



**Figure 31.** Changes in daily diary z-scores for anxiety and sleep quantity (subject 13)



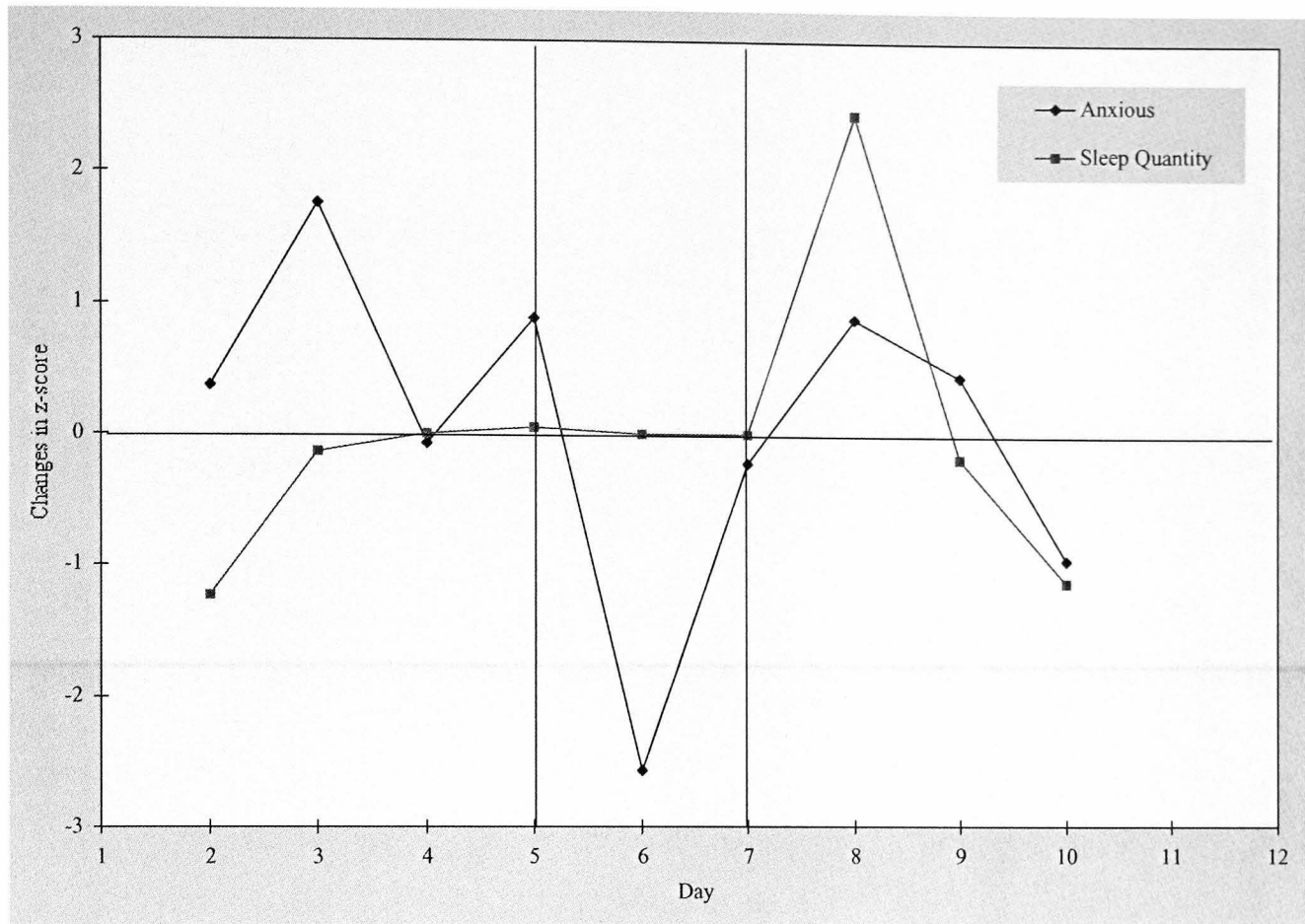


Figure 32. Changes in daily diary z-scores for anxiety and sleep quantity (subject 15)

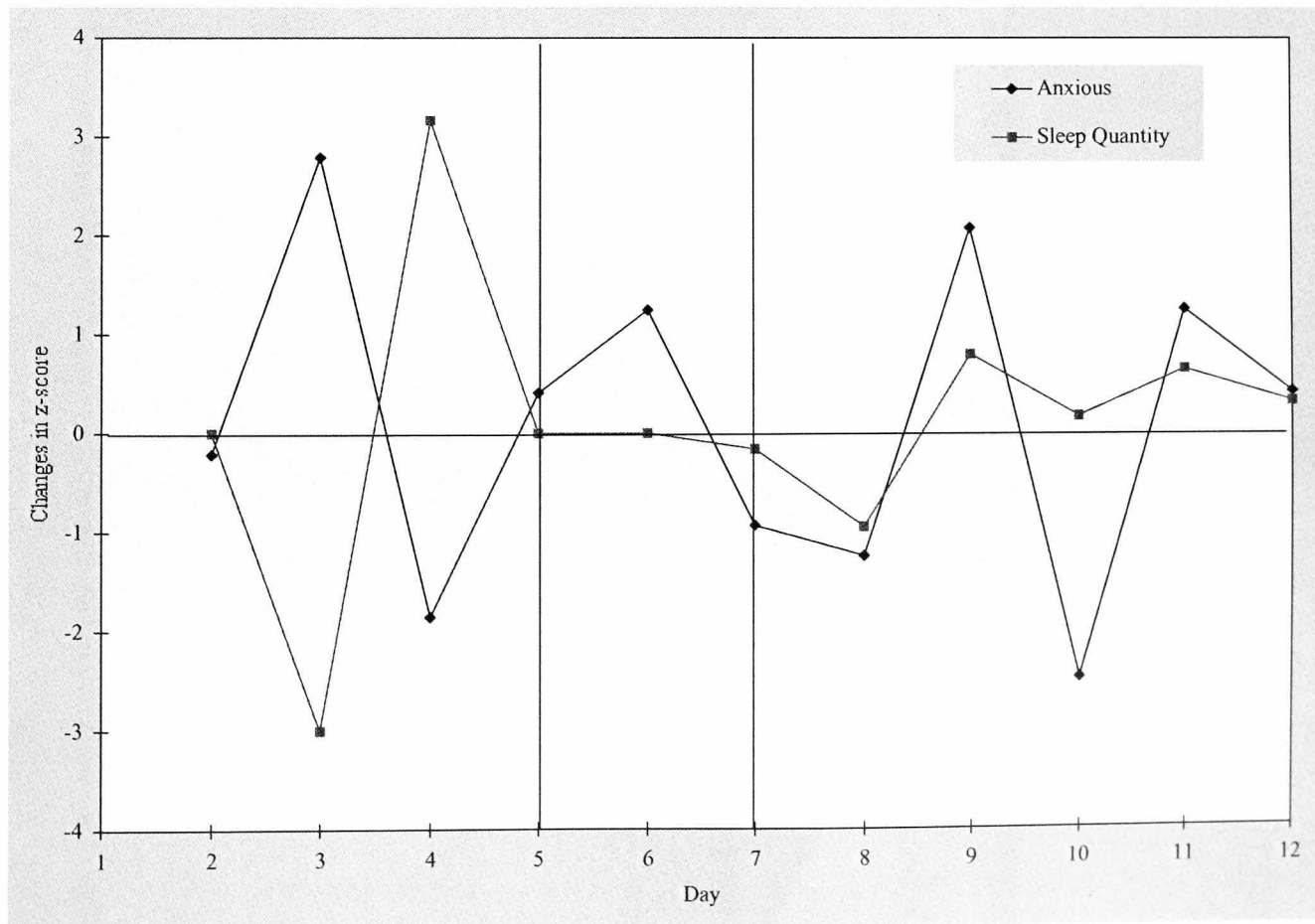


Figure 33. Changes in daily diary z-scores for anxiety and sleep quantity (subject 17)

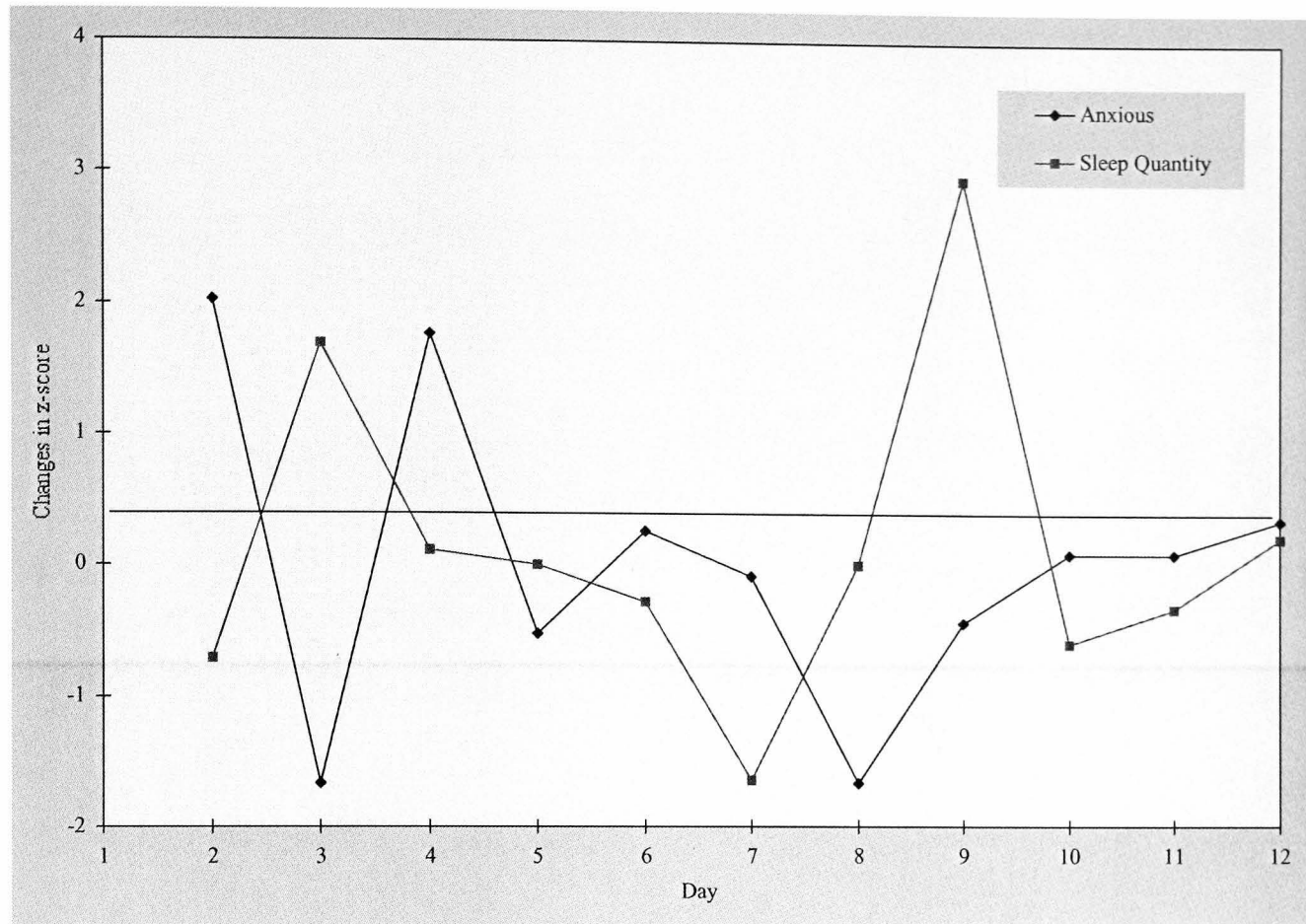


Figure 34. Changes in daily diary z-scores for anxiety and sleep quantity (subject 18)

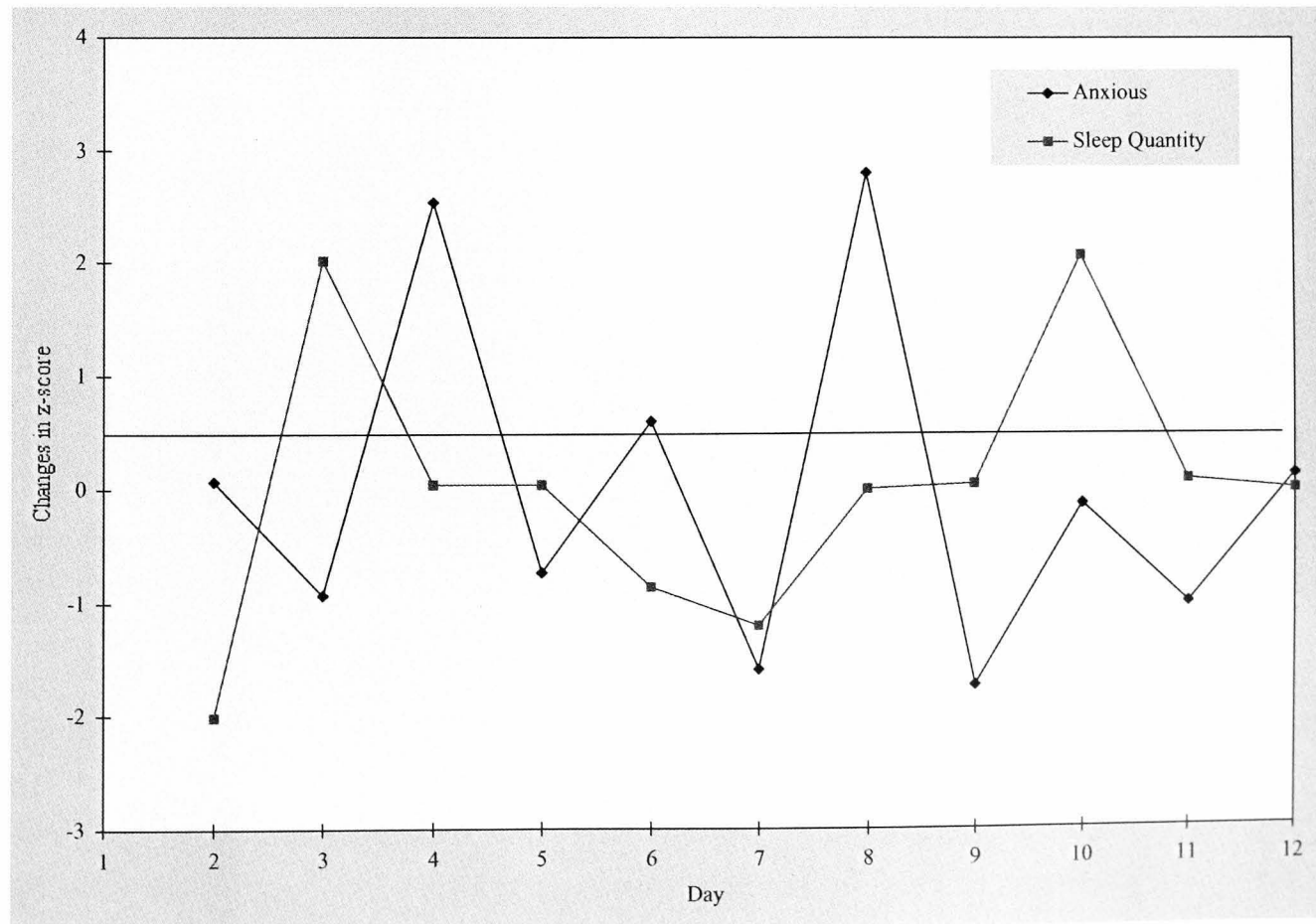


Figure 35. Changes in daily diary z-scores for anxiety and sleep quantity (subject 19)

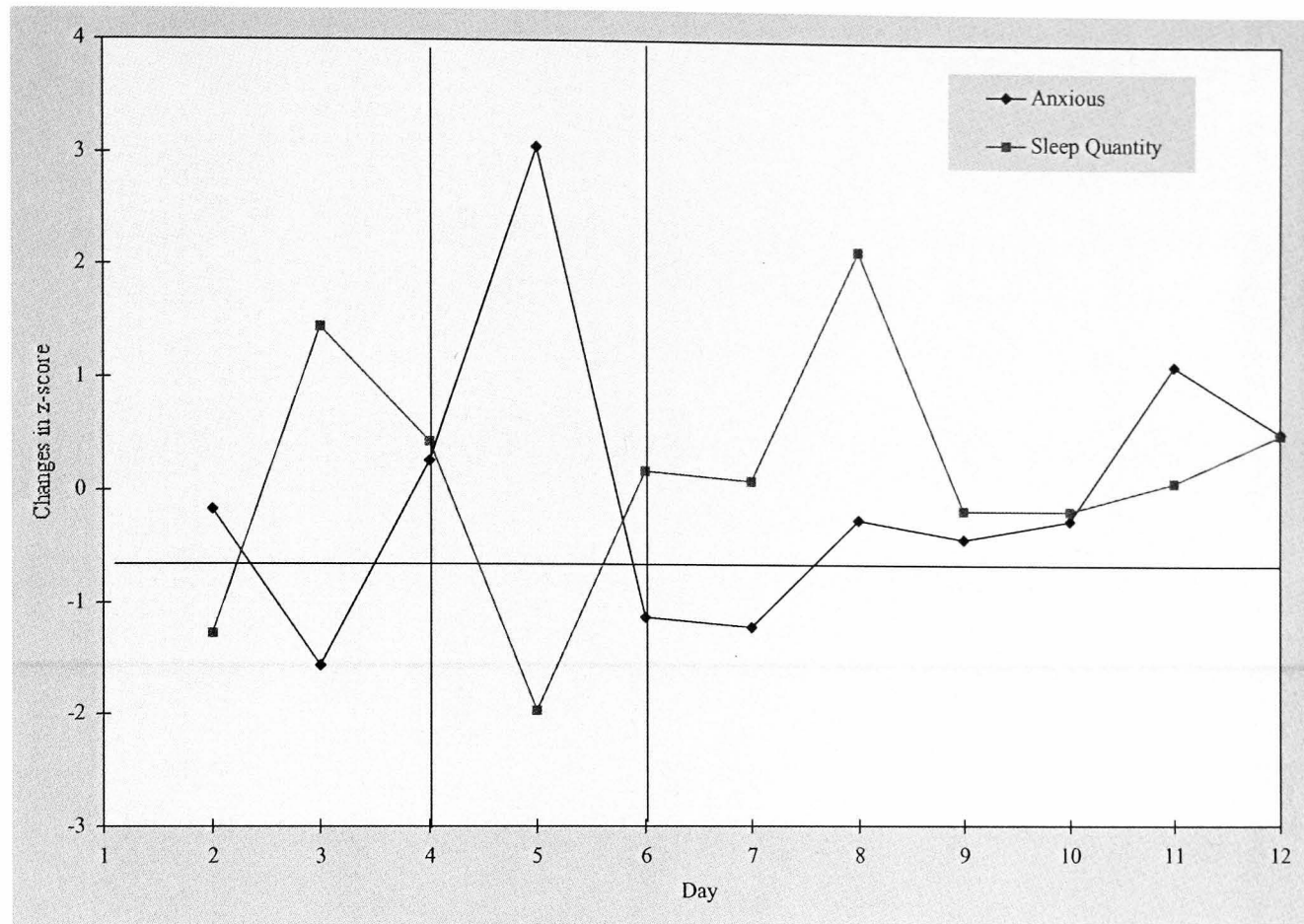


Figure 36. Changes in daily diary z-scores for anxiety and sleep quantity (subject 6)

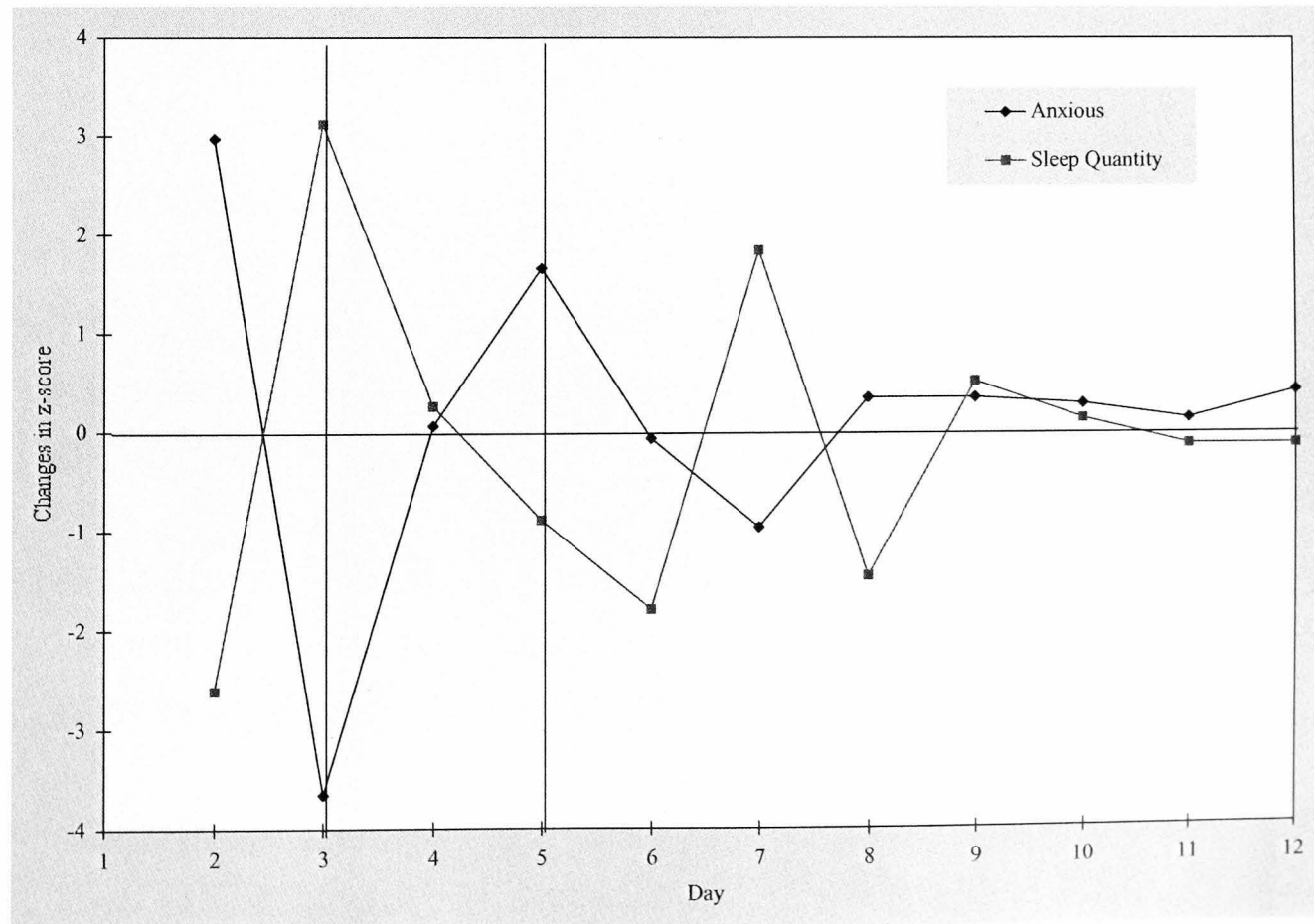
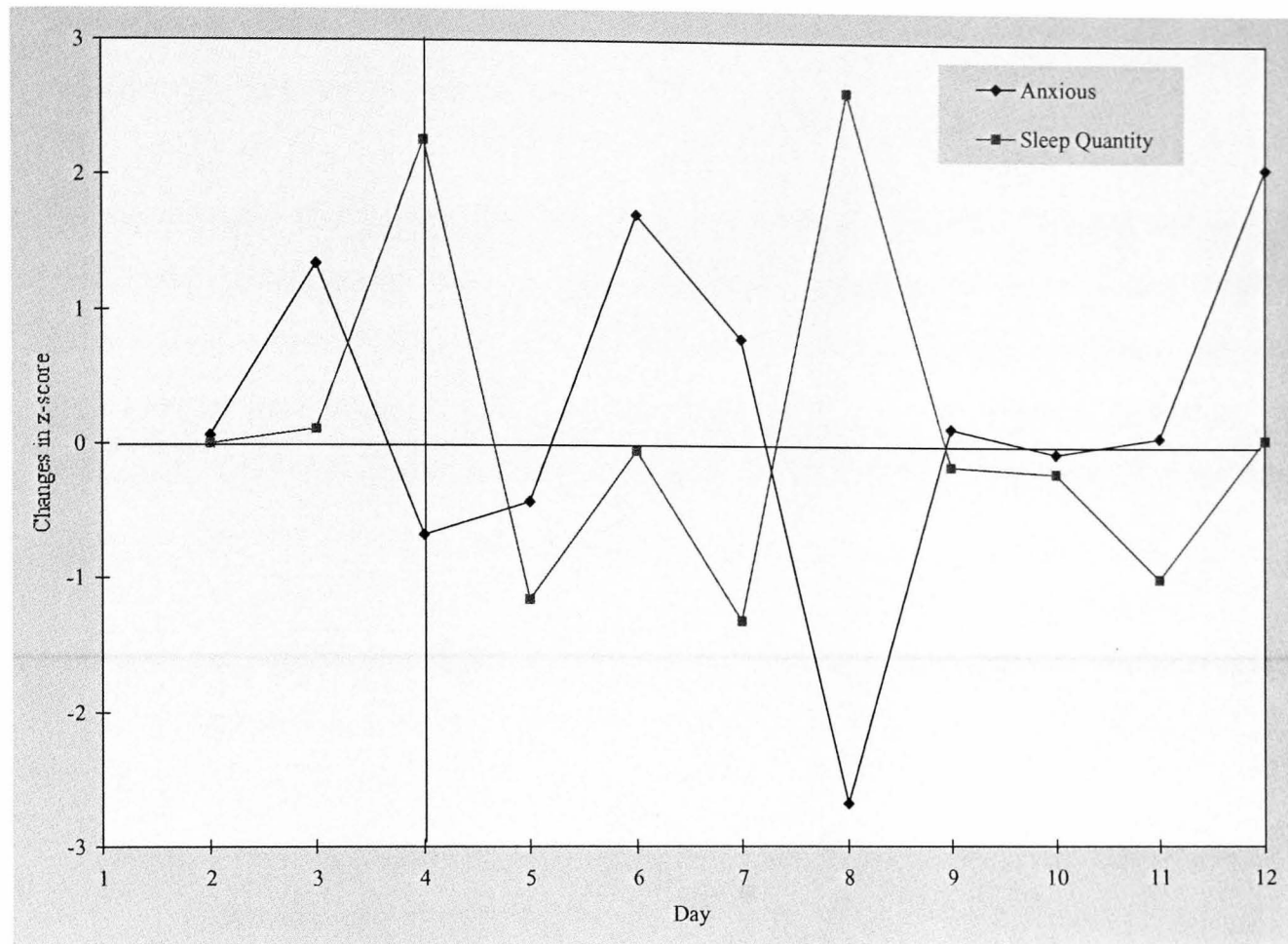


Figure 37. Changes in daily diary z-scores for anxiety and sleep quantity (subject 2)



**Figure 38.** Changes in daily diary z-scores for anxiety and sleep quantity (subject 12)

#### ***5.4.6. Summary of main findings***

1. Match performance data revealed that players tended to assess their own individual performances lower than the team's performance overall, and the achievements of their fellow players.
2. Somatic anxiety levels as measured by the CSAI-2 were significantly higher before the Test match. Significant differences were not found between the first match and the Test match for cognitive anxiety or self-confidence.
3. Self-confidence was significantly and strongly negatively related to somatic anxiety scores in both matches. However, no significant correlations were found between somatic anxiety and match performance data, and between cognitive anxiety and match

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performance data. Interestingly, self-confidence CSAI-2 scores did correlate significantly with match performance scores.

4. No significant correlations were found for diary based measures of mood and anxiety, and match performance data. No significant correlations were found between behavioural variables and match performance scores. Sleep measures correlated significantly and strongly with a wide range of mood and anxiety measures, and weariness correlated significantly and strongly with the greatest number of behavioural variables and mood and anxiety measures.
5. An intra-individual analysis of each individual's daily diary data set revealed that clear individual differences existed for correlations between mood, anxiety and behavioural measures. For example:
  - 5.1. One individual reported a strong significant positive correlation between anxiety and cheerfulness, whilst a different individual reported the strongest negative correlation for mood and anxiety variables across the whole data set for cheerfulness and anxiety.
  - 5.2. Whilst 1 individual reported 10 significant correlations for anxiety or cheerfulness and other mood and behavioural measures, another individual reported no significant correlations involving anxiety and cheerfulness.
  - 5.3. Seven of the subjects (n=11) did not report significant correlations between anxiety and worried.
  - 5.4. Training correlated positively with excitement, and negatively with distracted for several subjects.
  - 5.5. Whilst anxiety and excitement did not produce any significant correlations, 6 negative significant correlations were reported for excitement and distracted.
  - 5.6. Correlations involving sleep quality and sleep quantity accounted for over 30% of all significant correlations reported. In addition, well above baseline Z-scores for anxiety were always associated with low and below baseline most complete and detailed scores for sleep.

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- 5.7. Profiles of Z-scores for anxious and excited indicated that several players experienced strong levels of anxiety and excitement together, and at other times experienced low levels of anxiety with correspondingly low levels of excitement. However, other individuals reported that anxiety and excitement were negatively correlated.
6. Based on the Daily Diary Data sets (n=6).
- 6.1. Uncomfortable and difficult travel arrangements appeared to have affected mood and anxiety states considerably.
- 6.2. Pre-match mood and anxiety states do not follow a consistent pattern across players, or for the same player at different points on the tour.
- 6.3. There appears to be no clear relationship between anxiety and mood states and match performance.
- 6.4. However, poor match performance by an individual, defeat in a match, or failing to be selected for the team, consistently result in a, high negative affect, low positive affect (mood and anxiety) profile.
- 6.5. Again, sleep appears to be the behavioural variable most closely associated with mood and anxiety profiles.
- 6.6. There is some evidence that the bipolar measure of worried - confident is better understood by the subjects and represented a more appropriate measure of anxiety in sport, than the anxiety measure based on the 2 bipolar scales of anxious - calm, and relaxed - tense.
- 6.7. Qualitative data in the form of a brief daily description of important events proved very helpful in providing a more complete interpretation of an individual's atypical mood and anxiety profiles in particular.
- 6.8. There is some evidence, again supported by the qualitative data, that for some individuals, mood and anxiety fluctuate considerably in relation to significant daily events, whilst for others, their most usual emotional state is one of equilibrium. However, it appeared from some of the diaries that players used various coping strategies to return their mood and anxiety profile to its preferred configuration, that is near baseline for stable
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individuals, and moving away from baseline to strong levels of emotion for more volatile subjects.

- 6.9. There is a clear suggestion from the diary data and match performance ratings that mood and anxiety are affected by the individual's performance and perceived performance, and crucially, the actual and perceived performance of the team. Qualitative data revealed several examples of where players recorded worry and concern about the outcome of the match (and not about their own individual performance). In addition, there were examples where mood and anxiety Z-scores remained close to baseline levels, or indicated strong levels of negative affect despite a good individual performance in the match. A closer investigation of the data in these examples suggested that a poor team performance, or loss of the match had a greater impact on mood and anxiety levels.
- 6.10. Uncertainty about being selected for the team, and failure to be chosen to play in matches, was associated with strongly negative affect mood and anxiety profiles.
- 6.11. There was some evidence from the diary qualitative data and the Z-scores that training was associated with well above baseline scores for excitement, and below baseline scores for distraction (on the distracted - focused bipolar scale). This clear pattern emerged for players selected to play in the matches, and equally for those players not selected at all, or chosen to play in only one of the two games.

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## 5.5. Discussion

### 5.5.1. *Performance and Anxiety*

Several important results emerged after analysis of the questionnaire data and diary information. However, the most important result was that there was no clear relationship between anxiety, mood states and match performance. Jones in his review of sport research investigating the proposed anxiety-performance relationship reported that there has been a: **“relative failure in predicting a substantial amount of performance variance”** (Jones, 1995, p.469). He explains that this failure is largely due to the continued and pervasive use of various self-report instruments to measure anxiety, and that researchers have been unable or unprepared to examine anxiety during an event and immediately before. The worrying aspect of these observations by Jones, a major researcher in the area during the past decade, is that similar concerns were raised by others several years earlier with apparently little effect.

This study has attempted to meet at least one of the methodological issues raised by Jones (1995) through the combined use of self-report questionnaires and daily diaries completed over a 12 day period. Although match performance ratings were provided by individual players immediately after the games, and the CSAI-2 was completed 10 minutes before kick-off, no data relating to anxiety was accessed during performance. However, the longitudinal design involving the completion of a daily diary prior to sleep each night allowed for analysis of anxiety and mood data both before and after match performance. This has rarely been considered in the sport literature with the exception of Hanin and Syrja’s (1996) work on predicted, actual and recalled affect in soccer players, and Annesi’s (1997) study investigating the efficacy of the CSAI-2 as a measure of recalled state anxiety.

Analysis of the CSAI-2 data relating to cognitive anxiety, and somatic anxiety revealed that no significant correlations were found with match performance scores, although, somatic anxiety levels were significantly higher before the lost Test match in comparison to the victorious Regional match. Interestingly, although the Test match was lost mean scores



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revealed that performance was marginally better in the Test match ( $4.84 \pm .37$ ) in comparison to the Regional match ( $4.73 \pm .42$ ) (Appendix D5). This result again supports the calls by Jones (1995), Jones and Hardy (1990) and others for the greater use of performance rather than outcome measures in examining the proposed anxiety-performance relationship. This result may even be interpreted as evidence of the positive and facilitative dimension of strong levels of somatic anxiety in a highly physical sport like Rugby League, and especially prior to very important games! Nevertheless, what remains clear from the results is that there was no clear support for the proposed negative effect of anxiety on performance.

### ***5.5.2. Self-Confidence Anxiety and Performance***

Although not the focus of this study, CSAI-2 scores for self-confidence were found to correlate significantly with match performance scores. The consideration of self-confidence has tended to be overlooked in most sport anxiety research, although Martens *et al.* (1990) clearly recognised its importance by including a 9 item scale to measure this construct within the CSAI-2. Whilst interest in self-confidence has centred on its supposed mediating effect on cognitive anxiety and somatic anxiety, arguably the most interesting and clear results have been reported for other relationships. For example, Maynard *et al.* (1995) reported that self-confidence was strongly and positively correlated with decision making and skill execution of semi-professional soccer players ( $n=16$ ), and Man *et al.* (1995) found that top level soccer players ( $n=45$ ) differed significantly only in terms of self-confidence scores as measured by the CSAI-2 in 2 different match conditions. Rather unconvincingly, Man *et al.* (1995) have explained this finding by questioning whether top level footballers are prepared to respond truthfully to questions relating to anxiety, whilst at the same time calling for many more studies to be conducted with elite level sport performers using the CSAI-2! Finally, recent work by Parfitt and Smith (1998) has investigated the impact of anxiety on performance of the tennis serve by using the CSAI-2. Results revealed that whilst cognitive anxiety significantly predicted some 16% of performance variance in a tennis serving task, self-confidence accounted for almost 44% of the variance in performance. These findings were interpreted as confirming that self-confidence has the

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most important role in successful performance, and that high self-confidence may be associated with positive interpretations of anxiety. In summary, this study and findings from those cited previously, suggested that self-confidence is the more clearly understood concept and has been shown to relate most closely to sport performance. Given this, it could be that much more may be found out about the mechanisms by which anxiety impacts on sports performance, through a more focused consideration of the role played by self-confidence in sport.

### ***5.5.3. Intra-Individual Differences***

A striking feature of the diary based results of this study was that there appeared to be important and at times vivid differences between subjects across mood, anxiety and behavioural variables. For example, one individual reported as many as 10 significant correlations involving anxiety and cheerfulness with several behavioural variables, whilst a different individual reported no significant correlations involving these variables over the 12 day period. Again, for over half of the subjects no significant correlations were reported between anxiety and worried. These examples seem to illustrate several important issues that continue to be overlooked in much of the sport anxiety literature. It may be that anxiety is not always viewed negatively by subjects, in comparison to worried which may be more frequently understood as a negative emotion in sport. Further support for this interpretation is related to the terms used in the bipolar scales for worried, and anxiety. Following Watson and Tellegen's (1985) earlier work on positive affect (PA) and negative affect (NA), scores were based on the combined ratings of the bipolar scales for anxious - calm, and relaxed - tense. However, building on the findings of the study involving Netball players and Rugby League Referees, a new bipolar scale of, worried-confident, was utilised with the Rugby League players in this study. Results seemed to suggest that it was possible for players to have well below baseline Z-scores for worried and simultaneously record baseline or just above baseline Z-scores for anxiety. A closer examination of qualitative diary data recorded prior to, or soon after matches revealed that players with this type of Z-score profile described themselves as feeling excited, nervous and confident. This result has been supported by Jones *et al.* (1994) in their work which focused on the distinctions

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between facilitative and debilitating anxiety. Following on from this, Perry and Williams' (1998) study of competitive anxiety intensity and direction in tennis, revealed that players who reported debilitating effects for cognitive and somatic anxiety on the CSAI-2 scored lowest for self-confidence. In support of Jones and Swain (1995), Perry and Williams (1998) have suggested that facilitative anxiety probably does not represent anxiety at all, but is more likely to be understood by the performer as, excitement or feeling "psyched up". However, it seems unlikely that the continued use of the CSAI-2 which focuses on cognitive and somatic anxiety symptoms, will be able to unravel this complex issue.

#### ***5.5.4. Sport Anxiety and Broader Measures of Mood***

Perry and Williams have argued that including a directional scale as part of the CSAI-2 will additionally allow researchers to assess the efficacy of various intervention packages by providing: "**sufficient knowledge and the opportunity to individualise interventions**" (Perry and Williams, 1998, p.178). This seems a remarkable claim given earlier work based on the matching hypothesis of Davidson and Schwartz (1976) looking at somatic intervention strategies and cognitive intervention strategies. For example, Maynard and Cotton (1993), found that the anxiety levels of male hockey players declined significantly after a 12 week intervention programme based on the players dominant responses (i.e. a measure of intensity) as measured by the CSAI-2. Of course, questions remain about whether lower scores recorded by individuals on the CSAI-2 after an intervention programme truly represented a decline in cognitive or somatic anxiety, or whether these results were largely due to socially desirable responding. However, Perry and Williams (1998) have suggested that without an in-depth knowledge of how the athlete experiences anxiety, it may be very difficult to design individualised interventions to meet their needs. For example, they have pointed out that athletes typically experience both somatic and cognitive anxiety, and that despite recording low scores on the CSAI-2, they may perceive that even at these low levels of anxiety various parts of their sport performance are negatively affected. They have proposed that the continued use of the CSAI-2 with a direction scale will be able to provide the solution. In contrast, the results from this study, supported by earlier work (Nesti and Sewell, 1999) strongly suggested that the

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measurement and understanding of anxiety in sport can not be advanced unless it is placed in context with other mood states. In addition, the pronounced individual differences in mood, anxiety, and behavioural scores found in this study were more fully understood where the players recorded qualitative diary data in the form of brief written accounts relating to important daily events. Support for the combined use of written reports and self-report questionnaire data, has emerged from work by Lavalley *et al.* (1997) investigating retirement and loss in sport. Lavalley *et al.* (1997) used a micronarrative approach with 18 retired elite level Australian athletes, which required these individuals to provide autobiographical details of their career transition experiences and complete questionnaires related to their current athletic identity. Following work by Heatherton and Nicholls (1994), Lavalley *et al.*, have argued that this approach provides: **“information about personally relevant experiences, feelings and relationships that could not have been assessed by other methodologies”** (Lavalley *et al.*, 1997, p.242).

### ***5.5.5. Anxiety and Excitement***

Although Perry and Williams (1998) and others (Jones, 1995) have suggested that facilitative anxiety may be more accurately described as excitement, this study did not reveal any significant correlations between anxiety and excitement based on the diary data. This seems to suggest that anxiety and excitement are not synonymous terms, although they may share some common emotional responses. A closer examination of the qualitative data indicated that a poor match performance, defeat, or failing to make the team was most frequently associated with a low PA high NA profile. The descriptive accounts provided by the players in their daily diaries after the matches and on the nights prior to the matches, revealed that an important distinction was made between mood states including, worry and anxiety associated with disappointment, and worry, anxiety and mood states associated with anticipation of an important event (i.e. the match). Whilst mood and anxiety Z-scores and qualitative diary data typically failed to demonstrate well above baseline scores or major concerns about the approaching game, the highest Z-scores for anxiety, worried and weariness and lowest Z-scores for cheerfulness were recorded by individuals after the game, or when not selected to play. This suggests that anxiety in sport could be better studied by

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differentiating between anticipation anxiety and disappointment anxiety. Rather than hiding behind the tautology, that if it seems difficult to distinguish between excitement and anxiety it is because they represent the same emotion, a more helpful development could be to examine the experience of anxiety associated with a desired event, in comparison to the anxiety that accompanies real or perceived failure. Further, it could be argued that anticipation anxiety is closely related to what May (1977) has referred to as normal anxiety. That is, it represents the anxiety which always accompanies the experience of confronting a desired challenge.

### ***5.5.6. Anxiety and Sports Performance***

This call for a substantial shift in the conceptualisation of anxiety in sport is based on the difficulties associated with clearly identifying a relationship between anxiety and performance in sport. This could be due to methodological weaknesses in studies investigating this area according to Jones (1995), that mood rather than anxiety alone should be considered (Lane and Terry, 1998), or finally as Nesti *et al.* have stated that: **“to fully understand the impact of anxiety or mood in a sporting context, life experiences for the days before the sporting event must be considered”** (Nesti *et al.*, 1997, p.99). Further, the distinction between facilitative and debilitating anxiety based on the CSAI-2 direction scale has led to some clear if rather expected findings, although, arguably no new light has been thrown on the performance-anxiety relationship in sport. For example, Jones and Swain (1995) found that elite level cricketers (n=68) reported their anxiety symptoms as more facilitative than did non-elite cricketers (n=65), however, no systematic attempt was made to identify how this result impacted on actual performance. This leaves Jones and Swain (1995) in the rather weak position, scientifically speaking, of suggesting implicitly within their work that elite cricketers have reached these high levels in part because they view anxiety as facilitative of performance. A more likely and rigorous explanation of their results could be that as high achievers, with knowledge of their own ability and past successes, high levels of cognitive and somatic anxiety prior to matches are not a concern and may even be recorded on the CSAI-2 as facilitative. In other words it is confidence in their own ability and past achievements which enable elite performers to

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report that anxiety is viewed favourably, and not the other way round! Again, this highlights the importance of self-confidence as a much more important mediator than anxiety in affecting performance in sport, and yet recent work (Parfitt and Smith, 1998) continues to closely examine the proposed anxiety and performance relationship in sport using the CSAI-2, despite reporting findings that confirm the far greater importance of self-confidence.

### ***5.5.7. Mood and Behavioural Measures***

The behavioural data recorded in the daily diaries highlighted the important effects of sleep, travel and training on mood. Almost all players reported a strong NA and low PA mood profile during the 24 hour journey to and from the international venue for the matches. Alongside this, Z-scores for sleep quality and quantity were quite expectedly, well below baseline during this period. Of more interest, well above baseline Z-scores for anxiety were frequently associated with low and below baseline scores for sleep, throughout the 12 day period. Qualitative diary data revealed that in general players felt distracted and anxious after a poor nights sleep which had resulted because of concerns about their match performance, or due to cramped travel conditions. However, some of the lowest scores for sleep occurred after nights out, and team social events, and these were usually associated the next day with well above Z-scores for cheerfulness and near to baseline scores for anxiety. This set of data again emphasises the importance of placing mood and anxiety scores for sport into a broader life context (Nesti and Sewell, 1997).

Given the increasingly international focus of many sports at the elite level, it seems surprising that studies have not been conducted to assess the impact of travel on mood and anxiety. This failure is most likely due to the narrow approach taken by much of the research where the focus is typically on competitive anxiety as measured by the CSAI-2 (Jones and Swain, 1992) the effects of interventions on competitive anxiety (Hale and Whitehouse, 1998), and the relationship between mood and performance (Lane and Terry, 1998). A promising area for future study could be to investigate whether it is merely a lack of sleep which is associated with high NA low PA mood profiles as reported by Reilly and

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Pierry's (1994) study on sleep deprivation and weightlifting, or are there other important factors to consider. For example, the data reported in this study highlighted that poor and little sleep was not a problem in terms of its impact on the next days' mood and anxiety, where the individual had voluntarily and willingly gone without sleep to take part in social events at night. In fact, from an applied sport psychology perspective, it could be argued that if high PA and low NA states are associated with good sport performance, coaches would do well to ensure that informal team building sessions and social events feature strongly in their pre-match preparation, even if this is at the expense of missed sleep! Such questions have been little discussed in most traditional sport psychology research, however, from a more applied perspective, the work of Professor Yuri Hanin a leading former Soviet sport psychologist is refreshingly different. His research on zones of optimal functioning (ZOF) has emanated from extensive work with elite level Soviet athletes. He has focused on mood, anxiety and emotional states from an intra and an inter-individual basis, and has investigated their relationship to performance. In addition, Hanin (1989) has begun to consider the important role of interpersonal and intra-group anxiety in sport, although, this work remains largely focused on the proposed anxiety-performance relationship.

### ***5.5.8. Effects of Training on Mood and Anxiety***

The results for rugby league players in this study, strongly suggested that training improved PANA profiles for most individuals before and after matches. This was most clearly seen where players had scored well above baseline Z-scores for wearied, worried, or anxiety because of a poor travel experience, or as a result of a major personal upset such as failing to make the team. The data, both qualitative and quantitative revealed that good, well structured and interesting training sessions had a positive impact on mood and anxiety states. Players typically discussed the benefits of training not in terms of honing skills, and improving fitness, but from a more psychological perspective. It could be argued again from an applied view, that good training sessions are likely to be a quicker, more efficient and effective way to improve players psychological states even close to important matches, or after devastating experiences in sport, in comparison to following a mental skills training programme. Although focusing on coping and performance stress, research by Crocker and

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Graham (1995) investigated whether gender differences existed between female (n=169) and male (n=208) athletes. Whilst sex role stereotyping suggests that females use emotion-focused strategies to deal with negative affect, and males use problem-focused strategies, no significant differences relating to this were reported in Crocker and Graham's (1995) study. However, they found that problem-focused coping strategies, such as effort, active coping and attention to planning were significantly positively correlated to positive affect. Such a finding lends further support to the results of this study with Rugby league players. It could be that training sessions, especially those near to matches or soon after, operate as problem-focused coping strategies and may be more effective than emotion-focused strategies (i.e. like those typically used in mental skills training programmes), at improving PANA profiles. Recent work by Breus and O'Connor (1998) has considered the impact of exercise on anxiety from a psycho-biological perspective. Their study with anxious females (n=14), investigated the impact of low levels of aerobic exercise, and aerobic exercise followed by a brief period of studying while sitting on a cycle ergometer. The main finding of their study was that anxiety levels as measured by the STAI were significantly reduced following low intensity exercise, because it provided subjects with a "time out" from daily cares and worries. They have suggested that: **"the findings support the idea that time out is a plausible mechanism by which the anxiolytic effects of exercise are realised"** (Breus and O'Connor, 1998, p1111). Their findings could be interpreted in broader terms in that it could be that any activity, in particular those chosen more or less freely, and where intrinsic motivation is strong, can provide the same positive effect on anxiety and other mood states. It is suggested that training represented this type of activity for most of the rugby league players in this study.

### ***5.5.9. Mood Stability***

Another important finding was that mood and anxiety levels fluctuated considerably for some players, and remained at or near to baseline levels for others over the 12 day period. However, a closer examination of the qualitative diary data revealed that players often recorded their most important written data on days where individual profiles were largely atypical. For example, one player whose Z-scores for mood and anxiety across the majority

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of 12 day period were near to baseline, provided a very detailed, emotional, and negative account at the end of the day which was associated with his highest Z-scores for worried and distracted. In contrast, a more volatile individual who recorded a series of well above baseline Z-scores throughout most of the period, entered little written diary data, except on the day that his mood and anxiety Z-scores were nearest to baseline levels! This day was described as a relaxing day, doing nothing, and as not really what he was expecting on an international tour. Interestingly, whilst the qualitative diary data suggested that this player was bored, not cheerful, lacked focus and was experiencing some anxiety, this was not picked up by the analogue scales. Again, this supports the need to use a methodology that provides combined quantitative and qualitative approaches, even where this presents difficulties associated with identifying an appropriate method for analysing the data.

Although the data does not allow for a discussion of the relationship between performance and mood volatility, the results suggested that this may be an area worthy of future study. However, it is clear from this study that the issue of volatility may prove to be an important new factor for researchers to consider in their efforts to uncover the mood, anxiety and performance relationship, and to identify if any such relationship actually exists. A helpful body of literature is already well established in relation to stress and coping in the mainstream, and in particular Friedman and Rosenman's (1974) work on Type A and Type B persons could assist sport researchers to build on a strong theoretical and empirical foundation.

#### ***5.5.10. Anxiety in Team Sports***

There was strong evidence from the match performance ratings and the diary data to suggest that in team sports situations, the performance of the team overall and outcome of the match had more impact on mood and anxiety scores, than did individual performance. This important issue appears to have been largely overlooked in the sport anxiety research. For example, Hale and Whitehouse's (1998) study on the effects of imagery on anxiety and performance with soccer players (n=24) focused on their individual perceptions of watching a penalty kick in 2 different conditions. In explaining their findings, Hale and Whitehouse

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(1998) focus exclusively on how the player interprets the anxiety associated with poor performance on the task (i.e. not scoring). However, it could be argued that this performance measure bears little or no relation to taking a penalty in almost any standard of match, where as anyone who has played or understands the game will know, any anxiety is related to the fact that whilst everyone is expected to beat the goalkeeper from 12 yards, a soccer penalty is awarded rarely, and unless one team is 4 or 5 goals in front, it can often decide the result of the match or be perceived in this way by those on the field.

### ***5.5.11. Future Directions and New Approaches***

In conclusion it appears that the reliance on the CSAI-2 has continued even where researchers cite the urgent need to employ a range of other methodologies and methods of data collection. Rather than following the suggestions made by Nesti *et al.* (1997) and Lane and Terry (1998) that mood should be considered alongside anxiety and performance, researchers have increasingly turned their attention to investigating the intensity and directional dimensions of competitive anxiety in sport. In addition, new research has emerged which focuses on the relationship between competitive anxiety in sport and a number of other psychological constructs, for example, self-presentation (Wilson and Ekland, 1998) and perfectionism (Hall *et al.*, 1998). Whilst this body of research can claim to represent a fresh change in direction, the issue of facilitating and debilitating test anxiety has been studied in the mainstream for almost 40 years since the work of Alpert and Haber (1960). Whilst Jones and Swain (1995) and others have continued to rely on the CSAI-2 in their work on debilitating and facilitative anxiety in sport, mainstream researchers such as Raffety *et al.* (1997) have begun to utilise diaries to investigate anxiety and coping in academic test anxiety. Their work proceeds from a process orientated approach which: **“involved multiple assessments of anxiety or coping before or after (or both) an academic examination”** (Raffety *et al.*, 1997, p.894). This approach allows a fine grained analysis of anxiety through longitudinal designs involving the completion of daily diaries. Although Raffety *et al.* (1997) have focused on facilitating and debilitating anxiety in their work, their results revealed that anxiety remained elevated after the exam for the high

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debilitating test anxiety group, and in support of the findings of this study, worry remained higher than all other anxiety dimensions both before, and after the exam.

The diary based methodology used in this study revealed a number of important features that could enhance the ecological validity of sport anxiety research. The findings of this study with Rugby League players has stressed the need to consider the social embeddedness of anxiety in sport, in particular in team situations. In addition the diary methodology allowed for a process orientated approach where data can be collected during a period up to an event, and in the immediate aftermath and beyond. Raffety *et al.* have also argued that longitudinal designs using daily diaries can: **“minimise the problem of retrospective recall by making reporting periods more proximal to the experience”** (Raffety *et al.*, 1997, p.893).

However, critics of diaries have pointed out that adherence problems can result in poor completion rates. Bull and Shambrook (1998) have pointed out that self-motivation is the key to adherence in mental skills training. It could be postulated that if athletes often struggle to complete MST, despite being aware that such programmes are ultimately aimed at improving their sport performance, daily diaries will present an even less appealing commitment. However, that the most detailed, complete and thorough daily diaries in this study were provided by players who failed to achieve selection for one of the matches, or who performed well below their expectations, suggests that mood and anxiety diaries could be used by players to help them cope with unwelcome events. In addition, they may benefit from the experience of self-analysis and be able to help rekindle motivation, self-confidence and focus as a result of completing the brief written accounts in their diaries. However, although addressing adherence to MST., Gordon's (1990) comments may serve as a warning in expecting too much from diary methodologies in sport. In discussing work with national level Australian Cricketers, Gordon warned that: **“The main problem I have is getting players to write anything down. Despite my efforts at devising user-friendly workbooks and explaining the benefits of written records only 40 - 50% of players seem willing to commit their thoughts to paper on this or any topic”** (Gordon, 1990, p.393).

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In terms of a consideration of emotional volatility and mood lability which appeared to be an important factor in this study, Schimmack and Diener (1997) have suggested that individuals who experience high levels of positive affect tend also to experience intense unpleasant affect. Diaries can be used to capture these fluctuations more easily than repeated use of self-report inventories, and may begin to provide a more detailed and rich explanation of how and why this experience occurs. In discussing the need for studies to consider both the intensity and frequency of affect, Schimmack and Diener (1997) have pointed out that traditional one-shot approaches relying on a single inventory are unable to distinguish between 2 people who although they experience similar levels of intensity, do so for different frequencies. For example, with one individual the experience of anxiety may be prolonged and remain at a given level for several days, compared to a different individual for whom anxiety, albeit at a similar intensity, is a more rarely experienced state. The diary based methodology used with the Rugby league players included bipolar analogue scales which were easy and quick to complete. This data facilitated the identification of baseline levels for each variable, and enabled intra-individual comparisons to be made regarding intensity and frequency of mood states and anxiety.

Finally, Parkinson *et al.* (1996) have argued that a new methodology is required that will allow for a detailed quantitative analysis of mood states, but still be able to capture the richness, complexity and variability of mood. In terms of broadening the scope of studies in the area, Parkinson *et al.*, have claimed that: **“A social as well as temporal discussion is missing from most current mood research”** (Parkinson *et al.*, 1996, p.213) and that new methodologies and approaches are urgently needed to meet these needs.

However, problems remain despite the findings from this study of rugby league players which have begun to illustrate that a combined approach using a daily diary, a self-report sports specific inventory and match performance data can be used together to investigate mood, anxiety and performance in sport. It could be argued, that the major problem is the difficulty faced by researchers in attempting to combine nomothetic and ideographic data in a way which does not mean that the validity of each is severely weakened. Nevertheless, a

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diary approach has not been used previously to investigate anxiety in sport, and it may be that its use in the future will force researchers to consider anxiety and mood together, and to examine the social and temporal dimensions mentioned by Parkinson *et al.* (1996).

Further, the diary methodology may even encourage researchers to confront some of the serious limitations of the multidimensional approach to anxiety and end the suffocating over-reliance on the CSAI-2. Indeed, the concept of sport anxiety itself may even be subject to a closer and more phenomenological analysis, and attention could profitably be devoted to the search for subtle, in-depth and ultimately more ecologically valid accounts of this very real, yet elusive concept in sport.

## 6 Chapter Six: Summary of Key Findings, Main Themes and Conclusion

### **6.1. Study 1: Individual Differences in Competitive State Anxiety in Sport**

#### ***6.1.1. Aim:***

To replicate and expand upon previous research using the CSAI-2 to examine individual differences and competitive state anxiety in sport.

#### ***6.1.2. Subjects:***

Competitive swimmers (n=89) at three achievement levels: National level (n=22); regional and county level (n=40); promising club swimmers (n=27).

#### ***6.1.3. Findings:***

The use of a directional scale alongside the CSAI-2 provided some support for the concurrent work by Jones *et al.* (1994). Significant differences were reported between different achievement levels for cognitive and somatic anxiety directional scores. These results emphasise the importance of considering individual differences in the interpretation of anxiety symptoms.

Unexpected correlations between intensity and directional scores highlighted problems associated with interpretation of the term “concerned” in 4 items in the CSAI-2. It appears that some athletes understood that “concerned” related to feeling worried and as something negative, whilst others seemed to perceive the term more positively and related to motivation. Support for this and other problems associated with the CSAI-2 has emerged from Lane *et al.* (1999) in their reanalysis of the psychometric properties of the CSAI-2.

### **6.1.4. Main Themes**

The psychometric properties of the CSAI-2 should be re-examined.

Anxiety, at least competitive state anxiety as measured by the CSAI-2 may not be viewed as a negative emotion, but is much more complex (as suggested by Existential psychology) and might be better understood in the context of other mood states.

Given the relatively few group differences reported in this study, it can be argued that the CSAI-2 is unable to adequately identify individual differences when used in isolation, or without an additional facilitative or debilitating scale.

Little evidence of differences between achievement levels for the CSAI-2 scores. This finding could be due to the psychometric weakness of the CSAI-2, and that the questionnaire is based on the multi-dimensional model of anxiety that identifies anxiety as a negative and undesirable emotion which interferes with performance. In addition, this study supports Hardy and Jones (1990) in calling for the use of more sensitive and ecologically valid performance measures in studies investigating the proposed anxiety-sport performance relationship.

## **6.2. Study 2: Anxiety Control in Competitive Sport**

### **6.2.1. Aim:**

To investigate whether the use of the CSAI-2 alongside other individualised assessment techniques can further explain how individual sport performers interpret competitive anxiety. This was to be achieved by testing the propositions of Davidson and Schwartz's (1976) Matching hypothesis which claims that intervention treatments, to be effective, must be designed to address alone either somatic anxiety symptoms, or cognitive anxiety symptoms.

### **6.2.2. Subjects:**

National and regional level female ice skaters (n=15).

### **6.2.3. Findings:**

No support for the Matching Hypothesis. Skaters were taught anxiety control techniques appropriate to their needs by following a nationally approved sport specific anxiety control programme (National Coaching Foundation Mental Skills Training).

The control groups, which received non-directive conversational and non-sport focused sessions lowered their CSAI-2 anxiety scores more than the two treatment groups. This questionnaire data were supported by further data emerging from subject and coach interviews.

Whilst behavioural adherence to the programme was assured, interview data post-intervention revealed that the athletes had largely not enjoyed the programme, and had not altered their anxiety levels.

### **6.2.4. Main Themes**

1. Subjects were allocated to groups based on their dominant mode of experiencing anxiety symptoms. However, the ineffectiveness of the intervention suggests that programmes should be delivered on an individual basis.
2. The qualitative results provided evidence that although several skaters had high anxiety levels, they were not motivated to change this.
3. Post intervention interview data suggested that adherence problems arose where the more subjective and broader needs of skaters were not assessed and considered.
4. The Matching Hypothesis focuses on level and type of anxiety following Spielberger's multi-dimensional model which separates anxiety into cognitive and somatic symptoms. Interventions aimed at anxiety control in sport may only be achieved where focus is redirected at the athlete's interpretation of anxiety intensity and symptoms. In addition,



it is suggested that programmes need to be individually tailored to be effective and to encourage athlete adherence.

### **6.3.**

## **6.4. Study 3: Experiencing Anxiety and Mood in Sport**

### **6.4.1. Aim:**

To redirect focus on the meaning that sport anxiety has for an individual.

### **6.4.2. Rationale:**

It is suggested that it is necessary to develop a more thorough and complete understanding of anxiety in sport, before considering the purported effects of anxiety on sport performance. To achieve this, it may be helpful to utilise a combined ideographic and nomothetic methodology which can place anxiety into a broader context. Further, this will enable anxiety to be better understood in relation to other similar mood states.

### **6.4.3. Subjects:**

Professional Super League Rugby League Referees (n=8) and Regional and National level Netballers (n=8) completed daily diaries to assess mood, anxiety and significant behavioural events.

### **6.4.4. Findings:**

Maybe because the diary methodology helps place anxiety in a broader context, there was little evidence of a steady and consistent elevation of anxiety prior to competition.

There was clearer evidence that anxiety and other NA scores fluctuated more in relation to significant life events other than sport performance (Netball) or performance in sport (Rugby League Referees).

Sleep quality is strongly associated with volatility of mood in sport.

Qualitative data in the diaries revealed that for these 2 groups of high level sports participants, major life events, other than sports based, influenced PA and NA most.

The results indicated that differences between groups or sex (female netballers, male Rugby League Referees) were much less important than individual differences.

The use of Z-scores suggested that volatility of mood was maybe a more important variable than level or intensity.

#### ***6.4.5. Main Themes:***

In terms of beginning to consider the meaning of anxiety in sport the findings in this study suggest a diary based methodology can provide a more complete account because of the following:

It allows for a longitudinal approach.

The diaries used in this study facilitated the investigation of anxiety in relation to other measures of mood.

Both quantitative and qualitative data combined can be assessed for each day.

Data can be analysed ideographically and patterns within the data set can be studied from an inter-individual basis as well.

## **6.5. Study 4: An Investigation of Anxiety, Mood and sports Performance**

### ***6.5.1. Background:***

Studies 1 and 2 have questioned the excessive reliance on the CSAI-2 and have provided a critical analysis of the narrow approach taken to anxiety in sport psychology. The aim of study 3 was to use an appropriate methodology which could re-direct attention towards the meaning of anxiety in sport. It is argued that without a deeper, richer and more complete understanding of the meaning of anxiety in sport, studies will continue to report little new results or unexpected findings. In conclusion, it is postulated that without the use of more ecologically valid approaches such as daily mood diaries research cannot seriously begin to investigate the sport performance-anxiety relationship.

### ***6.5.2. Aim:***

To utilise a diary based approach to examine the relationship between anxiety, mood and performance in sport.

### ***6.5.3. Subjects:***

Nineteen International level student rugby league players were included in this study. The CSAI-2 and performance data were provided by all the players (n=19) and a sub-group of players (n=11) completed daily diaries for a 12 day period.

### ***6.5.4. Findings:***

No clear relationship was found between anxiety and other mood states and match performance for daily diary data or CSAI-2 scores.

NA mood scores and anxiety scores were most affected by loss of a match or poor team performance rather than how well the individual performed.

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Pre-match mood and anxiety states do not follow a consistent pattern across players, or for the same player at different stages of the tour.

Self-confidence as measured by daily diaries or the CSAI-2 did correlate strongly with match performance scores for individual players.

There were clear and at times striking differences between players in terms of mood and anxiety profiles and correlations between these states and behavioural measures.

There was strong evidence that anxiety and excitement were not uniformly viewed as one emotional state.

#### **6.5.5. *Main themes:***

Anxiety and performance in sport could be better studied by placing it alongside other mood and emotional states

There appears to be an important distinction between anxiety related to an important and desired event and anxiety that accompanies a real or perceived failure.

Future studies should carefully explore the relationship between confidence and sport performance.

It seems likely that the negative impact of anxiety on performance in sport is difficult to identify, because it occurs much less frequently and for fewer individuals than has been hypothesised traditionally.

Much greater effort to study anxiety in sport in relation to other mood states and behavioural variables is necessary. Currently, most research in the area has opted for ease

and neatness in data collection (through use of questionnaires) largely at the expense of ecological validity.

## **6.6. Conclusion**

### ***6.6.1. Overarching Themes***

Taken as a whole, these studies suggest that the traditional approach to investigating competitive anxiety in sport psychology has had limited success. There are at least four major reasons for this relating to the conceptualisation of anxiety, measurement issues, a failure to consider individual differences and the almost exclusive use of one methodological approach.

Studies 1 and 2 highlighted the importance of individual interpretations of anxiety, in terms of whether competitive anxiety is perceived as either a positive, negative or a neutral phenomenon by athletes. That some skaters and swimmers within these studies appeared to view competitive anxiety favourably represents a major problem for those researchers utilising SCAT or the CSAI-2, both of which view anxiety as a negative emotion. The evidence from anecdotal reports provided by athletes has recently been tentatively supported by Jones and Swain's (1994) work which suggests that, worryingly, it has taken the research community almost 20 years to accept that anxiety may be either facilitative or debilitating. The findings of studies 1 and 2 are quite possibly consistent with a sizeable body of work in the area, which nevertheless has rarely been published.

A further challenge facing this body of work is that investigation of the competitive anxiety- sport performance link has been difficult to achieve. The failure to identify

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suitable measures of performance has been lamented by Jones (1995), and attempts were made to address this within studies 1 and 4. However, the strongest relationships in these studies were between measures of self-confidence and performance and not between anxiety and performance. Interestingly, this finding has emerged from a number of studies whose primary aim was to investigate the competitive anxiety-performance link. Most usually researchers have called for improvements in the measures used to identify performance. Notably, Jones and Hardy, (1990) and others have warned that efforts should be directed at process approaches focusing on performance per se and not outcome. Study 4 attempted to address this by including the players' view of their performance overall, their assessment of how others performed and an assessment by team colleagues of their own performance. However, despite this, the anxiety-performance relationship remained difficult to detect. This strongly suggests that improvement in performance measurement is still unlikely to furnish clear unequivocal evidence, and that it seems likely that the hypothesised anxiety-sport performance link is much weaker than has been thought.

Although Jones later (1995) has argued that a broader range of methodologies have increasingly been employed in sport anxiety research, the empirical evidence does not support this. Whilst studies 1 and 2 attempted to replicate and build upon previous work in the area, studies 3 and 4 involved the use of a new methodological approach. The daily mood and anxiety diaries used in these studies represented a significantly new way of collecting combined qualitative and quantitative data. Although previously used by Clough et al. (1996) in an exercise setting, this method had not been used in sport psychology research. This methodology provided data which could be examined from an inter and

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intra-individual perspective, therefore facilitating a closer inspection of individual differences. It appears from the findings in study 3 and 4 that, by allowing for anxiety to be measured alongside other mood and behavioural variables, the participants have been able to distinguish more easily between what Jones and Swain (1994) have called facilitative and debilitating anxiety. This was clearly seen where anxiety at or above baseline levels prior to matches was not infrequently associated with higher than baseline levels for Positive Affect. In addition, qualitative data often provided further interpretation of this pattern of scores by identifying that it was possible to feel anxious, happy and excited simultaneously. This finding is important because it challenges the view of those for whom facilitative anxiety and excitement are synonymous. A further important issue is that the diary method allows for a longitudinal approach, and highlighted that anxiety and other mood states of sports performers are also influenced by broader life experiences. Again, high NA low PA profiles in the days pre-match, were often explained in terms of major family, work and other non-sport related concerns. Data post-match revealed that high anxiety and generally low PA scores were recorded after lost matches or poor performances. Apart from Anessi's (1997) work, there has been little interest in post-event anxiety. This is likely due to the excessive use of the CSAI-2 which is concerned solely with pre-competition anxiety and that sport research has slavishly followed the earlier work in academic test anxiety where the focus, quite logically, has been on the impact of anxiety on a terminal performance situation, such as a test or an exam. However, the sport environment differs markedly from the "academic" in that performances are often team based rather than individual, and crucially, the final result may be based on a number of performances, often back to back. Given this contextual element, it may be even more important to be aware of (and address)

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sport performers' post-event anxiety as they progress through their heats, rounds of the competition, league fixtures or section of the draw. Finally the diary data revealed that future research should be directed at what May (1977) has called normal anxiety. This ecologically valid approach would involve focus on the anxiety associated with facing a welcome challenge. This anticipation anxiety, arguably cannot be reduced to a facilitative or debilitating dimension, as it is already constituted of both elements, representing as it does, something we simultaneously desire and fear!

Finally, there seems to be an urgent need to move away from a concern with the symptoms of anxiety, and to draw on conceptualisations which allow anxiety to be viewed as either a positive or a negative mood state. The findings in the final study revealed that anxiety after a disappointing experience may be a more clearly negative and unwelcome emotion. Through the continued use of the CSAI-2, focus has remained with pre-event anxiety. Anxiety has unsurprisingly been described as a potential interference to performance because it is thought to cause over-arousal and a fear of failure. However, that the participants in studies 3 and 4 do not uniformly describe anxiety in this way suggests that there is a need to consider other approaches to anxiety in sport. It may be time to consider those provided by existential psychology, where anxiety is not seen as synonymous with stress or arousal, and where interest is on the meaning of this construct rather than the identification of particular causal factors.

### ***6.6.2. Limitations and Delimitations***



1. The relatively small sample (N=89) in Study 1 made it difficult to make inferences about the interactions of the independent variables (i.e.: sex, age and achievement level). In some cases cell frequencies were very low or non-existent.
2. The CSAI-2 used in studies 1 and 2 included a 4 point Likert-scale to measure facilitative and debilitating dimensions. Concurrent work by Jones and Swain (1994) on the development of a 7 point Likert-scale meant that this addition to the CSAI-2 was unavailable during data collection in studies 1 and 2.
3. A more powerful case for rejecting the Matching Hypothesis (Davidson and Schwartz, 1976) would have been warranted had the design included a reversal of groups. Whilst Terry's (1997) later study addressed this by having players experience both cognitive anxiety and somatic anxiety interventions, these were carried out over a very brief period (i.e. 2 weeks). However, given that the skaters were involved in an 8 week anxiety control programme and that motivation to learn the appropriate techniques was waning throughout, it would have proved difficult and unethical to compel these young athletes to continue for a further 8 weeks' intervention.
4. Although few studies have looked at anxiety control and young athletes, this study considered 15 youth skaters. In sports such as gymnastics, skating, swimming and tennis, young performers frequently participate at the highest levels of the sport and therefore encounter the same competitive pressures as older and more experienced athletes. However, it may be that these younger athletes' resistance to the intervention programme is more related to developmental and maturity issues, rather than due to the inappropriateness of the matched interventions.

5. A control group was included in study 2 primarily to meet ethical considerations and provide a comparison with the 2 treatment groups. However, to ensure coach, and more importantly, parental support, the control received brief, non-specific and non-directive input. This was apparently perceived favourably by most of the group, and may have contributed to undermining the motivation and interest of skaters in the 2 treatment groups.
6. The combined use of qualitative data alongside the CSAI-2 in study 2 to identify anxiety levels and meanings, proved difficult to achieve. This may have resulted in some skaters being assigned to the wrong treatment groups.
7. The CSAI-2 scores may have reflected preferred anxiety levels and not actual states. This could have occurred because of the likelihood of socially desirable responding by young competitive athletes.
8. The daily diaries were completed after each days activities and last thing at night. As retrospective data, validity may have been adversely affected by a participant's ability to remember and accurately recall past mood states and events. In addition, completion of daily entries may not have taken place at the required time where subjects were tired, experiencing strong NA or attended late socialising events.
9. A further difficulty associated with daily mood diaries is that completion rates and the quality and quantity of written data were negatively affected because of the effort required to fill them in. Gordon (1990) has noted that high level athletes in particular are reluctant to provide written accounts relating to their psychological state on a regular basis.



### ***6.6.3. Future Directions - Recommendations***

1. Although difficult to design and carry out, there needs to be a greater use of combined qualitative and quantitative methods in sport anxiety research.
2. Given the importance of individual interpretations of anxiety, greater efforts should be made to enhance the ecological validity of future studies. All four studies in this work possessed high ecological validity; this led to considerable problems with data collection and subsequent analysis of results. However, as an applied discipline, sport and exercise psychology needs to maintain a high level of ecological validity in its research. Anxiety in sport has far too often been investigated in studies lacking adequate ecological validity.
3. Mood and anxiety lability and volatility of emotional states may be more important than intensity or levels. Studies using daily diaries and other means of collecting longitudinal data should be used more frequently to enable researchers to investigate anxiety and mood patterns over time, particularly if programmes are to be tailor-made for individuals.
4. Following existential psychology, sport research needs to closely examine the meaning individuals attach to their experience of anxiety. To date most studies have avoided considering what the experience of anxiety actually describes within the lives of performers in sport.
5. There is a need to examine sport anxiety from a broader perspective which includes both a sport and non-sport social context.

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## 7 Chapter Seven: Postscript

### 7.1. A note on the meaning of anxiety and its importance in sport

This study has argued that before beginning to investigate the causes of anxiety in sport, much more needs to be done to explain the meaning of, and the individual experience of anxiety. However, whilst existential psychology has greatly extended our understanding of the meaning of anxiety, especially in terms of differentiating between normal anxiety and neurotic anxiety, some (Caruso, 1964, Fischer, 1970) have suggested that this approach represents a one-sided solution. Caruso has strongly warned against accepting existential psychology as omnipotent. He claims that: **“their approach is accompanied by a veritable inflation of concepts such as freedom, responsibility and decision. If the psychoanalysts during the period between the wars defined man as the product of his instincts, he is now defined as the product of his own decision”** (Caruso, 1964, p.113). Sartre, Camus and deBeauvoir are the main advocates of this view, which, although it has been expressed by each in different ways, nevertheless supports the idea that man is condemned to freedom, and that as we create ourselves, we are the sole criterion of all, including values and meaning. Whilst Fischer, Caruso, Kingston and others are sympathetic to the aims and purpose of existential psychology, they have warned against replacing the partial truths and one-sided accounts of classical psychoanalytical psychology and behaviourism with a different, yet still incomplete view.

In terms of identifying the underlying causes of anxiety, existential approaches have tended to focus on human isolation, the search for meaning in life and the threat to values. For example, May (1977) very interestingly from a sports perspective, has explained normal anxiety levels as being closely related to the competitive nature of modern society. Although writing almost fifty years ago his arguments appear even more acceptable today. Briefly, he contends that as competitive success is the dominant cultural value at least in the West, it is used as the means of enhancing individuals self esteem or value in the eyes of other people. **“Whatever threatens this goal is, therefore, the occasion for profound**

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**anxiety for the individual in our culture because the threat is to values held essential to one's existence as a personality"** (May, 1977, p.232). This relates closely to formally competitive sport in particular, although, in one sense it could be argued that the competitive experience is intrinsic to all sport, although in some activities this may be arguably not the most important motive for action. For example, in climbing, surfing and some martial arts, the most important motives for participation are typically related to what Deci and Ryan (1985) have called intrinsic motivation, which involves perceived competence and feelings of self-determination regarding behaviour. However, even in these activities competitive demands usually exist in the form of the challenge of the task itself, and in social comparison with others taking part.

For existentialists and their allies such as Tillich (1952), Frankl (1984) and Fromm (1994), the causes of anxiety are to be found in the inescapable situation that humans find themselves in, where they continuously face choices in every aspect of their lives, and yet increasingly, have lost faith in their own power to make and follow their own choices. These psychologists and philosophers have warned that an increasingly alienated, sceptical, and even cynical individual is appearing in modern societies, and lacking belief in any universal values, have instead abdicated responsibility for themselves and handed themselves over to the sway of public opinion. However, this anxiety control mechanism has been bought at great expense according to Fromm (1994) and others, in that although people have escaped the need to make their own decisions by handing the responsibility over to others, through this process they have restricted their growth as individuals. May's (1975) text "The Courage to Create" addresses this important problem and stresses that courage will be required by individuals to avoid artificially restricting their lives (experiences) in an effort to avoid anxiety. Courage of course is a word rarely used in most modern psychological works, and yet it is a term much invoked by those involved in the practice of sport! It could be argued that the more scientific sounding and modern term, self-confidence, actually is closely associated with the concept of courage, and indeed may in fact be synonymous with it. That self-confidence, even where measured by rather limited means such as the CSAI-2, is strongly negatively correlated with anxiety levels and debilitating anxiety is one of the more important, if somewhat expected, findings in the

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sport anxiety literature. Again, whilst coaches and practically focused sports psychology texts (Butler, 1996) emphasise the importance of developing self-confidence in sports as a means of overcoming the negative effects of anxiety and maintaining high standards of performance, no intervention studies have directly investigated this strategy. Although studies have examined closely related concepts such as self-efficacy theory and sport anxiety (McAuley, 1985), and research (Jones *et al.*, 1993) has revealed that cognitive anxiety and somatic anxiety are both correlated with levels of self-confidence, little has been done to assess the effect that improving an individual's self-confidence would have on their experience of competitive anxiety and interpretation of it. In addition, research may reveal that some athletes are wary of feeling highly self-confident before an event, believing that excessive confidence could have a negative impact on performance.

Returning to the commonly held research view of competitive sport anxiety as a destructive emotion, it may be argued that there are three quite distinct positions with regard to how best to deal with this unwanted phenomenon. Firstly, if May (1977) is correct about the influence of competition on anxiety, then the removal of anxiety in sport could be achieved by the removal of competition in sport. Whilst this has been advocated by some and even apparently put into practice in various locations, it is clearly not an appealing idea to most sports participants and sport followers according to studies (Scanlan and Lewthwaite, 1984) that have identified competition as an important motive towards participation. Secondly, athletes and others could be taught techniques to control anxiety to help them achieve bodily control and freedom from negative thoughts. However, issues raised by Caruso (1964) in the mainstream, and Corlett (1996) in sport psychology, question whether mere technique alone can be an effective strategy against the debilitating impact of anxiety in an ever increasing competitive sports environment. Finally, a different response advocated by May and Schneider (1995) identifies the current Western emphasis of isolated individualism over community values as the source on anxiety. In terms of competitive sport, anxiety could be faced constructively and more often serve to enhance performance, where competitive individualistic aims were located within a strongly community-focused framework. This community would stress the importance of traditional and universal values, and emphasise individual rights, and responsibilities, and the autonomous condition

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of each person. Within this complex dynamic of permanence, stability and growth and evolution, sport competition would be set in a perspective which emphasised that the person's needs and those of society were related to social values and the intrinsic worth of each human being. Existential psychologists and those sympathetic to this approach such as Caruso (1964) and Jung (1945) are not suggesting that this form of community can ever be fully achieved, however, that as an ideal, it should be the aim of all economic, material and psychological life to work towards this. If this discussion appears far removed from competitive sport and anxiety, two examples should highlight that this need not be the case.

Sport historians such as Brailsford (1980), although their interpretations are rarely supported by sport sociologists, have nevertheless described how the public school ethos of late Victorian Britain contained many of the qualities of a social psychology nature that could foster a healthy approach to competition in sport. They have argued that these schools tended to emphasise the importance of team effort over individual achievement, and that personal self-aggrandisement was frowned upon. This system appeared to value sport as an opportunity for character building which involved individuals in successfully facing the anxiety of the competitive experience, by drawing upon their own resources and through co-operating with others. This view of competitive sport has recently received government support with the introduction of the policy statement, "Sport Raising the Game" (Department of Heritage, 1995).

From a more applied perspective the work of Smith *et al.* (1995) demonstrated that a more supportive environment, where individual effort as opposed to outcome received the greatest emphasis, brought a reduction in the stress and anxiety associated with children's participation in competitive sport. Although Smith *et al.*'s (1995) research is important for several reasons, it could be argued that the most interesting finding is that competitive state anxiety levels can be altered positively without having to remove the competitive experience from sport.

The importance of sound and mature values and their relationship to anxiety has already been noted. Within the sports psychology literature addressing competitive anxiety and its

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causes, little attention has been directed at the issue of values and anxiety. By values the existential psychologists are essentially referring to those beliefs that the individual holds dear; these can range from the relatively trivial such as a belief in punctuality, to more central and all embracing ideals such as belief in the dignity of human beings, or conviction of the existence of a supreme being. Either way, May (1977) has claimed that anxiety results when the values a person is committed to are threatened. This can be better understood by recognising that May described an individual's values as not only defining them, but as actually giving substance to them as a self. From this it is easier to see how May could construe that a threat to one's values could at the same time be a threat to one's existence (sometimes even literally, for example, where death is preferred to giving up a cherished belief).

In competitive sport, even at lower levels of performance, research suggests that anxiety is a frequent occurrence. A closer analysis of the sport experience reveals that participants are often prepared to cheat, subject themselves to dangerous situations, and accept considerable discomfort to achieve their goals. That the motivation is there and strong is clear to see, and yet, especially where there are no great prizes to be won, or financial rewards available, it is difficult on the face of it, to understand why people would be prepared to freely subject themselves to such stress. The existentialists however seem to have identified an important set of factors that provide an appealing explanation of this behaviour. For them, particularly in modern Western civilisation, an individual's worth, self-esteem and psychological health is all too often tied up exclusively with how they perceive themselves in relation to others and in relation to their 'ideal self'. Competitive sport provides an artificial and therefore "pure" competitive environment, where achievement is governed by effort, skill and ability in a way that is rarely possible in other social domains. Whilst success in so clear a "world" can bring self-esteem, confidence and affirmation of an individual's worth, failure, and more importantly, fear of failure brings anxiety. Although not empirically tested, anecdotal accounts of athletes and coaches attest to the belief that those who value themselves solely in terms of their success as sport performers are liable to experience greater debilitating anxiety than others whose self-worth is based on broader and deeper foundations. Although not focusing on anxiety in sport, Grove *et al.* (1998) have

investigated the coping mechanisms used by elite level athletes facing retirement for sport. Their work suggests that those individuals who identify themselves more or less in terms of their athletic identity suffer considerable anxiety when facing retirement. Again, there is also evidence from studies on drop out in youth sport (Scanlan and Lewthwaite, 1984) which suggests that for some athletes, withdrawal from competitive sport is more likely where repeated failure in competitions is accompanied by a belief that success in sport is central to self-esteem overall.

Related to the importance of values in determining anxiety, Caruso (1964) addressing the role of psychotherapy in curing anxiety neurosis, has pointed out that values centred on the self even where these are good in themselves, can become destructive if they are turned into absolutes. He has warned that: **“When what is relative is regarded as absolute and the world of values is turned upside down, the whole world of man must of necessity become disjointed too”** (Caruso, 1964, p.111). He refers to anxiety as a symptom of the disease of bad conscience which has resulted from the hypertrophy of the ego, where people no longer recognise any absolute or universal values, and have placed themselves as the sole arbiter of truth and value. This important differentiation between relative and absolute values could help explain why athletes whose identity and self-esteem is tied to broader humanitarian or spiritual value systems seem better prepared to confront the anxiety of competitive sport constructively and without retreating mentally from the challenge. Anecdotal accounts of these individuals, such as Mohammed Ali, Jonathan Edwards, Mary Peters, Aryton Senna and Pele and in coaching, Sir Matt Busby and Vince Lombardi suggests that this area could prove worthy of more empirical research.

Finally, identification of the causes of anxiety in sport could be given considerable impetus by recognition of what May (1977) has termed normal anxiety, and neurotic anxiety. Although these constructs have been discussed elsewhere in this study, it is worth reiterating that neurotic anxiety, according to the existential psychologists is the problem, and that normal anxiety is not. The sports literature has focused almost exclusively on the symptoms of anxiety following Spielberger’s multidimensional model. Such a view of course has little to say about the potentially positive aspect of anxiety, and crudely proceeds

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from the assumption that anxiety is rather like illness in that one suffers from it and would never actively seek it out. However, competitive sport is a stressful activity and anxiety is experienced in it on occasion. Put simply, if anxiety is so bad why do so many people engage freely and often for no obvious extrinsic reward, in such a potentially anxiety inducing pursuit as competitive sport? A fuller explanation of this must surely draw on the idea of normal anxiety being that anxiety which we are prepared to experience and even enjoy. Kierkegaard (1944) has managed to catch this apparently paradoxical aspect of anxiety by describing it as an experience which accompanies something that we simultaneously fear and yet desire. Again, in straightforward terms, we often find ourselves genuinely anxious prior to a task which often involves some considerable discomfort, and yet be prepared to meet the challenge, especially where we feel competent and the activity is more or less freely chosen. Some theorists have described this emotional state as not in fact anxiety, but excitement. However, it could be argued that whilst positive anxiety is more likely another name for excitement, that normal anxiety can be experienced (usually before and during the event) as a beneficial and facilitative experience, is to say something quite different. Again, from sport practice, coaches and others have frequently been denigrated for using so called “psyching up” tactics to induce greater anxiety in their players prior to an event. It seems that they believe in the galvanising effects of normal anxiety on performance, although, sports researchers are only now beginning to seriously consider this in their work. In supporting this point, May and Schneider (1995) reported that many psychologists in the mainstream agree that anxiety facilitates performance up to a certain point, and that beyond this level performance may decline. However, they cite the important work of Denny (1966) which explains performance deterioration in terms of poor preparation or lack of ability, rather than anxiety. That anxiety is the result of poor performance, or the anticipation that one will perform unsuccessfully because of a lack of ability or inadequate preparation, seems a very likely explanation of much of the test anxiety research findings which report that poor performance is strongly associated with anxiety. In sport, the knowledge that an individual has not trained properly, or lacks the sufficient skill or ability to succeed, surely represents the more likely explanation of the hypothesised strong relationship between high levels of anxiety and poor performance.

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A more complete understanding of anxiety in sport appears necessary, before studies can attempt to identify and isolate causal relationships, even of a loose kind. Much more needs to be done to investigate the meaning of anxiety in sport for the individual athlete. Fischer's thorough review of the theories of anxiety put forward by all of the major schools of psychology has pointed out that no single approach satisfactorily accounts for what he has termed: **"anxious experiencing and the experience of the other-being-anxious"** (Fischer, 1970, p.94). According to Fischer (1970) most research has focused on assessing and measuring the other-being-anxious, and apart from the approach of the existentialists, very little attention has been devoted to more subjective accounts of how anxiety is experienced by an individual themselves. The exclusive focus of the existentialists on the interpretation and meaning of anxiety for the individual could provide a much needed change of direction for sport anxiety research, where the vast majority of studies so far have considered anxiety from the perspective of an observer. However, Caruso (1964) has warned against replacing one philosophical and metaphysical prejudice with another, albeit opposite, and yet partial and one-sided approach, even though there is a great need to redirect attention towards a more in depth consideration of what constitutes anxiety and its meaning for an individual in a real life situation.

Sport anxiety researchers need to be more aware of work in the mainstream as it seems rather naive, unlikely and somewhat arrogant to expect that they will be able to add anything new to these theoretical debates about anxiety, given that they come to the table so late in the day, and arguably rather empty handed! Much more promising and worthwhile would be to accept the need to search for an integrated approach to the study of anxiety in sport that draws on the strengths of both main approaches. In practical terms this would require researchers to ground studies in an holistic and organismic perspective but which still recognises the individual's biological and physiological components. Fischer (1970) has gone further, and suggests that anxiety researchers need to reject the dominant natural scientific philosophy as the basis for psychology, that is, where the experiential and the bodily are viewed as distinct and separate.

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Prior to assessing how such an integrated approach to anxiety would influence sport research, the following extensive quotation from Fischer seems to capture the essence of this new approach. In referring to the interpretation of the physiological symptoms of anxiety he contends that: **“All of the bodily phenomena that we have enumerated signify one and the same condition: my uncertain impotence and imminent collapse in the face of my crumbling world. Thus we can affirm with Schachter that different people manifest different bodily “signs” of anxiety: some express this condition through palpitations, others perspire, others tremble, etc. However, all of these bodily events have the same common experiential significance to the individuals undergoing them and only if the theoretician grasps the holistic character of human bodily functioning will he be able to realise that which the everyday individual already understands”** (Fischer, 1970, p.171).

Such a view clearly rejects the multidimensional models of anxiety as theoretical, abstract and of little practical use. Research based on multidimensional models would, according to this view, be unlikely to discover anything new about anxiety and sport, and be unable to offer any findings that could be of interest or help to coaches and their athletes. A review of the sport anxiety literature over the past two decades would largely support this conclusion, and yet sports psychologists and researchers such as Jones (1995) continue to argue for more of the same. Instead, it is suggested that sport anxiety research will largely produce either strikingly obvious and bland results and findings, that continue to be ignored by sport practitioners, until it adopts different methodologies, methods and approaches to data analysis and interpretation. For the sake of consistency and scientific rigour, it could be argued that this realignment should be accompanied by explicit recognition that psychology (research) needs to proceed from a human science as opposed to a natural scientific approach (Giorgi, 1985). However, given that most researchers in sports psychology remain wedded to the metaphysical and philosophical assumptions of the natural scientific model, it may be too much to expect that many will be prepared to publicly renounce their beliefs. This could be particularly difficult as Rennie (1994) has argued, that the dominant approach has been typically uncritically accepted, and generally ignored as an issue by most sport anxiety researchers. More likely, recognition that much

current work in the area has borne little fruit and is of even less interest to an increasingly vocal and important practically focused sports community, should begin to broaden the approach taken towards sport anxiety research. The slight increase in the use of qualitative methodologies, (Scanlan *et al.*, 1991) greater calls for single subject design studies (Jones and Hardy, 1990), and for mood and emotion to be considered (Gill, 1994), suggest that sport researchers are slowly beginning to move closer towards a more ecologically valid and integrated approach to the study of anxiety.

Finally, researchers (Lazarus, 1990; Gill, 1994) are moving towards greater recognition of the important role of the environment in the study of sport anxiety. Calls to place the sport anxiety experience within the social context of competitive sport seem to be along the right lines. However, arguably an even more meaningful addition, would be to begin to interpret sport anxiety from within the context of an individual's life. This approach has been considered within the final studies here, and the findings have gone some way to supporting the belief that anxiety must be studied whole and against the backcloth of an individual's life. Although not easy to achieve, such an approach may allow the researcher to differentiate more clearly between anxiety and excitement, and to consider the individual's psychological life whole, involving a continuous stream of emotions and cognitions, rather than as a series of discrete and unrelated mental events and their physical correlates.

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## A. APPENDIX A

### A.1. Information about Swimming Clubs

**36 Victoria Road**

**Northampton**

**NN1 5ED**

**Phone/Fax: 0604 22849**

**Mobile: 0836 665470**

**Swim Club Office: 0604 233029**

**Swim Club Fax: 0604 602226**

4th October 1993

Dear Mark

Following our telephone conversation earlier today I have enclosed some relevant information. The squad handbook is from last season and some of the personnel have changed, indeed the squad has increased to 24 swimmers, but the aims and objectives remain very much the same. Five members of this group were ranked in the top ten Nationally at the recent National Age Groups. The Masters swimmer is a World Record Holder and I have two Paraolympians joining this year, both of whom swam in Barcelona.

The squad structure highlights the main groups in our programme, the squad composition for the top group gives an identification of ages and the coaching list gives current qualifications, although 5 of the coaches are currently undertaking their journals for elevation to Club Coach. There are about 50 Masters swimmers in membership.

We have one other "full-time" staff member, Jas Smallbone, who is responsible for the Development programme of around 70+ and a part-time administrator who mans the Club Offices every weekday morning. We are adding to this staffing by appointing another "full-time" from January 1st and I have appended a job description for that post.

I have contacted you specifically because I know you have experience with both swimmers and swimming coaches and I feel that I need someone with that kind of background to help me and my staff as we develop our organisation over the next five years. Although I trained twenty years ago as a Physical Education Teacher, worked in schools and colleges teaching and coaching a range of sports and then moved into full-time swimming coaching in 1984 I am aware that the level of swimming we are aiming for requires a mental education that is only achieved with professional support. My concerns lie very much in the area of self-confidence and anxiety control although a number of my younger swimmers need considerable help at developing concentration skills.

I am quite happy that this group become involved as subjects in your research work if you wish and I am certainly keen that our relationship be viewed in terms of long-term intervention.

I look forward to hearing from you soon and would welcome the opportunity of discussing these proposals in more detail either in Hull or Northampton.

Yours sincerely

Dave Day

**To be given to all coaches and interested parents/guardians.**

## **A.2. SPORT PSYCHOLOGY AND COMPETITIVE SWIMMING**

**Mark Nesti BA (Hons), MA, Registered Sport Psychologist**

### **Introduction**

There is large evidence to suggest that athletes can learn new mental skills and develop positive attitudes to assist them to achieve their potential in sport. Studies during the past twenty years in the area of motivation, stress and anxiety in sport have revealed that these factors greatly affect sporting performance.

I am currently pursuing a PhD research study at the Department of Psychology, Hull University, into the relationship between anxiety and performance in sport. Having completed a masters degree course at the University of Alberta which looked at the relationship between motivation and achievement in competitive swimming, I am keen to extend this work by investigating this area further.

- a) Initially, questionnaires will be used to determine levels of motivation, competition and self-confidence. This data will then be used to: -
- b) Provide mental skill training to assist the development of all swimmers at the club.
- c) Enhance coaches understanding of the contribution that sport psychology can make to their own performance and that of swimmers.

### **More about the Project**

Anxiety is generally viewed as a negative state and, as such, is thought to interfere with performance in two main ways:

**Cognitive anxiety** or worry involves feeling nervous or distracted and may prevent the swimmer from focusing their attention on the task in hand. It can lead to irritability, lethargy, and a lack of self-belief. **Somatic anxiety** in contrast refers to the physical components of anxiety such as tension, elevated heart rate and blood pressure, sweating and stomach cramps. These can cause problems for athletes such as interfering with co-ordination, sapping energy and preventing rest.

**Competitive anxiety** or the experience of anxiety induced in an athlete when facing the stressor known as competitive, may interfere with an athletes performance. At this point it is worth mentioning that whilst stress can be viewed by the athlete as a negative or positive phenomenon, anxiety is generally experienced as a less helpful emotional and physical state.

Finally anxiety has been divided into two personality components. **Trait anxiety** (A-Trait) refers to the degree to which a person normally experiences situations as anxiety producing (i.e. it identifies the nervous type of person).

**State Anxiety** is transitory. This is the anxiety experienced in response to a particular event or situation. Obviously, the intensity and duration of this anxiety that a person



experiences depends upon their personality (i.e.: are they high A-Trait) and the situation.

### **Motivation**

An important facet of motivation, at least where sporting achievement is concerned, is the degree to which an athlete is either self-motivated or motivated by others.

**Intrinsic Motivation** refers to the level of self-motivation and focuses on doing something for its own sake. An intrinsically motivated athlete is said to be performing to prove competence to themselves and to experience feelings of control over their own actions or self-determination.

**Extrinsic Motivation** refers to motivation by factors beyond the immediate control of the athlete. Examples of extrinsic rewards would be trophies, praise, status and medals. The important thing here is whether an athlete is motivated both intrinsically and extrinsically. To be motivated exclusively by extrinsic rewards can cause problems when these rewards are not forthcoming, or are unavailable.

Motivational orientation can impact on the experience of stress and anxiety, and disrupt training and performance at events.

To determine Trait Anxiety and State Anxiety and Self-Confidence two questionnaires will be administered to all swimmers. The result of these tests will be analysed to discover differences between and within squads, based on age, level and sex, and recommendations made in terms of how coaches may wish to address any potential problem areas. No individual athlete will be identified in the findings, and to ensure that swimmers respond fully and honestly they will not be requested to identify themselves by name on the questionnaire.

However, a coding system will be used with the Olympic squad swimmers to ensure confidentiality and enable me to identify individual swimmers for whom anxiety is an area of concern.

Both questionnaires, the Sport Competition Anxiety test (SCAT) and the Competitive State Anxiety Inventory - 2 (CSAI-2) are reliable and valid measures developed by Rainer Martens, one of the top sport psychologists in the world. All coaches and interested parents and guardians will receive feedback on the results and have an opportunity to discuss the findings and any recommendations in more detail.

### A.3. Administering SCAT and CSAI-2

#### Timing

(I) **SCAT** (the questionnaire with 15 questions) can be given to swimmers at any time, for example before training.

(ii) **CSAI-2** must be given to swimmers at the following times: -

(a) **All swimmers**

To complete 2 questionnaires - the first should be 8 days before an event and half an hour before the same event.

(b) **For Olympic Squad Members only**

To complete questionnaires at intervals of 8 days, 1 day and half an hour before the event.

#### Instructions to swimmers

Please inform them that-

(I) No coaches or parents will see their individual results and that the findings will not be published in journals listing their names.

(ii) These tests assess a range of self-evaluation statements.

(iii) Swimmers should respond on how they feel at the moment.

(iv) They must answer all questions.

#### Advice

(I) If you get questions from the swimmers on the nature of the questionnaires or purpose of the study, please try to answer by reiterating or clarifying the instructions. Do not offer any information regarding the purpose of the inventory

(ii) **CSAI-2** should take about 5 minutes to complete. **SCAT** should take between 3 to 5 minutes to complete. The important point here is that they should be done quickly-swimmers should not dwell on their responses for too long.

(iii) Please ensure that swimmers identify their age, sex and squad on the questionnaire.

(iv) Please identify on the questionnaire, or batch of questionnaires, exactly when they were administered.

**A.4. Feelings Questionnaire**

**Coding:**

AGE \_\_\_\_\_  
 SEX \_\_\_\_\_  
 SQUAD \_\_\_\_\_

DATE \_\_\_\_\_  
 EVENT \_\_\_\_\_

**Directions:** A number of statements that competitive swimmers have used to describe their feelings before competition is given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but choose the answer which describes your feelings right now.

Now consider whether you think this a good or bad situation for you. Please circle the appropriate number.

**Does this make you feel**

		Not at all	Somewhat	Moderately	Very Much		Very Bad	Bad	Good	Very Good
1	I am concerned about this competition	1	2	3	4		1	2	3	4
2	I feel nervous									
3	I feel at ease									
4	I have self-doubts									
5	I feel jittery									
6	I feel comfortable									
7	I am concerned that I may not do as well in this competition as I could									
8	My body feels tense									
9	I feel self-confident									

Appendix A

10	I am concerned about losing	1	2	3	4		1	2	3	4
11	I feel tense in my stomach	1	2	3	4		1	2	3	4
12	I feel secure	1	2	3	4		1	2	3	4
13	I am concerned about choking under pressure	1	2	3	4		1	2	3	4
14	My body feels relaxed	1	2	3	4		1	2	3	4
15	I'm confident I can meet the challenge	1	2	3	4		1	2	3	4
16	I'm concerned about performing poorly	1	2	3	4		1	2	3	4
17	My heart is racing	1	2	3	4		1	2	3	4
18	I'm confident about performing poorly	1	2	3	4		1	2	3	4
19	I'm concerned about reaching my goal	1	2	3	4		1	2	3	4
20	I feel my stomach sinking	1	2	3	4		1	2	3	4
21	I feel mentally relaxed	1	2	3	4		1	2	3	4
22	I'm concerned that others will be disappointed with my performance	1	2	3	4		1	2	3	4
23	My hands are clammy	1	2	3	4		1	2	3	4
24	I'm confident because I mentally picture myself reaching my goal	1	2	3	4		1	2	3	4
25	I'm concerned I won't be able to concentrate	1	2	3	4		1	2	3	4
26	My body feels tight	1	2	3	4		1	2	3	4
27	I'm confident of coming through under pressure	1	2	3	4		1	2	3	4

**A.5. Competitive Swimming Questionnaire**

Age: \_\_\_\_\_

Coding: \_\_\_\_\_

Sex: \_\_\_\_\_

Squad: \_\_\_\_\_

We want to know how you feel about competitive swimming. Below are a few statements about how persons feel when they compete in sports and games. Read each statement carefully and decide if you Hardly Ever, Sometimes, or Often feel this way when you compete in swimming. Depending on your feelings, put a tick in the appropriate column that best describes your feelings about each statement. There are no right or wrong answers. Do not spend too much time on any one statement. Remember choose the word which best describes the way you unusually feel when competing in swimming.

- |   | <u>Hardly</u><br><u>Ever</u> | <u>Sometimes</u> | <u>Often</u> |
|---|------------------------------|------------------|--------------|
| 1. Competing against others is fun.                                 |                              |                  |              |
| 2. Before I compete I feel uneasy.                                  |                              |                  |              |
| 3. Before I compete I worry about performing well                   |                              |                  |              |
| 4. I am a good sportsman when I compete.                            |                              |                  |              |
| 5. When I compete I worry about making mistakes.                    |                              |                  |              |
| 6. Before I compete I am calm.                                      |                              |                  |              |
| 7. Setting a goal is important when competing.                      |                              |                  |              |
| 8. Before I compete I get a funny feeling in my stomach.            |                              |                  |              |
| 9. Just before competing I notice my heart beats faster than usual. |                              |                  |              |
| 10. I like rough games.   |                              |                  |              |
| 11. Before I compete I feel relaxed.                                |                              |                  |              |
| 12. Before I compete I am nervous.                                  |                              |                  |              |
| 13. Team sports are more exiting than individual sports.            |                              |                  |              |
| 14. I get nervous waiting to start my race.                         |                              |                  |              |
| 15. Before I compete I usually get up tight.                        |                              |                  |              |

**B.****C. A6: Descriptive Statistics, Means and SD**Table 1

<u>Self Confidence Intensity Scores</u>		
<u>Level</u>	<u>M</u>	<u>SD</u>
National	24.16	4.68
Regional	24.03	4.36
Club	22.83	5.07

Table 2

<u>Self Confidence Direction Scores</u>		
<u>Level</u>	<u>M</u>	<u>SD</u>
National	26.63	4.62
Regional	26.37	4.64
Club	24.55	4.47

Table 3

<u>Somatic Anxiety Direction</u>		
<u>Level</u>	<u>M</u>	<u>SD</u>
National	25.44	5.21
Regional	23.56	5.15
Club	23.15	4.69

Table 4

<u>Cognitive Anxiety Direction</u>		
<u>Sex</u>	<u>M</u>	<u>SD</u>
<b>National Level</b>		
Male	23.60	5.30
Female	23.40	4.91
<b>Regional Level</b>		
Male	22.90	5.98
Female	24.63	4.23
<b>Club Level</b>		
Male	23.10	4.63
Female	24.54	4.37

**D.**

## Descriptive Statistics for Directional Scores of All Swimmers According to Age, Achievement Level and Gender

Achievement Level	National Qualifiers						Regional/County Qualifiers						Club Swimmers					
	Male			Female			Male			Female			Male			Female		
Age Cohort	11 & under	12-13	14&over	11 & under	12-13	14&over	11 & under	12-13	14&over	11 & under	12-13	14&over	11 & under	12-13	14&over	11 & under	12-13	14&over
Cognitive Anxiety (8 days)		X=21.00 SD=2.24 N=5	X=18.43 SD=5.03 N=7		X=22.25 SD=7.81 N=4	X=19.83 SD=4.67 N=6	X=24.40 SD=2.70 N=5	X=24.11 SD=5.11 N=9	X=22.00 SD=6.56 N=3	X=21.22 SD=4.27 N=9	X=21.44 SD=5.70 N=9	X=19.60 SD=5.77 N=5	X=19.36 SD=3.73 N=14			X=21.83 SD=5.46 N=12	X=26.00 SD=0.00 N=1	
Cognitive Anxiety (½hr)		X=23.60 SD=4.56 N=5	X=17.00 SD=5.16 N=7		X=19.75 SD=8.38 N=4	X=20.00 SD=8.46 N=6	X=23.40 SD=3.91 N=5	X=24.78 SD=6.24 N=9	X=22.67 SD=2.52 N=3	X=19.78 SD=4.05 N=9	X=21.56 SD=5.64 N=9	X=19.60 SD=6.47 N=5	X=21.14 SD=6.62 N=14			X=22.67 SD=6.01 N=12	X=24.00 SD=0.00 N=1	
Somatic Anxiety (8 days)		X=15.00 SD=6.44 N=5	X=14.71 SD=3.99 N=7		X=20.50 SD=6.46 N=4	X=15.50 SD=4.76 N=6	X=25.40 SD=3.58 N=5	X=21.56 SD=5.77 N=9	X=20.00 SD=7.00 N=3	X=20.00 SD=4.47 N=9	X=19.56 SD=7.73 N=9	X=19.80 SD=4.32 N=5	X=21.21 SD=5.41 N=14			X=17.83 SD=4.86 N=12	X=17.00 SD=0.00 N=1	
Somatic Anxiety (½hr)		X=22.40 SD=2.97 N=5	X=18.71 SD=3.68 N=7		X=18.75 SD=4.57 N=4	X=19.83 SD=3.71 N=6	X=22.80 SD=7.33 N=5	X=21.78 SD=6.04 N=9	X=16.67 SD=5.13 N=3	X=18.67 SD=3.16 N=9	X=19.56 SD=6.89 N=9	X=19.00 SD=4.64 N=5	X=22.29 SD=5.57 N=14			X=21.42 SD=5.14 N=12	X=25.00 SD=0.00 N=1	
Self-confidence (8 days)		X=23.00 SD= 2.92 N= 5	X= 23.43 SD= 5.88 N= 7		X=23.50 SD= 5.32 N=4	X=22.17 SD= 3.60 N=6	X=27.20 SD=3.00 N=5	X=23.67 SD=3.46 N=9	X=20.67 SD=2.08 N=3	X=23.44 SD=2.96 N=9	X=22.33 SD=3.74 N=9	X=22.80 SD=4.15 N=5	X=23.71 SD=4.34 N=14			X=22.58 SD=4.91 N=12	X=21.00 SD=0.00 N=1	
Self-confidence (½hr)		X= 27.80 SD=3.11 N= 5	X= 28.00 SD=6.22 N=7		X=25.00 SD=2.94 N=4	X=20.50 SD=5.36 N=6	X=30.80 SD=2.39 N=5	X=25.33 SD=7.71 N=9	X=25.00 SD=1.73 N=3	X=22.44 SD=3.78 N=9	X=22.44 SD=4.07 N=9	X=21.40 SD=4.39 N=5	X=21.86 SD=6.14 N=14			X=23.75 SD=5.05 N=12	X=18.00 SD=0.00 N=1	

## Descriptive Statistics for Directional Scores of all Swimmers According to Gender and Achievement Level

Achievement Level	National Qualifiers		Regional/County Qualifiers		Club Swimmers	
	Male	Female	Male	Female	Male	Female
Cognitive Anxiety (8 days)	X = 24.08 SD = 5.02 N = 12	X = 22.00 SD = 5.21 N = 10	X = 22.82 SD = 5.35 N = 17	X = 23.22 SD = 4.07 N = 23	X = 22.86 SD = 3.88 N = 14	X = 23.23 SD = 4.05 N = 13
Cognitive Anxiety (½hr)	X = 25.50 SD = 5.55 N = 12	X = 24.10 SD = 6.97 N = 10	X = 23.00 SD = 6.61 N = 17	X = 24.04 SD = 4.50 N = 23	X = 23.36 SD = 5.39 N = 14	X = 23.85 SD = 4.69 N = 13
Somatic Anxiety (8 days)	X = 27.92 SD = 5.33 N = 12	X = 26.70 SD = 6.20 N = 10	X = 23.47 SD = 4.94 N = 17	X = 24.30 SD = 4.52 N = 23	X = 22.14 SD = 4.61 N = 14	X = 24.39 SD = 4.31 N = 13
Somatic Anxiety (½hr)	X = 26.25 SD = 4.12 N = 12	X = 24.80 SD = 5.18 N = 10	X = 22.35 SD = 6.59 N = 17	X = 24.13 SD = 4.57 N = 23	X = 22.07 SD = 4.97 N = 14	X = 24.00 SD = 4.88 N = 13
Self-confidence (8 days)	X = 29.42 SD = 5.35 N = 12	X = 26.90 SD = 3.25 N = 10	X = 27.53 SD = 5.42 N = 17	X = 27.00 SD = 3.06 N = 23	X = 26.14 SD = 3.35 N = 14	X = 26.92 SD = 3.30 N = 13
Self-confidence (½hr)	X = 27.92 SD = 4.96 N = 12	X = 22.30 SD = 4.92 N = 10	X = 27.35 SD = 5.89 N = 17	X = 23.61 SD = 4.19 N = 23	X = 21.86 SD = 6.14 N = 14	X = 23.31 SD = 5.09 N = 13



**Descriptive Statistics for Intensity Scores of all Swimmers According to Gender and Achievement Level**

Achievement Level	National Qualifiers		Regional/County Qualifiers		Club Swimmers	
	Male	Female	Male	Female	Male	Female
Cognitive Anxiety (8 days)	X = 19.50 SD = 4.17 N = 12	X = 20.80 SD = 5.83 N = 10	X = 23.82 SD = 4.59 N = 17	X = 20.96 SD = 5.00 N = 23	X = 19.36 SD = 3.73 N = 14	X = 22.15 SD = 5.35 N = 13
Cognitive Anxiety (½hr)	X = 19.75 SD = 5.80 N = 12	X = 19.90 SD = 7.95 N = 10	X = 24.00 SD = 4.99 N = 17	X = 20.44 SD = 5.10 N = 23	X = 21.14 SD = 6.62 N = 14	X = 22.77 SD = 5.76 N = 13
Somatic Anxiety (8 days)	X = 14.83 SD = 4.88 N = 12	X = 17.50 SD = 5.76 N = 10	X = 22.41 SD = 5.50 N = 17	X = 19.78 SD = 5.70 N = 23	X = 21.21 SD = 5.41 N = 14	X = 17.77 SD = 4.66 N = 13
Somatic Anxiety (½hr)	X = 20.25 SD = 3.77 N = 12	X = 19.40 SD = 3.86 N = 10	X = 21.18 SD = 6.31 N = 17	X = 19.09 SD = 5.00 N = 23	X = 22.29 SD = 5.57 N = 14	X = 21.70 SD = 5.02 N = 13
Self-confidence (8 days)	X = 23.25 SD = 4.70 N = 12	X = 22.70 SD = 4.14 N = 10	X = 24.18 SD = 3.96 N = 17	X = 22.87 SD = 3.42 N = 23	X = 23.71 SD = 4.34 N = 14	X = 22.46 SD = 4.72 N = 13
Self-confidence (½hr)	X = 27.92 SD = 4.96 N = 12	X = 22.30 SD = 4.92 N = 10	X = 26.88 SD = 6.19 N = 17	X = 22.22 SD = 3.86 N = 23	X = 21.86 SD = 6.14 N = 14	X = 23.31 SD = 5.09 N = 13

## H. Appendix B

**CSA1-2: from Martens, R., Varley, R.S. & Burton, D. (1990)**  
***Competitive Anxiety in Sport.* Human Kinetics, Champaign, Illinois**

### H.1. Illinois Self Evaluation Questionnaire

Name \_\_\_\_\_ Sex: M

Date: \_\_\_\_\_

**Directions:** A number of statements that athletes have used to describe their feelings before competition is given below. Read each statement and then circle the appropriate number to the right of the statement to indicate *how you feel right now* - at this moment. There are no right or wrong answers. Do *not* spend too much time on any one statement, but choose the answer which best describes your feelings *right now*.

Not at All	Somewhat	Moderately So	Very Much So
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1. I am concerned about this competition
2. I feel nervous
3. I feel at ease
4. I have self-doubts
5. I feel jittery
6. I feel comfortable
7. I am concerned that I may not do as well in this completion as I could
8. My body feels tense
9. I feel self-confident
10. I am concerned about losing
11. I feel tense in my stomach
12. I feel secure
13. I am concerned about choking under pressure
14. My body feels relaxed
15. I'm confident I can meet the challenge
16. I'm concerned about performing poorly
17. My heart is racing
18. I'm confident about performing well
19. I'm concerned about reaching my goal
20. I feel my stomach sinking
21. I feel mentally relaxed
22. I'm concerned that others will be disappointed with my performance
23. My hands are clammy
24. I'm confident because I mentally picture myself reaching my goal
25. I'm concerned I won't be able to concentrate
26. My body feels tight
27. I'm confident of coming through under pressure

## H.2. Semi-structured interview

INTERVIEWS: March - June 1994

TIMES: 30-40 MINUTES each

SUBJECTS: N=15

### QUESTIONS AND PROBES TO ADDRESS THE FOLLOWING ISSUES

- 1 How long have you been involved in ice-skating?
- 2a What sort of goals do you have for yourself in ice-skating?
- 2b Do you find it difficult to motivate yourself in training?
- 3 Do you experience anxiety before the competitions and during the event?
- 4 What kinds of physical symptoms do you have when you feel nervous?
- 5 What do you think about when you feel nervous?
- 6 Would you describe yourself as self-confident as a skater?
- 7 How did you feel when you last had an excellent performance?  
Why did you think this happened?

### H.3. Sample Interviews

#### H.3.1. INTERVIEW A

M=Mark Nesti

A=Athlete

I am taping this conversation so that I can be as objective as possible to save me sitting here writing things down. When you're talking and I'm writing, it's the easiest way to do it and so if I can record it, I can go home and listen to it later on and I can try and draw things out that I might not be able to do whilst I'm doing it now - BUT this is totally confidential. We are just going to chat away in terms of when you started skating, how long you've been skating, that sort of thing.

M When did you get going, when did you start skating?

A I started skating at Grimsby

M Grimsby?

A I used to go there then

M Do you live over at Grimsby?

A No

M No you live here now, so you lived in Grimsby or you used to travel from here to Grimsby?

A I used to travel from here to Grimsby

M Ah right. Of course when this place was opened it was like, like for some of the Grimsby people they weren't too happy about this place opening were they, I know that, I remember being caught in that I'd just got my job. So, how old are you now

A I'm 14

M 14 and when did you start, when did you get going at Grimsby

A About when I was 7 or 8

M 7 or 8, so then you've been here 5 or 6 years in this facility here

A Yeah

M Right, so how did you get going, what happened, did someone take you

A Well we lived in Hull at the time

M You lived in Hull then

A Yeah, my sister and her friend went and I went. I never went on the ice but I know I wanted to try it

M So you didn't go to any taster sessions, or any sort of introductory coaching sessions.

A I did after that

M Did you, and how did you get, did you just decide that you were going to go along to them

A Yeah

M That's interesting. So you just went along yourself did you to get going

A Yeah

M Yeah, and then after that, how did you get involved in the competitive side of things after you'd had a bit of coaching or some other way

A Yeah I got the bug I suppose

M Yeah how did you get involved with that, did somebody spot you and say you should be getting involved or did you just put yourself forward

A No I just went up and got involved

- M You just went up to the coaches and said you fancied getting involved and how did you, how did you get on
- A OK, you know
- M Yeah but what do you mean OK because if you say you're OK, it's just like, I'm trying to find out why you're still skating now, its not magical you can tell me, but I'm just trying to find out what it is that keeps you going, it seems to me that you put loads of hours in compared to other sports, loads of hours in and I'm just trying to find out why it is that you're all still at it at 14 when you've got homework, parties you should be going to, all sorts of stuff you could be getting up to and you're putting loads of hours in, so, how did you do in your competitions, did you, did you win some trophies or was it events themselves you enjoyed
- A Em yeah I like competitions
- M Yeah, like county ones or local or national
- A Just like them around here, the local smaller ones
- M Just around the Humberside area. So then, why did you come over here?
- A Well this one opened and it was easier to get here and now I live close by.
- M All right then, so just that it was close and who's your coach that you went to
- A Em, the first coach was Coach B
- M Was Coach B here then?
- A Yeah
- M Has she been here since it opened?
- A Yeah
- M What that's 5 or 6 years isn't it, she's been here all that time, so then when you started you got involved in bigger competitions of where did you go from there?
- A Well, I thought I could do with a change of coach because I was getting better then
- M What here you mean?
- A Yeah
- M Yeah, so you changed from Coach B to whom?
- A Coach D
- M Oh I see, so you asked for that did you?
- A Yeah
- M Yeah and are you happy about that?
- A Eh, no Coach B was better (giggles)
- M That's always the way isn't it. What, why did you want to have a change?
- A Well I wasn't getting on very fast and I began to wonder if I was any good or had it all been just beginner's luck
- M OK
- A So I thought I'd have a change
- M But did you sit down and discuss with your coach why you weren't getting far?
- A No there seemed no point
- M No did you just like get up one morning and say I want a change did you, so how did Coach B handle that one
- A She was sort of strange a bit cold, as if she wasn't really bothered
- M Yeah, you don't know about how Coach D and Coach B handled that amongst themselves do you

- A No they never talk about these things in front of us
- M No are you allowed to do that then, are you allowed, well not allowed, but I mean is that like normal practice to change coaches?
- A If you need to then you do it. Lots of skaters change all the time.
- M Right, so then did that make a change to your success
- A Yeah
- M Yeah, did it, why, why do you think, why did that happen?
- A Don't know, I was just better the way she reaches out seemed to help my confidence
- M What is that, the way she coaches?
- A Yeah
- M Like what sort of things were different?
- A She talked more like, and went into things more, explained stuff better
- M What, technical, the technical details, is that what you felt you needed?
- A Yeah but other things as well
- M And what about competitions, how did you do in competitions when you were with coach D
- A Not too bad
- M Better than you had before
- A Yeah
- M So did you feel it was justified making the move?
- A Yeah
- M Yeah, it took some pressure off you a bit
- A Yeah they supported it
- M Yeah, was it you or was it both of you that wanted to move
- A Yeah, it was like my Mum first mentioned it and then I agreed with her
- M Because she'd been watching and thinking you're not quite getting - what was it that wasn't happening for you, what was the main thing?
- A Eh, I was just like standing still and not progressing or anything
- M Sort of drifting a bit
- A Yeah
- M So how long have you been with Coach D now?
- A Em, I'm not sure about 2 years
- M 2 years skating in International events right and you've been in Norway haven't you? It's nice to see you're doing well. OK so now, what's your aim, why are you still at it, what do you want to do, what do you want to achieve?
- A I'd like to coach, become a skating coach
- M Like to coach, right, but surely you're good enough now that you can just keep going, cut your hours way back and still be a coach couldn't you? You've got to be good enough now are you not?
- A I'm not I don't think
- M No, not to become a coach, so you still need to work a little bit harder.
- A Yeah in some areas
- M Don't you have other competitive aims, what about competitions have you got any coming up?
- A Eh, there's this evening here, an important and enjoyable one for me
- M Right,
- A and then there's Telford
- M Right, which is the national one, is it

- A Yeah, it's the National Championship
- M If you want to be a coach, did you always want to be a coach or did you want to do better than that
- A I'd like to do better than that but I got to a stage where I think I know that I can't really
- M When was that. Since coming with Coach D or before that era
- A Since before when I got going with Coach B really
- M Since before that, so at one stage you wanted to be what, what were you aiming for
- A The Europeans
- Yeah, the Europeans and that eventually you sort of changed your aim to what, in terms of competitions
- A Anything
- M Anything? But I mean did you just move from Europeans to nothing or what are you aiming for now
- A Not sure really
- M You're not sure, don't you have a sort of thing in your mind - sort of the main thing that you're going for in terms of levels and events, or is the only thing your skating for to be a coach
- A Yeah I want to be a coach but I know I need to keep going at competitions
- M Is that right?
- A Yeah it shows that you can do it to others
- M Right, so for competitions, do you need to go to competitions then, do you need to go to competitions to get where you want to be?
- A It helps
- M How does it help?
- A It helps you to see how other people are doing and what you can do in comparison
- M How does that help in becoming a coach, like in other sports is someone says, if someone is 14 and say plays football or tennis like you are in skating and they said to me I want to be a coach I'd say well yeah, I can understand you want to be a coach, although most people want to be a top player, I'd say well you know do you think you need to play to the level your playing at now and they would probably say I need to be a good player with some sort of history, you know so that people know that I've actually been quite a good player, but that's so you can become a coach. is that what your aim is
- A Yeah I hadn't really thought about it like that, it's just all the coaches I know have been good skaters
- M Right, I mean have you set any targets with your coach, or have you got some goals, have you set some goals as to what your aiming for
- A Not long term
- M No, like you've got short term ones have you, on what sort of things
- A just on skating bits that make me feel better now.
- M On technical things yeah, why haven't you got long term goals, don't you think that would be help you or don't you think you need that
- A I don't think I'm up to that yet
- M You don't think you're up to it
- A No

- M Well what if your long term goal was to become a coach, what do you think Coach D would think?
- A I don't know
- M Don't you know, you've never discussed that. What do you think she would say. What do you think if she knew that your motivation was to become a coach would she think that would be OK or would she be unhappy, or change the programme for you, or change the competitive programme maybe or what would she think.
- A I don't think she'd be real happy
- M You don't think she'd be real happy. Why do you think that.....what would she be expecting do you think.
- A She'd expect more interest for me in winning competitions
- M Like what
- A Achieving things, doing much better
- M In competitive skating
- A Yeah
- M Yeah, right, moving away from that that's interesting to know where your coach is coming from, but in competitions or before competitions, before you get to say ones that are, not the ones that don't matter to you but ones that are quite challenging ones to you, if you think about the last one you were at, not really difficult ones, but some middle ranking ones that mean something to you, what are you like, what are you like say a week before, do you think about it or what.
- A No I try not to
- M Right but do you think about it in any way
- A I do like to prepare before
- M How do you feel, how do you feel about it?
- A OK
- M OK is it yeah, but what about the night before seeing that you have quite an imposing competition coming up
- A I feel really nervous the night before
- M Yeah, and how's that, how do you feel, what sort of things happen to you, do you sleep well or have a bit of a restless night the night before or what sort of things happen to you, do you feel nervous or what
- A I get a bit worried
- M You get a bit worried, so what do you think, do you think what's going to happen
- A Yeah it might go wrong
- M You imagine things going wrong and stuff like that, right, right. And what about you yourself, do you eat well or do you feel a bit restless or do you feel lethargic. how do you actually feel, how do you behave
- A I try to forget about it so I don't get too nervous.
- M Yeah but do you manage that?
- A Yeah I think I do
- M You manage to forget about it, how do you do that then?
- A I calm myself down
- M How do you actually do it though, what do you do, do you say to yourself, right I'm not going to worry, what do you do because it's not easy is it. What do you think about, what do you think about, what do you do, what are you



- like the day before or the morning before a competition, what do you like to do, do you sit and read or do you do other things
- A Yeah just sit and do nothing on my own
- M Do nothing, so do you like to be with people?
- A No definitely no.
- M no
- A I like to be on my own
- M Like to be on your own but not reading not doing anything, just on your own just thinking about what's coming up.
- A No, doing something else I don't want to think about it
- M Doing something else, sort of to keep your mind going on something else, right. And what about like half an hour or so before you get on the ice or 10 minutes before you get on the ice and your waiting, what do you do, do you watch the other skaters before you get on or....
- A Yeah
- M You watch the others
- A A bit, not real close though
- M Doesn't that make you feel nervous watching the others
- A Not really
- M No, right and when you actually, when you get out there in the middle, just before the music starts how do you feel within yourself, to get up there when it's your turn next
- A I just try to feel I'm going to enjoy it.....
- M How do you feel in your body you must be shaking surely
- A No my body feels fine, but I am maybe a bit worried about messing up though
- M You think that but do you feel totally in control or do you feel a bit, eh, wondering how it's going to go for me, or worried a bit that you probably won't pull that jump off that you've been trying for the last few weeks, do you think like that?
- A No, I think that when I go through the programme well before I'm out there
- M When you go through the programme
- A Yeah like tonight before I get going
- M When you're in it you mean
- A Yeah before my programme is on
- M Right so, what happens when it starts, what are you like when it starts then, take me through that, say one thing that's quite important to you and you've got a few big jumps and a few difficult techniques, what are you thinking of
- A I just think eh, if I do the big jump I'll be fine
- M You'll be OK of you do the jumps
- A Yeah, because with them if I think I can't do it, I won't do it
- M So when your going into it, your thinking oh gosh I can't do this, or
- A I try to think that I can do it
- M When you're doing into the big jumps
- A Yeah
- M And sometimes you think when your going in you think you can't do it
- A Yeah that happens a lot
- M Right, then you can actually feel yourself thinking that, like ah, I can't do this one, and then what happens when you say I can't do it and you jump up, is that what sometimes happens, is that how it goes

- A If I think I can't then I won't do it or don't try it properly
- M Right, sometimes that happens does it
- A Yeah
- M And then you land and your a bit late, and you lose your balance.....and you haven't pulled off a nice smooth glide, how do you feel after that, how do you react after that what does it make you feel like for the next few seconds
- A Angry
- M Angry that you fell
- A Yeah or that it was useless
- M And what do you think about then
- A I think about the next thing that has to be done
- M Yeah
- A Particularly the next big set of jumps and stuff like that
- M When you think about the next one and wondering whether your going to do it or not
- A Yeah, hoping the next one will go well
- M So yes after you've blown one, what happens usually for the next one, do you em, do you usually blow it I mean if you blow out early in a big one, does it really affect you on the night.
- A It does if you like don't calm yourself down
- M And how do you try to calm yourself down sometimes
- A By thinking I'll do this one, telling myself I can do it this time
- M Right you actually think I'm going to do this and that's what you say to yourself do you. Do you think actually about what you've got to do though, or just say general things to your self?
- A Just say things to myself
- M You don't actually thinks about like technical bits of the jump
- A Yeah, if like it's one that I've had trouble with in turning. Sometimes I don't learn properly because I'm too tired to concentrate well
- M If it's not one you've had trouble with, you can still blow out although you don't normally have trouble with
- A Yes it scares me because I fell
- M Because you fell
- A Yeah,
- M And the one that you've not had trouble with it can affect that one
- A Yeah
- M Do you think, ah I've got to get this one. So what happens if you don't, how does the rest of the programme go then
- A It becomes a mess
- M Does it sort of collapse
- A Yeah, it collapses because I'm worrying rather than thinking about what I should do
- M Right and what about, can you actually, can you see your coach, do you look at you coach
- A Er no, I try not to it puts me off and makes me worry more
- M No and what can you see when your skating round can you see the audience, the crowd there, or
- A No, just the barrier

- M Just the barrier. Right would you say that I mean as a skater generally, not so much as a person but as a skater, em, do you feel confident as a skater, or middlish or how do you feel about confidence as a skater
- A Quite confident it depends sometimes on how I'm feeling
- M What sort of things makes you feel really confident
- A If I've done well I feel confident but if I don't think I've done well I can talk myself out of it completely
- M Right, in a competition right. And so what makes you feel you know that you're not so confident as a skater
- A When I jump and everything is going wrong
- M And in training as well
- A Yeah, it is just as bad there
- M Doesn't it matter how Coach D talks to you about such things or how other people are looking at you or is it just like yourself, do you feel it's just a combination of all those things
- A It's just myself, I don't care about what the rest think
- M Is it just yourself, you sort of feel down on yourself sort of thing at the time and say you had a competition that's going really well, you've done well, you know you've done better than you thought you would do, what are you like when you come back training form that, when you've had a really good one
- A Confident
- M Yeah, and do you think everyone can see that or is it really obvious that your different or
- A I feel different inside
- M So when you haven't done well are you, do you think people can tell that you haven't done well or do you hide it
- A I think they can tell
- M You think they can tell, you don't try to hide it when you come back
- A I try to but they can easily see it
- M You try to, but they can tell, you can give things away
- A Yeah
- M So when you're training when you come back and you haven't had a good one what helps you to get some of your confidence back again, when your training, what do you do with Coach D to try to get some of your confidence back
- A I don't know I think I just.....if I go down it's all over for me
- M In a competition
- A Yeah
- M But what about during training, say you haven't got a competition for another 3 or 4 weeks, and you had a bad one, how do you get your confidence back in training before you go to the next competition
- A Just try and calm down see what things I've got to do
- M Right, I mean do you try and learn a new move, or do you go back and do moves you could do before or go over old sequences or what do you do
- A I just go over everything in training
- M The things you should have done in competition you mean, right. Does that help though?
- A Yeah
- M Does it
- A Yeah, what else can you do anyway

- M You don't think, well it's alright doing it in training but I couldn't do it in competition, you don't think that
- A No maybe sometimes if I 'm in a type of mood
- M It makes you feel as though you know that you can actually do it all the time, is that how it makes you feel
- A Yeah it helps my confidence
- M Er, just one last thing and then we're finished. In terms of how you feel when it's going really well for you, you know when you've had really good session, I mean a really, really good one, I don't know, your most recent one, if you remember when you went in a competition and you went really well, what sort of things were you thinking about when your out there when it was going well, what was happening
- A I don't really know, I think it's just when I'm out there I just think like the things I have to do.....
- M Like the things you have to do, like what sort of things
- A My programme and all the jumps and things like that and how I should do
- M You mean to win
- A No, the rest of the things in the programme
- M All the moves and the technical bits
- A Yes, like turns, jumps and my finish
- M so you're not thinking about any of the other things
- A No
- M Like your place, or those watching you
- A No
- M None of those things.....right, OK. That's real good. Have you got, do you want to say anything else either about you know what motivates you, or about in competitions, how you feel in competitions or before competitions, I mean if you don't, it's up to you, no problem
- A No
- M No, OK, thanks again.
- (End of Interview)

MN/CT/11 July 1994

### H.3.2. INTERVIEW B

I'm taping each conversation so that I can be as objective as possible to save me sitting here writing things down. When your talking and I'm writing, it's the easiest way to do it and so if I can record it, I can go home and listen to it later on and I can try and draw things out that I might not have been able to do whilst I'm doing it now – BUT this is totally confidential. We are just going to chat away in terms of when you started skating, how long you've been skating, that sort of thing.

M How old are you?

A 15

M 15 since September right. So is next year your last year at school?

A My last year at school I leave when I'm 17

M You leave when your 17, definitely

A Yeah

M Good for you, OK, so how long have you been skating, when did you get going?

A Fist time I ever went on the ice was my 10<sup>th</sup> birthday

M 10<sup>th</sup>, so it was here when this place opened?

A Yeah, it opened on the 14<sup>th</sup> and my birthday was on the 15<sup>th</sup>

M So you came for your birthday here, somebody else has done that in this squad, came here for a birthday present, don't know who it was, Ill hear later on who it was, but someone has done that. So why, how did you get here, did you just think I want to go there for a change?

A No, it was a surprise, like a party thing, my mum brought me down with my dad and I was skating around and one of the coaches, she's not here now, she approached my mum and said would I like to have lessons

M Right, so they actually saw you skating and said would you like to have lessons. So you were 10, then what happened to you then, you came down and had lessons here?

A I started group courses and then like once a week I used to go to off on courses and have private lessons and I joined a club on a Thursday night.

M So who were the lessons with, who was the coach?

A Coach A

M Coach A is no longer with us is she?

A She's at another place

M Right, OK, so then you started going to the sessions on an evening at the actual club

A Yeah

M Right, and what did you feel about it, I mean were you really hooked on what you were doing?

A It was just like fun and exiting, something new and different

M What was it that you like about it, a different sport altogether, the experience of it or...

A Yeah, I think I liked it as well because everybody was saying how well I was doing at the club and other skaters

M All the coaches and others as well?

A Yeah, and at home as well because like my Grandma used to come and video me, she used to take video tapes to all the family

- M Right, right, you mean look what she can do this week that sort of thing?
- A I used to think I was doing really well, and when I look back now, I think I didn't used to look like that did I!
- M You've got all the videos then?
- A yeah, every one of them
- M I bet that's nice. So beyond that stage then, when did you start to think I want to get involved in competitions or did you get involved in them straight away?
- A Yeah straight away. I was in the first competition they ever had here, they wouldn't let me do it, they said like I wasn't good enough, they had a skater and everybody, you know and I was like reserve and then I went to Croft. That was my first competition I did and I came 5<sup>th</sup>.
- M In your very first one?
- A Yeah, I was like you know, I was sort of on a high
- M That must have been a good feeling
- A My first competition and I was expecting to come last!
- M So after that what did you think after that in your mind, I mean you did really well but what did you start to think about in terms of what you could be as a skater, I mean what sort of aims did you have?
- A I didn't, I didn't really have any aims I just like to go for fun
- M Wasn't it like every time you got a reasonable place, did you start winning after that?
- A Yeah, the second competition I went to I managed a second place and I always got a place after that
- M So were you just going to the event and expecting a place or were you happy that you got one or what?
- A I was going but I wasn't expecting anything, I was just like, doing it
- M Just doing it
- A It was just a bit of fun
- M Just doing it
- A Yeah
- M Right that's a great way of doing it that's what its meant to be about, it's the way of getting to the top, just doing it. So, you move on, and you move on and upwards in terms of competitions. Has it moved form being a hobby to something a bit more serious now?
- A Yeah, I was about 11 or 12, getting on for 12 and Coach A left and Coach B was here and then Coach B left
- M Right
- A And Coach C works here now
- M Yeah I know Coach C works here now
- A He used to go and coach me for about 2 years and he used to like, he knows what he's talking about and he used to like boost my confidence that I could get on further in the sport
- M What's Coach C's style like?
- A I think he's brilliant
- M What's he like as a coach, I just want to know what he's like as a coach on the ice, what's his style?
- A I don't know, he's different from all the other coaches, he boosts you, he never puts you down like, I don't know if I should say this, but the ones on the ice at the moment like Coach D and Coach B, they make you feel really small you

- know like embarrass you a lot and then you don't go out and do anything, no matter what you do he pushes you and boosts you up and boost your confidence
- M All the time?
- A Yeah, and like, if you do something wrong he makes it into a joke so we don't feel so bad about it
- M Right, right, but he'd still make some points, may be some technical point?
- A He puts it over to you so like you know that it's wrong but not terrible
- M But not to crush you
- A No, not to like think Oh God!
- M Right, so you had a good period under him then did you continue?
- A Yeah, I kept it going but it wasn't going as well
- M Yeah so how did you get on at that stage. Were you still doing well in competitions or was it getting tougher?
- A It was getting a bit tougher, I was coming like 4<sup>th</sup> and 5<sup>th</sup> most and only sometimes I'd get second place or something
- M Right was that because the competition was getting better or was it because you were not doing as well
- A I was a higher standard and it was getting a bit tougher
- M Was it, right, have you got an aim for yourself, tell me what you want to do in skating now
- A I'd like to get to the British, I've done International competitions before but I'm not qualified for the British yet, I failed my figures
- M Right, so you want to get to the British Championships
- A Yeah, I've done a lot of competitions and like people will say to me if I don't do well in the competitions, and I'm still high and happy and that, I might not be happy with what I've done but that's different when I'm off the ice and I'm a normal person again but everybody else doesn't understand that. They always like ignore me and say I shouldn't be happy I should be upset because I haven't skated well, like and that makes me upset
- M They, they all think you should be upset, that poor skating should make you upset?
- A They think I'm daft, they say I'm mean because I have a real bad skate and I come off and I'm in a bit of a mood and then I calm down and like laugh and joke with them all again
- M And they thinks that's because you don't take it seriously?
- A Yeah, I do take skating seriously, I've got different ways of doing it
- M Right OK, sounds interesting, so one of your aims is to get to the British Championships but have you got any targets, in the nest few years as it were, your 15 now, lets be honest, in 4 years time, even less, in three years time you might not be doing this, or you could have achieved whatever it is that you want to achieve, your goal, you could be at the British Championships next year, the year after, but have you got like goals, they may not be written down but have you got them in your mind?
- A I've got to get into the Great British team before I turn 16
- M Have you, that's a goal, is that one you've talked about with Coach D and Coach C
- A No
- M No

- A No, I don't like talking about it, I keep them things to myself
- M So have you not sat down with Coach D and B and sort of come up with some goals and things?
- A I do with Coach B about the squad stuff and that
- M Yeah, the squad stuff but in terms of the work you do with Coach B how do you know what your aims are?
- A I do with figures but not with competitions
- M Right
- A Because figures are the main problems
- M So what happens if you go to a competition and you think, if I get 7<sup>th</sup> place and I manage to nearly pull off a really difficult technical move, then I'll be really happy with myself then you go to it and you do it, you know you get 6<sup>th</sup> place and you almost pull off a really difficult jump, I mean it's not quite spot on, maybe, I don't know, a bit late into it or a bit raggy coming out of it or whatever, I mean it's not perfect, but it's pretty good and you get the height and you get most of the turn in and you know the body is in good form, and you go off and your quite happy and you think I did really well and Coach B thinks that you should have done more, in the top three places, if you don't get in the top three places you've wasted your time and you were a bit raggy on that jump anyway coming out, you've done it really well in training but you haven't done it well here. Does that ever happen when in your mind you think, If I do this or do that tomorrow I'll be really happy when your coach is expecting something different?
- A I don't really care what my coach thinks I know that sounds really daft but I don't respect her opinions
- M No
- A But really I don't care what my coach thinks, I skate because I want to skate
- M Right, but before you actually go to competitions say a Saturday or a Friday night or on a Saturday when you have been driven there do you sometimes think..... right if I end up in the top 5 today and I manage to pull that off just about, I'll be real happy with myself. Do you ever think like that?
- A Yeah
- M Yeah, but what about if Coach B afterwards says well what are you so happy about, you should be upset because you cocked it up
- A It's happened
- M Has that happened, you should be upset by that but you say, but I'm not because I did well..... has that sort of thing happened?
- A Yeah, it has often but I don't think I've ever skated by best except for last week at Bracknell... I was a bit over confident
- M Right, and how was that received by your coach skating your best like that
- A She was real excited because I had like just got some new jumps.... Yes and I was going around like, with a big cheesy grin on my face and everything, I think I got too over confident, I had no nerves, and its really unusual for me as I'm usually like being sick all the time before I go on the ice crying and everything
- M Really, what before you go on?
- A Before I go on
- M What sick as in vomiting, yeah, are you upset when people say anything to you?



- A I can't have anyone saying anything to me, especially not to my gran, I've got this thing about my gran, when my gran speaks to me everything's going to go wrong
- M Really, like a suspicious thing. So what were you like last week if it went really well, your best ever last week?
- A I like Bracknell ice rink, there's a lot of like support there, they all know me and they were all cheering for me
- M What staff, coaching staff?
- A Coaching staff, the kids as well, I was like, oh well I feel comfortable here and I just went out and thought, right I'm just going to show you all and I did, it was like, I came first in the short and then I got really ratty afterwards, I was tired and I wasn't nervous or anything it was like I had no adrenaline
- M And how did you skate that one, not well?
- A I started off like really good and like my body it just seemed so heavy, like weights pushing down on my shoulder that I couldn't lift up.
- M What were you thinking about do you think on that second one, can you remember what you were thinking about when it was happening, what was so different between that one and the first one?
- A I don't know my mind goes blank and I didn't think about anything, I didn't think about anything at all the first one that I did, I can't tell you what I was thinking about because it's daft
- M Because it's daft? What do you mean?
- A Just daft
- M No tell me, you can tell me, I want to know, I don't care how daft it is. Tell me what you're thinking about, it doesn't matter
- A There's this boy at school, I hate him he's always nasty to me, He's always taking the mickey out of me because I've got muscely legs and he's says it's not right for a girl to have muscley legs
- M And you were thinking about him before you went on?
- A Yeah, and when I was skating through the programme
- M And you were skating through the programme and thinking of him?
- A Yeah because he punched me
- M He punched you?
- A I was thinking how I could get back at him and I went out there and did a clear programme and I couldn't believe it
- M And you were thinking about him on and off throughout the programme?
- A Yeah
- M Nearly all the way through it?
- A It was real daft, because I like I don't think I've ever done it before and I was like in the middle of a spin and I could see myself punching him in the back
- M Really
- A It was real stupid
- M So you weren't thinking about all the technical bits and pieces that you've got to do
- A You never do it's like it comes natural to me
- M You weren't thinking I've got to do this, I've got a lift here, I've got to – and is that the first time you've been absolutely engrossed in thinking about something that has nothing to do with skating when your skating?

- A That's what I mean, it's like a totally different experience, there was no nerves or anything
- M You're not making this up for me now are you?
- A No, she's there you can ask Coach B she was there, it was; like perfect
- M Absolutely perfect like out of the book
- A Coach B was like very happy and exited
- M So did you afterwards when you were going away and Coach B knew you'd performed really well, did she sort of ask you, did you have this conversation about what happened, or you hadn't told anyone what you were thinking about?
- A No because this is daft, they would think you were a nutter if you told them something like that
- M So, in terms of coaches or Coach B at the moment, she's your coach now, they don't ask you in that way do they in terms of what you were thinking about. But it's like this was definitely miles better than anything else you've done, or definitely better than most?
- A It was the best I've ever done
- M Right
- A And like all Coach B said to me was well done, lets hope the next skates are like that from now on go and get changed and that was it!
- M Ok well you've answered lot of things in just that one description so I'll not ask you any of these questions now because you've told me them all in terms of how you feel physically before you go on, what you are like in your mind before you go on usually, not on this occasion, so not on your best performance but usually what you are like
- A Taking Bracknell away I am different usually though
- M Taking Bracknell, away, what are you usually like in your mind when you go on, what are you thinking about
- A What's going to happen today, or what if I don't do well
- M really, in terms of like what, what do you think is going to happen
- A Everyone says I'm so negative about everything, I think I'm getting used to it now
- M What being negative you mean?
- A Yeah
- M Just that you don't feel comfortable unless you're being negative
- A Yeah I can't say to myself your going to do this, you're the best like Coach B and Coach D and everyone else says you should say to yourself, or you should be the best
- M No I don't think I believe in that either
- A I just can't because you look out and you say, well she's better than me, she's got style
- M You see the reality, so you look out and watch them before you go on?
- A Yeah, like you've got to see the truth
- M Do you, you don't look away?
- A No, I've got to watch them because if they've fallen of 'blown out' it makes me feel confident. I'm most confident when others around me are crap
- M It gives you some hope
- A I think yes I'm in with a chance here

- M Right, right, it gives you a bit of confidence, if they don't do well, or it makes it worse for you
- A No I think if they do well, I just think I've got to do well now
- M Right, but would you say that your like a really confident skater, a confident person as a skater, I don't mean as a person now, it's maybe a different thing being a person outside the skating, but as a skater before competitions, when your in a competition, afterwards, at hr training generally, do people think you're a real confident type of person or one whose not so confident?
- A People look upon me as like I'm not real confident
- M How do you feel, it's difficult to separate skating from how you feel as a person isn't it, but try and do that if you can
- A I feel confident like, this may sound daft and it may sound big headed but I think I am a fairly good skater for how long I've been skating compared to skater B
- M Yeah, you've only been at it for 5 years
- A Like Skater B's been doing if since she was 5 years old and still has not achieved the top
- M Yeah there's a big difference in terms of years there
- A And like I'd say I was a fairly good skater
- M So you keep that in you mind, the times you think well I've only been at it 5 years and they've been at it 10, do you think of that do you?
- A Yeah, but I'm really like shy, I daren't, if anybody, I like artistic stuff I like to express ,yourself on the ice, and like, I get on my own in a trance.....well away with the music and I find Coach B is looking at you I start laughing and I think Oh god, I feel so stupid, and get off the ice
- M Or they might come up and say that was really good
- A Yeah
- M Yeah
- A But that doesn't often happen and I don't care anyway
- M Because you get sort of into another level where you ignore everybody and you get totally absorbed in what your doing
- A And then it dawns on me that someone is watching
- M And then, if someone was really really confident they would be able to as it were, I know you don't quite mean this but almost instead of doing it for 20 seconds before they're being self aware, a bit self conscious you could may be do it for half a minute and a half for example, you could do it longer and more intense and not get embarrassed when someone is watching
- A Sometimes I'm not as bad, sometimes it varies
- M What, what, can you put you finger on what makes a difference, when is it bad, what's the things that makes it bad?
- A it's really bad like when I skated for instance at Luxembourg with Skater B and Coach d and when Coach D took me down to an international event like I'm only bronze and I was skating at gold standard. You think that everyone is laughing at you, I have real mood swings and each time during a competition it's different
- M So you felt out of it a bit
- A Yeah I felt really like confused, and as if the coaches were not really bothered about how I felt, sometimes I wonder if they actually care about us at all

- M Did you feel out of your depth there. Doesn't that work sometimes the other way for you though that when you feel so out of it you think what the heck was I expecting and go for it, does that not work for you?
- A No because I'm expecting something always
- M Right
- A That's what I mean, sometimes I do expect, sometimes I don't expect but I think about it (my expectations)
- M Right, OK you said that happens sometimes when you go into competitions and it's a really high level one, what about when you go into the opposite, what about when you go into one that you expected to get a place, and you know you should get a place Coach B has told you should get a place, you know she's not kidding, and you should definitely get a place, how do you feel then?
- A And I don't get a place
- M Yeah
- A I get really ratty, I won't speak to anybody at all
- M Right
- A Anybody on the ice
- M And what you like ignore people
- A I've got a bad attitude about that
- M So when you come back, when you go back training, what are you like training after one of those experiences
- A Normal
- M Normal, you just go back?
- A Just normal, train as normal
- M Yeah,
- A Competitions to me are like training when everything goes brilliant
- M Really, I mean the experience that you had at Bracknell when you had your best performance, have you had that experience in training. How do you behave at training compared to that in the competition, would I see the same sort of person, would I be able to guess that that person behaves in the way you do behave before competitions, would I be able to guess, would there be little clues do you think?
- A Well when I'm training if something doesn't go right I get in a right temper like, sometimes it's really tough physically because you're tired
- M What do you do?
- A I throw my hands by my side and I like, I really don't think I should be telling you this
- M You mean, your half acting it or do you really mean it, do you know what I mean, are you like half acting it or do you feel like your meant to do that or do you really mean it at that time?
- A It just happens, I really mean it like
- M Really gets you angry and frustrated
- A I used to kick the ice a bit but like you get kicked off the ice it's not worth doing that
- M Yeah,
- A Once with Skater C I got fed up I was skating around like quarter of an hour and nobody would move out of my way and I was asking politely, excuse me,

- and they wouldn't move so I said move now before I jump on you and Skater C didn't think I mean it and I did and I jumped
- M You jumped at her
- A I came off worse, because like I'd gone into her and she stands there and I was coming down in my jump and like I'd gone into her, then I'd fallen and I got up.....I've got such a bad temper
- M Have you
- A I've got so many nicknames at the rink as well
- M Because of your temper
- A Yeah
- M Really, at training, you can lose your temper if something's really getting you down
- A I boil over at anything, at home as well, it's just really how I am
- M Yeah I can be quite stroppy as well but most of the time I can pull out of it real fast, can you pull out of it fast, does it last for ages, days do you hold it for days
- A No
- M How long does it last?
- A As soon as I leave the rink it's OK, like but if the stropiness started at home when I come to the rink, I won't speak to anybody
- M And if you're unhappy with something do you always show it?
- A It's weird, everybody tells me I am moody and bad tempered anyway
- M Ah well, that's their interpretation of things, I wouldn't pay much attention to that
- A I take after my dad
- M Yeah, well genes always count, genes are definitely a part of it but there are plenty of people at the top in all sports who are, unusual, as in not the norm, the norm being the average, there's loads of people like that who are either quiet and introvert and like haven't any temper at all or there's plenty of examples going the other way, fly off the handle, really emotional, there's a whole range at the top, depends on the sport, depends on you know, making the best use of your own natural temperament
- A I get really stroppy with Skater B mainly in general, we get on OK, bit it's just like when she criticises me, I can't stand being criticised by a young kid because, I think well your not perfect yourself
- M Right
- A So I say I don't want to know what you think, it's just the coaches I'm interested in but they often knock me
- M Em, right, well why are they doing that, why are they criticising you, do you think that they're being positive or does it make them feel better or what?
- A I get a lot of criticism, especially off the lads as well
- M Do you
- A Because I don't, I mean when we train in groups and that sometimes.....I train with the lads instead of the girls
- M And they sort of resent you, why are you training with them then?
- A What the boys
- M Yeah
- A I don't know I just like them when they're skating, they strong skaters, when they're jumping

- M More aggressive
- A Yeah
- M That suits you doesn't it, your style
- A Yeah I'm aggressive
- M You're more aggressive
- A I'm aggressive but on the actual skating I like to thrill, I like to be stylish as well but powerful
- M Be artistic and creative and really express it. Which is like aggressive as well isn't it, its passionate, I should say
- A I think the jumps should be strong and stand out
- M With power yeah
- A The lifting, they shouldn't be little wimpy things because that's what most girls do they look like they don't enjoy it or want to do it
- M Yeah, they do, I've been watching and I don't know much about skating but the girls look like as if they want to get the jump out of the way, whereas for the boys it's a pinnacle, it's the pinnacle of the move
- A I used to like compete you know to see which things we could do that were like the boys.....like a double act, doubles and stiff, and it's like me and Skater C trying to get a double act
- M Right, so you quite like that bit because you get passionate you can really get involved
- A I can communicate with the boys better as well, I aren't too keen on girls, there's too much bitchiness and jealousies
- M Are the boys a bit more up front?
- A I don't know like, all my cousins are male and I've been brought up with them and I'm just sort of a bit of a rebel, a bit of a tom boy
- M Right, right OK. So in terms of just before you go on, when your actually involved, I just want to ask you this one last point, em do you ever try to do anything, have you ever tried to do anything at all yourself to solve you feeling sick before skating, to make it easier on yourself, do you ever use anything to prepare mentally?
- A I learned to about before how to calm myself down and how to boost yourself up in preparation and stuff like that at squads
- M But do you ever use it or what do you think about it?
- A Yeah I tried but it didn't work for me
- M It didn't work for you
- A I can see myself skating but each time the jumps went wrong, and more wrong and I just couldn't get the image out of my head
- M Really
- A I mean like, I can sit here now and say I do an axle and I can go on the ice and I can do it, but in my head I can't do it
- M You can't do it in your head
- A No, the take off's not right and it's just the jump, it starts letting me down when I go down and I land on two feet
- M Right, and what about relaxing and relaxation before you skate?
- A I'm always tense before I go on until a minute before and I like freeze and I'm real still and everything and my insides like getting tighter and tighter
- M And when does this start?
- A When they call your name out

- M And what about not watching it, do you say I'm not going to watch people or, have you tired that
- A I don't always watch it
- M No
- A It depends like what sort of competition it is
- A Right
- A You see I'll have to keep notes like on how I feel
- M Yeah
- A On competitions because it varies
- M Yeah you're quite right
- A My tests are soon there're different feelings to just competitions
- M Tests, when are they?
- A I just thought, I've got one on the 22<sup>nd</sup>, I just don't like anybody mentioning it or speaking about it, just forget it, I just forget I've got a test
- M Really, so up until you arrive you're just going to wipe it out of your mind
- A I always do because I'm getting nervous now talking about it I hate taking about it
- M Really
- A It's just like so panicky because everybody is expecting me to pass like last time they were all saying your gong to do it...and I went out there and like, on my warm up with Coach B I was like shaking, my asthma started up, I couldn't breath and everything, everybody is putting lots of pressure on me, tests make skaters nervous
- M Saying that you can do it, I suppose they may be saying, look it's no problem if you don't do it this time because there's going to be plenty of other times coming up
- A No I know it must be done now though
- M Yeah well, imagine someone had said hat to you though way back, you might have passed first time, passed first time it's a bonus, see what I mean
- A The first time I did it I felt I was nervous and I was just crying but I calmed down before I went to the judges, the judges seem to make me nervous as well, and I'm like stood there talking to them and they said go and do it, I was real confident I thought I was actually going to pass and when I didn't I just thought fair enough I didn't pass but next time I'll get it
- M Next time yeah, and then do you feel pressure the next time
- A Everybody's saying you're going to pass this time its easy, a lot of people support me in the rink, really proud of me, my mums saying like, how good I am I don't really like that
- M It puts pressure on you
- A Yeah because she doesn't really understand
- M You don't want to let them down do you
- A I feel like I'm letting them down
- M Yeah
- A Not myself down like I'm letting myself down
- M Right, I can see that
- A Especially my gran and granddad because I owe them a lot for bringing me up for so much time
- M And do they get involved in everything you do, all your tests, competitions
- A Yeah, but I don't like them coming to my training sessions

- M But they come to everything else
- A Yeah, because I'm a bit of a perfectionist
- M And they're keen and they want to see you do well and that sort of thing, you don't want to let them down
- A I've just got this thing about my gran, I don't like, if she's out the way and I don't see her before I skate or anything she's OK, she thinks I'm being mean but well you know
- M It's an awkward one that trying to tell her, it's awkward trying to explain everything sometimes
- A It used to be my mum, and then my mum let go a bit.....now it's my grandma. I don't mind my granddad coming, my grandma doesn't understand why of course
- M That is weird isn't it, its difficult to explain, but I can see kind of where that's coming from you see somethings you can do something about, something's are very difficult to do much about
- A I tried to let her come and watch but I know she's there and I'm just thinking about her all the time, I know it's weird it's just different things happen.....
- M It may be too difficult to do anything about that but I'm sure there are some other things anyway you can try to alter
- A I think I'll get better at it anyway
- M Well that's good
- A You know learning how to calm down. I'll have to calm down like the lads, some of the lads got banned for bad tempers, I don't want to get banned because skating is everything to me
- M Right so that would be a bit devastating wouldn't it, to get banned
- A I do take part in other sports, but not as serious as skating
- M Right
- A I enjoy skating, I do the others just to keep fit
- M But you really hooked on the sport yourself
- A Yeah, I watch it on TV, I watch all skating, dance,.....speed, I've got books and books on it,.....at the moment I'm totally into it
- M OK that's interesting
- A My course work is all about skating
- M I'm not surprised
- A My assignment is all about skating
- M All about skating, you sound very keen. Anyway thanks very much for all your time and help with this

(END INTERVIEW)



## H.4. NCF Questionnaire

Name:

Age:

Squad:

Instructions: I would like to know how you felt about your performance at the Humberside Simulated Opens. Please answer each of the following questions by circling one number. Remember there are no right or wrong answers – I am interested in how you feel about your performance

	Definitely Disagree			Somewhat Agree			Definitely Agree
1) During the competition I was often distracted by irrelevant thoughts	7	6	5	4	3	2	1
2) During the competition I was often Distracted by bodily sensations	7	6	5	4	3	2	1
3) When I was distracted I managed to let the distraction pass and then carry on with the performance		2	3	4	5	6	7
4) After the competition my body felt relaxed	1	2	3	4	5	6	7
5) After the competition I felt calm	1	2	3	4	5	6	7
6) After the competition I felt confident	1	2	3	4	5	6	7
7) Before the competition I felt confident I would do well	1	2	3	4	5	6	7
7) At the start of the competition I felt panicky	7	6	5	4	3	2	1

(Based on questionnaire developed by Hardy and Fazey National Coaching Foundation 1990)

### **H.5. Semi – Structured Interview Post Intervention**

Time: 15 – 20 minutes each subject

1. How do you feel about the programme you have just been on

Probes i) Have you felt more able to deal with your worry and negative feelings in relation to skating tests and competitions?

Or ii) Have you felt more able to deal with the physical symptoms you normally suffer from before skating tests and competitions

2. What did you enjoy most about the programme?

3. What did you like least about it?

4. How would you improve the programme?

5. Any further comments

\*1 Cognitive Anxiety and Somatic Anxiety groups only

## **I. Appendix C**

### **I.1. DAILY MOOD SCALE (Yorkshire and Humberside Netball)**

**School of Leisure and Sports Studies  
Leeds Metropolitan University  
Department of Psychology  
University of Hull**

**Yorkshire and Humberside  
Netball Squad**

Name-----

**Any queries please contact Mark Nesti on 0113 2832600 (work) or 01423 881279 (home).**

### **I.1.1. INSTRUCTIONS FOR COMPLETION OF THE DAILY DIARY**

The following information should assist you to fill in the diaries correctly.

- 1            Please record the data on each page.
- 2            The dairy should be completed at the end of your day.
- 3            Please score across the lines (like this --- | ----) to record how you have felt overall during that day.
- 4            When each weekly (i.e.: 7 days) diary is complete please return to M. Nesti in the S.A.E provided.
- 5            You will be sent a new diary each week during a four-week period.
- 6            It is most important that you fill in each page each day.

Again thank you very much for your co-operation and assistance.

Mark Nesti, Senior Lecturer, Sport and Exercise Science, LMU. Accredited Sports Psychologist.

## I.2. Diary Blank

Name:-----

Day/date:-----

Time:-----

a) How are you feeling at the moment?

Relaxed	-----	tense
Energetic	-----	weary
Depressed	-----	elated
Tired	-----	alert
Anxious	-----	calm
Cheerful	-----	miserable

B) Please mention any significant event(s) that occurred today and whether you interpreted it as positive or negative

Brief description of event

+/-

-----  
 -----  
 -----  
 -----  
 -----  
 -----

b) Please rate each of the following in relation to normal everyday experience.

Much less

same

much more

Sleep quality

Exercise

Eating

Mental work load

Physical work load

Time commitments

### I.3. TEAM GOALS

List some goals to help the team/squad to achieve success. Make the goals specific, clear (i.e.: not vague) and something which can be measured. Focus more on what you can do as a team rather than as individuals. Again think about performance goals (that is what you have got to do to win) and outcome goals (that is how many matches you aim to win, or points scored).

#### GOALS

1. -----
2. -----
3. -----
4. -----
5. -----
6. -----

Dear

Please familiarise yourself with the Team Goals that you provided last Sunday at Mirfield. It is important that you focus in on the goals in which you are particularly involved. In addition, it is vital that you keep these goals at the forefront of your minds as the match approaches. Please don't let the team (or yourself) down by forgetting to constantly remind yourself of the targets we set.

Having worked so hard both physically, and on tactical issues last Sunday, it would be remiss (at least) to leave mental preparation to mere chance!

Individual Goals: Should you wish to agree specific goals for yourself in addition to team goals, please fill in the sheet provided last Sunday.

Examples of individual goals could be weight loss, endurance fitness (tested by the multi-stage fitness test), arm strength (tested by pull-ups or press-ups), or speed tests. In terms of skills, you could set targets for shooting success rate, completed passes etc. Alternatively you may wish to set goals for the amount of time you hope to play, or fouls conceded. Additionally, you may give yourself an overall performance target rating, for example, "to perform to at least 70% of my full potential in the next match".

Remember, you are not obliged to complete the individual goals form unless you wish to.

Those of you who agreed to complete the Daily Diaries will receive the second weekly diary this weekend in the post. This information will eventually assist me to work out an individualised mental skills programme in plenty of time before the regionals at Durham.

Yours Sincerely

Mark Nesti  
Senior Lecturer  
Sport & Exercise, LMU  
Accredited Sports Psychologist

## YORKSHIRE AND HUMBERSIDE NETBALL SQUAD 1996

## TEAM GOALS

Events:	Red Rose Match	Target Rating
Technical/Tactical Goals:		
	Centre Pass Conversion	90%
	Break Opposition Centre pass	30%
	Overall Shooting Percentage	70%
	Back Line Pass Failure	3
Mental Attitude:		
	Concentration - Last 5 minutes	8/10
Overarching Goal:		
	Regionals – Durham	Top 3 finish



## YORKSHIRE AND HUMBERSIDE SQUAD

Group Environment Questionnaire (Carron et al., 1985).  
 Psychological Skills Inventory For Sports (Mahoney, 1987).

## RESULTS

Motivation: general; match play; training – very strong.

Self - confidence: Netball Specific – a difficulty for most – 2 expectations!

Anxiety and tension: Pre – Performance and during performance a considerable problem for most – again 1 clear exception. Unusual finding as anxiety during match performance less of problem, according to research in many other sports.

Importance of Winning: Again with 2 exceptions, scores for personal importance of winning extremely high. For all players, winning considered more important than social dimensions.

Use of Mental Skills: Mixed response, no general pattern across squad, for use of visualisation, relaxation techniques, concentration strategies, etc.

## SUMMARY

- (i) Vast majority of squad show similar pattern for scores on Motivation, Self Confidence, Anxiety and tension, and importance of winning.
- (ii) Generally the focus is much more on the task rather than social aspects
- (iii) Very few squad members seem to be frequently and regularly using mental skills fully, to prepare for matches.

## Strategies:

- A. To assist Self-Confidence and increase likelihood of winning  
 Develop Cohesion – Satisfaction – Success  
 Or Develop Success – Cohesion – Satisfaction  
 - Latest research says Winning teams work on Success first rather than Cohesion  
 Steps to winning – A question of Control!  
 Focus on – Things YOU can control  
 - Things the team can control  
 For example, effort, tactics, skills. Physical fitness, mental preparation, etc.  
 To maintain motivation and control anxiety and tension.
- B. Focus on – Personal Goals – for physical fitness, shooting success, interceptions, mental preparation, playing time etc.  
 Focus on – Mental Skills programme.

## INDIVIDUAL GOALS

Please fill this in and return it to Head Coach as soon as possible. Discussion with Coach will then take place and individual goals agreed and recorded.

### Performance Goals:

For example, physical fitness (speed, endurance, flexibility, etc.), number of successful passes, fouls, mental preparation.

- 1-----
- 2-----
- 3-----
- 4-----
- 5-----
- 6-----

### Outcome Goals:

For example number of matches played in, time on court, etc.

- 1-----
- 2-----
- 3-----
- 4-----
- 5-----
- 6-----

2 Langdale Avenue  
Beverley  
Hull  
HU17 9JN  
March 6<sup>th</sup> 1996

Dear

I would like to thank those of you who have been completing Daily Mood Scale diaries during the past four weeks as part of the individual mental skills programme. I know that it takes a lot of commitment and self-discipline to fill them in each day, so once again, thanks for your efforts.

In terms of using this information to help design individualised programmes (should you wish these), it is very important that I receive your diaries for the full four week period. If you have diaries still to be returned I would appreciate receiving these within the next few days. Head Coach has mentioned that you may be getting together for some training and preparation work on the weekend of March 30/31<sup>st</sup>. I would expect to be able to discuss mental skills programmes with interested players at this time. There will then be 6 weeks to work on these in preparation for the Regional tournament at Durham.

Finally, if you have completed the diaries and would like to be involved in the individual mental skills programme, please complete a goals setting form and return this to me prior to the last week in March.

Yours sincerely

Mark Nesti

2 Langdale Avenue  
Beverley  
Hull  
HU17 9JN  
March 6<sup>th</sup> 1996

Dear

Thank you for providing me with the diary information which has helped in designing a personal mental skills programme.

I would have liked to have met with you individually at an earlier date, however I appreciate that this has not been feasible.

I have agreed with the Head Coach that we can do some work on Tuesday 30<sup>th</sup> April prior to your match v. North West. This will involve a short period of group work followed by the agreement of individualised programmes for you to follow during the twelve days leading up to Durham.

I intend to see you individually for a short time at training on the 7<sup>th</sup> May; in addition I will phone you at a mutually convenient time on at least one occasion during the period to discuss your progress. The programme will involve you in about 15 minutes – half an hour per day (depending on your needs) throughout the twelve-day period. In other words, you are being given a chance to see whether an extra 3 –6 hours of intense and focused work can improve your performance. Whatever the outcome you'll know something more about yourself at the end of it!

Please come along for a 6.30 p.m. start on 30<sup>th</sup> April should you still wish to be included in the programme.

Yours sincerely

Mark Nesti M.A  
BASES Accredited Sport Psychologist

YORKSHIRE & HUMBERSIDE NETBALL SQUAD 1996  
MOOD DIARY FINDINGS

VERY SIMILAR PATTERN FOR ALL WITH SOME INDIVIDUAL VARIATION  
(MAGNITUDE NOT GREAT)

NORMAL ANXIETY EVIDENT

TIRED AND WEARY SIGNIFICANTLY DIFFERENT TO OTHER SCORES FOR  
A 6 OUT OF 8 PLAYERS

STRATEGY

1. CONTROL THE CONTROLLABLE
2. EXPECT (AND ACCEPT) ADVERSITY AND DIFFICULTIES – BEFORE  
NEED FOR PSYCHOLOGICAL SKILLS COME LIFE SKILLS!

## TECHNIQUES

1. FROM NOW TO DURHAM CHANGE SLEEP HABITS, AND EXERCISE, EATING, MENTAL WORK, PHYSICAL WORK, TIME COMMITMENT

TWO FROM THE FOLLOWING DEPENDING ON NEEDS

- A) PERFORMANCE IMAGERY IN BATH/SHOWER
- B) RELAXATION IMAGERY IN BED
- C) CONCENTRATION/RELAXATION BREATHING – BATHROOM, BEDROOM, LUNCHTIME
- D) SELECT PERSONAL AFFIRMATION STATEMENT AND PUT ON WALL, ABOVE BED, IN SPORTS BAG, CAR, KITCHEN

TAKE RESPONSIBILITY FOR YOUR OWN PREPARATION

Evolved individuals avoid extremes, avoid extravagance, avoid excess.  
The arrival is nothing compared to the journey.  
I am only as strong as my weakest link; strengthen it and I will improve.  
I am never too old to discover the gold.  
When I see myself as a beginner I'm more likely to become a winner.  
Superior leaders are those whose existence is merely known.  
The depth of my integrity determines the breadth of my achievement I sport.  
Inflexible athletes descend; flexible athletes ascend.  
I am adaptable to the unpredictable.  
If I persist each day, I'll eventually get my way.  
Balance is power!  
Less is more!  
Simplicity is the freedom to focus on only that which is truly important.  
Complete simplicity, costing nothing less than everything!  
Athletes who stay well, play well.  
Success does not guarantee happiness; failure does not guarantee misery.  
Think less, achieve more.  
Like a child at play I ask my mind to stay.  
Relax, relax to achieve the max.  
How I see me I will be.  
I become what I imagine.  
Courageous athletes feel the fear and go beyond. I am courageous.  
The voice of fear is healthy to hear.  
Analysis is paralysis. Act don't think.  
I'm in sync, I use instinct.  
When I detach from results things begin to go my way.

#### I.4. Instructions for Completion of Questionnaires

##### **Form A**

Please complete this questionnaire between ½ hour and 15 minutes prior to the start of the game. Please circle the appropriate response on the scales (1 – 4).

##### **Form B**

Please complete this at the ½ time interval. It should only take about 3 - 4 minutes to complete.

##### **Form C**

Subjective Match Performance Appraisal. Please complete at ½ time interval. This should take no more than 1 ½ minutes to complete.

##### **Form D**

Please complete within ½ hour after the end of the game.

##### **Form E**

This can be completed at any time convenient to you.

Thank you very much for your assistance.



### **I.5. Instructions for Completion of the Daily Diary**

Thank you for agreeing to participate in this study.

The following information should assist you to fill in the diaries correctly.

- 1) Please record the data on each page
- 2) The diary should be completed at the end of each day
- 3) Please score across the lines (like this--- | ---) to record how you have felt overall during the day
- 4) When the diary is complete please forward to R.L.H.Q and retained safely to be returned at the end of the 4 week period
- 5) You will be sent a new diary each week during a 4 week period
- 6) It is important that you fill in each page each day

Again, thank you very much for your co-operation and assistance.

Mark Nesti, Senior Lecturer, Sport and Exercise, Leeds Metropolitan University

## I.6. Example Form A

Name-----

Form A

Directions: A number of statements that athletes and officials have used to describe their feelings before competition are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but choose the answer which describes your feelings right now.

	Not at All	Somewhat	Moderately	Very Much
1 I am concerned about this match	1	2	3	4
2 I feel nervous	1	2	3	4
3 I feel at ease	1	2	3	4
4 I have self doubts	1	2	3	4
5 I feel jittery	1	2	3	4
6 I feel comfortable	1	2	3	4
7 I am concerned that I may not do as well in this match as I could	1	2	3	4
8 My body feels tense	1	2	3	4
9 I feel self confident	1	2	3	4
10 I am concerned about failing	1	2	3	4
11 I feel tense in my stomach	1	2	3	4
13 I am concerned about choking under pressure	1	2	3	4
14 My body feels relaxed	1	2	3	4
15 I'm confident I can meet the Challenge	1	2	3	4
16 I'm concerned about performing poorly	1	2	3	4
17 My heart is racing	1	2	3	4
18 I'm confident about performing well	1	2	3	4
19 I'm concerned about reaching my goal	1	2	3	4
20 I feel my stomach sinking	1	2	3	4
21 I feel mentally relaxed	1	2	3	4
22 I'm concerned that others will be disappointed with my performance	1	2	3	4
23 My hands are clammy	1	2	3	4
24 I'm confident because I mentally picture myself reaching my goal	1	2	3	4
25 I'm concerned I won't be able to concentrate	1	2	3	4
26 My body feel tight	1	2	3	4
27 I'm confident of coming through under pressure	1	2	3	4



## I.7. Example Form B

Name-----

Form B

Directions: A number of statements that athletes and officials have used to describe their feelings before competition are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but choose the answer which describes your feelings right now.

	Not at All	Somewhat	Moderately	Very Much
1 I am concerned about this match	1	2	3	4
2 I feel nervous	1	2	3	4
3 I feel at ease	1	2	3	4
4 I have self doubts	1	2	3	4
5 I feel jittery	1	2	3	4
6 I feel comfortable	1	2	3	4
7 I am concerned that I may not do as well in this match as I could	1	2	3	4
8 My body feels tense	1	2	3	4
9 I feel self confident	1	2	3	4
10 I am concerned about failing	1	2	3	4
11 I feel tense in my stomach	1	2	3	4
13 I am concerned about choking under pressure	1	2	3	4
14 My body feels relaxed	1	2	3	4
17 I'm confident I can meet the Challenge	1	2	3	4
18 I'm concerned about performing poorly	1	2	3	4
17 My heart is racing	1	2	3	4
18 I'm confident about performing well	1	2	3	4



**I.8. SUBJECTIVE MATCH PERFORMANCE APPRAISAL 1 (Form C)**

Name:

Form C

Subjective Match Performance Appraisal

Please answer all questions by scoring across the line at the appropriate place. All data will be stored securely and confidentiality is assured.

Q1 In comparison with your normal performance how well have you officiated during the first half?

-----  
Much better Much worse

Q2 In comparison with your usual match day, how do you feel now?

-----  
Relaxed Tense

-----  
Anxious Calm

-----  
Alert Tired

### I.9. Subjective Match Performance Appraisal 2 (Form D).

Name-----

Form D

#### Subjective Match Performance Appraisal

To be completed within half an hour after the match.

Please answer all questions. All data will be stored securely and confidentiality assured.

Please circle the appropriate response.

Q1 I have made several bad decisions in this match

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Q2 This is a very important match.

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Q3 I have lost concentration often in this match.

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Q4 I have kept up with play in this match.

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Q5 I have missed several important incidents during play.

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Q6 I have felt totally in control during this match.

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Q7 I have not worked well with the touch judges during this match.

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Q8 Overall I have performed well in this match.

1	2	3	4	5	6	7
---	---	---	---	---	---	---





**I.10. PROFESSIONAL DETAILS (Form E)**

Name-----

Form E

**PROFESSIONAL DETAILS**

Please complete the following questions. All data will be stored securely and maintained confidentially.

Refereeing Qualifications/Grade

-----  
-----

How long have you refereed at the current level?

Less than 2 years----- 3 – 5 years----- 6 – 10 years----- more than 10-----

How long have you been involved as a referee at any level?

Less than 5 years----- 6 – 10 years----- 10 – 15 years----- More than 15 years

What is/was the highest level at which you played Rugby League?

School Teams----- Age Group Representative Sides----- Senior Amateur-----  
Professional-----

Have you officiated in other sports?

Yes----

No-----

If yes please state sport and level-----

-----

Please provide as much information as you feel able.

Age-30 or under----- 31 – 40----- 41 – 45----- 45 – 50----- 51 and over-----

Highest Academic or Vocational Qualification-----

-----

Occupation-----

-----

Thank you for your assistance

DAILY MOOD SCALE

School of Leisure and Sports Studies  
Leeds Metropolitan University  
Department of Psychology  
University of Hull

Mr. G. McCallum  
The Rugby League

Name-----

Any queries please contact Mark Nesti on 0113 2832600 (work) or 01482 881279 (home).

Name-----

Day/date-----

Time-----

a) How are you feeling at the moment?

Distracted-----	Focused
Exited-----	Bored
Worried-----	Confident
Relaxed-----	Tense
Energetic-----	Weary
Depressed-----	Elated
Tired-----	Alert
Anxious-----	Calm
Happy-----	Unhappy

b) Please mention any significant event(s) that occurred today and whether you interpreted it as positive or negative.

Brief description of event	+/-
-----	
-----	
-----	
-----	
-----	

c) Please rate each of the following in relation to normal everyday experience.

much less

much more

Sleep quality  
Sleep quantity  
Work pressure  
Rest  
Training  
Time commitments

### **I.11. Letter to Rugby League Referees**

March 18<sup>th</sup> 1996

PLEASE RETURN ALL QUESTIONNAIRES, DAILY DIARIES ETC. BY  
THURSDAY 28<sup>TH</sup> MARCH.

Dear Referee,

Thank you very much for your efforts in completing the data gathering inventories during the past few weeks. I now need to collect and collate the data to assist me to generate some research findings.

May I stress again that no individual referee will be identified within the findings or the research report. When completed, this will be made available to you all individually. The interest is on how referees as a group interpret matches in terms of anxiety, and whether this particular variable enhances or undermines performance. This data will assist me to develop a training and educational package which I should be able to offer to the R.F.L and yourselves later this year. Again, I envisage that your participation in this would be voluntary and the focus be directed at strategies for anxiety control rather than individual needs. Of course, should any one wish to work on individualised programmes in this area I would be pleased to offer a more in depth and totally confidential service.

Finally, may I thank you again for your assistance with this research; the completion of performance reports, questionnaires or daily diaries is a time consuming and irksome task, especially during a hectic stage of the season.

Yours sincerely

Mark Nesti  
Senior Lecturer Sport and Exercise  
Accredited Sports Psychologist

**I.12. Letter to Head of Referees**

Mr. G McCallum  
Head of Referees  
Rugby League Headquarters  
Redlands  
Leeds

22 January 1997

Dear Greg

We have finally completed our data analysis of the referee's diaries and questionnaires on anxiety and performance. This process has been rather longer than anticipated, due to the inclusion of data from other sports in our broader study, and because of discussions over our methodology and the form of analysis.

However, these issues have now been satisfactorily resolved and I am now writing to you to identify possible dates to meet you to present the findings. I would also like to provide some feedback on the referees themselves, and again, I would welcome your comments on how you would like this to be done.

Finally, we wondered whether you would feel able to provide assessor ratings for the games identified in the referee's diaries. This data would obviously be presented in a confidential way; it may prove particularly valuable in terms of exploring the anxiety-performance relationship in more depth.

Thank you for all your assistance so far. I hope that we can meet sometime after 12<sup>th</sup> February to discuss the findings.

Yours sincerely

Mark Nesti  
Senior Lecturer  
Sport and Exercise  
Accredited Sports Psychologist

<b>Name:</b> J Connolly		
<b><u>Games</u></b>		<b><u>Assessors Ratings</u></b>
Home Match at Workington	Sun 11.2.96	
Home Match in Paris	07.6.96	
1 <sup>st</sup> Division Match	Sun 23.6.96	
<b>Name:</b> S Cummings		
<b><u>Games</u></b>		<b><u>Assessors Ratings</u></b>
Castleford v St Helens	Sun 04.2.96	
Match Day	Sun 11.2.96	
Match Day Halifax v Leeds	Sun 25.2.96	
<b>Name:</b> D Asquith		
		<b><u>Assessors Ratings</u></b>
Refereed at W.Bowling v Shaw Cross	Sat 02.3.96	
Refereed at Carlisle "A" v Widness "A"	Sat 18.2.96	
Refereed Chester cge v John Moore unsw	Sun 18.2.96	
Refereed Sikilaugh v Hensineham	Sat 24.2.96	
Touch Judged at National Conference		
Game at Heworth	Sat 10.2.96	
Refereed at Bradford "A" v Warrington "A"	Wed 14.2.96	
<b>Name:</b> A Bates		
		<b><u>Assessors Ratings</u></b>
Cup Game Rochdale v St Helens	Sun 11.2.96	
Ran line in testimonial game – Whitehaven	Sun 18.2.96	
<b>Name:</b> E Johnson		
		<b><u>Assessors Ratings</u></b>
Alliance challenge cup match	4.2.96	
Youth match 4 <sup>th</sup> official at the Boulevard	12.2.96	
Alliance Challenge cup match	27.2.96	
<b>Name:</b> G Oworm		
		<b><u>Assessors Ratings</u></b>
Touch judge at a conference RL game	Tues 5.3.96	
<b>Name:</b> S Lowe		
		<b><u>Assessors Ratings</u></b>
Semi final match day	Fri 8.3.96	
Match day	Thu 29.2.96	
<b>Name:</b> A Burke		
		<b><u>Assessors Ratings</u></b>
Refereed alliance cup match	Sat 10.2.96	

## I.13. ANOVA Tables

## I.14.

**I.14.1. Analysis of Variance for Anxiety (NA) for Rugby League referees and Netball players at two match levels for three days pre match and three days post match.**

Source of Variation	Degrees of Freedom	Mean Square	F Ratio	Probability
Main Effects				
Time	6	0.81	0.67	0.67
Game type by time	6	0.17	0.14	0.99
Within and Residual	138	1.21		

**I.14.2. Analysis of Variance for Anxiety (NA) for Rugby League referees and Netball players at two match levels for six days pre match and three days post match.**

Source of Variation	Degrees of Freedom	Mean Square	F Ratio	Probability
Main Effects				
Time	9	0.62	0.52	0.86
Game type by time	9	0.69	0.58	0.81
Within and Residual	81	1.19		

**I.14.3. Analysis of Variance for Cheerfulness (NA) for Rugby League referees and Netball players at two match levels for three days pre match and three days post match.**

Source of Variation	Degrees of Freedom	Mean Square	F Ratio	Probability
Main Effects				
Time	6	0.43	0.50	0.81
Game type by time	6	0.75	0.87	0.52
Within and Residual	138	0.86		

**I.14.4. Analysis of Variance for Cheerfulness (NA) for Rugby League referees and Netball players at two match levels for six days pre match and three days post match.**

Source of Variation	Degrees of Freedom	Mean Square	F Ratio	Probability
Main Effects				
Time	9	0.23	0.26	0.98
Game type by time	9	0.77	0.86	0.56
Within and Residual	81	0.90		



## **J. Appendix D**

### **J.1. Instructions for completion of the daily diary.**

The following should assist you to fill in the diaries correctly.

- 1 Please record the data on each page
- 2 The diary should be completed at the end of your day
- 3 Please score across the lines (like this-----/-----) to record how you have felt overall during the day
- 4 It is most important that you fill in each page each day
- 5 Important events that you may want to report could include stressful, tiring and unpleasant experiences, like an illness, injury or poor training session. More positive events might include, performing well in a match, sleeping well, socialising or resolving a problem in a relationship. Please give as full an account as space allows.

Again thank you for your co-operation and assistance.

Mark Nesti  
Senior Lecturer  
Sport and Exercise , LMU  
B.A.S.E.S Accredited Sports Psychologist

**J.2. Diary Blank**

Name-----

Day/date-----

a) How are you feeling at the moment?

Distracted-----	-----	Focused
Exited-----	-----	Bored
Worried-----	-----	Confident
Relaxed-----	-----	Tense
Energetic-----	-----	Weary
Depressed-----	-----	Elated
Tired-----	-----	Alert
Anxious-----	-----	Calm
Happy-----	-----	Unhappy

b) Please mention any significant events that influenced your mood today. These events may be specifically related to Rugby League, or could be better described as life events.

Brief description of event

-----

-----

-----

-----

-----

-----

-----

c) Please rate each of the following in relation to normal everyday experience.

	Much Less		Much More
Sleep quantity	-----		-----
Sleep quality	-----		-----
Work pressure	-----		-----
Time commitments	-----		-----
Rest	-----		-----
Training	-----		-----

**J.3. Performance Rating**

Name-----

Match-----

To be completed as soon as possible after the match. All information is totally confidential. To respond please circle the appropriate number.

How would you rate your performance overall?

Very weak	Weak	Less than Average	Average	Good	V.Good	Excellent
1	2	3	4	5	6	7

How would you rate the overall performance of the team?

Very weak	Weak	Less than Average	Average	Good	V.Good	Excellent
1	2	3	4	5	6	7

How would you rate the individual performance of individual members of the team?

Player Number	V.Weak	Weak	Less Average	Average	Good	V.Good	Excellent
1	1	2	3	4	5	6	7
2	1	2	3	4	5	6	7
3	1	2	3	4	5	6	7
4	1	2	3	4	5	6	7
5	1	2	3	4	5	6	7
6	1	2	3	4	5	6	7
7	1	2	3	4	5	6	7
8	1	2	3	4	5	6	7
9	1	2	3	4	5	6	7
10	1	2	3	4	5	6	7
11	1	2	3	4	5	6	7
12	1	2	3	4	5	6	7
13	1	2	3	4	5	6	7
14	1	2	3	4	5	6	7
15	1	2	3	4	5	6	7

Add other players/Numbers as Necessary

	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7

**J.4. Illinois Self-Evaluation Questionnaire**

Name:----- Sex: M F Date:-----

**Directions: A number of statements that competitive swimmers have used to describe their feelings before competition are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but choose the answer which describes your feelings right now.**

**Now consider whether you think this a good or bad situation for you. Please circle the appropriate number.**

**Does this make you feel**

		Not at all	Somewhat	Moderately	Very Much		Very Bad	Bad	Good	Very Good
1	I am concerned about this competition	1	2	3	4		1	2	3	4
2	I feel nervous									
3	I feel at ease									
4	I have self-doubts									
5	I feel jittery									
6	I feel comfortable									
7	I am concerned that I may not do as well in this competition as I could									
8	My body feels tense									
9	I feel self-confident									

Appendix D

10	I am concerned about losing	1	2	3	4		1	2	3	4
11	I feel tense in my stomach	1	2	3	4		1	2	3	4
12	I feel secure	1	2	3	4		1	2	3	4
13	I am concerned about choking under pressure	1	2	3	4		1	2	3	4
14	My body feels relaxed	1	2	3	4		1	2	3	4
15	I'm confident I can meet the challenge	1	2	3	4		1	2	3	4
16	I'm concerned about performing poorly	1	2	3	4		1	2	3	4
17	My heart is racing	1	2	3	4		1	2	3	4
18	I'm confident about performing poorly	1	2	3	4		1	2	3	4
19	I'm concerned about reaching my goal	1	2	3	4		1	2	3	4
20	I feel my stomach sinking	1	2	3	4		1	2	3	4
21	I feel mentally relaxed	1	2	3	4		1	2	3	4
22	I'm concerned that others will be disappointed with my performance	1	2	3	4		1	2	3	4
23	My hands are clammy	1	2	3	4		1	2	3	4
24	I'm confident because I mentally picture myself reaching my goal	1	2	3	4		1	2	3	4
25	I'm concerned I won't be able to concentrate	1	2	3	4		1	2	3	4
26	My body feels tight	1	2	3	4		1	2	3	4
27	I'm confident of coming through under pressure	1	2	3	4		1	2	3	4

### J.5. CSAI and Performance Scores

#### J.5.1. Regional Match

Subject	Cognitive	Somatic	Self Confidence	Score Awarded	Self Score	Total Score
1	16	18	27	4.88	3	4.76
2	20	10	33	4.69	4	4.65
3	13	14	31	4.56	3	4.47
4	21	17	30	4.44	4	4.41
5	14	14	28	4.63	5	4.65
6	28	30	26	4.94	4	4.88
7	21	13	31	5.44	5	5.41
8	26	21	30	4.75	6	4.82
9	25	16	27	4.31	4	4.29
10	15	12	28	4.75	4	4.71
11	19	15	29	4.31	3	4.24
12	33	24	10	4.19	4	4.18
13	21	17	25	4.38	5	4.41
14	17	14	31	5.13	4	5.06
15	27	24	24	4.31	4	4.29
16	28	15	32	4.81	4	4.76
17	28	18	29	5.94	5	5.88
Mean	21.88	17.18	27.71	4.73	4.18	4.70
s	5.86	5.07	5.19	0.45	0.81	0.44

**J.5.2. Test Match**

Name	Cognitive	Somatic	Self Confidence	Score Awrded	Self Score	Total Score
1	19	20	24	4.38	4	4.35
2	20	21	26	4.87	4	4.82
3	19	20	22	4.73	4	4.69
4	21	19	30	4.93	5	4.94
6	30	33	27	4.30	3	4.22
7	17	11	34	5.20	5	5.19
8	29	27	29	5.07	5	5.06
9	28	20	28	4.57	5	4.59
10	17	13	34	5.00	5	5.00
11	21	20	27	4.36	4	4.10
13	22	16	25	5.00	5.5	5.03
14	19	20	28	5.10	5	5.09
15	23	28	19	4.20	3	4.13
16	28	22	22	4.93	5	4.94
17	26	31	25	5.80	5	5.75
5	15	19	31	5.66	5	5.62
12	23	12	30	4.56	4	4.53
Mean	22.18	20.71	27.12	4.86	4.50	4.83
s	4.57	6.18	4.11	0.45	0.75	0.47

**J.6. Significant correlations ( $P < 0.05$ ) of daily mood, anxiety and behavioural variables over 12 days**

**J.6.1. Subject 2**

1- Cheerfulness	-.43										
2-Distraction	.50	-.42									
3-Excitement	-.34	.54	<b>-.66</b>								
4- Rest	<b>-.80</b>	.39	-.29	.12							
5 - Sleep Quality	<b>-.75</b>	<b>.66</b>	<b>-.60</b>	.26	.54						
6 - Sleep Quantity	<b>-.77</b>	.67	-.61	.26	.56	<b>.99</b>					
7 - Time Constraints	-.43	.37	-.11	.31	.37	.41	.43				
8 - Training	<b>-.70</b>	<b>.74</b>	<b>-.59</b>	.29	<b>.76</b>	<b>.79</b>	<b>.80</b>	.17			
9 -Weary	<b>.65</b>	-.08	.16	.01	<b>-.73</b>	.50	-.50	-.55	-.39		
10 - Work Pressure	-.41	<b>.74</b>	-.15	.33	.29	.53	.54	<b>.61</b>	.47	-.05	
11- Worried	<b>.77</b>	-.55	<b>.65</b>	-.25	<b>.67</b>	<b>-.78</b>	<b>-.82</b>	-.39	<b>-.81</b>	.42	-.50
	Anxiety	1	2	3	4	5	6	7	8	9	10



## J.6.2. Subject 5

1- Cheerfulness	-.17										
2-Distraction	.20	-.44									
3-Excitement	.39	.01	-.39								
4- Rest	-.07	<b>-.68</b>	.40	-.19							
5 - Sleep Quality	.34	-.15	.07	.21	.49						
6 - Sleep Quantity	-.01	-.42	.21	-.01	<b>.83</b>	<b>.66</b>					
7 - Time Constraints	.10	.26	-.31	<b>.60</b>	-.05	.39	.11				
8 - Training	.30	.08	-.18	<b>.76</b>	-.42	-.23	-.35	.12			
9 -Weary	-.33	.47	.13	-.50	-.47	<b>-.59</b>	<b>-.58</b>	<b>-.60</b>	.07		
10 - Work Pressure	.01	-.29	-.11	.17	.34	.47	.40	.55	-.28	<b>-.73</b>	
11- Worried	.43	<b>-.75</b>	<b>.69</b>	-.15	<b>.64</b>	.25	.56	-.24	-.17	-.37	.21
	Anxiety	1	2	3	4	5	6	7	8	9	10

## J.6.3. Subject 6

1- Cheerfulness	-.40										
2-Distraction	.49	<b>-.72</b>									
3-Excitement	-.20	.54	-.48								
4- Rest	-.12	.32	-.08	-.19							
5 - Sleep Quality	-.46	.27	-.16	-.41	<b>.58</b>						
6 - Sleep Quantity	-.47	.51	-.42	-.02	.32	<b>.84</b>					
7 - Time Constraints	<b>-.64</b>	.26	-.31	.05	.48	<b>.60</b>	<b>.59</b>				
8 - Training	.44	-.30	.30	-.13	.13	-.27	-.40	-.03			
9 -Weary	.56	-.21	.29	.43	-.11	-.66	-.49	-.27	.38		
10 - Work Pressure	-.27	-.17	.29	-.34	-.27	.40	.27	-.01	-.53	-.54	
11- Worried	.32	<b>-.60</b>	<b>.59</b>	-.29	-.10	-.34	-.58	-.09	<b>.75</b>	.20	-.24
	Anxiety	1	2	3	4	5	6	7	8	9	10

## J.6.4. Subject 8

1- Cheerfulness	<b>.61</b>										
2-Distraction	-.09	-.49									
3-Excitement	.29	.40	-.54								
4- Rest	.00	-.21	-.29	.09							
5 - Sleep Quality	.06	-.23	.47	-.09	-.02						
6 - Sleep Quantity	.42	.10	.13	.17	.33	<b>.83</b>					
7 - Time Constraints	.33	.18	-.11	.46	.04	<b>.65</b>	<b>.74</b>				
8 - Training	.24	.56	-.40	.30	.26	.13	.39	.36			
9 -Weary	<b>-.58</b>	-.53	-.02	<b>-.58</b>	.22	-.40	-.54	<b>-.65</b>	-.46		
10 - Work Pressure	.56	.51	-.38	<b>.74</b>	-.09	.14	.38	<b>.72</b>	.50	<b>-.68</b>	
11- Worried	-.15	.20	-.33	-.07	-.02	<b>-.91</b>	<b>-.80</b>	<b>-.79</b>	-.10	.37	-.35
	Anx iety	1	2	3	4	5	6	7	8	9	10

## J.6.5. Subject 12

1- Cheerfulness	-.26										
2-Distraction	-.22	-.35									
3-Excitement	.39	.40	<b>.92</b>								
4- Rest	.34	.06	.10	-.05							
5 - Sleep Quality	-.12	.15	-.34	.12	.18						
6 - Sleep Quantity	-.20	.16	-.24	.05	-.15	<b>.84</b>					
7 - Time Constraints	-.27	-.06	-.36	.33	-.40	-.37	.41				
8 - Training	.19	.22	<b>.81</b>	<b>.76</b>	-.26	-.09	-.19	<b>.68</b>			
9 -Weary	-.45	-.35	<b>.85</b>	<b>-.90</b>	.10	-.32	-.19	-.08	<b>-.61</b>		
10 - Work Pressure	.11	.20	<b>-.76</b>	<b>.76</b>	-.06	-.06	-.23	<b>.77</b>	<b>.89</b>	-.54	
11- Worried	-.13	-.24	.45	-.42	.43	-.25	-.44	.26	-.12	<b>.61</b>	.12
	Anx iety	1	2	3	4	5	6	7	8	9	10

## J.6.6. Subject 13

1- Cheerfulness	<b>-.81</b>										
2-Distraction	.27	-.51									
3-Excitement	-.31	<b>.62</b>	<b>-.76</b>								
4- Rest	<b>.67</b>	<b>-.86</b>	.47	<b>-.59</b>							
5 - Sleep Quality	<b>-.62</b>	<b>.80</b>	-.39	<b>.59</b>	<b>-.87</b>						
6 - Sleep Quantity	-.51	<b>.70</b>	-.40	<b>.58</b>	<b>-.81</b>	<b>.97</b>					
7 - Time Constraints	-.26	.42	-.43	.28	-.55	<b>.71</b>	<b>.71</b>				
8 - Training	-.15	.00	-.55	.31	-.09	.04	.04	.37			
9 -Weary	.31	<b>-.67</b>	<b>.76</b>	<b>-.90</b>	<b>.77</b>	<b>-.65</b>	<b>-.67</b>	-.34	-.22		
10 - Work Pressure	-.05	.28	-.51	.35	-.50	.35	.30	<b>.60</b>	.37	-.45	
11- Worried	<b>.77</b>	-.52	.45	-.28	.43	-.26	-.17	-.12	-.37	.21	-.25
	Anx iety	1	2	3	4	5	6	7	8	9	10

## J.6.7. Subject 15

1- Cheerfulness	<b>-.96</b>										
2-Distraction	-.01	-.18									
3-Excitement	-.09	.25	<b>-.76</b>								
4- Rest	.07	-.08	.21	-.42							
5 - Sleep Quality	-.35	.34	.04	.02	.57						
6 - Sleep Quantity	-.35	.30	.05	-.03	.55	<b>.98</b>					
7 - Time Constraints	.14	-.10	.25	-.26	-.07	-.24	-.35				
8 - Training	-.07	.16	-.26	<b>.71</b>	-.16	.09	.01	.08			
9 -Weary	.14	-.20	.35	-.32	-.03	-.56	-.55	-.09	-.12		
10 - Work Pressure	.26	-.24	.05	-.04	.09	.02	-.02	<b>.69</b>	.22	-.57	
11- Worried	<b>.76</b>	-.78	.06	-.22	.14	.02	.06	.19	-.28	-.41	.57
	Anxiety	1	2	3	4	5	6	7	8	9	10

## J.6.8. Subject 16

1- Cheerfulness	.03										
2-Distraction	.02	-.01									
3-Excitement	-.28	<b>.90</b>	.09								
4- Rest	-.01	.27	.22	.25							
5 - Sleep Quality	.52	.38	-.52	.20	.01						
6 - Sleep Quantity	.42	.02	<b>-.74</b>	-.16	-.06	<b>.80</b>					
7 - Time Constraints	.24	<b>.58</b>	-.34	.47	-.11	<b>.66</b>	.38				
8 - Training	.03	<b>.67</b>	-.04	<b>.61</b>	.16	.43	.21	.17			
9 -Weary	.16	.02	.28	.09	.24	-.38	-.29	-.36	-.17		
10 - Work Pressure	.40	.19	-.10	.09	-.14	<b>.69</b>	.30	<b>.68</b>	.12	<b>-.58</b>	
11- Worried	.41	.45	-.16	.20	-.17	.34	.07	.41	.29	-.12	.44
	Anx iety	1	2	3	4	5	6	7	8	9	10

## J.6.9. Subject 17

1- Cheerfulness	<b>-.69</b>										
2-Distraction	.11	-.01									
3-Excitement	-.22	.56	-.17								
4- Rest	.34	-.26	.43	-.33							
5 - Sleep Quality	-.02	.44	-.45	.27	-.33						
6 - Sleep Quantity	.10	-.01	<b>-.67</b>	.13	-.21	<b>.72</b>					
7 - Time Constraints	-.03	.13	-.11	-.26	-.18	.11	.03				
8 - Training	-.09	.24	-.36	.18	-.30	<b>.59</b>	.48	.21			
9 -Weary	.46	-.35	.50	-.37	.43	-.30	-.11	-.01	-.09		
10 - Work Pressure	-.32	.13	-.09	-.14	-.14	.06	.05	<b>.65</b>	.10	-.39	
11- Worried	.11	.01	.45	-.44	-.05	-.03	-.47	.07	-.40	.17	-.09
	Anx iety	1	2	3	4	5	6	7	8	9	10

**J.6.10. Subject 18**



1- Cheerfulness	-.28										
2-Distraction	.56	-.56									
3-Excitement	<b>-.59</b>	.43	<b>-.88</b>								
4- Rest	.20	.01	.56	-.53							
5 - Sleep Quality	-.26	.37	<b>-.64</b>	.56	-.16						
6 - Sleep Quantity	-.18	.17	-.44	.52	-.07	<b>.82</b>					
7 - Time Constraints	-.03	-.30	.22	-.12	-.38	<b>-.70</b>	<b>-.65</b>				
8 - Training	-.37	<b>.64</b>	<b>-.75</b>	<b>.70</b>	<b>-.58</b>	.29	.16	-.11			
9 -Weary	.17	-.42	.54	-.51	.44	-.45	-.47	.16	-.39		
10 - Work Pressure	-.41	.32	<b>.70</b>	.57	<b>-.65</b>	.27	.20	-.03	<b>.80</b>	-.12	
11- Worried	<b>.87</b>	-.43	<b>.79</b>	<b>-.77</b>	.26	-.44	.22	.10	-.49	.25	-.49
	Anx iety	1	2	3	4	5	6	7	8	9	10

## J.6.11. Subject 19

1- Cheerfulness	<b>-.75</b>										
2-Distraction	.32	-.24									
3-Excitement	-.42	.15	<b>.90</b>								
4- Rest	-.21	.13	-.51	.51							
5 - Sleep Quality	-.52	.28	-.56	<b>.69</b>	.56						
6 - Sleep Quantity	-.45	.28	-.42	.57	.49	<b>.89</b>					
7 - Time Constraints	.04	.11	-.72	<b>.63</b>	.07	.17	.24				
8 - Training	.06	.01	-.85	<b>.74</b>	.29	.44	.40	<b>.84</b>			
9 -Weary	-.36	.14	<b>.68</b>	-.48	-.19	-.20	-.19	<b>-.79</b>	<b>-.82</b>		
10 - Work Pressure	-.15	.33	-.20	.24	.16	.39	.49	.38	.30	.31	
11- Worried	.53	<b>-.91</b>	.18	-.03	-.09	-.20	-.16	-.04	-.04	-.05	-.39
	Anx iety	1	2	3	4	5	6	7	8	9	10

## J.7. Feedback on British Students Rugby League Team French Tour Easter 1998

### Introduction

The following key issues emerged from the questionnaire data relating to your 2 matches in France. A more complete and in-depth level of analysis will be provided once the daily diaries have been collated and included alongside the questionnaire data.

The 27 item questionnaire that you completed prior to each match records anxiety and self-confidence scores. This inventory is one of the most used by applied sports psychologists and researchers and provides three scores relating to sport self-confidence, cognitive anxiety and mental anxiety.

Completion of the Performance Rating questionnaire provided further useful information to investigate the relationship between anxiety levels, confidence and individual and team performance in the 2 games.

### Results

#### Psychological

- 1 Highest scores across the team related to concerns about losing the match, and feeling nervous. These results may not be a problem especially where confidence is strong.
- 2 Self-confidence scores were in most individual cases, and for the team overall, much lower than would normally be seen at this level (i.e. based on published norms). However, a small number of players had extremely high scores for self-confidence.

### Performance

- 1 Very little discrepancy between self rating and team performance rating (Average/Good).
- 2 No player rated themselves in the top 2 categories – Very Good or Excellent
- 3 (I) A very similar pattern in terms of individual rating of players across the team - mostly Average/Good  
 (ii) Very few players rated by colleagues as Very Good and only 2 (different) Players rated Excellent

### General Implications

- 1) Strong feelings of nerves alone not key issue, but where accompanied by weak levels of confidence, tends to correlate strongly with poor performance.
- 2) Degree of realism in assessing own performance, team and assessment of others
- 3) Clear that team accepts that performed well below par.

### Strategies

Self confidence is the key factor – develop SC can convert into positive anxiety and relates strongly to achievement in sport performance.

This can be addressed by-:

#### 1 Use of Goal Setting

- Issue of control
- Achieving control
- Team and individual

#### 2 More in depth individual approaches

For some self confidence may not be just related to RL performance but other areas (of life) which negatively affect general confidence and RL performance

#### 3 Mental Skills Techniques

Can be learned and practised by individuals to help self confidence, focus and control of nerves.

For example-:

Mental Imagery

Positive Self-Talk

Breathing Exercises

Philosophically Speaking the key issue relates to belief in Fate or Destiny. Fate hands over initiative to Fortune – Destiny recognises that have no total control over outcome but can influence it if we act.

## J.8. Group Environment Questionnaire

*Gould and Weinberg-Foundations of Sport and Exercise Psychology Student Study Guide*

### Worksheet 21

#### Group Environment Questionnaire

*Directions:* The Group Environment Questionnaire (GEQ) helps you assess your perceptions of an athletic team of which you are a member. If you are currently participating on a team, use one form your past. There are no right or wrong answers, so please give your immediate reaction. Some of the questions may seem repetitive, but answer them all- and be as honest as possible.

*The following questions help you assess your feelings about your personal involvement with your team. Circle a number form 1 to 9 to indicate how much you agree with the statement.*

1 I do not enjoy being a part of the social activities of this team  
 1 2 3 4 5 6 7 8 9  
*Strongly Disagree Somewhat Agree Strongly Agree*

2 I'm unhappy about the amount of playing time I get  
 1 2 3 4 5 6 7 8 9  
*Strongly Disagree Somewhat Agree Strongly Agree*

3 I am not going to miss the members of this team when the season ends  
 1 2 3 4 5 6 7 8 9  
*Strongly Disagree Somewhat Agree Strongly Agree*

4 I'm unhappy with my team's level of desire to win  
 1 2 3 4 5 6 7 8 9  
*Strongly Disagree Somewhat Agree Strongly Agree*

5 Some of my best friends are on this team  
 1 2 3 4 5 6 7 8 9  
*Strongly Disagree Somewhat Agree Strongly Agree*

6 This team does not have enough opportunities to improve my personal performance  
 1 2 3 4 5 6 7 8 9  
*Strongly Disagree Somewhat Agree Strongly Agree*

<i>Disagree</i>									<i>Agree</i>
7	I enjoy other parties more than team parties								
1	2	3	4	5	6	7	8	9	
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>	
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>	
8	I like the style of play on this team								
1	2	3	4	5	6	7	8	9	
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>	
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>	
9	This team is one of my most important social groups								
1	2	3	4	5	6	7	8	9	
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>	
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>	
10	Our team is united in trying to reach its performance goals								
1	2	3	4	5	6	7	8	9	
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>	
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>	
11	Members of our team would rather go out on their own than get together as a team								
1	2	3	4	5	6	7	8	9	
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>	
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>	
12	We all take responsibility for any loss or poor performance by our team								
1	2	3	4	5	6	7	8	9	
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>	
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>	
13	Our team members rarely party together								
1	2	3	4	5	6	7	8	9	
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>	
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>	
14	Our team members have conflicting aspirations for the team's performance								
1	2	3	4	5	6	7	8	9	
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>	
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>	

15 Our team would like to spend time together in the off season

1	2	3	4	5	6	7	8	9
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>

16 I members of our team have problems in practice, everyone wants to help them so we can get back together again

1	2	3	4	5	6	7	8	9
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>

17 Members of our team do not stick together outside of practices and games

1	2	3	4	5	6	7	8	9
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>

18 our team members do not communicate freely about each athlete's responsibilities during competition or practice

1	2	3	4	5	6	7	8	9
<i>Strongly</i>				<i>Agree</i>				<i>Strongly</i>
<i>Disagree</i>				<i>Somewhat</i>				<i>Agree</i>

*Scoring:* The GEQ measures these four elements regarding how attractive a group is to it's individual members (1) *Attraction to group-task*; (2) *Attraction to group-social*; (3) *group integration-task*, and (4) *group integration-social*. To determine your score, simply add the numbers you circled for the questions in the brackets below.

\_\_\_ Individual Attraction to Group\_\_ Task (score of item 2 + item 4 + item 6 + item 8)  
 \_\_\_ Individual Attraction to Group\_\_\_ Social (Item 1 + item 3 + item 5 + item 7 + item 9)  
 \_\_\_ Group Integration\_\_\_ Task (Item 10 + item 12 + item 14 + item 14 + item 16 + item 18)  
 \_\_\_ Group Integration\_\_\_ Social (Item11 + item 13 + item 15 + item 17)

The higher your score on each subscale, the greater you reflect that dimension (e.g. a score of 31 on the Individual Attraction\_\_\_ Social means you are more socially attracted to the group than a score of 15 would indicate). Note that the individual attraction scales range from a low of 4 to a high of 36, whereas the group integration scales range from a low of 5 to a high of 45.

## **J.9. MOOD DIARY REPORT**

### **Mark Nesti. Accredited Spots Psychologist**

#### **J.9.1. Player A**

Mood scores reveal that you were upset by the disruption of the journey, and that this not only frustrated you but interfered with your focus and elevated your anxiety levels. Again, with the poor sleep experienced around journey periods your mood overall is not positive and in fact sunk to a very low point.

Confirmation of your place in the first match resulted in feelings of relief and a major change in mood. However, your mood remains quite stable and generally positive up to and even after defeat in the test.

**The key issues for you from this data are as follows:-**

- 1** Why were you not in a clearly negative mood state after losing the test given that you didn't rate your performance or that of most of your team as v good or excellent?
- 2** What can you do to avoid such a severe mood fluctuation around the specific issue of travel and the concomitant lack of sleep, and in general, your reaction to uncontrollable frustrating events?



## **MOOD DAIRY REPORT**

### **J.9.2. Player B**

Your mood state fluctuated very significantly between the journey, training and are most times not making the 17. Your mood did begin to pick up the next day and then moved dramatically during the test day with your selection and man of the match. Generally, your mood returns to a mildly volatile state over the next week, and at no time do we see huge shifts in particular factors, and low or high points to compare with France. Your sleep quality and quantity fluctuates with the normal pattern of life, however in France it is generally well below normal.

**The key issues for you form this data are as follows:-**

- 1** What can you do to avoid such a negative mood state upon hearing bad news, and how might you have played during the test had you not allowed yourself to have experienced such a state pre match day?
- 2** How much of your reaction to missing the first game was due to a feeling that you had done all that you could and yet this was not good enough, or alternatively, that you were frustrated because you know that you are good enough for the team but have missed out for some unusual reason this time?  
Your confidence rating was always high to very high - is this how you really

**J.10. Feedback to squad members**

**To all Squad Members**

Dear all

I hope that some of the enclosed information is both interesting and informative. I hope to have the opportunity at Warrington this Sunday to follow on some of the issues raised here. The goal setting chart in particular may need further revision; it is based on the excellent feedback you provided at the last full squad meeting in Warrington.

I am trying to organise some practical sport psychology sessions (voluntary) with at the moment. However, I would like to have a chance to give each of the players who completed their performance and mood diaries a brief personal report based on their results. This is best done by meeting briefly face to face so that I can explain the material in more detail as players receive it. Again, I am in contact with Vinney to timetable this in to Sunday if possible.

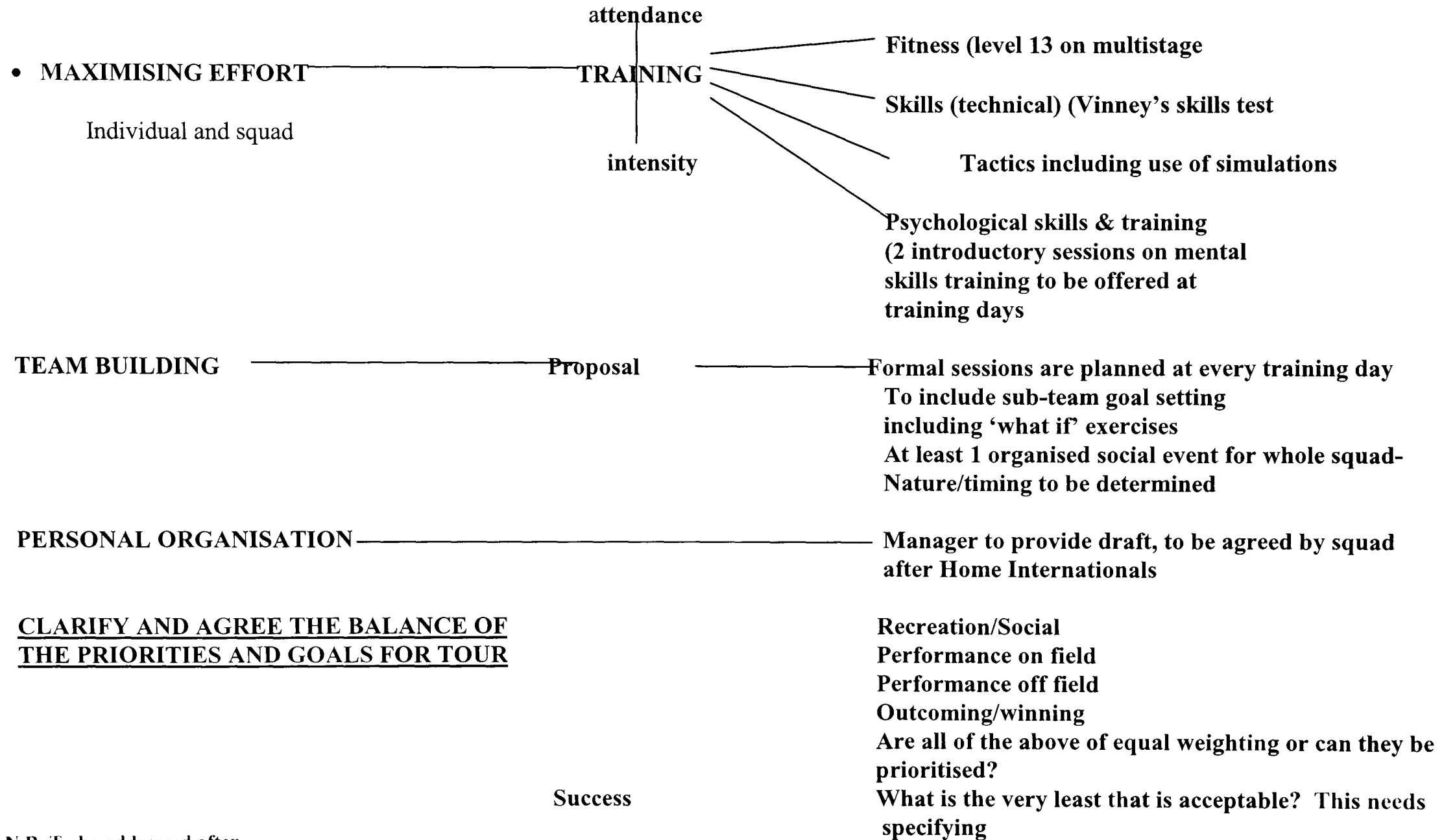
Thank you for the information provided to date and I look forward to meeting you again.

Yours faithfully

Mark Nesti  
Accredited Sports Psychologist

J.11.

J.12. GB Students RL Squad, May 98 - Oct. 98, PRE - TOUR GOALS



N.B. To be addressed after confirmation of touring squads

**J.13. GB Students RL Squad, May 1998 - Oct. 1998, ON TOUR GOALS**

- **TEAM SPIRIT** ————— **review/evaluate/learn** ————— **Team meetings**  
**Individual feedback (1-2-1 meetings)**  
**As a minimum - full team/squad meetings**  
**after each match - (timescale to be decided)**  
**Coach to meet individual player at least 3**  
**times on tour - (timing and duration to**  
**remain flexible**
  
  - **PROFESSIONAL APPROACH** ————— **discipline/organisation/planning** ————— **Code of conduct**  
**Responsibility of individual player**  
**Players know their role/what is expected of**  
**them**
- 

**N.B. ALTER & AMEND THE WINNING PERFORMANCE GOALS AS TOUR PROGRESSES**

- i.e. Not to leave to Chance and Fate. For example - if after 3 matches have met performance expectations only on one occasion need to recognise this and address it for remaining 3 games**

**J.14. Feedback form GB Squad (Australian Tour)  
26th 1998**

**July,**

To: Mr V Webb  
Head Coach GB Student Rugby League  
74 Maple Crescent  
Penketh  
Warrington  
WA5 2LQ

Psychological Issues

Match Stats.

1

- (I) Players want match/performance stats. available at half-time and after the game. Players are free to inspect these if so desire. Stats. refer to team and individual achievements.
- (ii) Stats. to be discussed at both team and 1 to 1 meetings after the match. Coach to provide constructive discussion around these data.

2

Posters in changing rooms (prior to match and possibly training). All in agreement over value of this technique - exact phrases still to be agreed - some output from team is essential here to confer shared ownership.

some examples to date:

- “There will be a time when the tour will ask what you did pre-tour”
- “A dictionary is the only place where success comes before work”
- “Get the performance right and you’ll get the results you deserve”
- “People in glass houses shouldn’t throw stones”
- “Winning isn’t everything, it’s the only thing”

Summary: Phrases can/should be emotive, able to “wake you up”, hit home the basic truths.

3 Performance Goals

- (I) General agreement that outcome goals not needed/helpful - only specific outcome goal mentioned, is to win all 6 matches.
- (ii) Process goals - less clear about whether these are worthwhile and effective. Mention made of specific technical goals - e.g. tackles made/missed, and that these could be individual and team.

Conclusion work remains to be done in next 2-3 weeks to

- (1) Agree poster phrases and get these up on walls and printed now.
- (ii) Confirm that stats. will be available at half time and end of match.

- (iii) Coach to lead session on value of goals - performance (i.e. process) goals at least. it should be made clear (again) that
- (i) goals are used to set realistic targets. This means simply that given the factors we have total control over, that is our ability to compete, put in effort etc., what level of performance overall would make us able to look at each other, after the immediate emotions of the match have dissipated, and know that we had not “let ourselves down”. If a perfect performance (10 out of 10!) and a good win is all we can expect and accept then what happens if we perform 4 out of 10 and get hammered? The purpose of goal setting is to remind us constantly that
- (i) We must do our bit ( perform/compete) to guarantee a win or be beaten. Not to do our bit (even if we win at times) is always to lose.  
“losing is not acceptable, being beaten is!”
- (ii) The goals help us to remind ourselves that we have totally in our control (skill, effort, commitment) to do well in a match, no matter how poor the ref., weather, intimidation, luck, etc.
- (iii) Finally, they help us to focus on the job in hand - to do this goals must be agreed before and constantly kept in our minds - gnawing away at our consciousness as the match day approaches.

Mark Nesti M.A, B.A. (Hons)  
BASES Accredited Sports Psychologist  
British Olympic Assoc. Registered Sport Psychologist

## J.15. Feedback from Squad (German Tour) July 26th, 1998

### Psychological issues

It is quite difficult to provide feedback on behalf of the whole squad because only 10 players were present. However, these individuals had plenty to offer the process, and made the following points:

#### 1. Match Stats.

Generally would like individual stats. to be made available (i.e. not read out openly) at half and full time. However, some disagreement about whether team stats. should be discussed openly at half time.

#### 2 Motivational and Activation Posters

Completely unnecessary at this level! General feeling that if players not focused, motivated and prepared now they shouldn't be playing at this standard or in these matches!

#### 3 Performance Goals

Agreement that outcome goals (i.e.: matches won, beaten, close, etc.) unhelpful and rather pointless. Open disagreement about setting targets for process goals. Opinions spread from need overall skill/tactical/psych. goal for each game for team as a whole, to goal is "take each game as it comes".

Most interesting discussion of meeting revolved around mention by Scots players that in home internationals they set goal of 10 for mental commitment and passion prior to match v England, and were very motivated to achieve this.

(i) It was totally in their control to achieve this.

(ii) Knew that English were better tech., tactically, etc. than they were but that demanding goal for passion/ intensity could help close the gap!

### Conclusion

Much more needs to be done to explain how posters are used most often at highest level of sport/the game. This needs, for credibility, to come from

Key players and/or Headcoach. Again, there seems to be some interest in setting goals/targets for specific aspects of team performance, however, more needs to be done to convince players of its worth.

**J.16. Letter to coach**

Mark Nesti. Aug 21, 1998

Dear Vinny

I am sending this fax to you from Switzerland because we did not manage to talk after I had sent you the feedback from the last meeting. I called several times during the week of 2-9 August but either your mobile was unavailable, answerphone off or I spoke to your family! I really should have kept trying, however, time ran out eventually on Sunday 9th when I left for business/holiday in Europe. I had expected to be back next week however, I now won't be returning to the UK until 5th September due to some work opportunities I need to follow up in France.

I had a long discussion with J.R and made sure that he would be available to do a further 2 group sessions should you wish these. The first would be to help facilitate more discussion and agreement around performance goals in particular, and hopefully to get the squads to work on some sub-group goals, and remind them of the need to set their own individual targets for the tours.

In addition, J.R agreed that he would make a workshop available (possibly in Leeds) on use of mental visualisation, arousal control and concentration skills. This would be strictly for those interested in finding out more about these mental skills and would be a largely practical session where the players learned these techniques. J.R is quite experienced with this type of work, and I've confidence in his ability to take these sessions.

I did tell you that several players (4) mentioned that they would wish to meet me for more in depth sessions on an individual basis, however, these did not take place. Anyway, this is quite normal for most athletes - the desire to see a Sport Psychologist individually usually comes after poor performance, and at the present time everyone seems keen to stress the positive, which in one sense, is a tribute to the attitude you have engendered amongst the players.

As always (at least when trying to do sport psychology at a group/team level) there is a feeling that much more could be done, however, as we have talked about several times, this area of work can not be forced, but requires much more input from individuals themselves. If a few more players reflect on their mental approach overall, or think about 2 or 3 specific areas that they need to prepare better rather than leaving them to chance on the players the need to "do all you need to do as an individual player to put in a competitive performance - to focus on what you must do as an individual to walk from the field with head held high, rather than walking off feeling that you would like to totally forget your performance "intensity from the start and intensity at the end".

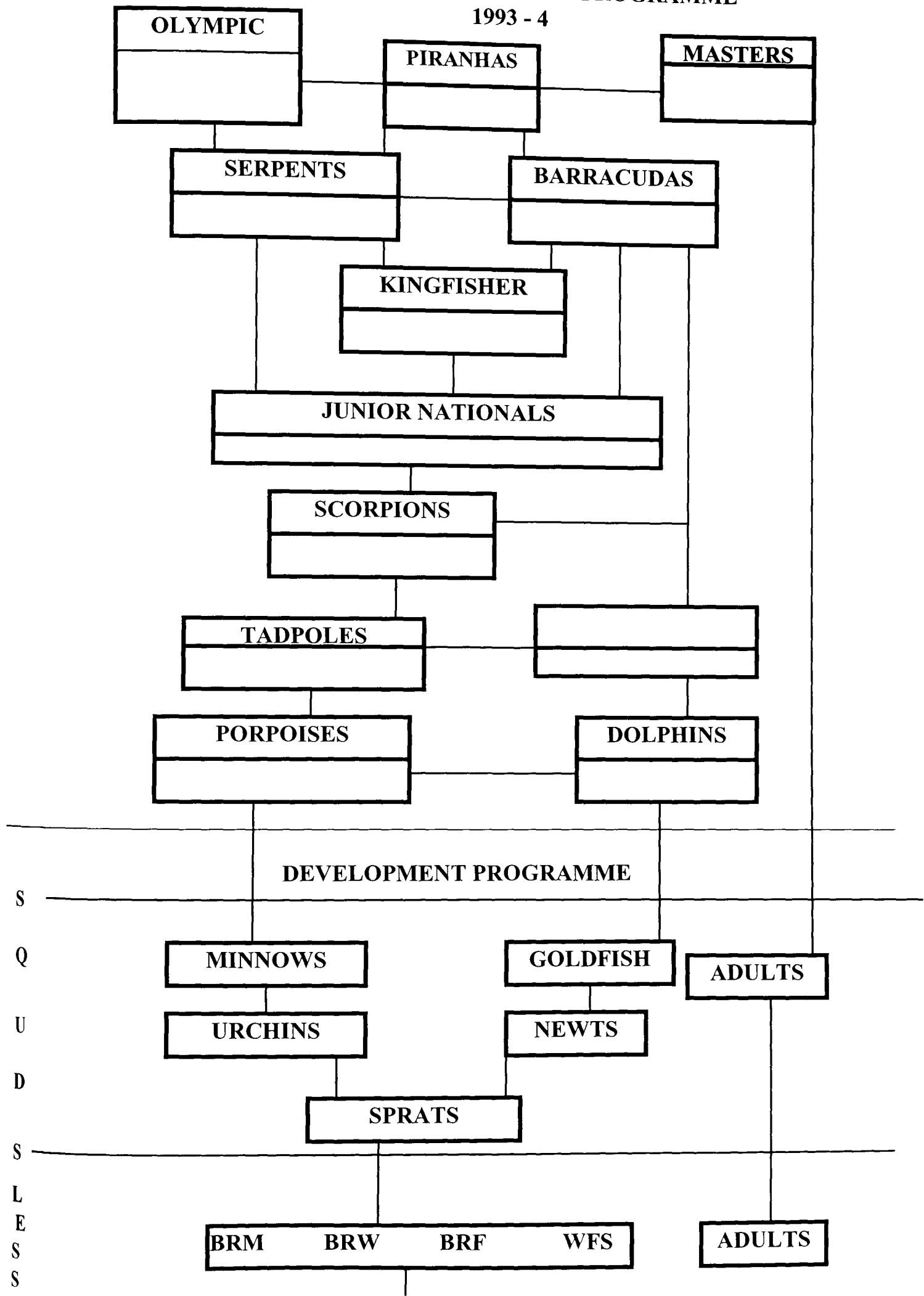
If you need to talk to me in the next 10-14 days I'll be staying at the address below. I wish my German (nil), Italian (some) or French (little more) was better and I could do much more sport psychology here - there is a strong interest in the area and, it seems, quite a balanced view of its potential benefits.

Regards

Mark Nesti



**J.17. CLUB SWIMMING PROGRAMME  
1993 - 4**



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