DOCTOR OF PHILOSOPHY

An investigation into the psychological responses of injured athletes.

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Award date:
1998

Awarding institution:
Bangor University

An Investigation into the Psychological Responses of Injured Athletes

by

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Thesis submitted to the University of Wales in fulfilment of the requirements for the degree of Doctor of Philosophy at the School of Sport, Health and Physical Education Sciences, University of Wales, Bangor.

December, 1998

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ACKNOWLEDGEMENTS

A number of people have made a significant contribution to my PhD studies, and ultimately to the completion of this thesis.

First and foremost to Lew. Well I wanted the best, and I have no doubt I got it. My thanks for your commitment, patience, and expert supervision.

To Richard, my sincere thanks for your friendship and support throughout the period of "our" studies. To Scott, my thanks for your support, and advice "on the bits without numbers".

Much of the research contained within this thesis would not have been possible without the unrequited help of Steve Cannon (and the staff) at the DTR Clinic and Nicola Phillips (and staff) of the sports medicine department at the BUPA hospital, Cardiff. To them a most sincere thank-you. My thanks also to the participants who so willingly gave of their time to take part in the various studies.

To my parents, thanks for always being there.

To a large number of friends who provided a support mechanism second to none, thanks for the frequent calls.

SUMMARY

This thesis examined the psychological responses of injured athletes as a basis for designing theoretically meaningful intervention strategies to expedite recovery from sports injuries. The thesis is written as a series of research papers (studies). The methodological approaches adopted ranged from quasi-experimental to qualitative research in a naturalistic rehabilitation setting. The first study reported the development of a theoretically derived psychometric measure to assess athletes psychological responses to injury, initially using exploratory factor analysis and subsequently, confirmatory factor analysis. The Psychological Responses to Sport Injury Inventory (PRSII) comprised five sub scales (Devastation, Dispirited, Attempts to Rationalise, Isolation and Reorganisation). In its final form the PRSII contained 20 items. The PRSII was found to possess adequate psychometric integrity. The second study examined the effects of a goal-setting intervention on injured athletes rehabilitation adherence, perceptions of self and treatment efficacy and the psychological response variables assessed by the PRSII. The study provided support for the effects of goal-setting upon athlete adherence, self-efficacy, treatment efficacy, and reorganisation. However, the hypothesised effects for dispirited and isolation were not found. As a result, a qualitative follow-up study was conducted to more closely examine the effects of the goal-setting intervention. The qualitative follow-up study proposed a number of possible mechanisms for the effects of the goal-setting intervention. These included the effects of goal-setting on self-efficacy, attributions, perceptions of control, and attention. The final, collaborative action research study employed a multi-modal intervention with three athletes rehabilitating from injury. The efficacy of social support, goal-setting, imagery, simulation training and verbal persuasion emerged from the study. The study highlighted the importance of outcome expectancy and goal flexibility. In relation to the re-entry phase of rehabilitation, confidence in the injured body part, and the ability to meet game demands emerged as important to participants successful return to competition.

Chapter 1

Introduction

A conservative estimate of sports related injuries in the UK suggests that 29 million such injuries occur each year (Sperryn, 1994). Recent evidence shows that sport/exercise related injuries account for one third of all injuries experienced (Uitenbroek, 1996). In light of this, it is hardly surprising that in recent years the psychology of injury has stimulated much research interest. Although predictors of injury occurrence appear to be the forerunner of research into the psychology of injury, a number of other areas have subsequently emerged and received focused research attention. Areas of research interest now include the psychological and emotional responses of injured athletes, adherence to rehabilitation programmes, and most recently the use of intervention strategies to promote adherence, psychological adjustment, and recovery from injury.

Researchers in to the psychology of injury face the same challenge as researchers in other emerging and established domains of enquiry; to establish a sound theoretical underpinning to their research focus. Indeed, the importance of theory development and theory testing has been widely acknowledged within applied sport psychology research (Brawley, 1993, Hardy, Jones, & Gould, 1996; Singer, Murphey, & Tennant, 1993), and to a lesser degree within psychological response to injury research. (Brewer, 1994; Evans & Hardy, 1995). Hardy, Jones, and Gould (1996) illustrated the importance of theory in applied sport psychology in their classification of characteristics of good research. They did this in the context of the performance enhancement literature, and studies which they considered had had a major impact on the field. Hardy et al. identified three characteristics: (a) *asking important questions* - significant studies ask high impact questions from a theoretical / practical perspective; (b) *systematic lines of research* - learning is enhanced more by systematic lines of research answering important questions, than by isolated studies; and (c) *theoretically based research* - significant studies "strive to go beyond specific

findings and data patterns to develop explanations that help us better understand ..." (p. 274).

Within the context of intervention research, Brawley (1993) also identified a number of characteristics of (what he termed) good theories. According to Brawley, good theories: (a) focus on processes susceptible to social change; (b) adequately describe the relationship between key sets of variables so that they can be targets of change; (c) have an associated set of assessments of the theoretical variables in (b) so that change can accurately be measured; (d) have a substantive research base that indicates the theory is valid; (e) offer concepts that can be translated into operational manipulations thought to effect cognitive and/or behavioural change; and (f) as a consequence of having the above characteristics, have a basis for detecting why (i.e., conceptual, measurement, manipulation level) an intervention failed to produce change. Brawley concluded, however, that "for all the practicality offered by good theories, there continues to be an apparent resistance to adopting theory to practice (and the reciprocal) despite the continued encouragement of various well known psychologists." (p. 100).

One of the most substantive issues faced by early research into the psychological responses of injured athletes, and one which remains to be satisfactorily addressed, involved the theoretical development and testing of models of injury response. The models of response proposed within the injury literature included the grief response model and a stress based cognitive appraisal model. The grief model examined in the context of the early injury research was derived from Kübler-Ross' (1969) work with dying patients. The stress based cognitive appraisal model was derived from a pre-injury model of predictors of injury occurrence proposed by Anderson and Williams (1988). Fundamental to the assessment of models of psychological response are issues of measurement. Indeed issues of measurement are integral to almost all psychological injury response research. Critical in this is the transience, or process of change, implicit within models of psychological response, and the validity of the measures of the variables predicted to characterise athletes psychological responses to injury. To date, neither of these issues has been adequately addressed by the empirical research.

Another key feature of the assessment of models of injury response is the potential effect of a number of moderating and mediating variables upon response

characteristics. Specifically, empirical injury research is faced with accounting for the effects of moderating variables such as injury severity, level of participation, and social support, and mediating variables such as self-confidence. Such issues have important implications not only for athletes psychological and emotional responses to injury, but also for adherence to programmes of rehabilitation, and subsequently, the use of specific intervention strategies to expedite successful return to sport. As Smith (1996) has recently suggested, psychological response to injury research is at present subject to an array of methodological criticism as researchers attempt to address issues of validity and reliability in an area of research which is still acknowledged to be in its infancy. Indeed, a number of researchers have advocated the use of specific intervention strategies with injured athletes, in the absence of any empirical support (Gould, Udry, Bridges, & Beck, 1997c).

Purpose of the Research Project

The purpose of the current research project was to examine the psychological responses of injured athletes as the basis for designing theoretically derived intervention strategies to expedite a successful return to competitive sport. Specifically, this research project examined: (a) the theoretical basis of grief models of response applied to injury; (b) the psychological responses of injured athletes; and (c) the effects of goal-setting and multi-modal intervention strategies on athletes' psychological responses, levels of adherence, and return to competitive sport.

Structure of the Thesis

This thesis is written as a collection of research papers. Chapter 2 of the thesis comprises a review of literature, the four ensuing chapters incorporate a review or synopsis of the literature relevant to each study. The final chapter provides a general summary. Thus, the structure of the thesis is as follows:

Chapter 2 provides a review of the clinical grief and injury literature, and forms the basis for examining the application of models of psychological response to injury.

Chapter 3 (Study 1) reports two separate studies involving the initial development and subsequent assessment of a population specific measure of athletes' psychological responses to injury (Psychological Responses to Sport Injury Inventory; PRSII).

Chapter 4 (Study 2) reports an examination of the effects of a goal-setting intervention on athletes' rehabilitation adherence, perceptions of self and treatment efficacy, and the psychological response variables assessed by the PRSII.

Chapter 5 (Study 3) reports a qualitative follow-up study to the goal-setting intervention study (Study 2). The purpose of this study was to more fully explore the effects of the intervention, as well as enhance the meaningfulness and interpretability of the results.

Chapter 6 (Study 4) reports a longitudinal multi-modal intervention with injured athletes, embracing the period of re-entry into sport.

Chapter 7 provides a synopsis of the research project as a whole. It discusses the major conceptual issues addressed, explores the practical implications, identifies the project's strengths and limitations, and directions for future research.

Chapter 2

Sport Injury and Grief Responses: A Review [1]

Introduction

There is increasing awareness within the sport-related literature of the importance of psychological factors in the rehabilitation of injured athletes. This awareness and subsequent investigations have led to the proposed application of grief response models to injury. However, limited attention has been paid to the clinical psychology literature on grief. The purpose of this review is to redress this oversight by examining the most relevant literature on the psychological responses of injured athletes in light of the philosophical and empirical research into loss and grief in the clinical literature. Although it is not the intention to assess in detail the ability of different models (e.g., stress and coping models) to account for the psychological responses to injury, the review will explore some of the tenets of grief response models in the context of stress, coping and appraisal models of injury response.

Grief Conceptualised

Although grief has been a topic of focused enquiry throughout the twentieth century, it is still poorly understood. Indeed an operational definition of grief which grows out of, or contributes to, the methods and procedures of investigation has yet to be clearly stated, and despite some early attempts to define grief, contemporary research shows little evolution of the concept (Rodgers & Cowles, 1991). As a consequence, much of the clinical literature has been descriptive and non-analytic in

[1] This review is an amalgam of two publications: (1) Evans, L. & Hardy, L. (1995). Sport injury and grief responses: A review. Journal of Sport & Exercise Psychology, 17, 227-245.
(2) Evans, L. & Hardy, L. (in press). Psychological and emotional response to injury: Theoretical and conceptual issues in measurement. In D. Pargman (Ed.), Psychological bases of sport injuries (2nd ed.). Morgantown, WV: Fitness Information Technology.

nature with many researchers attempting to define grief in terms of its emotional, physical and psychological manifestations (Oltjenbruns, 1991). This descriptive approach has, perhaps as a direct consequence, been perpetuated in the injury literature.

According to Rodgers and Cowles (1991) the concept of grief is preceded

> by any situation in which there is a perceived loss, such as separation from any object of attachment whether it be a person, pet, or physical object of significance to the individual or change in the satisfaction of an abstract personal need (pp. 449-450).

Although the literature is far from replete with definitions, Simos (1977) suggested that grief can be defined as an "an intense emotional suffering set off by a loss" (p.337). Lindemann (1944) suggested that grief is a normal reaction to a distressing situation, while Karl (1987) defined grief as "both an experience of loss and the process of recovering from that loss" (p. 641). In the context of injury to view grief as a process in response to, and recovery from, loss implies that the injured performer can take some action to influence the grief process. Similarly, to consider grief as a normal reaction to a distressing situation is more consistent with the context of injury, than to consider it as dysfunctional or pathological as in psychoanalytic theory. Indeed, grief in this context may be viewed as an emotional response to a perceived loss, which may be best seen as a process characterised by behavioural and psychological manifestations.

In an effort to conceptualise grief, researchers have proposed a number of theories, the origins and boundaries of which vary considerably in terms of clarity and definition. One such theoretical approach (and arguably of the most relevance in the context of injury) is provided by attachment theory. Bowlby (1961, 1978), the major proponent of attachment theory, viewed grief as an adaptational response to the loss of an attachment object. According to attachment theory grief is considered to apply "to the condition of a person who is experiencing distress at loss and experiencing it in a more or less overt way" (Bowlby, 1991, p. 18). Attachment theory stresses that a person can be expected to operate effectively only within his or her environment of adaptedness. Bowlby's attachment theory offers a means of conceptualising the tendency in humans to make strong affectional bonds with others, and helps explain the emotional reaction which occurs when these bonds are threatened or broken. Situations which threaten the maintenance of affectional bonds

to attachment objects give rise to intense emotional reactions; especially when the potential for loss is considered to be great. Although Bowlby's initial research, and much of the basis for attachment theory, involved the reactions of children to temporary or permanent separation from parents, attachment theory has equal relevance to behaviours exhibited by one adult towards another, especially in times of ill health, stress, chronic illness, disability, and injury (Bowlby, 1991; Werner-Bland, 1980). In order to understand the meaning of grief in response to injury within the framework of attachment theory it is important to consider the 'self' as an attachment object. Although Bowlby does not clearly deal with this issue, there is support for the conceptualisation and application of attachment behaviours when dealing with loss of self and loss of identity through injury and disability (Werner-Bland, 1980; Worden, 1991). Similarly, although grieving behaviours are considered to be to a greater or lesser extent maladaptive in response to bereavement, this is because such behaviours are considered to be without function. Within the context of injury this is rarely the case, and the desire to maintain proximity to the attachment object may be considered adaptive.

Attachment theory offers a very broad framework for understanding loss through injury, despite lacking explicitness to fully conceptualise all the necessary processes. Injury, certainly threatens important attachments in terms of bodily function, self-image, self-esteem, the context of important relationships, and the basis for many forms of reinforcement and self-gratification (Peretz, 1970).

Clinical Inquiry into Loss and Grief

Although the clinical literature generally emphasises loss through the bereavement of a significant other, grief may be occasioned by the loss of any significant object; the significance of which is determined by the individual's own value system. Loss is a state of deprivation, or being without something one has had. Indeed, loss is simultaneously a real event and a symbolic event; symbolic in that it carries with it the threat and representation of future loss (Peretz, 1970). Such real or potential loss may include loss of health, loss of skills, loss of job, loss of role, and real or anticipated loss of respect from others. Quite simply, the more we have invested emotionally in the lost object, or aspect of ourself, the more threatened we are likely

to feel in anticipation of that loss, and respond to it with grief. For example, role loss from injury may entail a loss of self-esteem or deprive the injured person of meaning and rationale for their actions (Averill, 1968; Karl, 1987; Peretz, 1970).

Grief, therefore, occurs as a result of the loss of anything that a person has come to consider a part of their natural environment, and therefore a source of psychological gratification (Engel, 1964). There is no single human response to loss, rather there is a substantial range of responses, each of which is supported by a cultural context that defines those responses as expressions of loss (Rosenblatt, 1988). Unfortunately, society does not allow individuals and contexts the same rights to grief; for example, the injured person may not be afforded the same emotional rights as a person who has been bereaved. According to Brasted and Callahan (1984), much grief behaviour can be better understood if one considers that normal schedules of reinforcement have been seriously disrupted by the loss; this may be as significant for the injured performer as for individuals who experience very different types of loss.

In an analysis of loss in medical settings, Peretz (1970) identified four different types of loss: (a) the loss of a significant loved or valued person; in an injury context this may be invoked by isolation and loss of contact with valued team members and coaches; (b) the loss of some aspect of the self, defined as the mental representation or image we may have of ourselves bodily and as a person. Loss of health or injury is considered to be experienced as a change in some aspect of the self, which may intensify the feelings of loss experienced through injury, for example, loss of self-esteem; (c) the loss of external objects or possessions such as, money, treasures, home or homeland may be of particular importance to high level performers; and (d) "developmental loss, or that loss which occurs in the process of human growth and development" (p. 5); developmental loss is a feature of many high intensity sports, for example, male gymnasts frequently lose range of movement as they grow older, whilst female gymnasts may lose their strength to weight ratio post-puberty. While athletes may experience the first and last of these types of loss, Astle (1986) has argued the second and third types are probably of most significance to athletic populations.

Although loss is a necessary precursor for grief, not every loss results in grief. Losses which are experienced as mild, benign parts of development, and from which

the person is protected by sufficient external supports, can become integrated into the personality without the pain of grief. The experience then becomes part of the adaptive behaviour of the individual (Simos, 1977). Grief, as a reaction to loss and as a process of recovery, is a function of the peculiar history and present circumstances of each individual, as well as cultural and biological determinants (Averill, 1968).

The Grief Process

Despite much ambiguity, the concept and process of grief pervades many subject populations who have experienced a significant loss. Unfortunately, little, if any differentiation has been suggested in the conceptualisation of the process of grief as a function of subject populations. From the available literature many of the characteristics and processes of grief would appear to be similar for the bereaved (Averill, 1968; Engel, 1964; Parkes, 1991; Worden, 1991), dying (Kübler-Ross, 1969), the child separated temporarily or permanently from its mother (Bowlby, 1991), the chronically ill and disabled (Werner-Bland, 1980), people experiencing job loss (Archer & Rhodes, 1993), and the injured athlete (Gordon & Lindgren, 1990; Pederson, 1986; Rotella & Heyman, 1986).

In one of the earliest empirical studies of grief, Lindemann (1944) described grief simply as a normal reaction to a distressing situation. Following observations and interviews with 101 patients, Lindemann identified five typical responses in the normal process of grief:

1. Somatic distress, for example, deep sighing, lack of strength, loss of appetite, and intermittent loss of breath.
2. Guilt, for example, verbal statements indicating a sense of self-blame for the death.
3. Anger, for example, directed toward others for mentioning cues associated with the death.
4. Pre-occupation with the image of the deceased, for example, survivors frequently thought they had seen or heard the deceased.
5. Agitated, non-goal directed behaviour.

Although Lindemann's analysis and description of grief was based upon clinical observations derived from: (a) psychoneurotic patients who lost a relative during the

course of treatment; (b) relatives of patients who died in hospital; (c) bereaved disaster victims of the Cocoanut Grove Fire, and their close relatives; and (d) relatives of members of the armed forces, subsequent research has generally supported his observations (Bowlby, 1961; Parkes, 1985).

Since Lindemann's early research into grief, clinical researchers appear to have invested much time and effort in trying to understand the pervasive process of grief. The result of much of this time and effort has been an exhaustive and ongoing debate as to the features of the grief process, and the structure of the manifestations, their sequence and duration (Bugen, 1977; Ramsay & Happee, 1977; Rodgers & Cowles, 1991). Approaches to grief have included those of stage (Averill, 1968; Engel, 1961; Parkes, 1991), component (Bugen, 1977; Ramsay & Happee, 1977), phase (Bowlby, 1991; Karl, 1987), and task (Worden, 1991) theorists. Key features of these approaches are in essence the foundation upon which a number of sport psychologists have rejected the utility of grief models.

A stage approach to grief has been utilised by a number of theorists (Averill, 1968; Engel, 1961; Kübler-Ross, 1969) who have justified its use by suggesting that certain features are sufficiently uniform to permit a judgement that healing is taking place. Stage theorists have suggested that between three and six stages most adequately account for the grief response. For the purposes of this review, Averill's (1968) stage approach to grief justifies some consideration.

Averill (1968) viewed grief as comprising a stereotyped set of psychological and physiological reactions of biological origin. The adaptive function of grief he hypothesised was to ensure group cohesiveness in a species where a social form of existence is necessary for survival. Although Averill's conceptualisation of grief was contextualised to bereavement behaviours he acquiesced to the view that other types of loss, including role loss, may give rise to grief, particularly when such role loss entails a loss of self esteem, or deprives a person of the meaning and rationale for their actions (a view that a number of theorists support). In this sense grief is a time of intense mental anguish, and of reduced psychological resistance to stress.

Averill proposed three stages to the grief process. The first of these, shock and disbelief, is accompanied by physiological changes similar to those observed in other periods of acute stress. In light of some of the more recent injury literature which has proposed the application of stress based models to account for the

psychological responses of injured performers, this point justifies further clarification. While Averill proposed that this first stage comprised an amalgam of generalised stress reactions as the person attempts to recover the lost object, he contested that it would be an error to view it as analogous to anxiety. Indeed, in his discourse on the relationship between anxiety and grief, he suggested that grief and anxiety were closely linked both empirically and conceptually. Empirically, a significant loss is usually a realistic occasion for anxiety as well as for grief and anger, while conceptually anxiety is often used to refer to the affective state which accompanies a loss which is believed to be temporary ("when the loss is believed to be permanent and hope is absent we speak of grief and despair" (Averill, 1968, p. 738). This, according to Averill, should not be taken to mean the difference between anxiety and grief is simply a future expectation of hope. Indeed if one subscribes to the view of a number of other writers, part of the significance of any loss even if temporary, is the threat of, or potential for, permanent loss (Peretz, 1970; Werner-Bland, 1980). As a result, certain types of temporary loss are enshrouded in a similar complex pattern of emotions to some types of permanent loss. Despite undergoing separate evolutionary development, Averill proposed that separation anxiety does share similar, and even overlapping, physiological mechanisms with grief (although he does not go into detail on these).

In the second stage despondency and depression are characterised by an awareness of the loss, an inability to concentrate, apathy, withdrawal, despair, and in some instances hostility, anger, anxiety, and guilt. Extinction of long-established and highly motivated behaviour underlies many of the symptoms of this second stage (Averill, 1968). Recovery is achieved during the third stage when these symptoms become less prevalent and new object relations are established. Averill summarised the major features of grief as follows:

1. A complex but stereotyped response pattern which includes such psychological and physiological symptoms as withdrawal, fatigue, sleep disturbances, and loss of appetite.
2. Elicited by a rather well defined stimulus situation, namely, the real or imagined loss of a significant object (or role); and resolved when new object relations are established.

3. A ubiquitous phenomenon among human beings, it appears in other social species especially in primates.
4. An extremely stressful emotion, both psychologically and physiologically, and yet behaviour during grief is often antithetical to the establishment of new relations, and hence the alleviation of stress (p. 744).

Critics of the stage approach, such as Bugen (1977), have suggested that the variability among individuals' grief responses severely diminishes the utility of stage theories; the stages are not successive, may not be discernible, behaviours associated with certain stages may not occur at all for a given individual, and although there is a sequential character to the grief process, there may be so much regression to earlier stages that it is better to use the term components and qualify it by saying that some components predominate earlier in the process, and others later. For these reasons a number of researchers have suggested components more closely reflect a breakdown of the response patterns experienced (Bugen, 1977; Ramsay & Happee, 1977). These episodic components comprise features such as: (a) preoccupation, pining and searching; (b) anger and guilt; (c) feelings of internal loss of self; (d) identification phenomena; and (e) mitigating defenses. General background components comprise: (a) emotional stress response; (b) inhibition of other activities; and (c) feelings of dejection and despair (Archer & Rhodes, 1993).

Others have subscribed to a phase approach to grief, with a conception of grief that acknowledges grief as a dynamic, pervasive experience, with the mourner more actively involved in the process (Bowlby, 1991; Karl, 1987). Based on the bereaved, Karl (1987) proposed a three phase approach to grief, with phases of shock, coping, and adaptation. The first phase, characterised by feelings of disbelief and hope, is followed by a phase during which the person attempts to gain some equilibrium. Symptoms of stress during this second phase include hyperactivity, insomnia, and fatigue. Karl suggested the person is influenced by two major forces in this coping phase: (a) the person attempts to repress the reality and avoid the new painful reality, and (b) the person attempts a problem-solving approach to reality, in an attempt to deal with the new reality and gain wellness. The second of these may have particular relevance to injury with the injured performer actively pursuing the rehabilitation process. The final phase of adaptation is when resolution occurs. Unfortunately the phase approach is not clearly conceptualised, or distinguished

from the stage approach, apart from the suggested broader conception of the grief process which allows for regression between phases. The distinction between the component and phase approach appears to be one of semantics.

The only approach to grief which appears to have received little if any criticism in the clinical literature is that of the task approach. Worden (1991), the main proponent of the task approach, differentiated the tasks he proposed primarily on the passivity which he feels is implicit within the stage, phase, and component theories. Worden proposed four tasks to the grief process.

An assessment of the relative contribution of these approaches to our understanding of the concept of grief is thwarted in part by the semantics of the debate, the inconsistent conceptualisation of the approaches, and misrepresentation of the theories. In essence the debate seems to be centred around a number of specific features: (a) the extent to which the theories are overly prescriptive in nature; (b) the extent to which they are sequential, allow for regression and oscillation; and, (c) the number and nature of the "phases". While some of the classical theorists, such as Engel (1961), clearly subscribe to an overtly regimented approach to the stages of grief, other stage theorists such as Averill clearly do not subscribe to such a view. Indeed, apart from conceptualising grief as more individualised and variable than the classical literature, contemporary research shows little evolution of the concept. Attempts to conceptualise grief to types of loss other than that of bereavement (including temporary loss) are thwarted by a dearth of empirical investigations testing classical and contemporary theory. In general, contemporary theorists have spent more time and effort criticising and inconsistently conceptualising classical approaches to grief (in particular stage approaches) than in proposing models of grief that can be empirically tested and verified. Such inconsistent conceptualisation is perhaps best illustrated in relation to the frequently cited work of Kübler-Ross (1969), particularly in the sport psychology literature.

Kübler-Ross' (1969) five stage model of the grief process which resulted from over 200 interviews with dying patients, is the one upon which sport psychologists appear, almost without exception, to have based their comparisons with, and assessments of, the contribution of grief responses to injuries in sport (despite being based upon the least applicable subject population). Criticisms of this model as a means of explaining psychological responses to injury have been focused on the

narrowness of the description of each stage, the failure of the model to account for oscillation between stages, and the need for stages to be experienced in a sequential manner by every individual experiencing grief (Brewer, 1994; Smith, Scott, O'Fallon, & Young, 1990a). In reality, Kübler-Ross did not subscribe to the issues for which she has been criticised;

> These stages provide a useful guide to understanding the different phases that dying patients may go through. They are not absolute; not everyone goes through every stage, in this exact sequence, at some predictable pace. But this paradigm can, if used in a flexible, insight-producing way, be a valuable tool in understanding why a patient may be behaving as he does (Kübler-Ross, 1975, p. 10).

Despite some conceptual ambiguity, both Averill's (1968) stage approach and Karl's (1987) phase approach provide a means of not only contextualising loss through injury but also of providing some insight into findings within the sport psychology literature. Indeed, the nature and number of phases / stages reported in the injury literature has been as variable as in the clinical literature with McDonald and Hardy (1990) proposing a two stage approach, Pederson (1986) a three phase approach, Gordon and Lindgren (1990) a four stage approach, and Rotella (1985) and Uemukai (1993) a five stage approach. Similarly, the presence of emotional and behavioural responses in some studies, and their absence in others (including those of stress and coping behaviours) may well be accounted for by the models presented here. Perhaps in light of the present discourse the inconsistent approaches and findings of researchers investigating grief responses in injury is not surprising. Further empirical investigation is needed to more accurately assess the contribution of grief models.

Determinants of the Grief Response

A number of grief researchers have attempted to identify 'determinants' of the grief experience. Engel (1964) proposed that many factors may influence and determine the eventual outcome of grief, these included the importance of the lost object as a source of support, and the extent of ambivalent feelings toward the lost object. These conflicting emotions may include anger, hostility and guilt which, if they persist, may interfere with the successful process of grieving. Engel suggested that the age, both of

the lost object and of the mourner, are also influential factors; an adult may have a greater capacity for resolving a loss than a child. The number and nature of other relationships may prescribe that a person with few meaningful relationships has greater difficulty in detaching from the dependence on the lost object, while the number and nature of previous grief experiences may also determine the success of the outcome. Engel proposed that "losses tend to be cumulative in their effects" (p. 96). The physical and psychological health of the person at the time of the loss may be critical in determining their capacity for dealing with the loss at the time of its occurrence.

Some of the factors reported by Engel were supported in a later study of bereavement by Parkes (1975). Parkes interviewed 68 widows and widowers shortly after bereavement and again a year later. Parkes considered good outcome to "follow reactions in which, between the sixth and eighth weeks, there is a lessening of symptoms of crying, anxiety and protest, recognition of feelings of anger, free expression of feelings to others and ability to use others for support and assistance" (p. 305). Poor outcome was characterised by pronounced ascriptions of self-blame, excessive concerns for others who were grieving, in lieu of grieving themselves, near panic resulting from reminders of death, misplaced over-activity, and the sudden appearance of psychosomatic symtomatology. Predictors of outcome were assessed via correlations between assessments of psychological state obtained 3-6 weeks and 13-14 months after bereavement. Parkes reported a number of pertinent findings:

1. In general three classes of inter-correlated predictors emerged - low economic status, lack of preparation for loss, and other life crises preceding bereavement.
2. Six variables were identified which taken together gave good prediction of outcome; these included yearning (3-4 weeks after bereavement), attitude to own death, duration of illness of the dead person, social class, anger, and self-reproach (3-4 weeks after loss).
3. Insecure relationships characterised by either clinging or ambivalence seemed to play a part in determining poor outcome.

Although Parkes suggested that methodological limitations made generalization unwise, his study does provide some interesting empirical evidence in an area of investigation that has been somewhat neglected.

In an effort to predict the factors enhancing and impeding readjustment following a traumatic loss Ben-Sira (1983) proposed a framework of readjustment based on survey results with permanently physically disabled Israeli war veterans (n = 545), war widows (n = 323), and bereaved parents (n = 293) collected over a 6 month period. The findings reported in relation to the structure of readjustment (which he suggested applied equally to all three types of loss) included:

1. Readjustment was predicted by successful coping, defined as a successful outcome following the employment of personal and primary group resources.
2. Coping capacity (measured by the respondent's satisfaction in various areas of life) rather than the severity of the event predicted readjustment.
3. How a person coped with demands as time passed determined readjustment (lapse of time did not directly predict successful outcome).
4. *Reliance* on the resources of a professional agency implied dependence which counteracted readjustment, but *resource enhancing assistance* predicted success and independence.

In applying Ben-Sira's findings, two limitations should be noted: (a) the loss was of a permanent and irrevocable nature, and (b) the time since loss was not identified in the study, which may account for the focus on readjustment (long-term) and the exclusion of any mention of grief (initial) response.

Based on findings in the Harvard Bereavement Study (Parkes, 1975), together with personal observations and experiences, Worden (1991) has also attempted to identify the determinants of the grief experience. He suggested that these include: (a) personality variables (for example, age, sex, emotional stability, and ability to cope with stressful situations); (b) the relationship with the lost person/object; (c) nature of attachment (for example, the strength of the attachment, the security the attachment offered and ambivalence in the relationship); (d) the nature of the death (for example, the suddenness with which it occurred); (e) historical antecedents (including previous experiences with loss, grief and stressful situations); and (f) social variables (including religious and cultural differences in rituals such as mourning).

Although a number of factors have been consistently identified across studies as determinants of outcome from grief experiences, there are also significant variations, in particular as identified by Ben-Sira (1983). This may be a consequence

of methodological differences, population group characteristics, differences in the nature of the loss, cultural differences, or individual differences in the experiencing of grief. Despite very limited research into the determinants of outcome from injury, some parallels can be drawn between the clinical psychology literature and investigations into the emotional responses of athletes to injury (Smith et al., 1990a; Smith et al., 1993). In the earlier of these investigations, Smith and associates considered the influence of sex, age, and severity of injury on the emotional responses to injury of 72 athletes. The results showed no significant differences as a function of sex or age, although differences in anger did approach significance, with younger athletes expressing more anger than their older counterparts (a similar finding to that of Engel, 1964). Not surprisingly, the severity of injury (duration of time unable to participate) was a significant determinant of emotional response, with more severely injured performers experiencing far greater post-injury mood disturbance in tension, depression and confusion. In the more recent prospective study, Smith et al. (1993) assessed pre-injury and post-injury differences in mood states and self-esteem across 38 competitive athletes; the influence of severity of injury, gender, level of participation, and type of sport was also measured. The results showed significant post-injury differences for depression, anger (increases), and vigor (decrease). The only significant predictor of post-injury depression was the severity of injury, and of the physical and psychosocial variables considered, only level of participation and type of sport were predictors of injury. These results were consistent with the findings reported. A number of the aforementioned variables have also been examined in the context of situational and personal variables proposed to moderate and mediate coping in cognitive appraisal models of injury. These variables will be examined later in this review within the context of cognitive appraisal models of injury response.

Grief Models of the Emotional Responses to Injury

Because the concept of grief has its origins in death, its application to other fields of investigation has been somewhat thwarted. Indeed, as Wiese-Bjornstal and Smith (1993) have suggested, the clinical utility of using 'loss of health' models for understanding athletes' reactions to injury has yet to be established; their reticence to

accept the application of such models was based upon the subject populations from which the models originated. Brewer (1994) dismissed the application of grief models on the grounds that they lack empirical support, and suggested that cognitive appraisal models provide a more viable conceptualisation of the process of coping with injury. While recognising the need for more research into the application of grief (or "loss of health") models to injury, Henderson and Carroll (1993) suggested that such models are very helpful in explaining athlete responses to injury. Indeed over the last decade, sport psychologists have begun to address the psychological rehabilitation of athletes from injury; and many have proposed that grief response models have much to offer the study of the rehabilitation process (Gordon & Lindgren, 1990; Hardy, Richman, & Rosenfeld, 1991; Pederson, 1986; Rotella & Heyman, 1986; Weiss & Troxel, 1986). Nevertheless there is limited, if any, empirical evidence to resolve the issue of the number and nature of "phases" needed to adequately characterise grief responses.

One of the earliest models of grief responses in injury was proposed by Pederson (1986) who, as a result of a limited review of the clinical and injury literature, proposed a three phase grief response model. The model prescribed an initial phase of shock and denial, followed by phases of preoccupation, and reorganisation. Within this three phase model, Pederson advanced similar response patterns and manifestations to Kübler-Ross' earlier observations of the terminally ill.

In an holistic account of psychological rehabilitation from injury, Weiss and Troxel (1986) reported observing responses similar to those outlined by Pederson (1986). The model they proposed incorporated a four step process: (a) the stressor (being injured), (b) cognitive appraisal of the situation or potential stressor (the injury) and one's personal resources, (c) the emotional response, and (d) the consequences of stress. The emotional responses that they observed in athletes included irrational thoughts, emotions such as disbelief, fear, rage and depression, and somatic complaints including insomnia, muscle tension, loss of appetite, and fatigue. Additionally, athletes reported doing things that adversely affected their rehabilitation programme. These observations are in part consistent with the grief models proposed by Averill (1968) and Karl (1987) and may suggest that it is inappropriate to view the responses of injured athletes as being mutually exclusive to either a stress based, or grief based model. Indeed, the responses may be an amalgam

of both, or an adaptive model of grief which accounts for the manifestation of stress and coping responses (similar to one of the aforementioned models).

In their descriptive single case study report of the process of rehabilitation in an elite cricket fast bowler, Gordon and Lindgren (1990) suggested that three factors emerged which appeared to have direct relevance to the sport psychology literature on injury response, injury rehabilitation, and return to competition:

1. "The recovery and subsequent return to full activity of this athlete was attributable to a combination of effective responses to both the physical and psychological demands of the incapacity" (p. 75). This was acknowledged by both the athlete and the medical team and appeared to play an equally important role to the physical programme.
2. The importance of a positive attitude was retrospectively acknowledged by both the athlete and the physiotherapists. Gordon and Lindgren maintained that the subject's attitude change over the rehabilitation period appeared consistent with the stages of the grief response. Specifically, the stages of the athlete's response to injury were said to resemble denial followed by anger, depression, and finally acceptance.
3. The use of rational thought processes by the athlete to produce effective behavioural responses, Gordon and Lindgren proposed supported the use of cognitive-behavioural approaches to stress management during injury.

Gordon and Lindgren's findings were based on data collected from interviews and retrospective accounts of the subject's rehabilitation from this and a previous injury which had occurred six years earlier and necessitated a complete two year lay-off. Interviews were also conducted with the two sports physiotherapists involved in the subject's rehabilitation. Although the study has much appeal in providing an insight into the rehabilitation of an elite performer from a serious and recurring injury, it is not without its limitations. These include the possible inaccuracy of recall, the interpretation, application, and conclusions drawn from the transcribed interviews (which in part appear tenuous), and contamination of the subject's response set through prior psychological counselling. Despite these limitations the findings reported are commensurate with the grief models presented, and the importance of coping mechanisms in the early response stages.

Gordon, Milios, and Grove (1991, 1992) in a study of psychological adjustment to sport injuries, examined the practical implications for physiotherapists and trainers of psychological aspects of the recovery process. Data were reported from a two part investigation which involved interviews with 14 experienced sport physiotherapists and responses to an inventory mailed to 190 physiotherapists (66 responses received). Symptoms which physiotherapists reported observing during treatment included denial and bargaining. Less frequent were symptoms of depression and anger, although all were rated greater than moderately, and interpreted as indicating a poor response to injury. Physiotherapists reported several factors which they thought heightened athletes emotional reactions to their injuries: (a) severity of injury, (b) timing of the injury, (c) intensity and importance of sport involvement, and (d) non-specific personality variables. These findings are comparable to some of the findings reported earlier from the clinical and psychology literature (Engel, 1964; Parkes, 1975; Worden, 1991). Gordon et al. (1992) advocated the need for further research on the stages of the grief response to establish whether they are sequential or recurring. If certain stages or phases could be recognised, appropriate interventions could be derived based upon them (Gordon et al., 1992; Hardy, 1992; Smith, Scott, & Wiese, 1990b).

McDonald and Hardy (1990) explored the affective, cognitive, and behavioural responses of five injured athletes across a four week period. Emotional responses during the rehabilitation period showed a progression from a negative to a more positive state with regard to anger, depression, fatigue, confusion, tension, and vigour. McDonald and Hardy suggested a resemblance to the stage-like grief process proposed by Kübler-Ross, but only involving two distinct stages. The first stage involved shock, with a second stage of retreatment. Retreatment was considered to be a type of denial which involved the athlete retreating into either illness or health. While McDonald and Hardy's study made a contribution to a sparse but increasing body of knowledge, it is not without methodological weakness. The researchers themselves acknowledged the need for larger sample sizes, extended measurement periods, the study of career-ending injuries, and the use of alternative methodologies and interaction paradigms to examine both individual and environmental influences upon the affective response patterns to injury. Other limitations include: (a) the relationship between the proposed two stage-like process and the five stages

proposed by Kübler-Ross, which appeared a little tenuous; (b) the pooling of data gathered over a four week period at each of eight time phases despite the variability in time scale for data collection points amongst athletes (there is a high degree of consensus that the rate that individuals move through the grief process is highly variable); and (c) the return to sport within the four week period of three of the five athletes, which draws attention to the need for a clear definition of severity in terms of the short and long-term injury prognosis.

Pearson and Jones (1992) investigated the emotional effects of sports injuries using a modified and unvalidated version of the Emotional Feelings about Injury Questionnaire (Smith et al., 1990a), and the Bi-polar Profile of Mood States (POMS-BI: Lorr & McNair, 1988). Results from a sample of 61 injured sportsmen were compared to a matched group of 61 non-injured sportsmen (matched on gender, age, sport played, amount of exercise undertaken weekly and standard achieved). Pearson and Jones reported that the injured athletes were significantly more tense, hostile, depressed, unsure, tired and confused than their non-injured counterparts. Interview data collected by Pearson and Jones showed that subjects exhibited some of the emotional and behavioural characteristics of grief responses (depression, isolation, helplessness, anger, frustration and acceptance). However, the authors concurred with Smith et al.'s (1990a) earlier proposal that sportsmen may not experience a typical grief reaction following injury. They also reported support for Wiese and Weiss's (1987) proposal that affective response patterns may be far more complex than suggested by stage models of grief, with athletes moving between highs and lows. However, as has already been mentioned, this oscillation in responses has also been described as a characteristic of grief responses in much of the clinical and injury literature (Brasted & Callahan, 1984; Pederson, 1986; Rodgers & Cowles, 1991; Rotella, 1985; Worden, 1991). Unfortunately, Pearson and Jones did not report the severity of the injuries suffered by their subjects, which may mediate compliance with proposed grief models.

A recent qualitative study examined responses to season ending injuries of 21 skiers, who were members of the US ski team between 1990 and 1993 (Udry, Gould, Bridges, & Beck, 1997a). In-depth interviews were content analysed and 136 raw data themes were extracted. Four general dimensions emerged: injury relevant information processing, emotional upheaval/reactive behaviour, positive

outlook/coping attempts, and other. Within the general dimension of emotional upheaval/reactive behaviour, six second order themes emerged that accounted for skiers responses: (a) emotional agitation, (b) vacillation of emotions, (c) emotional depletion, (d) isolation/disconnection, (e) shock/disbelief/denial, and (f) self-pity. Because of the retrospective nature of the study Udry et al. felt the it was inappropriate to attempt to explore the temporal nature of skiers responses to injury, however, the homogeneity of the sample in terms of injury severity was a strength rarely observed in research into psychological responses to injury. In comparing their findings to grief models of injury, Udry et al. proposed support for a number of characteristics. These included anger, depression and acceptance. Although they also observed shock, disbelief, isolation, and worry/anxiety, they did not equate these with models of grief; despite support for these as characteristics of grief within the grief literature (e.g., Archer & Rhodes, 1993; Averill, 1968).

Cognitive Appraisal and Emotional Responses to Injury

The concept of cognitive appraisal is embedded in research and theory on stress, coping, and emotion. Stress is best understood as a relationship between the person and the environment, appraised as taxing or exceeding resources (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). As a model of stress it prescribes a central role (mediating) to cognitive appraisal and coping. Cognitive appraisal is a process through which the person evaluates whether a particular situation is stressful, and if so, to what extent. Coping is defined as the person's ever changing efforts to manage circumstances that are appraised as stressful (Lazarus & Folkman, 1984). This process is termed one of transaction because it proposes a bi-directional transaction between the person and environment. In other words coping is thought to vary within individuals, depending on the circumstances, and in circumstances depending upon individual differences. Three major categories of coping have been proposed that comprise, problem focused coping, emotion focused coping, and avoidance (Cox & Ferguson, 1991). Cognitive appraisal or an individual's subjective interpretation takes two forms, primary appraisal, and secondary appraisal (Lazarus & Folkman, 1984). Primary appraisal involves an assessment of what is at stake, secondary appraisal involves an assessment of the coping options available.

Appraisal in turn determines emotion, which serves a number of functions: (a) its quality and intensity tells us about the ongoing relationship between the person and environment; (b) it tells us what is important in a given situation; (c) it provides an insight into a person's beliefs about "self and world"; and (d) it can tell us how a person has appraised a situation with respect to its significance for well-being (Lazarus, 1991, p. 22). Emotion in this context is a reaction to meaning.

Cognitive appraisal models provide a valuable framework for understanding the process athletes might go through in response to injury. They also enable us to understand the importance of the appraisal of the injury, as opposed to the injury per se, in determining an athlete's psychological responses. This process of appraisal largely accounts for individual differences in response characteristics, and provides a basis for understanding why athletes may be experiencing certain emotions and behaving in certain ways. However, models of cognitive appraisal do not preclude the application of models of grief to injury.

Cognitive appraisal models have evolved within the injury literature from a model of injury prediction proposed by Anderson and Williams (1988). Anderson and Williams pre-injury model has subsequently been updated into the post-injury phase by Wiese-Bjornstal and Smith (1993), and most recently by Wiese-Bjornstal, Smith, and LaMott (1995). The latter model (presented in Figure 1) was based on a deductive analysis of empirical research. The basis of cognitive appraisal models of injury response is that an individual's interpretation (appraisal) of an injury will determine how they respond to the injury (Weiss & Troxel, 1986; Wiese-Bjornstal & Smith, 1993). Much of the support for cognitive appraisal models is based on their ability to account for individual differences in psychological responses to injury (Brewer, 1994). This is due mainly to the proposed interaction between personal and situational factors, and the subsequent appraisal of these factors. Although within the injury literature there has been a limited attempt to test the validity of cognitive appraisal models (Brewer, Linder, & Phelps, 1995a; Daly, Brewer, Van Raalte, Petitpas, & Sklar, 1995), there is support for the relationship between emotional response to injury and a number of situational variables. These include social support for rehabilitation (Brewer et al., 1995a; Fisher, Domm, & Wuest, 1988; Udry, 1997), physician rated current injury status, and impairment of sports performance (Brewer, Petitpas, Van Raalte, Sklar, & Ditmar, 1995b). Personal factors that have

been found to be associated with athletes' emotional responses include age (Brewer et al., 1995b), injury severity (Leddy, Lambert, & Ogles, 1994; Smith et al., 1990a; Smith et al., 1993), injury duration (McDonald & Hardy, 1990; Smith et al., 1990a; Uemukai, 1993), injury history (Johnson, 1996), and self esteem (Chan & Grossman, 1988; Leddy et al., 1994). Having said all this, genuine person by situation interactions have rarely been assessed.

In one of the aforementioned studies, Brewer et al. (1995a) examined the relationship between a number of situational factors and emotional adjustment to athletic injury. Subjects, 121 patients at a sports medicine clinic completed the Postinjury Questionnaire (PQ), the Athletic Identity Measurement Scale (AIMS), the Beck Depression Inventory (BDI), and the Profile of Mood States (POMS). Brewer et al. reported physician-rated current injury status, perceived impairment of sport performance, and perceived social support for rehabilitation as significantly correlated with post-injury depression. Age was negatively associated with post-injury disturbance, and mood disturbance was found to be generally positive and global, rather than specific. The absence of a temporal pattern in emotional responses was attributed to subjects' injury severity (more severe than other studies where such a pattern has been observed). However, this study has a number of methodological limitations. The authors themselves acknowledged that the use of single item scales may have obscured the relationship between situational factors and emotional adjustment. Since no information was presented on the PQ or AIMS it is difficult to assess the psychometric integrity of these measures. This, and the use of what are in effect clinical measures of depression and mood must raise some questions in relation to the validity of the findings. In addition, the inferred absence of a temporal pattern from a sample that included athletes who were injured for one day is simply unsustainable.

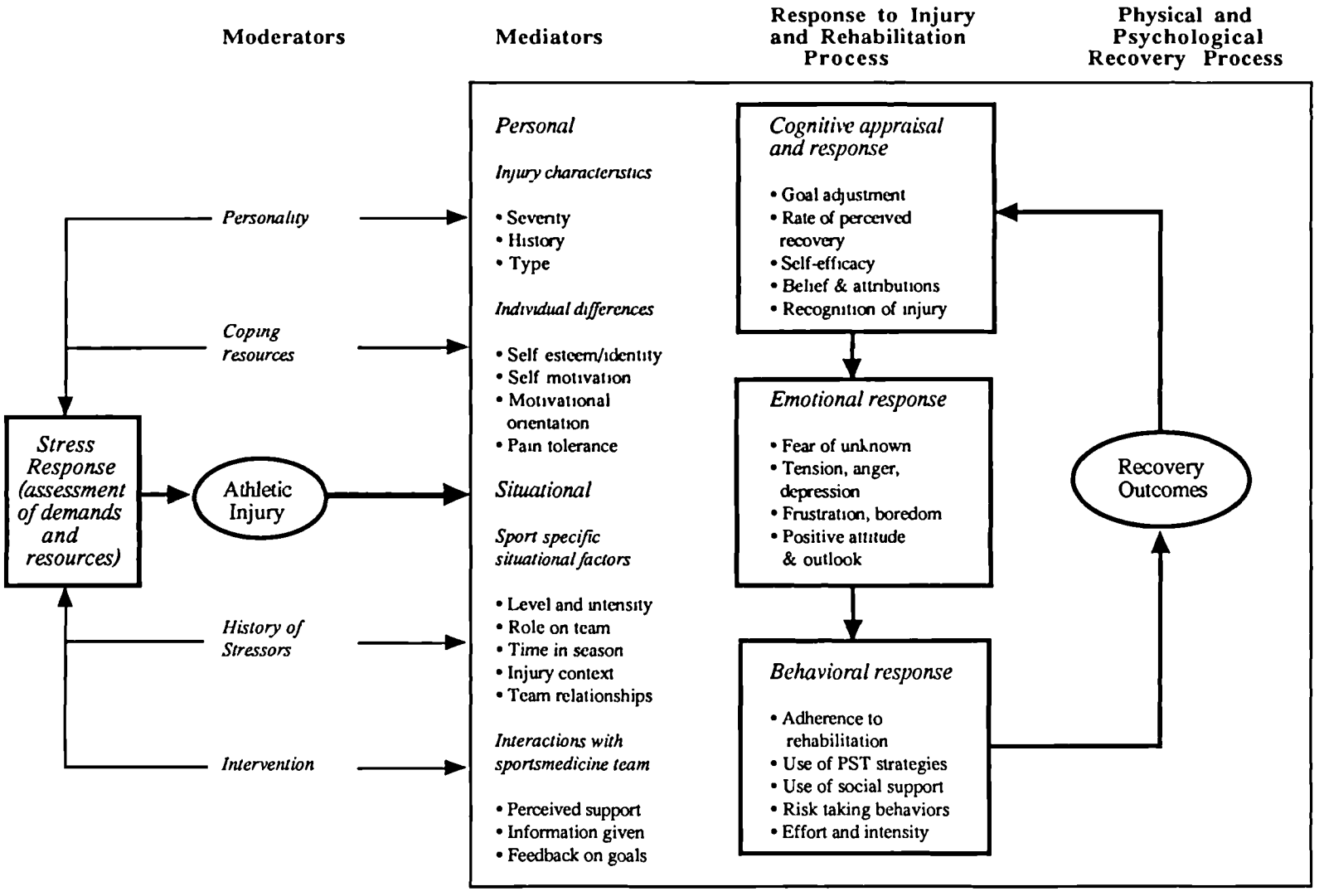

Figure 1: Cognitive Appraisal Model of Injury Response (Wiese-Bjornstal et al., 1995)

A number of studies have sought to examine the effects of injury on athletes' self-concept. McGowan et al. (1994) examined changes from baseline in the global self-concept of 29 injured varsity football players. Athletes were assessed pre-injury, weekly throughout the duration of their injury, and post-injury (one week after the last game of the season). Global self-concept was assessed using the Coopersmith Inventory, a measure of global self-worth. A comparison of injured versus non-injured players showed the injured players to be higher on global self-concept pre-injury, but significantly lower post-injury. No other significant differences were reported. Although the period of injury ranged from one week to nine weeks, the sample size after three weeks precluded statistical analysis. The authors acknowledge two limitations in particular in this study. These include the use of a global, uni-dimensional measure of self-worth, and the differences between the two groups on self-concept at the outset of the study. Unfortunately a lack of detail in relation to the procedures employed makes an assessment of the findings emerging from this study difficult. It would certainly be helpful to know the length of time that lapsed between the pre-season assessment of self-concept and injury occurrence. While assessments of athletes pre-injury will undoubtedly help to advance our understanding of the emotional responses of injured athletes, there is a need to attempt to standardise this baseline or pre-injury assessment across subjects relative to injury occurrence. A similar standardisation procedure should be utilised post-injury relative to completion of rehabilitation.

In an investigation of the psychological reactions to injury of 343 male college athletes participating in 10 sports, amongst a number of other variables, Leddy et al. (1994) also assessed the effect of injury on athletes' self-concept. Using the Tennessee Self-Concept Scale, Beck Depression Inventory, and State-Trait Anxiety Inventory athletes were assessed pre-injury (pre-test), one week after injury (post-injury), and 2 months after each athlete's second test completion (follow-up). Independent variables included injury status with four levels: Injured (athletes injured at post-injury and at follow-up, n = 77); Recovered (athletes injured at post-injury but fully recovered at follow-up, n = 68); Non-Injured (athletes who were not injured at all, n = 110); and, Late Injured (athletes who were not injured at post-injury but who were injured at follow-up, n = 58). While pre-injury results showed no significant differences between the groups on the constructs assessed, post-injury

results showed the Injured and Recovered athletes exhibited significantly higher levels of depression and state anxiety, and significantly lower total and physical self-esteem scores than the Non-Injured and Late Injured athletes. Follow-up results showed that the Injured and Late Injured athletes had significantly higher levels of depression and lower levels of total and physical self-esteem, than either the Non-Injured or Recovered athletes, although only the Injured groups showed significantly higher levels of state anxiety than the other three groups. Late Injured athletes had significantly lower physical self-esteem scores than the other three groups. Reference is made to a number of models proposed to explain psychological reactions to athletic injury, including that of cognitive appraisal. Self-esteem is considered to mediate appraisal, and coping in such models. No reference is made to the grief response despite the authors suggestion that in some instances the emotional responses reached "similar levels of intensities to clients receiving outpatient psychotherapy" (p. 351). This is perhaps surprising since loss of self-esteem as a function of loss of bodily function and role loss has been identified as a significant factor within the clinical literature as predisposing an individual to a grief response (Averill, 1968; Peretz, 1970).

While offering further insight into features of the psychological responses of injured athletes, there are a number of inherent weaknesses which preclude a clear assessment of the contribution this study makes to theoretically derived models of psychological rehabilitation: (a) it lacks sufficient detail to enable replication; (b) injury was defined as one missed game or practice session and included no other detail in relation to the severity of injuries (duration) of subjects who comprised the sample; (c) the period of time between pre-injury and post-injury data collection were not stated; (d) post-injury data were collected across a variable time span of one week across subjects; and (e) only three data collection points were utilised.

In a somewhat different vein, Johnson (1996) compared coping strategies and mood of first time injured and multiply injured athletes (at least three acute long-term injuries). Athletes were assessed at the beginning of the rehabilitation period with the Mood Adjective Checklist (MACL), the General Coping Questionnaire (GCQ), and the Karolinska Scales of Personality (KSP). Athletes were also interviewed. At a second assessment at the end of the rehabilitation period, the Sport Injury Questionnaire and the Diagnostic Checklist were employed, in addition to the

MACL. Although Cronbach alpha's are reported for the MACL, GCQ, and KSP, no further information in relation to their development or psychometric integrity is provided (the study was conducted in Sweden). The subjects were 81 highly competitive athletes who had sustained acute long-term injuries. Comparisons at the first assessment showed that subjects in the multiply injured group tended to accept their current situation to a higher degree than the other group. They also showed a higher overall mood level, and a greater urge to suppress anger and irritation. At the second assessment at the end of rehabilitation, the multiply injured athletes scored significantly higher on the mood variables social orientation and activity, than the first time injured athletes. The authors also report that the first time injured athletes worked toward their recovery significantly less than the multiply injured athletes, and felt significantly less physically restored. A number of comparisons are drawn with models of grief, but generally the findings are interpreted to be more consistent with cognitive appraisal models of injury response. At best these comparisons and conclusions appear tenuous. Some difficulties may have arisen in the interpretation and discussion of the findings because of loss of meaning through translation. This said, the measures utilised have poor face validity, and are non-population specific. While a study of this kind has enormous potential for identifying factors which may predispose athletes to respond with greater emotional intensity to injury, Johnson's study falls short of achieving this.

Daly et al. (1995) conducted what appears to be the only published study to formerly assess cognitive appraisal as a determinant of emotional responses to injury. Subjects were 31 individuals who sustained a knee injury requiring either arthroscopic or open surgery, and that required them to have been in physical therapy for at least a week, with at least one week of appointments remaining. Subjects completed a single cognitive appraisal item designed to tap secondary appraisal, POMS (only a total mood disturbance [TMD] score was calculated), and two measures of adherence to rehabilitation. The adherence measures involved an attendance score (number of sessions scheduled divided by the number attended), and the Sports Injury Rehabilitation Adherence Scale (SIRAS; involves the physical therapist's completion of three items to assess rehabilitation adherence during the rehabilitation session). Cognitive appraisal was significantly correlated with TMD, such that low levels of perceived ability to cope with the injury were associated with

high levels of mood disturbance. TMD was inversely related to one measure of adherence (attendance), but unrelated to the other (physical therapist ratings). Although not without merit, Daly et al. identified a number of limitations: (a) the findings were correlational and preclude causal inferences regarding the relationships between cognitive appraisal, emotional disturbance, and attendance at rehabilitation sessions; (b) the measures of cognitive appraisal and adherence were limited in scope; and (c) sample - in terms of size and homogeneity. Wiese-Bjornstal et al. (1998) have recently questioned the value of total mood disturbance scores as a basis for understanding the intricacies of individual mood state changes in response to injury, and perhaps more importantly, the use of non-population specific (clinical) measures. However, the implementation of cross sectional studies of this nature utilising injury specific measures (wherever possible) have much to offer, particularly if they adopt multiple assessments throughout the injury period.

A recent qualitative study conducted by Johnston and Carroll (1998) assessed the utility of a number of models of injury response, including those of cognitive appraisal and grief. The study used grounded theory to describe the emotional responses of 16 seriously injured athletes. Interviews examined emotional responses, appraisals, events, and behaviours, within a temporal context. Three higher order themes emerged from the analysis, events and behaviour, appraisals, and emotions. Frustration and depression were the prevalent emotions throughout rehabilitation. In the early phase of rehabilitation they resulted from disruption to normal function, in the middle, from a negative appraisal of rehabilitation progress, and at the end, impatience to return to sport. Although appraisal appeared to serve a key function within the model that emerged from Johnston and Carroll's study, the authors suggest a model of cognitive appraisal is inconsistent with their findings because it fails to account for the temporal nature of the responses they observed. While cognitive appraisal models presented in the injury literature can certainly be criticised for this, Lazarus and Folkman's (1984) model of cognitive appraisal does account for this dimension. Models of cognitive appraisal presented in the injury literature should re-examine this feature of Lazarus and Folkman's model, particularly in light of recent injury response research. Although many of the emotional responses described by Johnston and Carroll (1998) are consistent with those depicted in grief models, the authors appear to dismiss this based on the proposed

failure of grief models to account for individual variation in responses, and the subject population from which they are derived. This appears a little misplaced in the context of their findings. They do suggest some support, however, for the risks model proposed by Rose and Jevne (1993). Rose and Jevne's risk model resulted from a qualitative grounded theory study, involving seven injured athletes. All subjects were interviewed twice over the period of their injury. A validation sample of medical professionals (n = 8) was used to verify the model that emerged from the interview data. The resulting risks model identified four phases associated with injury: (a) getting injured, (b) acknowledging the injury, (c) dealing with the impact, and (d) achieving a physical and psychosocial outcome. The model has not been empirically tested, and Johnston and Carroll's study appears to be the first to offer some support for it in the context of athletes emotional responses to injury.

An Inclusive Model of Injury Response: Cognitive Appraisal and Grief

Although generally overlooked within the injury response research, there are a large number of commonalities between models of grief and cognitive appraisal. As adaptational models they apportion mutually important roles to both situational and personal variables in response to perceived threat (cognitive appraisal) or loss (grief). These include the significance or threat of loss, previous experience of the loss or stressor, perceived social support, and the psychological and emotional response characteristics.

The significance of loss is central to proposed grief models and acknowledged as a determinant of the emotional response. An equally important role is attributed to threat of harm in cognitive appraisal models, for example, threat to ego. Within the injury literature severity of injury has consistently been identified as a determinant of emotional response. Controllability and anticipatory loss are examples of two variables that may form part of the appraisal of significance of loss. Controllability is certainly a feature of grief, and within the cognitive appraisal literature life events appraised as uncontrollable are more strongly associated with depression than events appraised as controllable (Vitaliano, DeWolfe, Maiuro, Russo, & Katon, 1990). Responses of confusion, helplessness, and the need to rationalise, reported in a number of injury response studies (McDonald & Hardy, 1990; Pearson & Jones,

1992) are consistent with strategies of emotion focused coping in situations appraised as uncontrollable. Both appraisal and grief models acknowledge the anticipatory function of loss and harm. In life in general we face constant reminders of our mortality and the inevitability of certain types of loss, injury provides us with such a reminder. For example, developmental loss characterized by loss of range of movement.

The importance of a person's previous experience of stressors in the appraisal process and in determining psychological and emotional response characteristics, has been supported within both bodies of research. As a moderating variable social support is assigned a key role in the both clinical and injury literature. However, in situations where athletes need to initially withdraw (as may be the case in injury because of the threat to self-esteem and self-confidence), and as a result become isolated, the role of social support is not clear (Udry, 1997).

The nature, intensity, and duration of psychological and emotional responses predicted by models of appraisal and grief presents the greatest challenge to researchers. One of the features of grief that has received much attention, and indeed criticism, in the psychological response to injury research is the psychological and emotional responses predicted by models of grief. Although such criticisms have not been made of cognitive appraisal models proposed in the injury literature, this is arguably because these models have lacked similar detail in relation to the psychological and emotional responses that they predict. In an injury context cognitive appraisal models have tended to focus on the process of appraisal as opposed to the responses which result from this process. In order to enhance our understanding of the psychological responses of athletes to injury, appraisal models must provide testable predictions both in relation to process (appraisal) and outcome (response) variables.

Some repetition may be useful for the purpose of clarification, with regard to psychological and emotional response characteristics of injured athletes. Both models of grief and appraisal propose that at any one time several different emotions might occur in response to loss / stress (interestingly grief models have been criticised for this). Indeed it has been suggested that both global and specific emotions may fluctuate to such an extent that they may last only hours or days. Having said this, grief models generally predict an initial phase of shock and disbelief, followed by a

phase (or phases) that involves depressive symptoms such as despair, despondency, preoccupation, searching for meaning, and in some instances anxiety, anger, and hostility. Behavioural responses include withdrawal and isolation, with such behaviour frequently not being conducive to adaptation and recovery. The later two responses characterise a final phase during which a greater investment is made to returning to normal functioning (Averill, 1968). As with appraisal models, these responses are considered to be a direct result of what appraisal models term goal incongruence, when goal directed behaviour is seriously disrupted. According to cognitive appraisal models, responses to an appraised stressor include shock, anger, guilt, anxiety, depression, helplessness, apathy, frustration, problem solving cognitions, and behaviours such as isolation and withdrawal. Although these are rarely placed within a temporal pattern, some researchers have suggested stages within the context of the coping process, for example, Shontz (1975) has suggested stages of shock, encounter, and retreat or reality testing. The apparent overlap in the response characteristics described is hardly surprising when one considers that the stressor in appraisal frequently results in an actual or perceived loss, the basis of grief models.

The above discussion provides a strong rationale for a model of injury response which encompasses cognitive appraisal and grief. Such a model is illustrated below (Figure 2). The model proposed differs from previous appraisal models in as much as it acknowledges grief as a response to loss through injury. The model does not prescribe that all individuals will experience grief, rather that appraisal will determine whether the emotions and behaviours elicited characterise a grief response. It is hoped that this distinction will enable researchers to investigate responses to injury within an appraisal framework that accounts for the potential of a grief like response. In addition practitioners may find it helpful in understanding the way that individual and situational differences may affect the response of one injured athlete compared to another. In this context a performer who responds in a way characteristic of grief will not simply be viewed as maladaptive, rather as someone requiring greater understanding and help in resolving their loss. A model in which the significance of the loss may determine the nature of the psychological and emotional responses to injury is not only intuitively appealing, but theoretically meaningful.

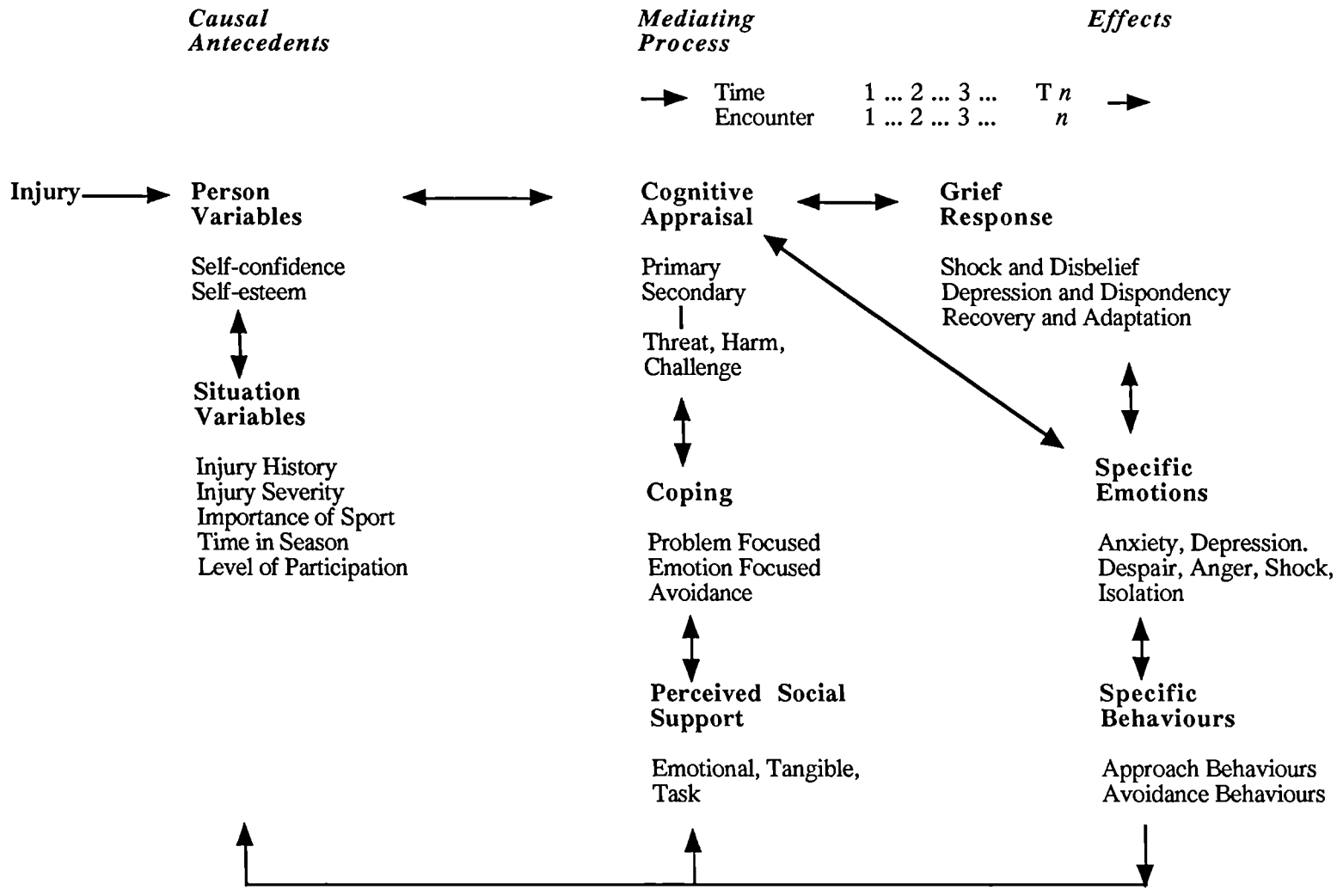

Figure 2: Psychological Model of Injury Response (Adapted from Lazarus & Folkman, 1984)

A critical feature of the model is that it acknowledges the process of appraisal and response as adaptive and dynamic, one which explicitly changes over time. This feature will hopefully encourage research to address the temporal pattern, central to models of adaptation.

Implications

The purpose of this review has been to examine research into the psychological responses of injured athletes particularly within the conceptual framework of models of grief, and to a lesser extent, stress based models of cognitive appraisal. As a result of this review a number of issues are identified for future research. While there has been increasing attention paid to the processes pervading the psychological rehabilitation of injuries over recent years, the extant literature has shown itself to have a number of limitations. The continued existence of these will hamper our understanding of the psychological responses of athletes to injury, the contribution and application of models of grief and cognitive appraisal, and the ability to employ effective intervention strategies:

1. The literature has been primarily descriptive in nature and has lacked empirical rigour. The research methodologies used have severely limited the generalisability of findings; retrospective case study designs, use of unvalidated and non-population specific inventories, inconsistent definition of injury, and lack of control of injury severity are some of the more prevalent features of the studies to date. While case study designs may provide some insight into the psychological responses of injured athletes, there is an urgent need for more empirically rigourous methodologies to be employed in this area (cf., Wiese-Bjornstal et al., 1998).

2. The literature has been inconsistent in differentiating between levels of injury severity and the nature of different injuries - since injury severity (in the injury literature) and nature and significance of loss (within the grief and coping literature) have been identified as possible determinants of outcome, it is essential that severity of injuries is included as an independent variable in future research. Indeed, it is vital that researchers come to some agreement as to levels of injury severity (e.g., chronic versus acute); injuries that prevent participation for one day, do little to advance our understanding of the psychological responses of injured athletes, even if they do

assist in implementing studies with larger sample sizes. An assessment of injured athletes who are unable to participate for a minimum three week period would enable researchers not only to assess the relative contribution of the theoretical models proposed within the sport psychology literature, but assess the complex pattern and interaction of behavioural, emotional, and psychological variables, as a basis for the design of intervention strategies

3. Many of the early studies in particular, have used retrospective methodologies - although retrospective methodologies may lend themselves more easily to the study of rehabilitation from injury, they may also be confounded in terms of accuracy of recall of what may have been a highly emotive experience, and lead to the collection of inaccurate data. Concurrent methodologies which include normative pre-injury, post-injury, and recovery data may be far more insightful for testing theoretical frameworks, providing a stronger basis for the development of sound intervention strategies. In this, it is essential that data collection accounts for the proposed temporal dimension of psychological responses to injury by adopting standardised assessment points throughout the rehabilitation period. While a number of more recent studies have attempted to implement such methodologies, few have been conducted with adequate rigor, or been reported in sufficient detail to enable replication.

4. Little account has been taken of moderator variables such as intensity of involvement, level of performance, social support, personality, cognitive appraisal, and coping resources. Although the contribution of moderating variables in determining psychological outcome from injury has received limited attention in the injury literature, there is some evidence to suggest that such variables may affect the successful rehabilitation of athletes in certain conditions (Smith et al., 1993). Within both the grief and cognitive appraisal literature a number of variables such as previous experience of loss (injury), other life crises, social support, intensity of involvement, and coping capacity, have been identified that have already been implicated in the psychological responses to injury literature. These warrant further investigation.

5. There has been some support for personal variables that have been proposed to mediate psychological responses to injury. Unfortunately, variability in population characteristics, measures utilised, and research designs has precluded the

generalisability of many of the findings. This has meant that progress has been slow in advancing our knowledge and understanding of the effect of different mediating variables upon athletes' psychological responses to injury. Once again this reinforces the need for greater empirical rigor in testing the role of both moderating and mediating variables predicted by models of injury response.

6. There has been limited regard for grief models other than that proposed by Kübler-Ross (1969), with much misrepresentation of this particular model. A number of other grief models have been proposed within the clinical literature, based on various subject populations. Of these models, the concepualisation of loss and grief as provided by Averill (1968), and Bowlby (1991) may be of particular relevance and worthy of further examination in an injury context. Despite being derived from a population who have suffered an irrevocable loss Averill's (1968) stage approach to grief provides a means of conceptualising alternative types of loss such as loss of health, role loss and loss of self-esteem; all of which may be contextualised to loss through injury. Indeed, Averill's three stage approach to grief may well be more congruous with many of the findings reported in the injury literature (particularly those which have proposed a grief like response), than that proposed by Kübler-Ross (1969). It may also be more insightful for determining the presence of a grief based model or a stress and coping one. Meanwhile, Bowlby's attachment theory provides a framework for understanding the nature and significance of important attachments and helps explain the intense emotional reactions in response to their loss. Many of the methodological issues identified in this section would certainly assist in assessing the relative contribution of these models to understanding the responses of injured athletes.

7. There has been little or no distinction between stage/component/phase and task models of grief. This issue appears to have been neglected, if not totally overlooked, in much of the sport psychology literature, but this issue may be of fundamental importance in the application of grief models to the psychological response patterns of injured athletes. The contribution of grief models is far from clear, but without more rigorous theory testing it will remain so. An assessment of the contribution of the grief models proposed within the clinical literature, and the application of stage/component/phase and task approaches, may only be done with methodologies that can account for these. For example, to reject a sequential pattern

of responses and the presence of certain characteristics, can only be done with any degree of validity if athletes are assessed more frequently throughout the injury period. Few studies have utilised data collection points of a frequency greater than every two weeks, and by and large these studies have supported a pattern of responses akin to grief (this is perhaps particularly pertinent in light of the fact that grief researchers have suggested that the duration of any one stage of the grief process is not only highly variable, but may last only a matter of days).

8. Until very recently researchers, without exception have viewed models of grief and cognitive appraisal as mutually exclusive in accounting for athletes' psychological responses to injury. Evans and Hardy (in press) and Wiese-Bjornstal et al. (1998) however, have suggested that a grief response could be subsumed within an integrated stress based model of cognitive appraisal. Such a model would provide testable predictions in accounting for the possible adaptive and maladaptive nature of athletes' psychological responses to injury. In this, both moderating and mediating variables could be examined as predictors of injured athletes psychological responses.

Research into the psychological and emotional responses of injured athletes is still very much in its infancy. While the research conducted to date has provided us with an insight into some of the factors affecting athletes' psychological responses to injury, much work remains to be done in this area. Future research needs to address the limitations identified within this, and other recent reviews, so that ultimately theoretically derived interventions can be designed and implemented to expedite injured athletes' successful recovery and return to sport.

Chapter 3

The Measurement of Psychological Responses to Injury (Study 1)

Introduction

The psychological responses of injured athletes has been the focal point of much recent research. However, despite this attention, research into psychological responses to sport injury has generally lacked empirical rigor (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998). In an attempt to understand the psychological responses of injured athletes, a number of conceptual models have been proposed in the injury literature. These have included the clinically derived grief response model, the stress based cognitive appraisal model and the more recent risks model (Rose & Jevne, 1993). Although there has been much debate as to the relative merit and application of these models to injury, at present the empirical evidence in support of any one particular model, is far from conclusive (for reviews see Brewer, 1994; Evans & Hardy, 1995; Wiese-Bjornstal, Smith, & LaMott, 1995). Indeed, recent reviews by Evans and Hardy (in press) and Wiese-Bjornstal, Smith, Shaffer, and Morrey (1998) have challenged the traditional view that models of grief and cognitive appraisal, as they apply to psychological response to injury, are mutually exclusive, and have suggested that grief may be conceived of as resulting from a process of cognitive appraisal.

To date, research into the psychological responses of injured athletes has been characterised by both consistency and inconsistency. There has been considerable variation in population characteristics and research designs (Wiese-Bjornstal et al., 1998), but a large amount of uniformity in the measures utilised. The research strategies employed in the investigation of psychological responses to injury have included case study designs (Gordon & Lindgren, 1990; McDonald & Hardy, 1990), descriptive accounts (Nideffer, 1989; Pederson, 1986), empirical investigations (Daly, Brewer, Van Raalte, Petitpas, & Sklar, 1995; Pearson & Jones,

1992; Smith, Scott, O'Fallon, & Young, 1990a), and qualitative studies (Johnston & Carroll, 1998; Udry, Gould, Bridges, & Beck, 1997a). Within these designs, researchers have utilised surveys, questionnaires, and interviews for data collection purposes, with the latter two receiving prominence. However, a dearth of appropriate measures by which athletes responses to injury may be accurately assessed has necessitated a reliance on non-population specific measures.

The findings that have emerged from this research have suggested that compared to their non-injured counterparts, injured athletes experience heightened levels of tension, anger, confusion, fatigue, and depression, and lower levels of vigor, and self-esteem (Chan & Grossman, 1988; Gordon & Lindgren, 1990; Leddy, Lambert, & Ogles, 1994; McDonald & Hardy, 1990; Pearson & Jones, 1992; Smith et al., 1990a; Smith et al., 1993). Comparisons of athletes pre and post-injury have demonstrated increased levels of depression, anger, and state anxiety, and decreased vigor (Leddy et al., 1994; Smith et al., 1993). Findings with regard to self-esteem pre to post-injury are equivocal (Leddy et al., 1994; McGowan, Pierce, Williams, & Eastman, 1994; Smith et al., 1993).

While these findings provide a useful insight into some of the psychological responses elicited by injury, they must be treated with some caution. In the majority of these studies the Profile of Mood States (POMS) has been utilised as the primary measure. Alongside POMS, researchers have utilized additional measures of anxiety, self-esteem, and depression. Even allowing for the use of injury specific demographic questionnaires (which have rarely been subjected to any validation procedures), this is less than satisfactory. While some of the measures utilised may have some relevance to the psychological responses of injured performers, none were developed to measure or predict variables derived from any psychological model of injury. As Anastasi (1990) has suggested, the same test when employed for different purposes and/or with different subject populations should be validated in different ways, hence a measure which has high validity in predicting a particular criterion in one population may have little or no validity in another. While the mood states assessed by POMS may be in part relevant to the subject population of injured performers, they are unlikely to adequately represent the behaviour domain of injury. Indeed Wiese-Bjornstal et al. (1998) have recently questioned the assumption that the

negative emotions assessed by POMS are dysfunctional in the recovery process, which raises an issue as to the predictive validity of POMS in an injury context.

A key feature of psychological responses to injury is their transient nature. Although the importance of this feature has been acknowledged by a number of researchers (Evans & Hardy, 1995; Johnston & Carroll, 1998; McDonald & Hardy, 1990; Quackenbush & Crossman, 1994; Smith et al., 1990a; Wiese-Bjornstal et al., 1998), it has received limited attention. Research which has attempted to examine the temporal pattern of psychological responses to injury has generally supported a move from negative to positive affect over time (McDonald & Hardy, 1990; McGowan et al., 1994; Smith et al., 1990a; Smith et al., 1993; Uemukai, 1993). In line with this, some researchers have suggested a global mood disturbance, with simultaneous elevations in a number of negative mood state variables (Brewer, Linder, & Phelps, 1995a; Smith et al., 1990a). There has been less support for an oscillation between highs and lows during the rehabilitation period (Pearson & Jones, 1992). Brewer et al. (1995a) conducted one of very few studies that has failed to observe a temporal pattern of some description in athletes' emotional responses to injury. However these findings must be viewed within a methodological context. The ability to infer the presence, or otherwise, of a temporal pattern, from a population that includes injuries of only two days duration has to be seriously questioned. Indeed, there has been considerable variability in population characteristics with regard to injury severity, with much of the research requiring for inclusion only one days non-participation following injury occurrence. In addition, there has been much inconsistency in the sampling of specific time phases, which has ranged from twice weekly (McDonald & Hardy, 1990) to fortnightly intervals (Smith et al., 1990a). Equally variable has been the proximity of the first data collection point relative to injury occurrence. Unfortunately, some of the research which has sampled distinct time phases throughout the injury period has shown little regard to the clinical literature in relation to the proposed onset and duration of emotional responses invoked by a significant loss. Within the clinical literature researchers have suggested that not only is the rate at which any individual may pass through the various phases of grief highly variable, but also it is such that any one phase may only commonly prevail for a matter of days.

The temporal feature of psychological responses to injury is an important issue in injury research generally, and in the current study specifically, because of its methodological implications. The emotional state is never static, it changes in both quality and intensity. In order to capture this process of change and the factors that contribute to it, the same person needs to be observed on a number of occasions (Lazarus, 1991). Unfortunately, this dynamic process-oriented approach to emotional states is the exception rather than the rule, and all too often such states are treated as static phenomena (Lazarus & Folkman, 1984). This process oriented approach to the study of changing states is known as an intraindividual perspective. In contrast to an interindividual approach which involves comparisons of one person against another, an intraindividual perspective involves the repeated assessment of the same person again and again at different points in time. Unfortunately, according to Aldwin (1994), such a reliance upon interindividual comparisons in process-orientated research has meant that researchers have frequently failed to answer important questions with regard to change.

Aldwin (1994) also asserts that the temporal features of any study involving health outcomes should guide the choice of measure. However, this is not as straight forward as it may seem. One of the major difficulties here arises from expecting process measures, which are usually designed for applied settings, to stand up to the same criteria as personality measures (Aldwin, 1994; Cattell, 1971). Not only do these measures have different purposes, process instruments are designed to tap variability and change, making them almost by definition unreliable. Further difficulties in the design of such measures result from the inevitability of smaller sample sizes (Lazarus & Folkman, 1984), and during factor analysis, a shift in factor structure (Aldwin, 1994). Although techniques exist by which such measures can be developed, for example, Cattell's population *P* technique, there has been much resistance from traditional psychometricians to embrace the use of such techniques. Proponents of an intraindividual approach to developing psychometric process oriented instruments argue that the merit of such measures is that they can be utilised for both intraindividual and interindividual comparisons (Cattell, 1971; Lazarus & Folkman, 1984).

The preceding discourse has identified two of the most important issues underpinning current, and future research into psychological response to injury: (a)

the use of non-population specific measures to assess the psychological responses of injured athletes, and (b) the need to accurately assess the temporal pattern of psychological responses within individuals. The purpose of the current paper is to report the initial stages of the development of a theoretically derived psychometric measure that reflects the temporal context of performers' psychological responses to injury. To this end an intraindividual approach has been adopted in the two studies being reported. Conceptually, the measure has been designed to reflect models of psychological response proposed within the injury literature. It is suggested that the development of such a measure would facilitate a more accurate assessment of athletes' psychological responses to injury and would thus aid sport psychologists working in both research and applied settings. Not only will this enhance our knowledge and understanding of performers psychological responses to injury, but help guide the design of successful psychological intervention strategies.

Study 1(a)

Method

Generation of Item Pool

The initial stage in the development of the Psychological Responses to Sports Injury Inventory (PRSII) involved the generation of a pool of items which was representative of the spectrum of possible responses characteristic of injured athletes. These response characteristics took account of the various phases or features that both the clinical and sports psychology literature have proposed might underlie athlete responses to loss and injury. In order to generate this item pool an extensive review of the injury related literature was conducted within the field of clinical, medical and sport psychology (Evans & Hardy, 1995). Based on this review, a pool of 140 items was generated under five categories proposed to account for possible phases of grief. These phases were identified as shock and disbelief, denial, anger, despair and reorganisation. Although support for the application of grief response models to injury is equivocal, it was proposed that generating the initial item pool under these five broad phases or categories would ensure that the inventory had the potential to test this model while also taking account of alternative

models of psychological and emotional responses, in particular, stress based cognitive appraisal models (see Evans & Hardy, in press). Each item within the initial pool was a statement which reflected a response, characteristic of how performers might react to injury. The item pool included both positively and negatively phrased items. The number of items initially generated as descriptors of specific phases or features varied as a function of the range of possible responses which could adequately characterise it (shock and disbelief n = 25, denial n = 20, anger n = 26, despair n = 54, reorganisation n = 15; Appendix 1).

In order to ensure content and face validity, the initial item pool was subjected to the scrutiny of a panel of individuals considered to have appropriate subject expertise. The panel comprised six British Association of Sport and Exercise Science (BASES) Accredited Sport Psychologists who had experience dealing with injured performers. The panel was requested to consider the 140 items based on specific criteria: (a) the suitability of the item as a response characteristic of injured performers on a scale from 1 (extremely relevant) to 5 (extremely irrelevant); (b) the clarity of phrasing, and the complexity and length of statements (the panel was asked to indicate any items which were ambiguous or required re-wording); (c) the representativeness of the item pool for the population domain under consideration; and (d) the need for additional relevant items.

Based on the panel feedback a number of items were re-worded and, any item with a mean relevance rating of greater than, or equal to two was excluded (high ratings equated to low relevance). This process resulted in a revised inventory of 86 items that were considered to be "relevant" or "extremely relevant". In this revised format, the five categories retained the following numbers of items, shock and disbelief n 14, denial n = 11, anger n = 18, despair n = 28, and reorganisation n = 15. The order of the 86 items was then randomised and the revised item pool placed on a five point Likert scale, anchored at strongly agree (5), agree (4), neither agree nor disagree (3), disagree (2), and strongly disagree (1).

The revised inventory also requested information regarding name, sex, main sport, age, present level of participation, period since the injury had occurred, nature of the injury, whether it had been diagnosed by a medical doctor, and if not by whom, anticipated time scale of return to full participation, and the date upon which the inventory was completed.

Sample

The revised inventory was administered on a number of occasions to performers (n = 22, observations = 218)[2] who had sustained an injury which would preclude them from full training and participation in their sport for a minimum of two weeks (mean 3.74 weeks, SD ±2.43). For inclusion, participants were required to complete the inventory within 24 hours of the injury occurring and, thereafter, at three-day intervals for the duration of the injury period. This was intended to ensure that the data would represent the total injury period and potential pattern of change. Because of the pattern of change in responses proposed by the clinical and injury literature, and the need to tap all possible phases of response, a fully randomised procedure was considered inappropriate. The participants (n = 22, male = 18, female = 4) represented a range of sports and levels of participation, and had a mean age of 27.6 years (SD ±8.14). The sports that the participants engaged in included rugby (union and league), association football, american football, netball, cricket, running, cycling, squash and tennis. Participants were all involved in competitive sport, ranging from club to representative level. The injuries sustained fell within two categories, muscle or connective tissue injuries, and fractures and associated soft tissue injuries. The site of the injury was predominantly the ankle and knee.

Data Collection

In order to gain access to injured performers within 24 hours of the injury occurrence, the inventory was administered at two hospital emergency departments (in one large and one small city) to individuals who had sustained sports injuries. These individuals were asked if they would complete the inventory and human consent form as the basis for taking part in a sports injury study. Performers who completed

[2] This process of using multiple observations for subjects in factor analysis is fundamental to Cattell's (1971) population *P* technique and enables the researcher to derive a factor structure which accounts for both individual difference and state pattern changes. This procedure of using multiple observations for subjects was utilised more recently in Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen's (1986) factor analytic study of the dynamics of a stressful encounter. Mefferd (1971) recommends that when adopting this procedure the number of observations should well exceed the number of variables (and be well over 100).

and returned the inventory and human consent form were contacted by telephone by the first author in order to confirm the nature and extent of their injury. Where the injury met the criteria for inclusion in the study, their continued participation was requested. At this stage, the nature of the study was fully explained:

1. Participants were advised that they would be sent a number of inventories (the number based on the estimated duration of their injury) and sufficient stamped addressed envelopes for the return of two completed inventories each week (since participants lived over a wide geographical area, and were not necessarily in regular contact with a physiotherapist or doctor, this was the only way in which data could be gathered).
2. Participants were also sent a completion schedule which listed the days and dates on which they should complete the inventory. They were requested to indicate alongside the prescribed date, the date that they actually completed the inventory. This was used as an adherence check since participants were requested to continue completing the inventory even if they had failed to adhere exactly to the prescribed dates.
3. Participants were requested to continue completing the inventory according to the schedule until they were able to return to full participation, at which point they were requested to return the remaining inventories and the completion schedule.

Detailed information and instructions were sent to all participants to ensure that they fully understood the nature of the study. Consent was then confirmed and participants were advised that they could withdraw from the study at any time. Of those participants who met the selection criteria none declined to be involved, or subsequently withdrew. Regular weekly contact by telephone to ensure adherence meant that whenever the duration of the injury lasted longer than originally anticipated, an updated schedule and further inventories could be supplied.

Although the dates and duration of completion of the inventories varied from participant to participant, the data collection points for each participant were fixed at every third day throughout the injury period. The selection of this completion time scale was based on the clinical literature on grief and the proposed movement and oscillation between the relative phases of the grief response (Averill, 1968; Bugen, 1977). All participants completed the inventories to the point of their return to full training and participation. The data collection procedures, in terms of frequency and

duration, were intended to ensure (as far as possible) that all proposed phases of response were assessed. The need to examine individual response data over time, and tap all phases of the injury period, provided the rationale for the within subject design employed in the analysis.

Data Analysis

The second stage of development involved attempting to examine and define the underlying constructs or factors of the 86 item inventory. To this end, preliminary analysis was conducted using a number of different exploratory factor analysis techniques. Prior to employing any factor analytic techniques, a decision was made concerning the inclusion of items that had not elicited responses throughout all of the scale points. Although Anastasi (1990) emphasises the need for items to be endorsed across all scale points in order to reflect sensitivity to individual differences, Cronbach (1990) argues that to automatically discard items that do not meet this criteria may reduce overall content validity. In light of Cronbach's argument, the six items which were not endorsed across all scale points were not excluded at this stage. The raw data for the 86 items was standardised within subjects and then collapsed across subjects; a procedure intended to account for interperson variation in responses (Cattell, 1971)[3] .

Principal axis factoring was utilised with both oblique and orthogonal (varimax) rotations. Pairwise deletion of missing values was employed for all analyses. Following each factor analysis, interpretation of the scree plot in conjunction with the cumulative percent of variance accounted for provided the basis for extracting a given number of factors. As a result of initial exploratory factor analyses, only data obtained from subjects who were injured for a period of greater than three weeks duration was utilised in subsequent analyses (n=8 males, observations – 113; see footnote 2). The factor solutions obtained from this data accounted for a greater proportion of the total item variance, and provided a much

[3] The process of standardising within subject observations and then collapsing across subjects, integral to Cattell's (1971) population *P* technique, avoids mixing inter and intra-individual variance (Cattell, 1971). According to Mefferd (1971) the potential diagnostic capabilities of such an approach within factor analysis far outweighs any statistical limitations with regard to factor resolution.

clearer factor structure. Although this meant reducing the number of cases relative to the number of variables, to what might be considered a less than satisfactory level (despite the number of cases still exceeding the number of variables; Munro, Visintainer & Page, 1990) it was anticipated that subsequent confirmatory analysis would protect against violations of a final factor solution derived from inadequate sample size. Following factor analysis, internal consistency and reliability were assessed using Cronbach's alpha.

Results

Exploratory factor analysis using principal axis factoring with an oblique rotation (Cattell, 1971; Stevens, 1996) provided the most conceptually meaningful terminal solution. Initial analyses suggested a nine factor solution which converged in 64 iterations and accounted for 56.4 per cent of the variance. However, within the nine factor solution, only five factors could be meaningfully interpreted, with the last four factors containing a small number of items which precluded unambiguous labelling. Further analysis was performed omitting those items which loaded on the ambiguous factors, or which in loading on two factors, loaded on the primary factor by less than .15 than it did on the secondary factor. This led to the retention of 44 items, all of which clearly loaded on a single factor with factor loadings greater than .3. The resulting five factor solution converged in 43 iterations and accounted for 52 per cent of the variance (Table 1 contains the factor pattern matrix).

Factor 1 contained six items which reflected feelings of devastation and shock. Such was the intensity of these items that the sub scale was labelled Devastation. Factor 2 contained nine items which were characteristic of feelings of apathy, loss of motivation, sadness and frustration; it was labelled Dispirited. The five items within factor 3 reflected feelings of reorganisation and recovery; the factor was labelled Reorganisation. Factor 4 also contained five items which were characteristic of a searching for meaning, or Attempts to Rationalise, as it was labelled. Finally, factor 5 contained 17 items, the highest loading of which contained social connotations. The items were characterised by feelings of anxiety, guilt, and hostility, and in an attempt to reflect the social context which underlined these feelings, the factor was labelled Isolation.

Table 1: Factor Pattern Matrix for Factor Loadings > .3

Variable	Factor 1	2	3	4	5
30. I am devastated by the injury	.60883				
23. I feel mentally much stronger	-.59626				
67. I experience a feeling of emptiness	.58157				
80. My world has fallen apart	.53217				
63. I feel a sense of sadness	.48913				
70. I have difficulty accepting I am injured	.44428				
7. I am not getting the support I need	-.41137				
78. I feel I have let people down	.36475				
37. I feel a sense of apathy		.67960			
38. I lack motivation		.60093			
16. I am aggrieved at what has happened		.54585			
74. I idealise the standard of my training and performances prior to the injury		.50149			
61. Socially I feel like an outcast		.48322			
36. I feel detached from life		.48132			
31. I seem to lack my usual strength and power		.45761			
54. I can't understand what went wrong		.44200			
22. I try to deny what has happened		.40745			
15. I have much more confidence in myself			.64874		
72. I am not seeking support from friends			-.59058		
14. Physically I feel a lot stronger			.54122		
19. I am beginning to feel like myself again			.52275		
69. I suffer from increased tension			-.49799		
9. I cannot work out why my injury happened				.71233	
4. I question why it happened to me				.67264	
13. I have been cheated				.66254	
34. I feel as if I have been cheated by being injured				.53515	
8. I can't help but feel bitter				.44827	
28. If possible I avoid contact with other people					.62892
29. I get unduly upset about things unrelated to my injury					.60197
49. I don't feel like mixing with other performers					.59789
50. I am unusually anxious					.59595
21. I feel guilty					.58989
44. I am unable to relax					.58625
41. I am unable to enjoy myself					.55481
48. I feel a sense of hostility					.51883
84. I feel philosophical about the experience of my injury					-.51372
27. Team-mates and friends seem to have lost interest in me					.50271
46. My attitude to my surroundings is aggressive					.49186
59. I feel dejected					.49168
75. I am unable to cope with my injury					.48360
66. I am able to relax					-.44342
56. At present there is no joy for me					.42903
18. I feel helpless					.41948
20. The impact of this injury is traumatic					.40089

Item analysis using Cronbach's alpha resulted in the selection of 25 items, with five items representing each of the five sub scales (Table 2). The sub scales demonstrated acceptable levels of internal consistency, ranging from .75 to .86 (alpha coefficients for each of the five sub scales are listed in Table 2). The PRSII was positively scored with scores ranging from a low of five to a high of twenty five. At this stage of development reverse scoring only applied to one item in the sub scale Reorganisation (as denoted in Table 2).

Predictive Validity

Procedure

The predictive validity of the PRSII was assessed using the data derived from those participants who were injured for a period of greater than three weeks (n = 8) compared against those derived from participants who were injured for a period of less than three weeks (n = 14). In order to examine the differences over time (temporal patterning) between the two groups across the five sub scales, three time phases were selected. These represented early, mid, and late phases of the injury period. The anchor points across which item sampling was conducted was based on the first, middle and last observations for each participant. The data sampling ranged from 3 to 6 observations around the aforementioned anchor points, according to the injury period. Median values were then derived from each participant's raw scores for each time phase. This procedure was intended to ensure that distinct time phases were identified and sampled.

Table 2: Factor / Sub Scale Labels and Cronbach Alpha's (25 Items)

Factor	Sub Scale / Items	Cronbach's Alpha
	Devastation	.84
1	30. I am devastated by the injury.	
	67. I experience a feeling of emptiness.	
	80. My world has fallen apart.	
	63. I feel a sense of sadness.	
	70. I have difficulty accepting I am injured.	
	Dispirited	.78
2	37. I feel a sense of apathy.	
	38. I lack motivation.	
	16. I am aggrieved at what has happened.	
	61. Socially I feel like an outcast.	
	22. I try to deny what has happened.	
3	Reorganisation	.75
	15. I have much more confidence in myself.	
	72. I am not seeking support from friends.	
	14. Physically I feel a lot stronger.	
	19. I am beginning to feel like myself again.	
	69.* I suffer from increased tension.	
4	Attempts to Rationalise	.77
	9. I cannot work out why my injury happened.	
	4. I question why it happened to me.	
	13. I have been cheated.	
	34. I feel as if I have been cheated by being injured.	
	8. I can't help but feel bitter.	
5	Isolation	.87
	29. I get unduly upset about things unrelated to my injury.	
	49. I don't feel like mixing with other performers.	
	50. I am unusually anxious.	
	44. I am unable to relax.	
	41. I am unable to enjoy myself.	

* Denotes reversed item.

Data Analysis and Results

Group x Time ANOVA's with repeated measures on the second factor and a Bonferroni correction showed significant main effects for time for the dependent variables of devastation ($F_{2, 19} = 6.56$, $P < 0.01$, $\eta^2 = .195$), isolation ($F_{2, 19} = 6.26$, $P < 0.01$, $\eta^2 = .151$), reorganisation ($F_{2, 19} = 9.61$, $P < 0.01$, $\eta^2 = .373$), and attempts to rationalise ($F_{2, 19} = 6.56$, $P < 0.01$, $\eta^2 = .127$), a significant main effect for group for attempts to rationalise ($F_{1, 20} = 13.30$, $P < 0.01$, $\eta^2 = .399$), and a significant group by time interaction for isolation ($F_{2, 40} = 9.19$, $P < 0.005$, $\eta^2 = .284$). The group by time interaction for devastation approached significance ($F_{2, 40}$ 4.22, $P < 0.05$, $\eta^2 - .174$). Post hoc Tukey tests showed a significant difference across time from early to late for devastation ($P < 0.01$), mid to late for isolation ($P < 0.05$), and from early to late and mid to late for reorganisation ($P < 0.01$). For devastation and isolation this change represented a decrease from early to late, and for reorganisation, an increase from early to late, and mid to late. Although examination of the cell means suggested that for attempts to rationalise the significant difference in scores was due to participants attempting to rationalise more in the mid phase than early or late phases, the Tukey tests failed to confirm this. Observation of the cell means showed that Group 1 attempted to rationalise more than Group 2.

The group by time interaction for isolation was examined using tests of simple main effects (Winer, 1971). Tests of simple main effects for group showed a significant difference at early ($P < 0.005$) with Group 1 (injured for greater than three weeks) significantly more isolated than Group 2 (injured for less than three weeks). No significant differences were found for the mid or late phases of the injury period. Tests of simple main effects for time showed significant differences for isolation for both Group 1 ($P < 0.005$) and Group 2 ($P < 0.05$). Follow-up Tukey tests showed that for Group 1 there were significant differences between early to late and mid to late ($P < 0.01$). Examination of the cell means showed participants became less isolated over the three time phases. The follow-up Tukey test for Group 2 for isolation showed no significant differences across time, despite the significant simple main effect. For Group 2 cell means showed participants to be most isolated in the mid phase of the injury period. Table 3 contains the mean and standard deviations for the sub scales for each group.

Table 3: ANOVA: Mean and Standard Deviations for the 5 Sub Scales of the PRSII

Subscale	Injury Group		Early Mean	Early SD	Mid Mean	Mid SD	Late Mean	Late SD
Devastation	1	Severe	16.62	2.84	13.95	3.15	12.12	5.30
	2	Less Severe	10.57	3.27	11.79	4.38	10.07	3.60
Dispirited	1	Severe	12.94	3.26	14.69	3.96	12.69	4.65
	2	Less Severe	10.21	3.38	12.25	4.39	10.93	3.17
Reorganisation	1	Severe	11.56	1.37	13.75	2.24	15.25	3.77
	2	Less Severe	14.93	2.92	14.25	2.22	16.14	4.72
Attempts to Rationalise	1	Severe	15.56	2.23	16.38	4.98	14.5	4.40
	2	Less Severe	9.07	2.81	12.04	4.19	10.29	4.14
Isolation	1	Severe	15.5	4.91	14.13	3.04	9.94	3.49
	2	Less Severe	9.50	3.61	11.36	4.44	11.14	4.52

Scoring: Low = 5, High = 25

Discussion

The initial stages of development of the PRSII were conducted as the basis of providing a population specific measure for assessing the psychological responses of injured athletes. As a result of factor analysis, the five factor solution which emerged was considered to be theoretically meaningful.

The items in sub scale 1 stressed feelings of devastation, shock and emptiness, feelings which have been frequently reported in the literature to characterise athletes' psychological responses to injury (McDonald & Hardy, 1990; Pederson, 1986). Although the injury literature, generally, does not identify such intensity in athletes' emotional responses, this is perhaps not surprising in light of the variability across investigations of injury severity; the injury literature has by and large reported on injuries of less than three weeks duration. Having said this, in a recent study of 200 consecutive patients attending an orthopaedic physical therapy clinic specialising in sports medicine, 19% reported clinical levels of distress (Brewer, Petitpas, Van Raalte, Sklar, & Ditmar, 1995b). The grief and cognitive appraisal literature also supports the intensity of the mental anguish that is exhibited in response to a significant loss (e.g., Averill, 1968, Lazarus, 1991).

The highest loading items in sub scale 2 represented feelings of apathy, and lack of motivation, responses reported in both the grief (Averill, 1968; Lindemann, 1944) and injury literature (McDonald & Hardy, 1990). Also present were connotations of frustration (a response to injury supported by Pearson & Jones, 1992, and Johnston & Carroll, 1998), depression, a symptom reported in a number of studies (Brewer et al., 1995a; Chan & Grossman, 1988; Gordon, Milios, & Grove, 1992; Leddy et al., 1994; McDonald & Hardy, 1990; Pearson & Jones, 1992), and denial (Gordon & Lindgren, 1990; Gordon et al., 1992; Pederson, 1986). The construct dispirited was felt to best account for the range of emotions contained within this sub scale.

Perhaps implicit within any model of the psychological response to injury is reorganisation or recovery. The five items in sub scale 3 clearly supported a concept of physical and psychological reorganisation, with confidence and tension in this context, central features. Interestingly, acceptance was not reflected in any of the items in this sub scale, despite being implicated in some previous studies (e.g.,

Gordon & Lindgren, 1990; Pearson & Jones, 1992). The absence of the concept of reorganisation in many of the studies conducted to date may well be a function of the definition of injury adopted, which has frequently only required performers to miss as little as one days participation (e.g., Smith et al., 1990a).

Karl (1987) considered adopting a problem solving approach as a characteristic response to loss, while both Pearson and Jones (1992), and McDonald and Hardy (1990) reported responses characteristic of rationalisation. The items in this sub scale (for example, items 9 and 4) were clearly underpinned by the performers questioning or searching for meaning, a finding recently reported by Gould, Udry, Bridges, and Beck (1997b). This sub scale was considered to be best reflected by attempts to rationalise. The limited frequency with which such a construct has been reported as a characteristic response to injury, may once again be a function of injury severity, with less severely injured performers experiencing a less complex pattern of emotional responses which may not involve the need to rationalise the injury.

As a response characteristic of injured performers, isolation has been implicated in few of the empirical studies conducted to date. However, this is not surprising since the majority of studies have not used measures that account for this construct. Support for the importance of isolation in an injury context may, however, be found in the qualitative literature on injury and social support (Gould et al., 1997b; Hardy, Richman, & Rosenfeld, 1991; Johnston & Carroll, 1998; Pearson & Jones, 1992; Thoits, 1995; Udry, 1997; Udry, Gould, Bridges, & Beck, 1997a).

The assessment of the predictive validity of the PRSII involved an analysis over time of two groups of injured athletes. Group 1 comprised the more severely injured athletes (injured for greater than three weeks, n = 8) and Group 2 comprised the less severely injured athletes (injured for less than three weeks, n = 14). The results of the analysis showed a significant difference across time for the dependent variables of devastation and isolation, with a significant decrease in devastation and isolation from early to late phases. A significant increase across time was observed for reorganisation for early to late and mid to late phases of the injury period. This pattern of responses supports a progression across time from a negative towards a more positive response, a finding consistent with a number of empirical studies conducted to date (Crossman, Gluck, & Jamieson, 1995; McDonald & Hardy, 1990;

Quackenbush & Crossman, 1994; Smith et al., 1990a). Since this study was restricted to the sampling of three time phases it is not possible to unambiguously assess the oscillation between highs and lows proposed by a number of researchers (Johnston & Carroll, 1998; Pearson & Jones, 1992; Wiese & Weiss, 1987). Despite a significant increase across all three phases, the mean values for reorganisation in particular warrant further comment at this juncture. Although the late phase marked the end of the rehabilitation phase and a return to sport (full training and participation), the mean values for reorganisation at this phase were well below the maximum possible value. This suggests that while performers might have physically recovered from injury, they may not necessarily be psychologically ready to return to sport. To ignore this psychological readiness might be to expose the performer to the risk of further injury, and possibly prevent their successful return to full or optimal performance. Where additional pressures exist to return to sport, such as may be the case for the professional or high level performer, the situation may be further exacerbated. In instances such as this, psychological support might be necessary to assist the performer to make the successful transition back into sport.

Attempts to rationalise was the only sub scale which showed significant main effects for both time and group. The trend in the mean scores across time was similar for both groups with an increased attempt to rationalise during the mid phase of the injury period. Although to date there is limited support for this as a feature of athletes' psychological rehabilitation from injury, a possible interpretation in the context of the present study may be useful for future investigations in this area. The results obtained suggested the need for performers to try to rationalise their injury, whether it be with regard to the nature of its occurrence, the process of rehabilitation, or the long-term implications for their return to sport. The group differences indicate that the more severely injured athletes attempted to rationalise more than the less severely injured athletes. This may be as a result of the actual or potential loss that they had experienced in terms of time out of sport. This process of rationalising, therefore, may be particularly salient for athletes sustaining severe injuries both in terms of injury occurrence, long-term prognosis, and return to competitive sport. The coach and sports medicine team may have an important role in assisting performers in this process of rationalising aspects of the injury.

As an initial response to loss there is some support for devastation within the loss and grief literature (Bugen, 1977; Parkes, 1975). Although there is limited support for devastation, as a response to injury, in the injury literature, data collections have rarely been conducted within 24 hours of injury occurrence. The decrease in devastation across time provides some support for the trend from negative to positive affect observed by a number of researchers (e.g., Quakenbush & Crossman, 1994). The results obtained for isolation provide further support for the differences that may exist in psychological responses as a function of injury severity. The differences between groups and across time (for Group 1) raise some interesting questions. In the context of the current study, the following are offered as possible interpretations of the findings, particularly with regard to severe injuries:

1. There may be a perception amongst performers that being injured is a sign of weakness, and therefore something they do not wish to be associated with. Indeed, to some extent this perception may form the basis of a stigma whereby other performers wish to withdraw from proximal relations at one extreme for fear of it 'rubbing off on them'.

2. The intensity of the initial emotional responses may be such that the injured performers may wish or need to 'withdraw'. This would be consistent with Kübler-Ross' (1969) perception of isolation in the terminally ill. In some instances, it may even be that the injury prevents the performer from being able to get to the athletic environment. However, having initially withdrawn from what may be perceived as an additional source of stress (the athletic environment; cf., Gould et al., 1997b), it is vital that the support mechanisms / providers are available when the performer eventually seeks support.

3. While performers may still have access at home to providers of social support, it may be the absence of specific types of support that are the critical factor in their psychological rehabilitation from injury, for example, types of support that relate to perceptions of self-esteem (King, Reis, Porter, & Norsen, 1993).

4. Providers who were previously an important source of 'self-gratification' (cf., Engel, 1964), reinforcement (cf., Brasted & Callahan, 1984) and social support (cf., Peretz, 1970), may have a negative effect during times of injury, unknowingly exacerbating perceptions of loss (Gould et al., 1997b; Thoits, 1995; Udry, Gould, Bridges, & Tuffey, 1997b). As time and rehabilitation progress this may become less

significant as performers' perceptions change and normal relations and 'schedules of reinforcement' are re-established.

5. Performers feelings of isolation may place added pressures on them to resume training and participation before they are psychologically ready to do so. In this context, it is unclear whether social support acts as a buffer for the possible stress of returning to sport following injury (Rosenfeld et al., 1989; Thoits, 1995). Udry (1997) has recently suggested that well developed social support networks may protect athletes against the additional stresses created by injury.

Although the aforementioned represent a number of possible interpretations of the findings of the current study, future research may provide further insights.

Study 1(b)

Procedure

The purpose of this stage of development was to examine the 25 item five factor structure generated from the preliminary exploratory analysis using confirmatory factor analysis. The cross sectional data utilised in this part of the study was derived from a second sample of performers who had sustained an injury that precluded participation in normal training and competition for a minimum period of five weeks. Participants (n 56, male = 42, female = 14, observations = 486) were all involved in competitive sport ranging from club to representative level. Access to participants was gained via two sports injury clinics. An initial meeting was conducted with all participants who met the criteria, to explain the nature of their proposed involvement in the study, and the need to complete the inventory at five day intervals for a minimum five week period (mean = 8.75, SD ±4.53). Having completed a human consent form, participants were provided with the required number of copies of the inventory, and a completion schedule. In order to encourage adherence, the first author met with all participants on a weekly-fortnightly basis for the duration of their involvement in the study. No one who was approached and met the injury criteria declined to take part in the study. The cross-sectional sampling employed in the current study was intended to facilitate a larger sample size

Data Analysis

Prior to employing confirmatory factor analysis the raw data for the 25 items was standardised within subjects and then collapsed across subjects (see footnote 3). Confirmatory factor analysis procedures were conducted with Lisrel 8 (Jöreskog & Sörbom, 1993) using a covariance matrix as data input. The method of maximum likelihood was used to estimate parameters specified in the model and to test the goodness of fit of the data. The method of maximum likelihood has been found to perform well under a variety of less-than-optimal conditions, including small sample size and excessive kurtosis (Hoyle & Panter, 1995; Hu & Bentler, 1995). Prior to assessing model fit the data was inspected for skewness. Subsequently, parameter estimates were examined to check for a mis-specification in model. Parameter estimate statistics of interest include the standard errors and associated test statistic, and factor loadings, for example, t values >2.00 provide evidence that a parameter is significantly different from zero (Byrne, 1995).

The adequacy of fit of each model was estimated using a number of fit criteria. Lack of consensus over the best indicator of model fit has led researchers to recommend the collective use of a number of fit indices. Despite its sensitivity to non-normal data the chi-square statistic and its associated p value is still considered an important indicator of model fit. A non-significant p value or a χ^2 /df ratio of <2.00 (Q value) suggests a good model fit (Byrne, 1989; Jaccard & Wan, 1996). As an absolute index of fit (class one; Jaccard & Wan, 1996), the goodness of fit index (GFI) is recommended. The GFI provides an index of the relative amount of the observed variances and covariances accounted for by a model, and is only moderately associated with sample size (Byrne, 1989; Hoyle & Panter, 1995; Hu & Bentler, 1995). In the second class of fit indices the root mean square error of approximation (RMSEA) and the associated test of close fit statistic is recommended (Jaccard & Wan, 1996). RMSEA values less than 0.08 imply adequate model fit, and less than 0.05, good model fit. Bollen's incremental fit index (IFI) and the comparative fit index (CFI; Bentler, 1990) represent class three fit indices (Jaccard & Wan, 1996). Despite some evidence to the contrary .90 is still acknowledged as a baseline value for denoting good model fit for the GFI, IFI, and CFI (Hu & Bentler, 1995; Jaccard & Wan, 1996). The final index used for determining adequacy of model fit in the present

study was the standardized root mean residual (SRMR). The SRMR provides an index of the average discrepancy between predicted and observed correlations. A small standardised RMR value (less than 0.05) suggests an acceptable model fit. In general for one to demonstrate good model fit the fit indices would be expected to converge and yield uniformly acceptable levels of fit (Jaccard & Wan, 1996).

Results

Examination of univariate skewness and kurtosis showed they did not depart markedly from a normal distribution (skewness values ranged from -0.434 to 1.093, kurtosis values ranged from -0.593 to 3.526). However, Mardia coefficients computed using PRELIS 2.12a revealed significant multivariate skewness ($z = 48.536$, $p < 0.00$) and multivariate kurtosis ($z = 24.734$, $p < 0.00$). Therefore, the results should be interpreted with some caution.

In line with Jöreskog's (1993) recommendations, single factor models were examined first to see if each factor measured a single latent variable. Factors were then analysed pairwise to assess their pairwise independence. Subsequently, the full 25 item model was tested. The hypothesised 25 item, five-factor model did not fit the data well χ^2 (718.71, *df* 265) $p = 0.00$, GFI = 0.89, CFI and IFI = 0.81. As a result of less than adequate model fit in two of the single factor models (Devastation, Reorganisation), four of the pairwise analyses (Devastation and Reorganisation, Devastation and Attempts to Rationalise, Reorganisation and Attempts to Rationalise, Reorganisation and Isolation), and the final model, the modification indices were examined. This resulted in the removal of one item from each of the five sub scales. Factors were again analysed singularly and pairwise, and subsequently a modified 20 item model was analysed (Model 2). This procedure resulted in good model fit being obtained from 13 of the 16 analyses, including that for the full model. The three pairwise analyses that did not achieve good model fit involved items from the sub scale Reorganisation. A final model was, therefore, tested with the removal of this sub scale (Model 3). This final model provided a good fit to the data. A summary of all the analyses can be found in Table 4.

Table 4: Model Testing Results - Goodness of Fit Statistics

PRSII Model	χ^2 *p* value	*df*	GFI	IFI	CFI	SRMR	RMSEA *p* value
Model 1:							
Single factors	30.17	5	0.97	0.92	0.92	0.050	0.10
All better than	0.00						0.006
Pairwise	171.12	34	0.93	0.84	0.85	0.068	0.092
All better than	0.00						0.00
Full 25 item	718.71	265	0.89	0.81	0.81	0.061	0.061
version	0.0						0.00031
Model 2:							
Single factors	7.25	2	0.99	0.98	0.98	0.026	0.074
All better than	0.03						0.19
Pairwise	48.30	19	0.97	0.95	0.95	0.040	0.057
7 pairwise better than	0.00023						0.25
3 pairwise	64.13	19	0.97	0.87	0.89	0.058	0.071
better than	0.00						0.035
(reorganisation)							
20 item version	358.44	160	0.93	0.89	0.89	0.049	0.052
	0.0						0.31
Model 3:							
Single & pairwise							
as for Model 2							
16 item version	197.47	98	0.95	0.92	0.92	0.046	0.047
	0.00000011						0.68

Parameter estimates for the modified models can be found in Appendix 2. The table contains the standard error and *t* value for each parameter estimate. All *t* values were significant (greater than 2.0). Standard errors ranged from 0.049 to 0.063, and factor loadings from a low of 0.22 to a high of 0.62.

Discussion

The purpose of this second study was to assess the 25 item, five factor PRSII derived from the previously reported exploratory factor analysis. As a result of confirmatory factor analysis two models demonstrated good model fit and provide support for the PRSII as a measure by which the psychological responses of injured athletes can be assessed. Bentler and Chou (1987) suggest that maximum likelihood estimators are usually acceptable even when distributional assumptions are violated. However, in light of the slight skewness and kurtosis in the raw data, the results of the present confirmatory factor analysis should perhaps be the treated with some caution.

One of the advantages of confirmatory factor analysis is that it can guide model re-specification when a hypothesised model does not demonstrate adequate model fit (Loehlin, 1992). This process of re-specification originally led to the removal of one item from each sub scale. The item removed from the sub scale devastation, 'I feel a sense of sadness', was not considered to detract from the meaning attached to this sub scale. Indeed it emphasised the intensity of the distress that this sub scale reflects (e.g., Brewer et al., 1995b). The removal of 'I try to deny what has happened', from the sub scale dispirited, also made conceptual sense as a number of researchers have proposed that denial does not occur in injured athletes (e.g., Smith et al., 1990a). Interestingly, the item initially deleted from the sub scale reorganisation was the only item involved in this stage of the analysis that contained an explicit physical dimension. Such a dimension may be inappropriate in the assessment of psychological responses. The bigger issue with regard to the sub scale reorganisation, however, was the slight improvement in overall model fit achieved as a result of the removal of this sub scale. This is considered to reflect a limitation in the sampling procedures employed in this study, which may have not adequately accounted for the period of return to sport. Conceptually, reorganisation is of major

importance in psychological response to injury research. Confidence, implicit within items in this sub scale is an important feature of athletes' recovery from injury, and re-entry into sport, as evidenced by a number of empirical studies. For these reasons, the authors recommend that despite a more adequate model fit being derived with this sub scale removed (Model 3), further validatory research should be conducted with the inclusion of this sub scale at the present time (Model 2). That improved model fit was achieved by the removal of the item 'I question why it happened to me', from the sub scale attempts to rationalise was somewhat surprising. This feature of questioning in injured athletes, has been identified recently by Gould et al. (1997b), and the removal of this item perhaps suggests that this revised sub scale may now better reflect despair, or a feeling of having been cheated, than 'attempts to rationalise'. Further examination of this sub scale seem warranted. The face validity of the sub scale isolation was considered to be enhanced by the removal of the item 'I get unduly upset about things unrelated to my injury'. The context of the performers isolation is now more clearly identifiable (injury), while not detracting from the social connotations contained in the sub scale.

Although it is acknowledged that the PRSII is still in an early stage of development and further validatory research will need to be conducted, the confirmatory factor analysis provided some support for the use of the PRSII as a measure of athletes' psychological responses to sport injury.

Summary, Conclusions and Recommendations

The current paper reports the initial stages in the development of a population specific measure with which the psychological responses of injured athletes may be assessed. Conceptually, some support exists for the sub scales derived from these initial stages of development, and confirmatory factor analysis largely upheld the initial factor structure derived from the exploratory factor analysis. An important feature of the these initial stages of development, was the intraindividual design adopted. A number of researchers have called for the development of process-oriented measures that address intraindividual changes, as well as being capable of interindividual comparisons (Aldwin, 1994; Lazarus & Folkman, 1984). The PRSII provides such a measure.

This said, although, the confirmatory factor analysis provided support for the factor structure, further analysis will be required to address some of the limitations in the analysis reported. In this, the sample size within the exploratory analysis is of particular concern. Unfortunately, the problem faced in the exploratory factor analysis of gathering data that for each athlete embraced the whole injury period (from 24 hours of injury occurrence through to their return to competitive sport), in sufficiently large numbers to address concerns of sample size, quite simply could not be fully resolved. The subsequent confirmatory factor analysis with a separate sample was considered at least a partial resolution of this problem.

The analysis conducted to examine the predictive validity of the PRSII was conducted across three time phases; early, mid and late phases of the injury period. These time phases were selected as the basis for a meaningful comparison between the two groups, of differing injury severity. An implicit assumption underlying this procedure was that athletes responses would reflect the stage of the recovery process relative to individual prognosis. Although, this was considered a reasonable assumption, it could be considered a limitation of the study. The results of the analysis of the predictive validity highlighted a number of factors which researchers in this area might wish to consider in their continued efforts. Although the data did support a transition from a generally negative to a generally positive psychological state during the injury period, in the final phase mean scores suggested that physical readiness to return to sport was not necessarily matched by psychological readiness. Future studies should therefore, extend the data collection period through the initial stages of return to sport. The continued negative states observed in this study may well have been a consequence of the duration of the injury period (injury severity). Indeed, the results for attempts to rationalise and isolation reinforced the differences that exist in psychological responses to injury as a function of injury severity (Crossman & Jamieson, 1985; Leddy et al., 1994; Smith et al., 1993). The importance of this feature for the design and implementation of research into psychological responses to injury cannot be over-emphasised. Future research needs to pursue a more adequate definition of injury severity, than has frequently been adopted (e.g., two days non participation in a large number of studies). This, along with more frequent data collection, standardised across studies, would enable an assessment of the temporal pattern of responses. This may be particularly important for

performers who sustain more protracted injuries. Another issue emanating from the present findings which future research should explore is the importance of different types of social support in helping performers deal with their initial trauma following injury and their subsequent return to sport. In addition to the possible adverse effects of isolation during the injury period, the role of coaches and the sports medicine team in the provision of different types of social support may be of particular interest.

Perhaps, above all, the present study highlights a number of response characteristics that have not been accounted for in the measures that have been utilised in injury research to date. The assessment of such response characteristics is essential if sports psychologists, coaches, and sports medicine personnel are to provide the most appropriate psychological assistance to injured athletes and thereby expedite their successful rehabilitation and return to sport.

Chapter 4

Injury Rehabilitation: A Goal-Setting Intervention Study (Study 2)

Introduction

Although more than 200 variables have been proposed to affect patient adherence behaviours (Meichenbaum & Turk, 1987), goal-setting is arguably the most underestimated and underutilised in the field of injury rehabilitation (DePalma & DePalma, 1989). As a strategy to enhance motivation and adherence in the rehabilitation of injuries, goal-setting has received much support (Brewer, Jeffers, Petitpas, & Van Raalte, 1994b; Fisher & Hoisington, 1993; Ievleva & Orlick, 1991; Weise & Weiss, 1987; Worrell, 1992). However, to date much of this support has been anecdotal, and there is limited empirical support for the use of goal-setting in injury rehabilitation settings.

Initial research into psychosocial and psychological factors that affect injury rehabilitation adherence appears to have propagated the proposed effects of goal-setting as a means of enhancing adherence behaviours. Fisher, Domm, and Wuest's (1988) study into the differences between adherents and non-adherents was one of the first studies to suggest athletes who adhered to rehabilitation programmes were more self-motivated than non-adherents. Unfortunately, no information was provided as to the psychometric properties of the Rehabilitation Adherence Questionnaire (RAQ) utilised in this retrospective study, and subsequent psychometric testing has questioned its psychometric properties (Brewer, Daly, Van Raalte, Petitpas, & Sklar, 1994a). Research by Duda, Smart, and Tappe (1989) also provided support for the predictive validity of self-motivation in the context of rehabilitation adherence. Specifically, Duda et al. found athletes who demonstrated greater adherence to be more goal directed or self-motivated, and placed more emphasis on mastery or task involvement goals in sport. A more recent study by Byerly, Worrell, Gahimer, and Domholdt (1994) found no correlation between

adherence and self-motivation. However, a number of methodological limitations including sample characteristics, the measurement of adherence, and the use of the RAQ suggests a need for caution in generalising from Byerly et al.'s findings.

In what appear to be the only two published studies of their kind, Theodorakis et al. (1996, 1997) examined differences in personal goal-setting, self-efficacy, self-satisfaction, pre-testing anxiety, and performance, as a result of goal-setting, between injured and non-injured subjects. The first of these intervention studies included two experimental groups (an injured and non-injured group), and a control group (non-injured). Subjects performed four trials of a knee extension task on an isokinetic dynamometer. Prior to the third and fourth trials subjects in the two experimental groups set personal goals and completed self-efficacy and self-satisfaction scales. Significant performance improvements were reported for the two experimental groups, and correlation coefficients between self-efficacy, self-satisfaction, goal-setting, and performance were significant. In the second study, an experimental group and a control group of physical education students participated in a four week quadriceps strengthening programme using an isokinetic dynamometer (three sessions per week). The experimental group set personal goals in each training session. Once again significant performance improvements were reported for the experimental group. No significant differences for group were found for pre-testing anxiety, self-satisfaction, or self-efficacy. Although the authors suggest the findings confirm the use of goal-setting enhances rehabilitation results, both studies lacked ecological validity in relation to the rehabilitation setting. As a result of methodological limitations in relation to the provision of feedback, the authors suggest some caution is required in interpreting the results from the first study. The use of a single item response scale to assess self-efficacy and self-satisfaction in both studies does raise some questions about the validity of these measures.

Support for the use of goal-setting as a means of enhancing performance can be found within industrial and organisational settings, and to a lesser extent sport settings (where findings have been somewhat equivocal). The basic assumption of goal-setting research is that goals are immediate, though not sole, regulators of human action (Locke & Latham, 1990). As such, goal-setting skills can essentially determine the probability, and therefore the experience, of success (Hardy, 1992). Although goal-setting operates primarily as a motivational mechanism to influence the degree of

effort in striving toward a goal, there are also cognitive effects from participating in goal-setting (Locke & Latham, 1990). Such cognitive effects include focusing and directing attention, enhancing persistence, and promoting the development of alternative strategies for improving performance. Since situational and population characteristics have been proposed to moderate the effects of different types of goal-setting strategies, there has been some debate within the sport psychology literature as to the relative merits of different types of goals (Hardy, Jones, & Gould, 1996; Kingston & Hardy, 1994). Although it is beyond the scope of the current paper to provide a detailed discussion of the salience of different types of goals, generally it has been suggested that process goals may have particular merit in stressful situations, enhancing self-efficacy through perceptions of control, and focusing attention (Kingston & Hardy, 1997). Such perceptions of control have been proposed to be particularly important in the context of treatment adherence (Meichenbaum & Turk, 1987). In this context, performance goals of a proximal nature that are negotiated, realistic, and flexible have been advocated (Heil, 1993; Meichenbaum & Turk, 1987). Although there is only anecdotal evidence within the injury rehabilitation literature to support such an approach to goal-setting (DePalma & DePalma, 1989; Fisher and Hoisington, 1993; Heil, 1993), empirical support can be found for the use of process and performance goals in the mainstream sport psychology literature (e.g., Burton, 1989; Kingston & Hardy, 1997). Moreover, it has been suggested self-motivation is better sustained through proximal sub-goals than distal goals (Bandura, 1988). Distal goals give purpose to an activity and serve a general directive function, but proximal goals, according to Bandura (1986, 1988), provide for enhanced perceptions of self-efficacy.

Within social learning theory, an important cognitively based source of motivation operates through the intervening processes of goal-setting and self-evaluation (Bandura & Cervone, 1983). As such, goals specify the conditional requirements for positive self-evaluation, defining for the individual what is an acceptable level of performance and direction of action (Bandura, 1988). Self-efficacy beliefs influence personal goal-setting and mediate the relationship between goal intentions and motivation (Bandura & Cervone, 1983). Bandura's (1977, 1982) theory of self-efficacy posits that if proper incentives and necessary skills are present, self-percepts of efficacy influence thought patterns, behaviour, actions, and

emotional arousal. According to Bandura (1982), perceived self-efficacy helps explain amongst other things, changes in coping behaviour, level of physiological stress reactions, and despondency to failure experiences. Judgements of self-efficacy will determine how much effort people will expend, and how long they will persist in the face of obstacles (Bandura, 1982, 1986). Bandura has suggested that efficacy expectations can be predicted by four factors; performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal.

Although the exact mechanism underlying the effects of self-efficacy on emotions, thoughts, and behaviour are unclear, the relationship is thought to be reciprocal (Bandura, 1988; Locke & Latham, 1990). For example, an emotional response will both result from actions, and also provide a direct stimulus for action (via a mechanism of appraisal; Locke & Latham, 1990). It has been suggested that when people feel satisfied with their performance, they generalise this positive affect to the task. In two studies which examined the effects of goal-setting and self-efficacy within a sporting context, Miller and McAuley (1987) reported that a goal-setting training group had significantly higher levels of self-efficacy and perceived their performances as being more successful, than a non goal-setting group. Although there was no significant difference in performance, the goal-setting group did perform better. In a more recent study, Lerner and Locke (1995) found self-efficacy to be significantly related to personal goals, goal commitment, and performance.

That self-efficacy not only affects the amount of effort devoted to a task, the amount of persistence when difficulties arise, and the individual's physiological reactions, has been confirmed within health settings. Indeed, within the health psychology literature patient self-efficacy ratings have predicted behavioural change in aspects such as weight control, recovery from myocardial infarction, and adherence to preventative health exercise programmes (Meichenbaum & Turk, 1987). Although Dishman (1986) has suggested self-efficacy generally proves to be a poor indicator of adherence, according to Meichenbaum and Turk (1987), the finding that people's perceptions of their capabilities affect how they behave has major implications for facilitating treatment adherence.

In the small number of studies in sport injury rehabilitation adherence, similar findings have been reported to those within health psychology. Taylor and May (1996) found greater self-efficacy in the ability to perform prescribed rehabilitation

modalities, stronger beliefs in treatment efficacy, and a higher value attached to rehabilitation, were all related to compliance. Similarly, Duda et al. (1989) found athletes who believed in the efficacy of the treatment had greater levels of adherence. Theodorakis et al. (1996) found significant correlation's between self-efficacy, self-satisfaction, goal-setting, and performance, for two experimental goal-setting groups (injured and non-injured).

Although a considerable amount of research has focused on the emotional and psychological responses of injured athletes, there has been a limited attempt to examine such responses within the context of rehabilitation adherence. Research that has examined the responses of injured as compared to non-injured athletes has generally reported greater negative affect, lower levels of self-esteem, and higher levels of depression and anxiety amongst the injured athletes (Leddy, Lambert, & Ogles, 1994; Pearson & Jones, 1992; Smith, Scott, O'Fallon, & Young, 1990a). Similar findings and direction of responses have been reported for athletes pre to post-injury (Smith et al., 1993). However a number of methodological limitations, in particular the use of non-population specific measures (e.g., Profile of Mood States - POMS), and inconsistency in the definition of injury (severity), have precluded generalisation of much of the research. While methodological limitations have also precluded a clear assessment of the temporal pattern of athletes psychological responses there has been support both for a trend from negative to positive affect (McDonald & Hardy, 1990; Smith et al., 1993), and alternatively, an oscillation between highs and lows (Pearson & Jones, 1992). In response to the need for a population specific measure with which the psychological responses of injured athletes could be assessed, Evans, Hardy and Mullen (1996) developed the Psychological Responses to Sport Injury Inventory (PRSII). Evans, Hardy and Mullen (1996) reported significant differences between two groups of athletes of differing injury severity for the dependent variables of isolation and attempts to rationalise. Significant differences across time were observed for devastation and reorganisation. No significant differences were observed for dispirited.

Although as Daly, Brewer, Van Raalte, Petitpas and Sklar (1995) have suggested, there is a strong theoretical rationale for examining the relationship between emotional responses and rehabilitation adherence, their study appears to be the only one conducted to date. Daly et al. (1995) reported emotional disturbance to

be inversely related to one measure of adherence (attendance at physiotherapy sessions), but unrelated to another (physical therapist / athletic trainer ratings). The results of this study suggested that emotional disturbance may be a marker for poor adherence to sport injury rehabilitation programmes (Daly et al., 1995).

The purpose of the current study was to address calls for well controlled longitudinal intervention studies that not only examine the effects of specific psychological strategies on rehabilitation adherence, but additionally, explore intervention effects on athletes' emotional responses and self-perceptions of efficacy (Brewer, 1998; Cupal, 1998; Duda et al., 1989; Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998). To this end, the present study examines the effects of a five week goal-setting intervention study on rehabilitation adherence, perceptions of self-efficacy and treatment efficacy, and specific psychological responses of injured athletes (as assessed by the PRSII). Based on the available research literature a number of hypotheses were established;

Hypothesis 1: Goal-setting would result in a higher level of rehabilitation adherence for the experimental group.

Hypothesis 2: The goal-setting intervention would engender higher levels of (a) self efficacy, and (b) treatment efficacy.

Hypothesis 3: Significantly higher levels of (a) reorganisation, and significantly lower levels of (b) dispirited, and (c) isolation, would result across time from the goal-setting intervention. No hypotheses were postulated for group differences as a result of the goal-setting intervention for devastation and attempts to rationalise.

Method

Sample

The participants were 39 individuals who had sustained a sports injury that precluded their participation in normal training and competition for a minimum period of five weeks. The participants were identified through their attendance at one of two sports injury clinics. Participant selection was based on injury severity, and willingness to participate in the study. Participants were randomly assigned to one of three groups, an experimental group that received a goal-setting intervention (GS group), a social support control group (SSC group), and a traditional control group

(TC group). When a match was obtained for a participant already assigned to a group, the new participant was randomly assigned to one of the other two groups. When two matches had already been obtained and assigned to a group, and a third match was identified, that participant was assigned to the remaining group. Participants were matched across groups according to the attending physiotherapist, nature of the injury, stage in rehabilitation, sport, level of participation, and gender. Participants who could not be matched across the three groups according to the aforementioned criteria were subsequently omitted from the study (n = 38). The injuries sustained had all required an operative procedure, the site of the injury although predominantly the knee (anterior or posterior cruciate ligament; n = 30), also included the shoulder (dislocations; n = 6), and ankle or lower leg (fractures; n = 3). Subjects ranged in age from 17 to 39 (mean = 25.42, SD = ±5.32). With regard to gender, six were female, and 33 male. At the time of injury occurrence all participants were involved in sport at either a competitive recreational level (n = 6) or within a more formal serious competitive structure (n = 33).

Measures

Rehabilitation Adherence. A variety of measures have been utilised to assess adherence in rehabilitation settings, many of which have been found to lack validity (Brewer, 1998). Measures of adherence have included attendance at rehabilitation sessions, patient and therapist ratings of adherence during therapy sessions, and practitioner behavioural observations / judgements. In the current study two measures of adherence were adopted. The first was based on patient self-report of rehabilitation exercise undertaken on a daily basis over the five week period of the study through completion of a daily diary (GS group and SSC group), or an exercise log (TC group). Using a frequency value of performing the prescribed exercises (derived from the self-report measure), an actual as compared to prescribed, weekly adherence rate was calculated (prescribed adherence as a frequency estimate was obtained from the attending physiotherapist). This was calculated as a percentage (actual as a percentage of prescribed). The second measure of adherence was an overall physiotherapist estimate of patient adherence. This was based upon the physiotherapist's knowledge of the patient, clinical symptoms, and rehabilitation

progress, during the five week period. This estimate was expressed as a single percentage value. Despite the concerns that have been expressed as to the efficacy of physiotherapist estimates of adherence, this measure was utilised to address the need for multiple measures of rehabilitation adherence in research of this nature (Brewer, 1998; Meichenbaum & Turk, 1987).

Self-Efficacy / Treatment Efficacy. The measure adopted in the current study was the Sports Injury Rehabilitation Beliefs Survey (SIRBS; Taylor & May, 1993, 1996; Appendix 3). SIRBS was originally derived using principal components factor analysis, which supported a four factor structure (Taylor & May, 1993). In the revised version, additional items were added to the self-efficacy scale, and a further item was constructed to assess the value of satisfactory rehabilitation to the individual. For this revised version, Cronbach's alpha for the internal consistency of the scales were as follows: self-efficacy (0.91), treatment efficacy (0.83), susceptibility (0.84), and severity (0.91; Taylor & May, 1996). The SIRBS utilised contained 19 items. Items were responded to on a seven point Likert scale, with responses anchored at each of the seven points across a range of, very strongly disagree (1) to very strongly agree (7). Although the SIRBS contained sub scales to assess self-efficacy, treatment efficacy, susceptibility (to re-injury), severity, and rehabilitation value, only the sub-scales pertaining to self-efficacy and treatment efficacy were utilised in the current study.

Psychological Responses to Injury. Subjects psychological responses to injury were assessed using the 20 item version of the Psychological Responses to Sport Injury Inventory (PRSII; Evans & Hardy, manuscript in preparation - Appendix 4). The five sub scales that comprise the PRSII measure devastation, dispirited, attempts to rationalise, isolation and reorganisation. The original five factor 25 item version of the PRSII was developed using exploratory factor analysis (Evans, Hardy and Mullen, 1996). Cronbach's alpha for the internal consistency of the five sub scales were as follows: devastation (0.84), dispirited (0.78), reorganisation (0.75), attempts to rationalise (0.77), and isolation (0.87). A study of athletes of differing injury severity supported the predictive validity of the PRSII (Evans, Hardy, & Mullen, 1996). Subsequent confirmatory factor analysis of the

PRSII resulted in the removal of one item from each sub scale (Evans & Hardy, manuscript in preparation). The PRSII contained a five point Likert response scale that was anchored at strongly agree (5) and strongly disagree (1).

Procedure

Access to participants was gained through attendance at one of two sports injury clinics. Athletes attending these clinics who had sustained a sports injury which would preclude them from participating in normal training and competition for a minimum five week period were initially approached to take part in the study by the attending physiotherapist. After agreeing, the athletes were contacted by the author, and an initial meeting arranged. All athletes were met at an agreed date and time, during which an outline of the study, and the requirements of their possible involvement, were explained. To avoid possible contamination, participants were advised that the study was intending to examine the psychological effects of injury, in relation to athletes' psychological responses and rehabilitation adherence. Participants were blind to the interventionist nature of the study. All participants were advised that their involvement would require completing the PRSII and SIRBS at five day intervals for a period of five weeks (8 time phases), during which regular contact would be maintained. Having obtained verbal consent, a second meeting was arranged to provide participants with the necessary materials. At this meeting participants were provided with the pre-requisite number of inventories, a daily diary or exercise log (depending on the group they were assigned to), a completion schedule for the PRSII and SIRBS, a demographic questionnaire (requesting information about their sporting involvement, injury history and current injury), and information explaining the requirements of their involvement in the study (this included a home contact telephone number for the first author). The completion schedule was intended to facilitate adherence; the starting date for completion of the inventories was the following day. The schedule required that both the PRSII and SIRBS be completed on the same day. The demographic questionnaire obtained information that was required in order to confirm the matching of participants. Participants were advised that prior to their involvement in the study, they would be required to sign a human consent form that would enable access to confidential

physiotherapist records. None of the athletes approached declined to participate in the study or refused access to the physiotherapist's records. The participants were requested not to look back over the inventories they had completed during the five week period. Participants were advised that no information gained as a result of their individual involvement in the study would be divulged to their physiotherapist. This was considered essential to eliciting from them a reliable record of their adherence, through completion of the daily diary / training log.

Experimental Goal-setting Intervention Group. Participants assigned to the experimental goal-setting group met with a sport psychologist (author) every seven to ten days, throughout the five week period. These meetings ranged from one hour to one and three-quarter hours in duration each. For the experimental group this meeting involved providing a goal-setting intervention based upon feedback from the physiotherapist and the participant. The intervention commenced during the second meeting with each participant, and continued throughout the duration of their involvement in the study. The goals included process and performance goals, of a proximal nature. All goals were specific to the task of injury rehabilitation, were negotiated between the participant and sport psychologist, and recorded on a goal-setting form designed for the study. This process invariably involved the setting of multiple goals (this ranged from two to five). The goals were specific to each individual's particular needs and circumstances. At each subsequent meeting the extent to which the goals were achieved was reviewed, and recorded, and in part, formed the basis for the next set of goals. The approach to the goal-setting intervention adopted in this study was based upon guidelines proposed within the treatment adherence, psychology of injury, and applied sport psychology literature (e.g., Burton, 1989; Fisher, 1990; Hardy et al., 1996; Heil, 1993; Kingston & Hardy, 1994; Meichenbaum & Turk, 1987). Participants in this group completed a daily diary in which they recorded all rehabilitation activities undertaken, how they felt their rehabilitation was progressing, and any other information which they felt was relevant to their injury, psychological / emotional state, and rehabilitation.

Social Support Control Group. Participants assigned to the social support control group also met with a sport psychologist every seven to ten days throughout the five week period. These meetings ranged in duration from forty minutes to one hour. This was intended to control for the interaction that occurred between the sport psychologist and participants in the goal-setting group, during which the sport psychologist would have implicitly provided a form of social support. During meetings with participants in the social support group the sport psychologist simply acted as a source of social support. The type of social support provided during these meetings predominantly comprised emotional support, listening support, shared social reality, and task appreciation (Rosenfeld, Richman, & Hardy, 1989; types of social support implicitly provided to the experimental group). Participants in this group also completed a daily diary in which they recorded the same information as participants in the experimental goal-setting group. This was intended to control for the effects that daily self-monitoring (in the form of a diary) is proposed to have on adherence behaviours (Kanfer, 1970; Meichenbaum & Turk, 1987).

Traditional Control Group. The only contact that the sport psychologist had with participants in the traditional control group during their involvement in the study, was a telephone call every 10 days. This was performed purely to encourage adherence to the study. These telephone calls ranged from five to ten minutes in duration. In order to counteract against some of the effects of daily self-monitoring, participants in this group were required to record the date and nature of any rehabilitation activities they completed, in a training log. They were not required to complete a daily diary.

Physiotherapists. The role of the chartered physiotherapists involved in this study was critical. The physiotherapists were fully aware of the nature of the study, and played an integral part in matching participants across the three groups. However, the physiotherapists were blind to the group to which any participant was assigned. Regular contact was maintained with the physiotherapists throughout the duration of the study. Feedback was received from the physiotherapists on the clinical progress of all participants, the rehabilitation that they had prescribed, the

extent to which they felt a participant was adhering to the rehabilitation, and set-backs participants were experiencing. Each participant was discussed on an individual basis.

Data Analysis and Results

Due to the sample size, and exploratory nature of the study, separate two-factor (Group x Time) repeated measures ANOVA's with a Bonferroni correction were employed to examine effects on the dependent variables (Stevens, 1996). In a number of cases where Mauchly's test of sphericity was found to be significant, an adjustment was made to the *df* using the Huynh-Feldt Epsilon.

Adherence. Results of the analysis of patient self-report of adherence showed a significant main effect for group ($F_{2, 24} = 16.37$, $P = .000$, $\eta^2 = .577$). Follow up Tukey tests showed that the GS group reported a significantly higher level of adherence to the prescribed rehabilitation programme than the other two groups ($P < .01$). Analysis of the physiotherapist estimate of adherence showed no significant group differences ($F_{2, 36} = 1.82$, $P = .177$). The results provided partial support for hypothesis 1, and the predicted effects of the goal-setting intervention on rehabilitation adherence.

SIRBS. Significant group by time interactions were found for the dependent variables of self-efficacy ($F_{7\,47,\ 89\,66} = 2.80$, $P = .01$, $\eta^2 = .189$) and treatment efficacy ($F_{14, 168} = 2.35$, $P = .005$, $\eta^2 = .163$). A significant main effect for group was found for self-efficacy ($F_{2, 24} = 6.93$, $P = .004$, $\eta^2 = .366$). No significant main effects were identified for time. The group by time interactions for self-efficacy and treatment efficacy were examined further using tests of simple main effects. This involved the use of one-way ANOVA's. Tests of simple main effects of group for self-efficacy showed a significant difference at time 3, 4, 6, 7, and 8 ($P < .01$). Follow up Tukey tests showed that for time phases 3, 4, 6, 7, and 8 both the GS group and SSC group possessed significantly higher levels of self-efficacy than the TC group ($P < .01$). At time phases 3, 4, 7 and 8, the GS group showed significantly higher levels of self-efficacy than the SSC group ($P < .01$). Tests of simple main effects of time

showed no significant differences. The results of the analyses provided some support for hypothesis 2(a), evidenced by the differences between the GS group, and the SSC and TC group.

For treatment efficacy, tests of simple main effects of group showed a significant difference at time 8 ($P < .01$). The follow up Tukey tests revealed a significant difference between the GS group and the other groups ($P < .01$), with the GS group having a significantly higher level of treatment efficacy. No significant differences were observed for time. The significant difference at time 8 provided partial support for the effects of the goal-setting intervention on treatment efficacy (hypothesis 2b). Tests of simple main effects for time showed no significant differences. The Tukey test of the main effect for group on self-efficacy failed to identify where the differences lay. However, observation of the cell means (GS 24.64, SSC 23.88, TC 20.46) suggested the difference was between the GS group and TC group, with the GS group having a higher level of self-efficacy than the TC group. Table 5 contains the cell means for self-efficacy and treatment efficacy.

Table 5: Cell Means for Self-Efficacy and Treatment Efficacy

	Self-Efficacy			Treatment Efficacy		
Time	GS	SSC	TC	GS	SSC	TC
1	22.92	24.31	21.38	22.23	21.00	21.92
2	23.85	23.85	21.31	23.08	20.92	22.31
3	25.08	23.77	20.38	23.54	22.00	20.69
4	25.77	24.54	21.46	24.00	20.77	21.00
5	24.31	24.38	20.46	23.23	21.85	21.15
6	25.15	24.38	20.15	23.62	22.00	21.46
7	24.46	23.08	20.00	23.68	21.00	20.54
8	25.54	22.69	18.54	24.23	20.00	19.77

PRSII. Analyses of the sub scales of the PRSII produced significant main effects for time for devastation ($F_{3, 36} = 5.94$, $P = .002$, $\eta^2 = .331$), dispirited ($F_{3.55, 42.54} = 3.91$, $P = .01$, $\eta^2 = .246$), and reorganisation ($F_{3.92, 47.11} = 6.64$, $P = .000$, $\eta^2 = .356$), and a significant group by time interaction for reorganisation ($F_{10.47, 125.73} = 2.59$, $P = .006$, $\eta^2 = .177$). With regard to the group by time interaction for reorganisation, tests of simple main effects for group showed a significant difference at time 8 ($P < .005$), and a significant simple main effect for time for the GS group ($P < .01$). Follow up Tukey tests for the effect for group at time 8 showed the GS group to be significantly more reorganised than both the SSC group and the TC group ($P < .01$). Tukey tests of the main effect for time for the GS group showed a significant difference between most time phases ($P < .01$) with the exceptions being time 1 to 2, time 5 to 6 and 7, and time 6 to 7. Observation of cell means revealed a gradual increase in the level of reorganisation over the eight time phases. The findings for reorganisation provide support for the hypothesised (3a) differences between the groups as a result of the goal-setting intervention.

Post hoc Tukey tests of the main effect for time for devastation showed a significant difference between time 1 to 4 through 8 inclusively. The direction of these differences was a decrease in devastation over time. Despite this overall trend, although not significant, there was some oscillation between mean values. Analysis of the main effect for time for dispirited showed a significant difference between time 2 and 8 ($P < .01$). These differences reflected a decrease in the mean value of dispirited between the two time phases. Since the predicted group differences for dispirited were not found ($F_{2, 24} = 4.69$, $P = .019$), hypothesis 3(b) was rejected. Follow up Tukey tests of the main effect for time for reorganisation showed a significant difference between time 1 to 4 through 8 inclusively ($P < .01$). These differences reflected an increase in performers level of reorganisation across the time phases. Since no significant group differences were observed for isolation ($F_{2, 24} = 1.10$, $P = .348$), hypothesis 3(c) was rejected. Table 6 contains the cell means for the sub scales of the PRSII.

Table 6: Cell Means for the PRSII

	Devastation			Dispirited			Reorganisation			Attempts to Rationalise			Isolation		
Time	GS	SSC	TC	GS	SSC	TC	GS	SSC	TC	GS	SSC	TC	GS	SSC	TC
1	10.62	11.23	11.00	9.85	10.46	11.62	10.62	10.92	11.00	10.69	10.23	12.38	10.15	9.00	10.15
2	9.92	10.08	10.08	10.31	10.54	11.77	10.92	12.23	10.62	10.77	10.54	11.38	9.92	9.38	9.92
3	8.92	9.92	9.54	8.69	9.92	11.54	12.38	12.15	12.08	10.15	10.15	11.77	8.54	8.92	10.46
4	8.62	9.46	9.23	9.77	9.85	11.31	12.54	12.62	11.77	11.08	10.31	11.00	8.15	8.15	10.23
5	8.62	9.31	8.92	8.46	8.92	11.00	13.00	13.00	12.62	10.46	10.54	11.31	8.31	8.00	9.15
6	7.46	8.85	9.08	8.46	9.00	11.15	13.62	13.23	11.62	10.00	9.92	11.00	7.69	7.54	9.62
7	7.23	9.08	9.77	8.23	9.31	11.54	13.69	12.38	11.85	9.69	10.15	11.23	7.08	8.38	10.08
8	7.38	9.85	8.77	8.00	9.46	9.69	14.46	12.31	11.08	9.62	10.69	10.15	6.77	8.77	9.62

Discussion

The results of the current study provide support for the use of goal-setting in injury rehabilitation settings. The significant main effect for group on athletes' self report of adherence supported the hypothesised effects of goal-setting on rehabilitation adherence in injured athletes. Athlete self report was assessed via completion of a daily diary or training log. Although some difficulties were encountered in accurately interpreting the information contained within the diary / training log, such difficulties were not considered to confound the significant difference between the GS group and the SSC and TC groups. Indeed, the same level of significance was found when the author repeated the procedure of diary / training log interpretation and analysis. This finding is consistent with the reported effect of self-motivation as a predictor of injury rehabilitation adherence (Duda et al., 1989), and the effect of goal-setting upon the performance of injured athletes (Theodorakis et al., 1997). No significant differences were observed for the physiotherapist estimate of adherence. This finding highlights the difficulties generally reported with measures of adherence based on physiotherapist / practitioner judgements (Brewer, 1998; Meichenbaum & Turk, 1987; Smith, 1996).

With regard to self-efficacy, the findings for the goal-setting intervention group are similar to those of Miller and McAuley (1987) in a non-injury goal-setting intervention study. The current study found significant differences between the GS group and the TC group on time phases 3, 4, 6, 7, and 8, and between the GS group and the SSC group for time phases 3, 4, 7 and 8. These findings are not consistent with those reported by Theodorakis et al. (1997) who found no significant differences in self-efficacy between a goal-setting intervention group and a control group, in an injury rehabilitation intervention study. Bandura (1982) suggested that perceived self-efficacy will determine the amount of effort invested and persistence in the face of obstacles. Although not examined directly, the results with regard to self-efficacy and adherence suggest that this may provide a possible explanation of the current findings. According to Bandura, efficacy expectations can be predicted by performance accomplishments, vicarious experience, verbal persuasion and emotional arousal. Although the relationship between goal-setting and self-efficacy is considered to be reciprocal, the present study provides some support for the effect

of goal-setting upon self-efficacy; through the use of proximal goals (Bandura, 1988). In particular, goal-setting may have enacted performance accomplishments in a rehabilitation context. The significant differences in self-efficacy between the SSC group and TC group although not expected, are perhaps not surprising. Recently, social support in injury rehabilitation has received increased research attention (Udry, 1996, 1997). Research into social support and injury rehabilitation has suggested that support for rehabilitation participation is a better predictor of rehabilitation adherence than support for athletic participation generally (Duda et al., 1989). Although the social support control condition in the current study was primarily intended to control for the social support (in an injury rehabilitation context) implicitly provided to the GS group, the results suggest that it had a significant effect upon self-efficacy. One possible explanation for these effects is that in providing social support (particularly in the form of shared social reality, and task appreciation), the sport psychologist inadvertently acted as a source of vicarious experience and verbal persuasion information for athletes. Additionally, the support provided may have induced a positive mood, which in turn enhanced self perceptions of efficacy (cf., Bandura, 1988). However, equally, the possible effects of daily self-monitoring should not be overlooked. Both the GS group and SSC group completed a daily diary which might have acted as an important source of efficacy expectations, primarily through performance accomplishment. It may also have encouraged the SSC group to implicitly set goals. It is possible these factors may have also contributed to the differences between the SSC group and TC group. Although the mechanism for the effects of social support on injury rehabilitation has not previously been explored, and was not directly examined in the current study, future research may wish to examine this, particularly in relation to social support and injury rehabilitation, and self-efficacy.

The findings in relation to treatment efficacy showed a significant difference between the GS group and both the SSC group and TC group. Perhaps surprisingly, the results of the group by time interaction only identified a significant difference for group at time 8. That goal-setting engendered a belief in the efficacy of the treatment is consistent with the view that when people feel satisfied with their performance (rehabilitation progress) they generalise this positive affect to the task (treatment / rehabilitation programme; Locke & Latham, 1990). The current findings provided

some support for those reported by Taylor and May (1996) and Duda et al. (1989) that identified treatment efficacy to be a predictor of adherence in injury rehabilitation.

That the GS group were significantly more reorganised than both the SSC group and TC group is another important finding. This sub scale included items that reflected self-confidence (e.g., I have much more confidence in myself), and so it is not surprising that there is some similarity between the findings for reorganisation and self-efficacy. Although the emotional response to injury literature has generally supported a positive trend in affect over time, emotional responses have not been explored in the context of rehabilitation adherence and goal-setting. The cognitive effects of goal-setting through self-evaluation offers the best explanation for the current findings. Positive evaluations of the experience of success would appear to have engendered perceptions of reorganisation, and resulted in a more generalised positive affect. Observation of the cell means for the SSC group and TC group provided some support (although not significant) for the oscillation in responses that has been proposed in the emotional response to injury literature (Pearson & Jones, 1992). Overall, the findings for reorganisation provide support for the effect that goal-setting may have on perceptions of positive affect in the context of injury rehabilitation.

The results with regard to devastation are consistent with those reported previously by Evans, Hardy, and Mullen (1996) which observed that injured athletes become less devastated over time. However, the absence of a significant main effect for group is also quite interesting. This finding suggests that the presence of feelings of devastation and loss do not preclude a concurrent move toward a more generalised positive affect (for example, in the GS group). The clinical loss literature provides some support for ongoing feelings of loss, during phases of resolution and recovery (Averill, 1968).

The results of the analysis of the sub scale dispirited showed a main effect for time. Items in this sub scale reflected feelings of apathy and motivation. The differences across time between the earlier and later time phases while once again reflecting a move toward a more positive affect over time, although not significant, showed much oscillation between individual time phases. The absence of a significant main effect for group, and group by time interaction, however, was not anticipated,

and is not consistent with other findings in the current study. Neither is it consistent with the differences between adherents and non-adherents on self-motivation/apathy reported by Fields, Murphey, Horodyski, and Stopka (1995). In the context of the current study the motivational effects of goal-setting were expected to have a significant effect on the GS group. Locke and Latham's (1990) suggestion that the exact mechanism underlying the effects of goal-setting on performance is not fully understood may form the basis of an alternative interpretation of the effects of goal-setting in the present study. Although goal-setting is considered to primarily operate through a motivational mechanism, it is possible that it had a greater direct effect on participants' level of self-efficacy. Bandura (1986, 1988) provides support for the effects of goal-setting on self-perceptions of efficacy, and the other findings that have emerged from the present study would certainly not preclude this as a possible explanation for the differences between the GS group and SSC and TC group.

The results for isolation although not significant, require some comment. Social support has been identified as a predictor of adherence behaviours in a number of studies of injury rehabilitation (Byerly et al., 1994; Duda et al., 1989) Perceptions of isolation have been reported in a number of recent qualitative injury response studies (Gould, Udry, Bridges, & Beck, 1997b; Johnston & Carroll, 1998). Although athletes in the GS and SSC group implicitly received a type of social support during their meetings with the author, the intention of the intervention was not to provide social support, and the support provided was limited in terms of its form. Having said this, observation of the cell means for the GS group, and to a lesser extent the SSC group, showed a trend in mean values toward becoming less isolated over the duration of the study. This trend in cell means was not present for the TC group. While this is to some extent only speculative, it does suggest the role of social support within the context of injury rehabilitation warrants further exploration.

The current study had a number of strengths and limitations. The matching protocol adopted of matching participants across six variables and then randomly assigning them to one of the three groups, was an obvious strength. However, as Kerlinger (1979) has suggested, the major limitation of matching across such a large number of variables is the inevitable effect of reduced sample size. While the inclusion of two control groups further exacerbated the problem of sample size, controlling for the possible effects of social support was an important feature of the

study. Although the possibility existed that participants in the SSC group and TC group engaged in goal-setting during their involvement in the study, since the purpose was to examine the effects of a goal-setting intervention, this was not considered a major concern. In retrospect it may have been useful to have obtained information as to the extent participants engaged in goal-setting from all participants following their involvement in the study. The inclusion of psychological and emotional response variables within the framework of injury rehabilitation adherence, was another important feature of the current study.

In summary, the present study examined the effects of goal-setting on rehabilitation adherence, self-efficacy, treatment efficacy, and psychological responses (as assessed by the PRSII) of injured athletes. The results of the study provided support for the efficacy of goal-setting upon participants' self-report injury rehabilitation adherence, and make a significant contribution to existing research in this area. However the results relating to self-efficacy, and the psychological response variables of reorganisation and dispirited, in particular, do raise questions as to the mechanism underlying the effects of goal-setting on the injured athletes in the current study. Moreover, although the research literature provides some support for the type of goal-setting strategy employed (Burton, 1989; Kingston & Hardy, 1994; Hardy et al., 1996; Heil, 1993), the effectiveness of proximal as opposed distal, process and performance (outcome) goals, might need to be examined more closely in the context of injury rehabilitation. In addition, the effects of this type of intervention may need to be examined over a longer period of time than the five week period adopted here. Studies that adopt a multiple base line design may be worthy of particular consideration in examining the effects of specific psychological strategies with injured performers. In relation to intervention studies of this nature, amongst other things, the current study has highlighted the importance of controlling for the possible confounding effects of social support.

Chapter 5

Injury Rehabilitation: A Qualitative Follow-up Study (Study 3)

Introduction

In the last few years sport psychologists have begun to embrace the use of qualitative research methodologies as a means of pursuing research questions (Hardy, Jones, & Gould, 1996). The goal of qualitative research is to "obtain rich, in-depth, and detailed information from an 'insider's' view - one that stresses the perspective of the participant (subject) and strives to understand the context or situation in which the experience takes place" (Hardy et al., 1996; p. 256). Qualitative methodologies have been employed within sport psychology research to examine individual and highly personal experiences such as flow states, pre-competitive cognition and affect, sport enjoyment and stress, and burnout (Gould, Eklund, & Jackson, 1992; Gould, Tuffey, Udry, & Lochr, 1996a, 1996b; Jackson, 1992; Scanlan, Ravizza, & Stein, 1989). An area to which qualitative methodologies lend themselves particularly well, but which has not been pursued in the sport psychology research, is in examining more closely the effects of interventions (Locke, 1989).

Within the research literature there has been a growing acknowledgment, that complex social and psychological phenomena can be more usefully understood by looking at them both quantitatively and qualitatively, adopting a multi or mixed method approach (Brannen, 1992; Rossman & Wilson, 1994). Although few examples exist within the sport psychology research literature, Gould and his colleagues have undertaken a number of large scale projects that adopt different forms of multi and mixed method approaches (e.g., Gould et al., 1996a, 1996b).

Despite the concern voiced by purists on a paradigmatic level, of mixing methods (e.g., Leininger, 1992), Rossman and Wilson (1985) outlined three functions for mixed methodologies: (a) corroboration, as in establishing convergence (usually equated to triangulation); (b) elaboration, as in providing rich detail and lending

strength to an argument, or providing alternative perspectives; and (c) initiation, which "prompts new interpretations, suggests areas for further exploration, or recasts the entire research question" (p. 637). Greene, Caracelli, and Graham (1989) expanded on Rossman and Wilson's (1985) conceptualisation, and proposed five purposes for mixed method designs: (a) triangulation - convergence and corroboration of results to increase validity; (b) complementarity - elaboration, enhancement, illustration, and clarification of results to increase interpretability and meaningfulness; (c) development - results from one method help develop or inform the other method to increase validity; (d) initiation - to increase breadth and depth, to discover paradox and contradiction, new perspectives of frameworks, and recast questions or results from the other method; and (e) expansion - to extend the breadth and range of enquiry by using differing methods for differing inquiry components. Depending on the specific focus of the research, mixed or multi method approaches can use qualitative and quantitative techniques either sequentially or concurrently (Stange, Miller, Crabtree, O'Connor, & Zyzanski, 1994).

In health care, evaluation research has recently paid particular attention to complementarity as a basis for mixed method designs (Morgan, 1998). The key goal of complementarity is "to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon" (p. 258). In using qualitative and quantitative methods for different, but well coordinated purposes within the same overall research project, basic paradigmatic assumptions need not be violated (Morgan, 1998). Morse's (1991) Priority Sequence Model provides a conceptual framework for complementarity combinations of qualitative research. Although initially conceived as involving a principal and supplementary method, both methods can also be given equal weighting.

Principal Method: Quantitative

(a) Qualitative preliminary; qualitative study helps guide the data collection in a quantitative study.

(b) Qualitative follow-up; qualitative study helps provide interpretations for the results of a quantitative study.

Principal Method: Qualitative

(c) Quantitative preliminary; preliminary results guide data collection in a qualitative study.

(d) Quantitative follow-up; quantitative study helps evaluate and interpret results from a qualitative study.

Mixed method approaches within health care research have usually involved qualitative follow-up studies to complement an initial quantitative study. Within intervention research such approaches have been utilised to assess adherence behaviours (Ornstein et al., 1993), to investigate results of an unsuccessful intervention programme (Ornstein et al., 1993), and explain ambiguous, misleading, or inconsistent findings (Stange et al., 1994; Weinholtz, Kacer, & Rocklin, 1995).

The present qualitative follow-up study was pursued according to Greene et al.'s (1989) conceptualisation, on the basis of complementarity, initiation, and expansion of the findings that emerged from an earlier quantitative goal-setting intervention study. Specifically, it was instigated to enhance interpretability, meaningfulness and depth of inquiry by adopting a different perspective, method, and paradigm (Greene et al., 1989; Morgan, 1998; Rossman & Wilson, 1994). To this end nine interviews were conducted (with three participants from each group) to explore in-depth their injury rehabilitation experiences. Interviews were conducted using an interview guide that focused on injury rehabilitation adherence, and psychological and emotional responses. Interviews were subsequently inductively analysed. As a result of the two phase nature of the intervention study and qualitative follow-up study, this research overcame paradigmatic concerns of mixing paradigms within a single study (Leininger, 1992).

Method

Sample

A purposeful sample of nine participants took part in this follow-up study. Purposeful sampling involves the selection of information rich cases for study in-depth (Patton, 1990). Of the nine participants, three represented the experimental goal-setting group, three had been in the social support control group, and a further three, the traditional control group. The selection procedure was criterion based to: (a) enable an equal sample size from each intervention group, and (b) gain a sample of participants who had either only recently returned to full participation or were in the

final stages of rehabilitation. This latter criterion was to established to minimise the effect of inaccuracy of recall. Thereafter, critical case sampling was adopted to permit maximum application of information to other cases (Lincoln & Guba, 1985). At the time of the interview, four participants had fully recovered from their injuries, and returned to sport. The other five were in the final stages of their rehabilitation, and their full return to sport was imminent. All nine had participated in the intervention study in the preceding five month period. Participants ranged in age from 19 to 39 (mean = 27.22, SD = ±6.96). Two of the participants were female, the remaining seven, male. Participants main sports were rugby union, association football, and tennis. The injuries sustained were dislocated shoulders (n = 2), and ruptured / torn anterior cruciate ligament of the knee (n = 7). At the time of interview, participants were still blind to the true purpose of the goal-setting intervention study in which they had participated. Demographic and participant injury information is contained in Table 7.

Table 7: Participant Information

Participant	Age	Main sport	Injury	Length of rehab.	Time between injury & operation	Hours training / competing pre-injury per week (av.)	Injury status at time of interview
Lesley	39	Tennis	Ruptured ACL	6 months	3-4 weeks	5 hours	Final few weeks of rehab.
Brian	19	Rugby Football	Dislocated shoulder	12 months	6 weeks	10 hours	Fully recovered
Carl	33	Rugby Football	Ruptured ACL	6 months	2-3 weeks	8-10 hours	In process of returning to full competition
John	28	Rugby Football	Ruptured ACL	9 months	4 weeks	6-8 hours	Fully recovered
Kevin	32	Soccer	Torn ACL	10 months	2 years	10 hours	Final few weeks of rehab.
Isaac	19	Rugby Football	Torn ACL	7 months	7 months	10-12 hours	Fully recovered
Hayley	20	Swimming Netball	Torn ACL	7 months	8 weeks	6 hours	Final few weeks of rehab.
Simon	26	Rugby Football	Ruptured ACL	6 months	2-3 weeks	8-10 hours	In process of returning to full competition
Andy	29	Rugby Football	Dislocated shoulder	12 months	2.5 months	10 hours	Fully recovered

Interview Guide

A semi-structured interview guide was designed for the purpose of the study (Appendix 5). This approach was adopted to ensure that participants were asked the same questions, in the same way, and in the same order (Patton, 1990). A priori probing rules were established to obtain responses that were as consistent as possible in terms of depth and complexity (Patton, 1990). The interview guide focused on key areas of the intervention study. Specifically, rehabilitation adherence, psychological and emotional responses, and social support. A final section invited participants to reflect on their overall injury experience. A demographic section was also included in the guide to verify, and supplement, some of the background information previously obtained. Once developed, the guide was scrutinised by three independent researchers experienced in qualitative interviewing techniques. One of the researchers had extensive knowledge of the subject matter, and two had first hand experience of being injured. The guide was scrutinised in relation to content, structure and the wording of questions. Two pilot interviews were conducted prior to the main study. The first was conducted with one of the independent researchers who had previously been injured. As a result of feedback, a number of questions were re-worded. A second pilot interview was conducted with one of the participants in the intervention study. This interview was recorded, transcribed verbatim and subsequently scrutinised by two of the independent researchers. Based on feedback, only minimal changes were made to the guide and interview technique. As a result, this interview was included in the final sample. The process of peer debriefing (with independent researchers) described was used at each stage of the study; design, implementation, and analysis (Lincoln & Guba, 1985). Peer debriefing serves a number of functions: (a) it enhances credibility; (b) it provides an opportunity to test working hypotheses; (c) it helps develop and test next steps in the emerging methodological design; and (d) it provides the researcher with the opportunity to clear the mind of emotions and feelings that may cloud good judgement (Lincoln & Guba, 1985).

Procedure

Participants were contacted by phone by the first author to elicit agreement to take part in the study. During this telephone conversation, the purpose of the study and the structure of the interview were fully explained. All participants contacted, agreed to take part in the study. As a result, a convenient time and place to conduct the interview was agreed. Participants were asked to reflect on their injury experience, prior to the interview, in relation to areas that had been outlined to them, and that the interview would be focusing on. Five of the interviews were conducted in the participants' homes, two at the interviewer's home, and two at an office on a university campus. All interviews were conducted by the author and lasted between 50 and 105 minutes. The interviews were tape recorded, and later transcribed verbatim. All individual transcripts were checked for accuracy of transcription.

Interview transcripts were inductively analysed and case profiles derived. Idiographic or inductive analysis is the preferred approach in capturing rich, in-depth, and detailed information (Bryman, 1988; Lincoln & Guba, 1985). Case reports enabled the unique features of participants to be reported within the specific context of each case (participant; Stake, 1998). Each case report was subsequently sent to the respective participant. The participants were asked to assess the case reports for accuracy and adequacy. Participants all confirmed that the reports accurately reflected their rehabilitation experience and declined the offer to add, omit, or change the report in any way. All participants consented to the report being published in its current form. At this stage, for reasons of confidentiality, participants names were changed to pseudo names (although interestingly none of the participants felt this was necessary). This process of member checking, or participant response verification, was critical in the context of the current study. Lincoln and Guba (1985) suggest this is important for establishing credibility (internal validity). Amongst other things, this process helps to ensure the adequacy of the information, and protects against potential misinterpretations and researcher subjectivity (Lincoln & Guba, 1985). Although closeness to data is an essential feature of qualitative research, as Richards (1998) suggests, getting close to data "is much less often a problem for researchers than getting distance" (p. 322). One of the reasons for this is the very nature of the methods employed (Richards, 1998). This can also mean,

particularly with certain types of research involving particular population groups, the researcher takes on multiple roles, for example, researcher, friend, counselor (Cartwright & Limandri, 1997; Richards, 1998). The current study is a case in point. During the process of the intervention study, largely because of the emotive nature of the participants' experiences, and the prolonged period of engagement, the researcher developed a closeness with many of the participants. This closeness went beyond the bounds of a researcher-participant relationship, both with participants in the goal-setting intervention group, and the social support control group, and to a lesser extent even with participants in the traditional control group. This closeness has the potential to be particularly problematic in the data analysis stage of qualitative research, when the researcher needs to achieve distance from participants (Patton, 1990, Richards, 1998). The process of member checking, or participant response verification, employed within the current study confirmed that the researcher had been able to achieve the pre-requisite distance during data analysis. Although as already identified, prolonged engagement posed a potential problem in the current study, it also contributed to the researcher's credibility, and as a result, the trustworthiness of the data (Lincoln & Guba, 1985). Peer debriefing also helped to ensure adequate distance and objectivity during the analytical stages of inquiry.

Following the construction of individual case profiles, cross case summaries were produced for the three participants comprising each of the original intervention study groups. These summaries were inductively derived to highlight similarities and differences in participants' injury experiences within a group context (Stake, 1998; Yin, 1984). According to Stake (1998), comparison conducted in this way, is "a powerful conceptual mechanism, fixing attention upon the few attributes being compared, obscuring other knowledge about the case" (p. 97). This process of comparison contrasts, but also compliments, the thick description contained within the individual case reports. Results derived from the case profiles and cross case summaries were then discussed in light of the findings of the goal-setting intervention study.

Case Profiles

Goal-Setting Intervention Group

Case Profile 1: Lesley. Lesley is a chartered physiotherapist who sustained a knee injury while skiing. When the injury occurred "I knew exactly what injury I'd done straight away ... I knew which ligament it was, ... and I knew it was a complete rupture, ... and because I knew what it was I wasn't frightened, or anxious". In fact Lesley recalled "a tinge of relief that I wasn't going to be skiing again". This was as a result of being with a group of very experienced skiers who were encouraging her to do far more than her ability allowed. As a result, she explained, she did not experience the frustration that she would normally associate with being injured. The next stage, Lesley described, was going to see the consultant, on her return from holiday. Although fully aware that she would need an operation, "at the back of my mind I thought he's going to say wow, you've done really well here, you don't need an operation". Lesley described it as quite a shock when she was told she needed an operation, and was a little frightened and apprehensive about it. However, during this period she was working on her masters dissertation, and admitted (following the operation), "I felt very glad that I had a reason to be at home" despite an "horrendous guilt complex about being off work". Throughout the rehabilitation Lesley described her emotions as fairly consistent, with the exception of two specific situations which aggravated the knee, when she described herself as hitting "those peaks of emotional reactions". During one of these she recalls experiencing "all the emotions that I would normally have expected to experience as a result of the injury". Lesley put her ability to cope with the injury "much better than I would ever have anticipated", down to 3 things: (a) "I had fantastic support from friends and family"; (b) "I was keen to have the time to get on with my dissertation work, and this provided the perfect opportunity"; and (c) "I could actually picture what was going on inside my knee joint the whole time". The two most frustrating features of the injury for Lesley were the initial restriction it imposed, which meant that early in the rehabilitation she was on her own a lot (particularly when she was unable to drive), and then later, not being able to do any aerobic exercise. Lesley recalled her impatience to be able to run. Being able to run again, she described, as being a really significant point; "when I actually got to jogging on the treadmill I really felt I was

making headway then". A significant feature of her rehabilitation motivation was the desire "to do better than anybody else who'd had the same operation", purely and simply because she "felt duty bound to her profession". Later she suggested, "It was important that other people could see that I could deal with the injury, it was some sort of professional statement, I think". This, along with her use of short-term goals were, Lesley considered, significant factors in her adherence to her rehabilitation programme. Of short-term goals Lesley said,

> they are important, ... you need to feel you are achieving something. If my goal initially had been to get back on a tennis court and play match tennis, I think I would have been knocked back so many times, because it's such a long term goal.

As a result of closely monitoring her progress, she adjusted her goals to suit her condition. She described the support she received throughout her rehabilitation as more than adequate, and considered herself really lucky in this regard, although she suggested it would have been nice once or twice to have had "a good old moan to someone". One important aspect of the injury that she became increasingly aware of, was what she described as "an ageing effect". Although not conscious of her age before, she suddenly found herself aware of a "vulnerability". She recalled, "it had quite an impact on me suddenly realising I'm getting older". Lesley has recently returned to playing tennis, although has not fully recovered as yet.

Case Profile 2: Brian. Brian sustained a shoulder injury while playing rugby, but did not realise how serious it was until as a result of constant discomfort, he was referred to an orthopaedic surgeon. During this time he continued to play rugby with the shoulder strapped up, as he approached "the biggest games I'd ever played in my life". A few weeks prior to seeing the surgeon he received an invitation to an under 19 national trial. When told by the surgeon he required an operation and he would be unable to play rugby for 12 months, he was devastated, "I cried the whole way home in the car, I was just so distressed". Later that week, he received his exam results which determined he would have to go away to university; a prospect he did not relish. He recalled, "it was one thing on top of another, they all seemed to pile on together". He described the two month period after the operation, waiting to go away to university, as terrible; "I couldn't do anything, I couldn't train, I could feel myself putting on weight ... I was really depressed, without rugby I didn't have any

direction in my life, I was just lost". During this time although his girlfriend and parents tried to be supportive he reflected, "no-one really understood what I was going through, unless you've been through it I don't think you can understand". The first three months at university, "I had a really tough time, ... being a sports college everything revolved around sport, you were just surrounded by it. Every second you could hear people congratulating people who were doing well, it was terrible". This was quite alien to Brian, who from a small community, was used to being one of those being acknowledged for his sporting achievements. Brian's lifeline at this time was volunteering for a research project that involved cycling. He recalled, "I found that brilliant because I started losing weight, and it really lifted me, that was a life saver, just to be involved in exercising." At home for Christmas he found out a number of his friends had got into "squads", and was really down; "you know, that should have been me as well". By now he was out of his sling, and was really looking forward to starting his rehabilitation. Brian had high expectations of how quickly the shoulder would improve, but these were soon dashed as he started to realise how slow his progress was going to be; "I was really frustrated, there'd be times where there was some relief, but then frustration again when you'd be going backwards, ... when the shoulder would twinge and ache". Brian explained, "I'm a person that always needs to see progress, if I can't see any progress I get really down". As a result, Brian found himself questioning whether his shoulder would ever be right. Brian reflected, "I didn't cope at all well, ... mentally I found it very hard to cope, without having anything just to focus my mind". Eventually as Brian was able to spend more time in the gym, training and rehabilitating, "I got into a training regime, and that became my means of coping ... it filled a gap, and stopped me from getting so upset". Once he started to see progress, Brian started to feel much better. He explained, "the diary made a big difference, ... it gave me confidence, ... I could look back and see the improvement and that would be a big confidence boost". Another boost to Brian was other people commenting on how much better the shoulder looked. As long as Brian was able to regularly change his rehabilitation programme he found he was able to "stick at it fairly well". But Brian suggested his level of adherence was "based around my emotions, and how I was feeling". These reflected how he felt about his shoulder. Brian set himself medium-term targets during his rehabilitation, which reflected phases of his rehabilitation. The diary he maintained

was key to monitoring his improvement as he worked towards these targets. He preferred medium-term targets to short-term targets, because if "I'd set short-term goals and didn't reach them I'd feel awful". The long-term target had been set by the surgeon. He reflected, it would have been very helpful if the physiotherapist had been able to spend time with him to assist in the process of setting these targets. Going away to University, Brian considered made coping with his injury much more difficult; "being away from home and friends is a big part of it". Brian found that because he didn't know anyone, he didn't feel able to talk about how he was feeling. Brian reflected,

> I don't think anyone knew how I was feeling, you know, the hurt I was feeling, ... and once the sling came off I'm sure they all thought, well he's alright again now, ... yes, sure, physically I might have been grand, but emotionally, mentally, I was still all messed up.

Brian described the injury as having a significant effect on his self-esteem. Brian is now fully fit and looking forward to the new season.

Case Profile 3: Carl. Carl sustained a knee injury while playing rugby football four months into the season with a new club. He recalled,

> when I actually did get injured it was a bit of a disappointment more than anything else because I was playing really well at the time. But I wasn't devastated because I didn't know the extent of the injury ... and I was led to believe in the beginning it was just cartilage.

Once he learnt the extent of the injury, it took a while to sink in. While awaiting the operation he described himself as "a lot moodier and more depressed than usual ... a mixture of depression and anger, a bit of both". He attributed this to, "you couldn't do anything, you couldn't go for a run, you couldn't go for a walk, you couldn't do anything really". After the operation he says, "I felt really good, because it was done, and I was told there was only a 1% rejection rate". During the early stages of rehabilitation he described being a little depressed on days when the leg was swollen, and when he watched his team and saw someone else playing in his position. When the leg became swollen, he found himself questioning whether the knee was all right, whether he had done too much, or whether the physiotherapist had told him to do too much. On these days, he recalled, "you just didn't want to be around anyone". Any initial doubts were exacerbated when he sustained a bad fall some three weeks

post-operation, which forced the knee into a fully flexed position. He reflected, "agony would be an understatement for the pain". The subsequent consultation with his surgeon, while offering some reassurance that the replacement ligament was intact, also left him in some doubt. This fueled his questioning of the stability of his knee, a feature which persisted throughout his rehabilitation. The predominant emotion, particularly during the early stages of his rehabilitation was frustration. This was in part because of the frequency with which the leg would sometimes swell, which meant having to rest it, and in part because of the nature of the rehabilitation activities. Carl described these as "so tedious, really, really tedious". He admitted,

> initially I just couldn't get my head around them, just stepping off a step ... You know I've been playing rugby and physical contact sports for so long. ... So I started to try my own thing instead, I think everyone does if they're honest. But when you can't do what you want to be doing, you just have to get your head around doing what you've been told to do, and get on with it.

Because of this, "the first quarter of the rehab programme is the hardest to adhere to". He continued, "having tried to do things my way, and it wasn't working, ... being able to successfully complete the exercises *[by the physiotherapist]*[4] and seeing the progress was really encouraging and just built confidence". The biggest problem then, Carl recalled, was "holding myself back". Carl found the desire to "train normally", and in particular, to go running, very difficult to contend with. Carl suggested, "there's nothing worse, I was just dying to go out for a run, all the time knowing I shouldn't ... just wanting to go out for a run, all the time".

Carl recalled a strong desire to rehabilitate quickly;

> I wanted to make the end of the season ... I was desperate to play a few more games ... to make an impact again because it was a new club for me, and I'd had a good first half year. I wanted to leave on a good note, not 'oh we forgot about him, he finished at Christmas'. So I was trying my utmost to play a game or two before the end of the season.

Another factor that contributed to his desire to rehabilitate quickly was his age. He suddenly became aware of the fact that he was getting older, and only had a few seasons left in him to play at his current level. Although after a couple of months it became obvious that this was not realistic, for him the desire was still there. This was

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[4] Additions, explanations, and amedments to quotations (to protect anonymity) are indicated by italicised text placed within brackets, for example *[the physio]*.

his long-term goal throughout his rehabilitation. He didn't describe goals as being set as part of his treatment. In relation to short-term goals set during the study, he suggested he found these very hard because "it's really difficult to direct your input into just jumping, or hopping or stepping from the step. But long term it was a lot easier". He also suggested that it's difficult to set goals when "the leg is still swelling up, because if that happens and you've set goals, it sort of knocks your rehabilitation sideways".

An important point in the rehabilitation was when the knee stopped swelling up after training. For Carl this was important because it meant he could decide when to have a rest day and not train, and not be dictated to by the knee; "I could determine when I wanted to go then, not my leg. I was in control of the decision". Carl considered himself fortunate that medical insurance had covered the full cost of his treatment, and his employers had given him seven weeks off work on full pay. In the first week or so following the operation, his wife and children "fetched and carried everything" he needed. After this he considered himself to be quite self-sufficient. He described himself as not the sort of person who turns to other people for support or help, and because "I've always liked to train by myself" rehabilitating on his own was not a problem. The only support he felt he needed during his rehabilitation was advice with regard to the injury and rehabilitation programme, which he received from the physiotherapist. He continued to socialise at the rugby club on a Friday night, and in that way kept contact with some of the players. He also trained at the club during his rehabilitation. Carl is participating in pre-season training with his club and looking forward to a full return to playing at the start of the new season.

Cross Case Summary. When the injuries occurred, Brian and Carl were unaware of the nature and extent of their injuries. Lesley was relieved, because she knew exactly what she'd done, and it meant she had a reason to discontinue her involvement in a situation in which she was extremely uncomfortable. When the exact nature of their injuries were confirmed, Brian and Carl experienced shock, devastation, depression, and apprehension. Brian described, "I cried the whole way home in the car, I was just so distressed". In the period post operation, depression was the most common response, and largely reflected the imposed restriction.

Participants' responses reflected their individual circumstances. Lesley, who was glad to have a reason to be at home, described her emotions as fairly consistent throughout her rehabilitation. This meant that Lesley had a very different injury experience to Brian and Carl. For Carl, a set-back during rehabilitation exacerbated his doubts about the success of the operation, and as a result, he described himself "questioning" throughout his rehabilitation. Brian and Carl found it particularly difficult watching others competing in their position in the team / or generally doing well in sport.

As rehabilitation progressed frustration was interspersed with relief when progress was made. Frustration represented the inability to "train normally", or make fast enough progress. Brian's frustration of not being able to train was heightened by his perceived weight gain. Lesley expressed frustration at not being able to do aerobic exercise or run. Carl also described a strong desire to be able to go out for a run. Both Carl and Brian expressed a need to "train normally".

Motives to rehabilitate and adhere to their rehabilitation programmes varied. Lesley wanted to do better than anyone else in order to make a professional statement (she was a chartered physiotherapist), Carl was desperate to get back in time to play one or two games before the end of the season. Only Lesley considered the use of short-term goals a significant factor in terms of adherence. Brian expressed a preference for medium-term goals, and Carl, for long-term goals. Both Brian and Carl felt that there was too great a risk in setting short-term goals of not attaining them, and as a result experiencing a set-back in the rehabilitation. Brian found that completing the diary enabled him to monitor his progress which in turn, increased his confidence. For Brian, adherence was based around how he was feeling (about his shoulder). Both Carl and Brian felt that being able to see progress was important. Two points appeared significant in the rehabilitation process which represented progress; the reduced frequency of swelling and aching, and the ability to exercise aerobically. For Carl, this signified an increased sense of personal control.

Lesley and Carl were quite happy with the support they received while injured, however, this was not the case for Brian. Moving away to university was a factor in this, and he felt that once the injury was no longer visible people assumed he was alright again. The extent to which participants were able to cope with their injury was determined by factors such as support, the ability to keep occupied and

keep their mind off the injury, and progress. For Lesley, the ability to picture exactly what was going on inside the knee was also an important factor. Age was a factor for both Carl and Lesley. This was associated with the importance of rehabilitating quickly for Carl. It represented a vulnerability or fragility for Lesley. Carl suggested that adherence had been a problem, particularly in the early stages, because of the tedious nature of the rehabilitation exercises.

Social Support Control Group

Case Profile 4: John. John was a professional rugby football player who sustained his injury five minutes before the end of a match which resulted in his team avoiding relegation. John recalled, "I knew I'd done something quite bad, ... but in all the emotion of the occasion, my injury went quite unnoticed". A week later when told his previously "repaired ACL had become un-repaired ... I was devastated, ... the hard struggle that I'd been through to get my knee right, and it was pretty good, and to have to go through that again was devastating really". The situation was not helped by the complete lack of interest shown by the club; "no-one really appreciated what I'd done, or was interested in what I'd done". This lack of interest and concern continued throughout John's rehabilitation;

> they were only asking me when I was going to be fit, rather than how my rehabilitation was going, ... and this was a bit soul destroying at times, ... and because it was my job as well, that put increased pressure on me.

Although this, and the prospect of not playing for eight months depressed John a bit, he did not recall feeling any other emotions. He explained, "well I just shut off, I didn't really feel anything, ... and I was pretty much the same all the way through". Although he described having good days and bad days, he viewed these as just "par for the course, just like life is really". He attributed his response to: (a) being determined to get back ("you want to prove that you can get back, not only to yourself, but to other people. But to yourself more ... I wanted to prove to myself that I could do it again, get back"); (b) being an optimistic, easy going person who doesn't get frustrated easily; and (c) having had the same injury before ("I knew what to expect, knew what it entailed, and how important the rehab was").

Although John considered his progress during his rehabilitation to have been good, he didn't feel his rehabilitation was well managed. This specifically related to a lack of feedback on his progress, and a lack of encouragement; "I think if the physio is enthusiastic and encouraging, I think that can be so beneficial to the person". Although John was not set any rehabilitation goals, he considered he stuck to his rehabilitation programme "pretty rigidly". He attributed this to wanting "to get back", and the enjoyment he got from training. While John had set a long-term goal for playing, he considered that short-term goals would have helped his motivation generally, and particularly on "your bad days". John was not so much concerned with rehabilitating quickly, as properly, and "having confidence in my knee". As a result the emphasis throughout his rehabilitation was on doing things "properly and thoroughly". He reflected, "there are no short cuts to a good rehab., ... not if you want it to withstand the forces that will eventually be placed on it when you return to playing". During his rehabilitation John received a lot of encouragement and support from his girlfriend, parents and friends. However, John felt quite strongly that for someone involved in sport, as he was, the support should have come from within the sport, and in this regard, considered his injury to have been "very badly handled". He reflected,

> But I think sport is totally different *[from normal life],* especially a team sport. I mean that's why you're playing isn't it, to be part of a team. And I think when you are part of a team, it's important that you feel part of a team, and that means supporting each other. If you don't feel part of the team, then you're very much on your own, and left out in the cold, which doesn't bode well really.

Following a successful recovery from injury, and a return to playing, John left the club, and is no longer a professional rugby player (this occurred after the interview).

Case Profile 5: Kevin. A competitive football player, Kevin was initially unaware of the severity of his injury when he sustained it. After a number of attempts at resting his leg and then trying to play on it, he eventually sought medical advice from his general practitioner (GP). Although the GP diagnosed it as requiring an operation, a protracted period of two years ensued waiting for one referral after another. Kevin vividly recollects the frustration of this period of "waiting"; "the frustration almost makes you feel like crying ... you get so far, and suddenly a light

appears, and then it's bloody gone again". During this two year wait Kevin described feelings of frustration, hope, expectation, disappointment, and depression. Eventually, at the prospect of the operation, these were replaced with apprehension and uncertainty. He recalled at that time, thoughts such as, "what if it's not successful, I've been through all this, what if it's all for nothing"; "mixed feelings", as he described them. Significant for Kevin was the understanding and support demonstrated by his employers giving him fully paid leave for three months. He described this three month period as "very boring at times, ups and downs, real frustration at times, things weren't progressing fast enough". During this time "a good day" was when his leg felt good and his rehabilitation was progressing, a bad day would be "back where I started". During these bad days or downs, Kevin recalled, "I'd get really depressed, really depressed" and "I wasn't responsive ... I'd be really quiet and miserable, ... and I just really wouldn't be able to lift myself out of it at all". This he considered was a lot to do with "the restriction, and being in the house on my own". This was despite trying to occupy himself as best he could. The support he received from his wife, he described as "brilliant". However, although family and friends were supportive, he felt increasingly isolated from his football friends and team mates. When able to do his rehabilitation exercises, and he could see the leg improving he "felt great". The physiotherapy treatment was a real plus, "it was great, I made real progress". Of the physiotherapist he said, "I trusted, I had a lot of confidence in ...". Of his own commitment to the rehabilitation programme, Kevin expressed disappointment; "the rehab that has been down to myself hasn't gone as well as I'd planned it to go really". Overall, he considered his progress "has not been anywhere near as quick as I would have liked". Since his return to work, this has deteriorated further, and he described his adherence to his rehabilitation as "very much fits and starts, as and when". In part, he attributed this to,

> a little bit of fear I suppose that it might never get back to what it was, and then I would have to admit to myself that perhaps you're never going to play football again, you know you're finished really.

This despite being what he described as "a determined person". Kevin reflected, that during his rehabilitation, "I would have liked to be able to chat to someone who'd been through what I've been through, understood what I've been feeling, and understood, and possibly shared my goals ... someone who could have given me advice". Although happy with the treatment, Kevin expressed some disappointment

at the lack of follow-up advice, which he feels he really needed. At first Kevin set what he described as "little goals", as opposed to long-term goals. During the initial three month period the physiotherapist also set him some goals. The goals Kevin set very much depended on how he felt the rehabilitation was going and "the rehab really affected the goals, rather than the goals affecting the rehab". Setting goals to work towards "and then not achieving them would have really depressed me". Kevin considered the goals he set to have had very little effect on his rehabilitation. He reflected that his approach to setting goals reflected his personality, and the fact that "I've never pushed myself at anything". He also suggested that "there's a bit of an age thing at the back of my head, as well. So that stopped me pushing myself as well". Kevin reflected that his injury has been a really negative experience,

> I've missed two, nearly three years when I could have been playing sport, I've put weight on, lumps and bumps in places I've never had them ... I've lost the sort of comfort of contact, if you like, with football friends, ... I haven't been able to play football, ... it's just all been so negative.

Now, at the start of the football season, Kevin's phone has started to ring with requests to play, this he finds is really motivating him. Between now and his return is the prospect of a lot more rehabilitation work in the gym.

Case Profile 6: Isaac. Isaac tore the anterior cruciate ligament in his knee in the off-season, at a national rugby football development course. Having received physiotherapy treatment he was passed fit to play. Unaware of the extent of the injury, about five weeks later during training, he realised the knee was far from being right. Getting access to medical support via the rugby union who had run the course was very protracted, and Isaac became increasingly frustrated; "I'd just had enough by the time I even got to have the scan". When told that he required an operation and would be out of rugby for eight months; "I was in bits by the time I got out of the hospital, ... it just freaked me out that I was going to be out for that long". In total it was seven months before he had the operation, by which time he was six months into his undergraduate studies on a sports science course. Although happy at the prospect of having the operation, the day after the operation Isaac described being quite distraught; "I was convinced I'd never play rugby again ... I was so wound up ... so angry, ... no, it was like absolute rage ... my pent-up frustration

was directed against everybody, and everything". Following his first two physiotherapy sessions Isaac recalled a significant change in the way he felt about the injury. He attributed this to the physiotherapist calming him down. For the next six weeks "I could see big gains all the time, so that really helped me ... and I started to believe maybe it's going to be all right". But as progress became slower "I started to get really frustrated ... I just wanted to get back, to make faster progress". As a result, Isaac admitted, "there was a point when I became physio myself ... but when I woke up the next day and could hardly move, I thought, oh well, better listen to the boss". How Isaac felt emotionally depended on "what happened at the physio, and what *[the physio]* said at the end of the session". Isaac described his rehabilitation as a "a hell of a lot of highs and a hell of a lot of lows". He added, "I was completely drained by the end of it. By the time I came back to playing, emotionally, I was absolutely knackered ... basically it was six months of hell". Despite this Isaac considered he adhered "pretty well" to the rehabilitation programme he was given. In relation to rehabilitation goals, a long-term goal had been agreed for his return to playing rugby, and at the beginning of his rehabilitation, a short-term goal was set for getting him off crutches. He recalled, "I got so frustrated and wound up at not reaching the goal", that no other goals were set. Looking back, Isaac sees the long-term goal as central to his successful rehabilitation, without it he suggested, "I wouldn't have put the effort that I did into the rehab programme". Short-term goals, he considered, would only have been useful if he had always been able to achieve them. He reflected that this would have been unlikely if he had been involved in setting them; "knowing me I would have probably set targets that I was totally incapable of reaching, and as a result would have probably done things which would have made things worse". Isaac was not only desperate to get back to rugby, but not to have to repeat his first year at university, a suggestion which had been made because he had missed so much of the practical side of the course. Although for Isaac, family, friends and his physiotherapist, were important sources of support throughout, "once the crutches disappeared people seemed to assume I no longer needed support". The lack of support Isaac received from the rugby union was an enormous disappointment and frustration. Isaac has subsequently made a successful recovery, and is once again playing competitive rugby football.

Cross Case Summary. The participants in this group had very different injury experiences. Kevin and Isaac were initially unaware of the extent of their injuries. A protracted period of seven months for Isaac, and two years for Kevin, ensued prior to their operations. During this period they described feelings of frustration, hope, expectation, disappointment and depression. Questioning was a feature for Kevin pre-operation, and for Isaac, post-operation. Post-operation, Isaac described himself as distraught, also present was anger and rage. John's injury was diagnosed and operated on fairly soon after he sustained it. He described himself as being a bit depressed. All found the initial incapacitation difficult to cope with. Kevin also identified the restriction (confinement) imposed by his injury problematic. John was able to cope reasonably well with his injury experience because: (a) he was determined to prove to himself he could 'get back'; (b) he was an optimistic, easy going person who didn't get frustrated easily; and (c) he knew what to expect, and what the operation and rehabilitation entailed (he had sustained the same injury before).

In contrast to Kevin and Isaac, John perceived a lack of feedback and encouragement during his physiotherapy treatment. Kevin and Isaac gained in confidence as a result of the physiotherapy treatment they received. Although there were differences in their initial progress, and for Kevin some real ups and downs and frustrations, both Kevin and Isaac experienced enormous frustration as their rehabilitation progress slowed. For Isaac this resulted in deviating from his prescribed programme and pursing his own programme, for Kevin, reduced adherence to any rehabilitation exercises. Although overall the participants reported adequate support, Kevin felt increasingly isolated from his football friends and team mates. Frustration resulted for John because of a complete lack of interest on the part of the club, who were also his employers, and for Isaac, disappointment at the lack of support from the rugby football union. Isaac attributed his emotions, to what happened during his physiotherapy session, and what was said by the physiotherapist at the end of the session. Rehabilitation, for Kevin and Isaac, was described as comprising a lot of highs and a lot of lows. Isaac described being completely emotionally drained by the end of it, and considered his injury rehabilitation to have been six months of hell.

Rehabilitation adherence varied. Poor adherence was attributed by Kevin to a fear that he might never get back to playing football, and an ageing factor. John

attributed his adherence to enjoying training, and wanting to get back to full fitness. All participants had got a long-term goal for returning to sport, in most cases this had been set by the surgeon. None had set short-term goals. Kevin and Isaac felt that short-term goals would not have been helpful because of the negative effects they associated with not achieving them, something they viewed as quite probable. Isaac had been set a short-term goal early on in his rehabilitation, and having failed to achieve it, got extremely frustrated. John felt that short-term goals would have helped his motivation, particularly on bad days. Interestingly, John described himself as more concerned with rehabilitating properly and thoroughly, than quickly. Both Kevin and Isaac felt that once the visible signs of their injury were gone, people assumed that they no longer needed support, despite the fact that they would have really benefited from it.

Traditional Control Group

Case Profile 7: Hayley. Initially when the injury occurred, Hayley recalled, "I was kind of in denial, I just thought, oh it's just another injury. I'll be all right in a few weeks". When her knee didn't improve and she was advised of the need for an operation she got extremely upset, "down", and started questioning whether her knee would ever be right again. Fear, was caused by the fact that "I didn't really know what was going on, I didn't know what was happening". Following the operation Hayley was quite depressed, because as she recalled, "I just couldn't do anything". Hayley recollected, "I got really jealous of other people being able to go out running, train, and do sport". She described this as very frustrating. At this time "I went really negative about it". In the beginning her rehabilitation went very slowly, which she found "really frustrating, ... I just couldn't seem to do any of the exercises, so my progress was much slower than I expected it to be". Her "lack of confidence" compounded the situation further, and she needed a lot of encouragement from her parents and boyfriend to complete her rehabilitation exercises. Determined to overcome this initial lack of progress, on her return to University (four weeks later), she started to regularly see a physiotherapist. This new physiotherapist set Hayley clear targets, and as Hayley became more confident, she'd "stick to the rehabilitation programme more and more". This coincided with Hayley setting herself short-term

goals; "I'd work towards bending it another five degrees, say every week, or every two weeks". She recalled, "I'd set short-term realistic goals, rather than goals that are going to be achieved in a couple of months, goals that could be achieved by the end of the week so I had something to work for". She commented that she found this motivated and encouraged her. During her rehabilitation Hayley described having good days and bad days, as her mood fluctuated from one day to another. Early in her rehabilitation her mood would be determined by how well she could occupy herself to keep her mind off the injury. Later on it would be determined by "how well the knee was coming, and how good I felt about myself". As her rehabilitation progressed Hayley recalled "a shift from being really negative to being much more positive". Throughout the period of her injury Hayley's boyfriend was a particularly important source of support, not least because "he's been injured, so he knows what it's like, how it feels, he could understand how I felt". Her parents and friends were also supportive, but weren't able to relate to it in quite the same way. Hayley is currently in the latter stage of rehabilitation.

Case Profile 8: Simon. Having injured his knee when playing rugby football, Simon was "gutted" when told "you may never play rugby again". Following his operation, however, he was told he would only be out of rugby for nine months. Initially, having to depend on other people to drive him everywhere, he got a bit frustrated at his loss of independence; "but that frustration only lasted until I got my independence back". Simon described his resentment towards the club; "once I was injured they didn't want to know me, and they even tried to get out of paying me the money that contractually they had to pay me" (Simon was a semi-professional player). Having only played three games himself, the lowest point for Simon was when his team won the league cup and gained promotion. He recalled, "I've never felt so low in my life to be honest, ... that was the lowest point I've ever hit". Also difficult for Simon was watching the team play on a Saturday, watching someone else playing in his position. Despite having what he described as some ups and downs, Simon was "mostly up". He took a very philosophical view of his injury;

> As long as I could get out, I considered myself not to be injured ... okay you can't play rugby, but there's more to life than that ... I had five months off work, I was down the gym everyday, ... it was great, ... I thought, I'm injured, make the most of it.

Simon attributed his attitude toward his injury to the fact that he'd been playing rugby for nearly 20 years, and this was the first time he'd ever had a break from it, and "as a person I'm pretty laid back". The break from rugby, Simon viewed as an opportunity to have a break from his normal routine, and to do other things he'd been unable to spend time doing. As an independent person, Simon said of support from other people;

> I didn't look for support, so I didn't get it, ... it was nice other people were interested, ... and offered a reassuring word, but I didn't need support, ... at the end of the day there's nothing anyone else can do, it's down to you, it's you who's injured.

Of his rehabilitation Simon said, "I thought it was great, I came on leaps and bounds". Having done weight training for years, weight training formed an important part of Simon's training and rehabilitation. Of his adherence to his prescribed rehabilitation he said, "in the beginning I did more or less everything I was told to do, but as the leg was getting better I'd do less of what they wanted me to do, and more of what I wanted to do". Important in this was the confidence the physiotherapist gave him. Simon had just one long-term goal which had been set by the surgeon for his return to playing rugby. Simon described himself as happy with just having that goal to aim for, and did not consider that short-term goals would have been helpful to his rehabilitation; "if you set short-term targets and you don't get there you're going to feel bad, you're better off with just one far away target, so you've got plenty of time to make sure you get to it". In the absence of short-term targets Simon attributed his adherence to his rehabilitation as "I was enjoying it". Simon has recovered from his injury and is back to full pre-season training with his club.

Case Profile 9: Andy. Andy is a physical education teacher who sustained an injury to his shoulder while playing rugby football. Andy associates three distinct phases with his injury, pre-operation, post-operation and incapacitated, and post-operation and rehabilitating. Immediately following the injury, although Andy knew the shoulder "was not right", he was told "you just need to get a bit of confidence back, keep playing through it, we'll tape it up". During this time, Andy recalled a complete lack of confidence and motivation. One month later, while receiving physiotherapy on the shoulder, "the shoulder popped out", "so I was playing, training, when I knew there was something wrong, but being convinced it

was OK". As a result, "a big sigh of relief when they said I had to go and have an operation, it was like a weight had been lifted". Immediately after the operation Andy described;

> well I was distraught ... because I didn't realise what they were going to do, and what it was going to be like ... I decided there and then that that was it, I wasn't going to take part in sport again, I'd had enough, you know, I'd had a guttsful.

Andy explained;

> I was really down in the dumps for a month while the shoulder was strapped and elevated in this stabiliser contraption ... I was getting fat, my motivation to do anything was nil, because I wasn't able to do anything. I wasn't able to run, I wasn't able to go for a long walk, I started to put on weight where I didn't want to put on weight, where I hadn't put on weight before. And people were noticing that I was keen to go out in the night because I was on my own in the day, so I wanted to go out and have a drink in the night, and I was putting on more weight, eating more.

During this time Andy recalled being extremely frustrated and angry. These responses reflected an inter-play of the injury itself, the club's refusal to meet the cost of the operation, and the club's complete lack of interest in his well-being. Andy explained, "I completely resented the fact that they didn't take any interest in me, felt really let down". Andy also described the frustration of not being able "to do the sorts of things you take for granted, and you feel stupid, really stupid". In addition, "Not being able to drive killed me, and not being able to write as well was a killer". Andy's way of dealing with his incapacitation, loss of independence and emotions, was to try and keep himself occupied, to get out and see people, and as far as possible to have a normal day. During this period the biggest thing that affected how he felt was the weather, which determined if he would be confined to the house; "if I got up in the morning and it was raining, nightmare, absolute nightmare". Boredom would be broken by the phone ringing and people calling round. At this stage "still asking yourself if it's all worth it", and "would it ever be okay again". The support he received from his fiancé, parents, and friends was extremely important in his attempt to cope.

Andy was off work for three months. During rehabilitation, Andy described himself as "a good patient, ... if the physio said 15 pulls on my elastic band, I did 15, I didn't do one more, or one less". The overwhelming influence in this was that "I'd

had to spend so much money on the operation, my own money, I was determined to get it right, ... so I did exactly what I was told". He described his emotions after the first physiotherapy session as being similar to coming out of hospital, and thereafter, "peaking and troughing" quite a lot. As rehabilitation progressed, frustration was replaced by greater confidence, motivation, and drive; "because I was being successful, I was getting enthusiastic". "Once you can see you're getting better, and getting stronger, that's brilliant, and you don't need as much physio". Andy considered his rehabilitation was a team approach, with the physiotherapist and surgeon as key players; "there was three people at the starting line, and we all wanted to get to the finish line". The physiotherapist set goals in conjunction with Andy and the surgeon, and these were monitored and adjusted as progress was made. Andy explained, "I've got the utmost respect for the two people who were looking after me because of the way they went about it. I was really happy with the treatment I was getting". And the physiotherapist, "said exactly the right things at the right time". Behind his desire to rehabilitate quickly, was his desire to get back to work; "I was frustrated because I wasn't allowed to go back to work. Getting back to playing sport was secondary". Andy's biggest disappointment was the lack of support he received from his club. Not only financial, but their general lack of interest in his well-being and welfare, as an individual, and as a player. Andy has now fully recovered from his injury, but has not yet returned to playing rugby. When he does return to playing, he suggested it wouldn't be with the same club.

Cross Case Summary. Both Andy and Hayley were initially unaware of the extent of the injury, Hayley identified this as a case of denial. When advised of the need for an operation, Andy described relief, Hayley described herself as down, questioning, and frightened of the unknown. Following the operation, Andy experienced depression and frustration as a result of his incapacitation, Simon described frustration at his loss of independence, although this didn't last very long. Andy described being distraught, not having fully appreciated the implications of the surgery. Andy found the first month much more difficult to cope with than Hayley and Simon. Andy vividly recalled his frustration at his incapacitation, restriction, and loss of independence. Putting weight on and not being able to do normal everyday things became real issues for him. This was further exacerbated by his anger at the

club because of their lack of interest, and refusal to meet his medical costs. Although Simon admitted to getting frustrated when watching his team play, and someone else playing in his position, his lowest point was when his team won the league cup and gained promotion. Simon expressed resentment towards the club for their lack of interest in him once he was injured, but generally looked at the positive aspects of being injured. Simon viewed being injured as an opportunity to have a break from rugby, and his normal routine. He also attributed being able to cope with being injured to being a laid back sort of person. All participants placed great importance on keeping themselves occupied, and keeping their mind off their injury, as a means of coping. For Andy and Hayley, the support they received from other people was also important in order for them to be able to cope.

Rehabilitation was characterised by Andy and Hayley as comprising peaks and troughs, highs and lows. All described the physiotherapist as an important source of self-confidence, particularly as their rehabilitation began to progress. Andy and Hayley attributed adherence to this, and the setting of short-term goals; and in Andy's case the cost to him personally of financing the operation and subsequent physiotherapy treatment. Andy and Hayley both suggested that with rehabilitation progress came a more positive attitude, confidence, and enthusiasm, which in turn enhanced their rehabilitation adherence. Simon had just one long term goal. He considered he was better off without short-term goals, which he suggested, would lead to disappointment when he failed to achieve them. Early in his rehabilitation Simon described his adherence as very good, but as his progress became better and better, he did less of what he was told to do, and more of what he wanted to do. Simon attributed his adherence to training and rehabilitation to his enjoyment of it. For Hayley the most significant feature of her support was that which she received from her boyfriend, who having previously been injured himself, she felt, understood what she was going through. For Andy and Simon, the most significant feature of their rehabilitation experience appeared to be the lack of interest shown by their rugby club.

Discussion

Hardy et al. (1996) recently called for a diversification in the qualitative methods employed within sport psychology research. Krane, Andersen and Strean (1997) similarly proposed that researchers should be prepared to move away from qualitative research that examines data by means of the development of higher order themes. Indeed, as Krane et al. suggested, "in many cases, rare experiences are no less meaningful, useful, or important than common ones" (p. 215). The current follow-up study represents such a diversification in its approach to the use of qualitative methodology. The purpose of the study has been to present case study profiles as a means of enhancing the interpretability and meaningfulness of the findings emerging from a goal-setting intervention study. To this end, the following discussion will integrate results of the case profiles and cross case summaries, with the findings derived from the previous intervention study.

Case profiles and cross case summaries highlighted the importance of individual difference variables, and the interaction of person and situational variables in participants' injury experiences. Such variables appeared to account, in part, for the intensity of the emotional and psychological responses, rehabilitation adherence, and the use of goal-setting. In general, following injury prognosis, emotional responses were very similar across groups. Responses were characterised by shock, depression, apprehension, and questioning. One participant in each of the goal-setting intervention group (GS group), the social support control group (SSC group) and the traditional control group (TC group) appeared to experience a far greater intensity in their emotional response as a result of the prognosis. One participant in the SS group suggested; "it just freaked me out that I was going to be out for that long". Post operation, a participant in the TC group described himself as being "distraught". Another participant in the SSC group, reflecting on his injury experience suggested; "I was completely drained by the end of it. By the time I came back to playing, emotionally, I was absolutely knackered ... basically, it was six months of hell".

Rehabilitation was characterised by depression, which changed to frustration, over time. Initially, these responses reflected the imposed restriction, incapacitation, and loss of independence. In the early stages of rehabilitation, for some participants,

the inability to train, putting weight on, and a lack of interest by their club and team mates were cited as contributory factors. With the exception of one participant in the GS group and another in the SSC group, keeping their mind off the injury was the coping strategy adopted. Although the means of coping with this initial incapacitation appeared to be avoidance coping or distraction coping (Thoits, 1995; Udry, 1997), Gould et al. (1997c) recently identified a number of coping strategies utilised by injured skiers which may have relevance to gaining a better insight into the strategies adopted by participants in the present study. Coping strategies adopted in Gould et al.'s study included; 'did things normally', 'distracted self', 'sought and used social resources', 'avoidance and isolation', and 'took note and drew upon injury lessons'. Many of the participants across the three groups adopted one or more of these strategies, to keep their mind off their injury. It may be that as a result of using these strategies, their means of coping was more akin to problem-focused or instrumental coping. Udry (1997) recently reported that instrumental coping was the most used coping strategy amongst 25 injured athletes who had undergone knee surgery, particularly in the early stages of rehabilitation.

In the mid phase of rehabilitation, frustration was associated with watching others competing in their position, or generally seeing the team do well. This was identified by participants in all three groups. One participant in the TC group described his response to his team winning the league cup, and gaining promotion; "I never felt so low in my life to be honest, ... that was the lowest point I've ever hit". Another described his reaction to his friends being selected for representative rugby squads; "you know that should have been me as well". This is consistent with findings reported by McGowan, Pierce, Williams and Eastman (1994) who reported reduced self-concept in injured athletes when their team won or did well. It is also consistent with Gould et al.'s (1997b) conceptualisation of 'social comparison' as a source of stress in elite injured skiers. Questioning was also a feature of this phase of rehabilitation for participants in the three groups. Questioning was identified by participants who sustained season ending injuries in a study conducted by Udry, Gould, Bridges and Beck (1997a), however, in Udry et al.'s study, questioning was related to injury occurrence. In the current study, questioning was related to participants' doubts about their ability to fully recover from their injuries.

Anger was described by one participant in each of the SSC and TC groups, but was very situation specific. The antecedent of this anger appeared to be their resentment for the disinterest shown by a rugby club in one instance, and the rugby union, in the other. Resentment was also expressed by another participant in each of the SSC group and TC group. In both cases this resulted from a lack of interest on the part of the participant's rugby club. As one participant in the SSC group asserted;

> no-one really appreciated what I'd done, or was interested in what I'd done. ... *[later]* they were only asking when I was going to be fit, rather than how my rehabilitation was going, ... it was a bit soul destroying at times.

Another said of the club; "once I was injured they didn't want to know me". No one in the GS group described this as a feature of their injury experience, and it may be that the lack of interest shown by club and coaches had a confounding effect on the aforementioned participants' responses to their injury and rehabilitation; via reduced self perceptions of efficacy.

Further into the rehabilitation, and across the groups, frustration was interspersed with relief, with highs and lows being experienced as a function of perceived rehabilitation progress and the desire to "train normally". This latter feature was particularly prevalent amongst members of the GS group. Whether this reflected an increased self-confidence, or exercise withdrawal is unclear. The latter emerged as a prominent theme in both Johnston and Carroll's (1998) qualitative study of seriously injured athletes, and in Gould et al.'s (1997b) study of sources of stress in injured skiers. Slowness of progress was something that participants in all three groups found difficult to cope with. As one participant explained, "I was really frustrated, there'd be times when there was some relief, but then frustration again when you'd be going backwards, ... when the shoulder would twinge and ache."

The aforementioned change in emotional responses over time, described by participants across groups, helps explain the findings of the PRSII (from the goal-setting intervention study) in relation to devastation and dispirited, in particular. The responses described here support the decrease in these sub scales across time. With regard to the intervention study findings for dispirited, however, the results were somewhat surprising. Despite this sub scale containing items which reflected apathy and motivation, no group differences were found. Interestingly, in the current study,

very few of the participants identified motivation as a feature of their rehabilitation experience, particularly in the context of goals (the later discussion of goals may help provide some interpretation of the intervention study results for dispirited). The increased confidence described by participants as rehabilitation progressed certainly provides a context to the findings from the intervention study in relation to the sub scale reorganisation. Increased positive affect over time has been identified in a number of studies of athletes' emotional responses to injury (e.g., Quackenbush & Crossman, 1994; Smith, Scott, O'Fallon, & Young, 1990a). The highs and lows described across all three groups, also provides a context for the oscillation in responses of injured performers across time observed in the intervention study (albeit non-significant), and reported elsewhere (Pearson & Jones, 1992).

As rehabilitation progressed, participants in all three groups reported increased confidence. However, sources of this confidence differed across groups. The TC group, and to a lesser extent the SSC group, considered the physiotherapist an important source of confidence. Of the physiotherapist, one participant suggested "I trusted, I had a lot of confidence in ...", and another, "... said exactly the right things at the right time".

Rehabilitation progress for the participants in the GS group was more related to the ability to exercise aerobically, or train normally. Monitoring this progress in the diary was considered important by one of these participants. Another monitored progress via short-term goals. The desire to monitor progress through what constituted normal training activities, by participants in the goal-setting group, differed from the other two groups, and may have been important to their reorganisation and self-confidence. Attribution theory may shed some light on whether the sources of confidence described here, help to explain the intervention study findings in relation to reorganisation (e.g., Roberts, 1992; Weiner, 1979). It may also provide some insight into the group differences reported in the intervention study for self-efficacy. The fact that some participants may have attributed progress to external uncontrollable factors, which may in turn have had an effect on emotional responses and adherence, would appear plausible in the context of attribution research. As Maehr and Nicholls (1980) suggested, affective reactions to outcomes do not necessarily reflect the outcomes themselves, but more ostensibly reflect the perceived reasons for the outcomes. Although the extent to which the goal-setting

intervention may have impacted perceptions of controllability, the meaning associated with rehabilitation progress, and outcome expectancy, is not clear in the context of the current study, it may in part help explain the findings derived from the intervention study. That the perception of meaning participants held for rehabilitation progress and outcome affected levels of self-confidence, while somewhat speculative, would certainly provide some insight into the group differences reported in the intervention study for self-confidence. It may also help explain the findings in relation to adherence reported in the intervention study. As Meichenbaum and Turk (1987) have suggested, it is not the failure to adhere per se, but the meaning they attribute to occasional set-backs that determines future patterns of adherence.

The previous discussion may also be extended to the findings emanating from the intervention study in relation to treatment efficacy. While participants in the TC group appeared to have greater confidence, and place more importance on the efficacy of the treatment (than participants in the other groups), this may well reflect a lack of confidence in their ability to take responsibility and control for their rehabilitation progress and treatment outcome. If as has been suggested, the goal-setting intervention enhanced perceptions of control, these perceptions of control may in turn have resulted in greater efficacy in the treatment. This would certainly help explain the group differences reported at time 8 described in the intervention study. Alternatively, participants in the GS group may have simply generalised their perceptions of self-efficacy to the treatment they were receiving.

The importance of social support was highlighted by all groups, although the extent to which participants were happy with the support they received varied, and reflected their personal needs and situations. One participant in the TC group, and two in the SSC group suggested the need for the support provider to have experienced injury personally, or (at least) understand the emotional effects of injury. Two other participants suggested that once the visible signs of injury had gone, the emotional support they needed was no longer available. As one participant in the SSC group suggested, "once the crutches disappeared people seemed to assume I no longer needed support". Udry et al. (1997b) recently suggested that visibility of injury may contribute to mobilisation of social resources, which may explain the depletion in social resources, once the visibility of the injury disappears as

rehabilitation progresses. This would certainly appear to be consistent with what participants reported in the present study.

Participants in the GS group appeared to have generally retained closer contact with their sporting environment and team mates. This feature may provide more insight into the findings for the isolation sub scale of the PRSII reported in the intervention study than the provision of social support per se. Isolation was cited as a source of stress by 66.6% of injured skiers in Gould et al.'s (1997b) recent qualitative study. Gould et al. suggested that isolation might have been intensified amongst their sample because of the nature and structure of skiing (injured skiers return home). However, participants in the SSC group and TC group in the present study, provide some support for the presence of isolation among injured team sport participants. The importance of social support as a predictor of rehabilitation adherence has been identified by a number of researchers (e.g., Duda, Smart, & Tappe, 1989; Fisher, Domm, & Wuest, 1988). Having said this, Udry (1997) recently identified the need for this support to be specifically related to rehabilitation. The current study would certainly support Udry's suggestion, since the lack of support from team mates, the club, and in one instance, the rugby union, seemed to be the cause of much resentment, anger and frustration for a number of participants. Although speculative, this may have had a detrimental effect on feelings of self-worth, self-confidence, and as a consequence, rehabilitation adherence. McGowan et al.'s (1994) study provides some support for these effects on perceptions of global self-worth and self-confidence.

Accepting that causality cannot be inferred from a qualitative study of this nature, the case profiles presented here for the three participants in each group do not provide direct evidence for the effects of goal-setting, particularly in relation to the proposed motivational effects emanating from the intervention study. In the majority of cases in the GS group and SSC group, there appeared to be a clear preference for long-term rehabilitation goals. These participants appeared to associate short-term goals with failure, in part, because of a perceived lack of flexibility with this type of goal. Participants suggested, "... if I'd set short-term goals and didn't reach them, I'd feel awful", and "... if you set short-term targets and you don't get there you're going to feel bad, you're better off with just one far away target, so you've got plenty of time to make sure you get to it."

Adherence was generally attributed to how participants were feeling and their perceived progress. Only one participant in each of the three groups felt that short-term goals had been, or would have been, beneficial, and enhanced rehabilitation adherence, despite the fact that short-term goals (and medium-term goals, in one case) had been employed with all participants in the intervention group, for the five week duration of the study. In contrast, two of the participants in the TC group, in part, attributed their rehabilitation adherence to the setting of short-term goals. In view of the intervention study findings in relation to adherence, this is perhaps somewhat surprising. While goal-setting is proposed to affect performance primarily through a motivational mechanism, goals are also reported to enhance self perceptions of efficacy (Bandura, 1986; Locke & Latham, 1990). The effects of process orientated goals, in particular, on self-efficacy have been reported by Kingston and Hardy (1997). Moreover, the effects of proximal, as opposed to distal goals on self-efficacy, has been posited by Bandura (1988). In the context of the current study, and the previous intervention study, it is possible that although participants in the goal-setting group expressed a preference for long-term goals, they still engaged in the process of short-term and long-term goal-setting to a greater extent than participants in the other groups. In engaging in a process which encompassed long-term goal-setting, and the short-term goal-setting process emphasised in the intervention study, these participants appear to have benefited from the motivational effects that Hardy et al. (1996) have suggested may be associated with long-term outcome goals. Additionally, these benefits may have been complimented by the attention directing, controllability, and self-efficacy enhancing properties of proximal process orientated goals. Locke et al. (1984) suggested that high levels of self-efficacy leads to more difficult goals being selected, and greater commitment to those goals, once selected. Bandura (1986) has further suggested that when negative discrepancies are experienced between aspirations and actual level of achievement, performers with high self-efficacy will increase their level of effort and persistence, whereas low self-efficacy performers will give up. The desire expressed by performers, predominantly in the GS group, to "train normally" may reflect their confidence to work towards more difficult goals, and sustain their commitment to these goals in the face of set-backs. Although somewhat speculative, it would not appear unreasonable to suggest their enhanced level of self-efficacy resulted from the goal-setting intervention, which

in turn resulted in a higher level of adherence. The fact that participants attributed adherence to how they were feeling provides support for this interpretation of the findings from the goal-setting intervention study. Further support for this interpretation may be found in Bandura's suggestion that positive mood enhances self-perceptions of efficacy. However, the importance that participants attached to long-term goals, should not be overlooked. As Hardy et al. (1996) have recently suggested, because of their motivational value, long-term outcome goals may be particularly important during long periods of rehabilitation. The information presented in the case profiles would certainly seem to support this.

The case profiles presented here, while providing a context for the findings resulting from the intervention study in relation to adherence, raise some interesting questions about the mechanisms underlying the reported effects. The present qualitative follow-up study provided rich information which has contributed to the meaningfulness and interpretability of a quantitative goal-setting intervention study. It has also helped illustrate, through what may represent typical and atypical examples, what participants may experience as a result of injury. The approach adopted in the current study will hopefully encourage a diversification in the qualitative methodologies employed within the sport psychology research literature.

Chapter 6

Intervention Strategies with Injured Athletes: An Action Research Study (Study 4)

Introduction

The need to embrace the use of qualitative research methods within the context of sport psychology generally, and intervention and injury research specifically has been identified by a number of researchers (Cupal, 1998; Hardy, Jones, & Gould, 1996; Krane, Andersen, & Strean, 1997; Vealey, 1994). Qualitative methods lend themselves particularly well to addressing a number of the issues which have recently been identified within the injury research literature. These include the need for: (a) longitudinal research into athletes' responses to, and rehabilitation from, injury; (b) research that examines psychological progress through long-term rehabilitation; (c) collaborative research involving sports medicine personnel; (d) research that is sensitive to the effects of rehabilitation outcome; and (e) research which explores the effects of various intervention strategies on the rehabilitation of injured athletes (Brewer, 1998; Cupal, 1998; Flint, 1998).

In a recent review of issues in intervention research in sport psychology, Vealey (1994) identified the need for reflective research to be conducted by practitioners in the field, in order "to clarify patterns of understanding that are developed in practice" (p. 501). This reflective practice, that Vealey refers to, underpins action research. Although action research emerged from America as a form of rational social management through the work of Kurt Lewin, in its various forms, it has been widely employed within educational practice and nursing, and as a means of examining a number of social issues (Hart & Bond, 1996). Recently, it was employed within a specialist sports injury clinic as a means of monitoring a goal-setting programme with injured athletes, in collaboration with physiotherapist personnel (Gilbourne, Taylor, Downie, & Newton, 1996).

Action research is "a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which these practices are carried out" (Carr & Kemmis, 1988; p. 162). It is concerned with small scale interventions in real life situations, and a close examination of the effects of such interventions (Castle, 1994). As a result, the emphasis is not so much on obtaining generalisable scientific knowledge, as on precise knowledge about a given situation, and for a given purpose (Cohen & Manion, 1994). According to Stringer (1996), action research processes: (a) are rigorously empirical and reflective (or interpretive); (b) engage people who have traditionally been called "subjects" as active participants in the research process; and (c) result in some practical outcome related to the lives or work of the participants. The two essential features of action research are improvement and involvement (Carr & Kemmis, 1988).

An action research project, therefore, emerges from, and contributes to, the solution of existing practical problems. It is located in the kind of reflective practice which aims to enhance process values. As a form of enquiry and reflection, action research is activated by a felt need on the part of practitioners to initiate change and innovation (Elliott, 1991). Action research, therefore, is not distinguished by choice of method, but rather by the way these methods are employed (Castle, 1994; Hult & Lenning, 1980), and involves a cyclical process of planning, acting, observing and reflecting, allowing for continual monitoring and evaluation (Carr & Kemmis, 1988). This action-reflection cycle, or spiral, involves identifying a problem, implementing a solution, observing effects, and evaluating outcomes in the process of promoting change.

The purpose of the current study was to employ the process of action research in a longitudinal psychological rehabilitation intervention with three injured athletes. Although the psychological intervention was originally conceived as a goal-setting intervention, during the course of the study the intervention involved the use of a number of other techniques. These included simulation training, visualisation, and verbal persuasion. Social support, in the form of emotional support, emotional challenge, listening, shared social reality, and task support, also became an integral feature of the intervention process (cf., Rosenfeld, Richman, & Hardy, 1989). As Hart and Bond (1996) suggest, although action research may be dominated by one

type of approach at the beginning, over the course of time the approach adopted may shift, even though it may not be what the researcher intended. This is, in essence, because of the real life situations in which action research is located, and the need to respond to the demands of any given situation. The need to respond to the specific demands of a situation emerged as an important feature of the present study.

The present action research project was conceived during a goal-setting intervention study (previously reported) with injured athletes. The purpose of that study was to examine the effects of a five week goal-setting intervention on rehabilitation adherence, self-efficacy, treatment efficacy and psychological responses (as assessed by the Psychological Responses to Sport Injury Inventory [PRSII]: Evans & Hardy, manuscript in preparation; Evans, Hardy, & Mullen, 1996) of injured athletes. The current study evolved out of this intervention study in response to the need for longitudinal interventions that occur in close collaboration with other members of the sports medicine team, and within the rehabilitation setting (Cupal, 1998). The three participants were identified through their involvement in the previous study, and their continued participation was requested within the framework of a more long-term action research project.

Method

Participants

The participants were three rugby players who had sustained serious injuries while playing or training. Biographical information is presented below on each of the participants. Participant selection was based upon injury severity, sport, attending physiotherapist, and willingness to take part in the study. The sample was purposive, in that it involved the selection of information rich cases for in-depth study (Patton, 1990). One of the participants was in the first week of the five week intervention study when he was invited to take part in the current action research study, the second was in the third week, and the third was approached after sustaining a second injury, 10 months after having participated in the earlier study. All agreed to take part in the study. All participants completed a human consent form that enabled access to confidential physiotherapist records, and that allowed the researcher to discuss their rehabilitation progress with the physiotherapist.

Participant 1 - Lyndon. Lyndon, a professional rugby player, was 23 when he dislocated his shoulder six weeks into the competitive season. Six months prior to this he had broken his ankle, in one of the last games of the season. He had spent the off season and pre-season recovering from this, and a small knee operation. Lyndon played first class rugby with a premier division rugby club. He had been with the club seven years, since joining as a youth player. Lyndon had represented his country at under 19 and under 21 level, and had received a senior 'A' cap, as a replacement. Lyndon sustained his injury two weeks prior to participating in the study. However, a week into the study, following a magnetic resonance imaging (MRI) scan, the prognosis of his injury was revised. The initial recommendation of five weeks of rest and rehabilitation became one of surgery to his shoulder and three months rehabilitation. Lyndon participated in the study for almost five months. This period included a six week period during which he had returned to full training and competition.

Participant 2 - Peter. Peter was 26 years of age when as a semi-professional rugby player he sustained a fractured fibia and tibia, two weeks before the end of the competitive season. Two and a half years prior to this a torn anterior cruciate ligament in his knee had necessitated 10 months out of the game. He had also previously sustained a fractured fibia which involved a six month recovery period. At the time of the injury Peter played first class rugby with a premier division rugby club. He had been with the club for six years. Peter had represented his country at school and under 19 levels. Although Peter had had the most first team appearances for his club during the season that his injury occurred, three weeks into the start of the next season, while injured, his playing contract with the club was terminated. This coincided with Peter's third week participating in the study. Peter sustained his injury 12 weeks prior to taking part in the study. Peter participated in the study for eight months through to his full return to playing competitive rugby. The study included the first six weeks of his full return to playing. Peter was in full-time employment. He and his partner had a young son.

Participant 3 - Howard. Howard was 26 when he tore the anterior cruciate ligament in his left knee during pre-season training. He had only been back to full training three weeks after recovering from a torn anterior cruciate ligament in his right knee. This had occurred eight months previously. Howard experienced his first of a catalogue of knee problems six years ago. These injuries included a torn medial ligament and torn cartilage in his left knee which had required the left knee to be put in plaster on one occasion, and on another, the cartilage in the same knee had to be trimmed. Howard was advised following the latest operation that he may never play rugby again. The orthopaedic surgeon subsequently advised him that he could return to playing rugby, but that he would experience on-going problems with his knees. At the time of the injury Howard was playing amateur rugby with a division one rugby club, having previously played semi-professional rugby. Howard had represented his country in rugby and track and field athletics at schools and under 20's level. He had also had a brief, but successful two year spell competing in power lifting. For the last three years Howard had been employed as a physical education teacher. Prior to his involvement in the current study, during his previous injury rehabilitation, Howard had participated in a five week goal-setting intervention study. Howard was 12 weeks post operation when he began to take part in the current study. He participated in the study for 12 months. Eight months into the project Howard took on a coaching role with his local club. Howard has not returned to playing rugby at present.

Physiotherapist

All participants in the study were being treated by the same chartered physiotherapist employed within the private medical sector, and operating out of a specialist sports medicine clinic. The physiotherapist had extensive experience of the treatment and rehabilitation of sports injuries, particularly within the sport of rugby football. The physiotherapist had been involved in treating all participants for prior injuries, and as a result had known the participants some years.

Researcher

The researcher was an accredited sport psychologist (British Association of Sport and Exercise Science; BASES), who worked within a sports science department at a British university. The researcher had had previous experience of working within rugby football at an applied level, and specifically, with over 40 rugby players rehabilitating from rugby related injuries.

Data Gathering

A number of techniques were adopted as a means of monitoring participants' rehabilitation progress, and as the basis for negotiating action.

Consultations with Participants. Regular consultations took place with each participant throughout the duration of their involvement in the project. These consultations took the form of face-to-face consultations and telephone consultations. Face-to-face consultations provided the primary method of monitoring progress and negotiating action, and took place every one to two weeks, depending on the individual participant's needs at any given time. For two of the participants these consultations usually took place at their homes, for the third, at a rugby club. Occasionally consultations took place at the sports medicine clinic and involved the physiotherapist. The consultations involved the participant reflecting on the period since the last consultation in relation to adherence to their rehabilitation programme, set-backs that they may have experienced and the possible causes, how they felt about their progress, physical and psychological symptoms, and personal and professional pressures that they may be experiencing and that may be impinging upon their rehabilitation. Intermittent telephone consultations supplemented face-to-face consultations and occurred in response to specific situations, for example, an appointment with the orthopaedic surgeon, physiotherapist, or during a set-back.

Consultations with the Physiotherapist. Consultations between the physiotherapist and researcher took the same format as those between the researcher and participants. In addition, on a number of occasions these also involved the

participant. Although as participants progressed through their rehabilitation, the need for participants to attend physiotherapy sessions became less, resulting in reduced contact between the physiotherapist and participant, consultation between the physiotherapist and the researcher was maintained throughout the duration of the project. During these consultations the progress of participants was discussed on an individual basis as a means of monitoring progress, discussing set-backs, and validating actions / interventions (where appropriate).

Diaries. Participants maintained daily diaries for the duration of their involvement in the project. They were requested to record all rehabilitation and training activities undertaken, together with any other information that they felt was relevant to their rehabilitation progress. All participants recorded information relating to on-going physical symptoms and how they felt about their injury, rehabilitation, and progress.

Sports Injury Rehabilitation Beliefs Survey (SIRBS; Taylor & May, 1993, 1996).

SIRBS is a population specific measure of self-efficacy, treatment efficacy, susceptibility (to re-injury), injury severity, and rehabilitation value. In the current study, only the self-efficacy scale was utilised. SIRBS was originally derived using principal components factor analysis, which supported a four factor structure (Taylor & May, 1993). In the revised version, additional items were added to the self-efficacy scale, and a further item was constructed to assess the value of satisfactory rehabilitation to the individual. For this revised version, Cronbach's alpha for the internal consistency of the scales were as follows; self-efficacy (0.91), treatment efficacy (0.83), susceptibility to re-injury (0.84), and injury severity (0.91; Taylor & May, 1996). The version of SIRBS utilised contained four items on self-efficacy. Items were responded to on a seven point Likert scale, with responses anchored at each of the seven points across a range of, very strongly disagree (1) to very strongly agree (7). Participants completed the SIRBS every five days for the duration of their involvement in the study.

Psychological Responses to Sport Injury Inventory (PRSII; Evans & Hardy, manuscript in preparation; Evans, Hardy, & Mullen, 1996).

Subjects' psychological responses to injury were assessed using the 20 item version of the Psychological Responses to Sport Injury Inventory (PRSII; Evans & Hardy, manuscript in preparation; Evans, Hardy, & Mullen, 1996). The five sub scales that comprise the PRSII measure devastation, dispirited, attempts to rationalise, isolation and reorganisation. The original five factor 25 item version of the PRSII was developed using exploratory factor analysis. Cronbach's alpha for the internal consistency of the five sub scales were as follows; devastation (0.84), dispirited (0.78), reorganisation (0.75), attempts to rationalise (0.77), and isolation (0.87). A study of athletes of differing injury severity supported the predictive validity of the PRSII (Evans, Hardy, & Mullen, 1996). Subsequent confirmatory factor analysis of the PRSII resulted in the removal of one item from each sub scale (Evans & Hardy, manuscript in preparation). The PRSII contained a five point Likert response scale that was anchored at strongly agree (5) and strongly disagree (1). Participants completed the PRSII every five days for the duration of their involvement in the study.

Completion Schedule. In order to facilitate completion of the SIRBS and PRSII every five days, each participant was provided with a completion schedule. This schedule identified the day and date on which the inventories should be completed. The schedule was based on a five week cycle. At the end of a five week period a further schedule was provided along with the pre-requisite number of inventories and diary forms.

Case Notes. Case notes recorded by the researcher took the form of analytic memoranda. These reflected systematic thoughts particularly in relation to set-backs or obstacles to progress that emerged during the project. Such memoranda were only recorded periodically in response to specific situations that arose for a participant. According to Elliott (1991), analytic memoranda enable the researcher to record: (a) new ways of conceptualizing the situation under investigation; (b) evidence to 'ground' and examine emergent concepts and hypotheses; and (c) statements that reflect emerging problems and issues that relate to future action.

Interviews. Unstructured interviews were conducted with all participants at the conclusion of their participation in the study. Interviews were conducted using an interview guide which was adapted to reflect issues peculiar to each participant. Unstructured interviews were considered the most appropriate approach to interviewing because they are more suited to eliciting in-depth information and promote greater equity between interviewer and interviewee in the interview process (Lincoln & Guba, 1985). The conversational style which emerges from this type of interview was deemed to be more in keeping with the ethos of action research and the relationship that had evolved between researcher and participants. The use of an interview guide ensured that key issues were covered during the interview with each participant (Patton, 1990).

Two interviews were conducted with two of the participants, and only one, with the third participant. The initial interviews ranged in duration from 1 hour and 20 minutes to 1 hour and 40 minutes. The two follow up interviews lasted between 20 to 30 minutes in duration. Three of the interviews were conducted in the participants homes, the initial and follow-up interview with one participant at the rugby club where all prior consultations had taken place. The interviews were tape recorded, and later transcribed verbatim. All individual transcripts were checked for accuracy of transcription. Interview transcripts were subsequently sent to the three participants. Participants were asked to confirm the accuracy of the information. All the participants confirmed the accuracy of the information and declined the offer to amend or remove information contained within the transcript. All participants agreed to the publication of the information contained within the interviews, and other information that had resulted from the study.

Reflexive Critique

Early Phase of Rehabilitation

When the study started two of the participants had already commenced their rehabilitation. Peter, although experiencing feelings of uncertainty over his position at his rugby club, was highly motivated to get back to playing first class rugby within the time-scale that had been agreed with the surgeon. Howard, while motivated, was a

little more despondent. Howard welcomed the opportunity to take part in the study, but was comparing his current progress to the rehabilitation progress of his other leg, even though his current injury was more severe than the previous one, from which he had recovered faster than anticipated. The situation with Lyndon was a little less clear as he was due to have a scan on his shoulder some five days later.

Within the first two weeks of the study commencing Peter's worst fears were realised, and as he recorded in his diary; "well the bombs finally dropped - I had a tap on the shoulder and the magic words 'Can I have a quick chat Peter?' Five minutes later I'm released - what a surprise!!". Although because a number of other injured players in the club had been released Peter had had his suspicions that he might be released, the impact was no less traumatic. As he recalled during the interview;

> I was gutted, not just at being released, but the way in which it was done, that really pissed me off more than anything, ... I'd been a first class player for six years, and now you're not part of a team. ... They also had contractual obligations, financial obligations, and they tried to renege on them ... so being released opened up another set of problems *[financial]* which I hadn't been anticipating.

No face-to-face consultations were held with Peter over the following two weeks at his request, and he took two weeks out of his rehabilitation programme. At the subsequent consultation Peter was clearly demoralised, and had lost some urgency about his rehabilitation. As he confirmed during the interview; "before getting released I knew my contract would depend on how quickly I got back, and when I got released I stepped off the gas ... the driving force in my rehab was really taken away from me". As a result, the time-scale for his return to rugby was adjusted, and his initial goals revised. Although part of this consultation was spent revisiting Peter's goals, what became particularly apparent during the consultation was the support role I could fulfill as part of the psychological intervention. Much of the consultation was spent discussing Peter's hopes and aspirations, and importantly in providing a sounding board and willing ear; providing support. To some extent this was confirmed by Peter's diary entry, "Felt much better after discussing my situation with Lynne". The support took a number of forms: (a) listening support, as he described the events surrounding his release, and the playing and financial implications; (b) emotional support, as he expressed his feelings and frustrations, and thwarted aspirations; (c) emotional challenge, as we discussed the obstacles and

challenges he faced in achieving his aspirations and revised long-term goal; and (d) task support which involved long-term and short-term goal-setting. The goals set during this consultation included both performance and process goals. A performance goal was set for Peter's return to playing, and to regain his focus and motivation a number of short-term goals were set for the following two week period. Process goals were utilised to direct Peter's attention to processes he needed to engage in and focus on during his rehabilitation, for example, the heel-toe foot plant action in walking and jogging activities. Performance goals were considered more appropriate than outcome goals because they do not involve the inter-personal comparison (implicit within outcome goals), which may be inappropriate in a rehabilitation context. Performance goals also possess important motivational properties (Burton, 1989). Meanwhile, process goals are characterised by greater flexibility (than both performance and outcome goals), and help focus attention. As a result, they lend themselves particularly well to tasks where specific parts need to be emphasised (Hardy & Nelson, 1988; Kingston & Hardy, 1994); a feature considered important because of the unpredictability of rehabilitation progress. The importance of 'process' features of rehabilitation was emphasised by the physiotherapist, and as a result, process goals formed an important part of the goal-setting programme, particularly during the early (and latter) stages of rehabilitation. The 'extended' support role that became apparent during this consultation continued throughout Peter's rehabilitation (it was also a feature of the intervention with Lyndon), and embraced a number of personal and professional aspects that directly and indirectly impinged upon his responses to, and rehabilitation from, injury. This included professional aspirations and commitments, parenting and child care responsibilities, financial concerns, and playing aspirations. There is limited empirical research into the effects of social support on athletes' responses to injury, particularly in relation to coping with set-backs. A number of researchers have suggested that in the context of injury rehabilitation, support for rehabilitation activities may be more significant in predicting rehabilitation adherence than social support per se (Duda, Smart, & Tappe, 1989; Fisher, Domm, & Wuest, 1988; Udry, 1997). Using a global measure of social support, Udry (1997) recently found that social support failed to predict rehabilitation adherence. Udry suggested a possible reason for this finding was that athletes in the study had well-developed social networks that were resistant to

additional injury related stresses. However, the importance of emotional support and understanding, with injured athletes, during set-backs such as those described here is supported by Udry, Gould, Bridges and Beck (1997a) in their qualitative study of athletes experiencing season-ending injuries. Gould, Udry, Bridges and Beck (1997c) have recently suggested the importance of identifying, and gaining a better understanding, of conditions under which social support is mobilised or curtailed. In the example just presented, following a period of coming to terms with the 'set-back', Peter appeared to utilise support to vent his disappointment and sense of loss, to rationalise what he was experiencing, and to find a way to re-focus on the challenge ahead of him. This problem solving approach formed the basis of reinvesting in the task of rehabilitation. The sub scale scores for the PRSII (Table 8), would certainly not preclude this interpretation. However, Peter's circumstances raised another issue, which also emerged out of Howard's situation; the effect of outcome expectancy on rehabilitation adherence.

Initially, Howard and I set about establishing a number of short-term rehabilitation goals. This process had been extremely successful during his previous injury rehabilitation and as a result he was keen to engage in this again. However, second time around the situation was very different. A few weeks following his operation Howard had been advised by his surgeon of the possibility that he would not be able to play rugby again, certainly not at the level he had previously played, or indeed in the same playing position. Although we had discussed this, at the time it was clearly something that Howard did not wish to address. Instead, we engaged in the process of setting rehabilitation goals based on the fact that whether he returned to playing or not, he needed to fully rehabilitate in order to effectively do his job. That both Peter and Howard's original long-term rehabilitation outcome goal had in effect been removed caused motivation problems that in Howard's case were never fully resolved.

Table 8: Sub Scale Scores for the PRSII and SIRBS (Self-Efficacy).

Participant / Completion	PRSII					SIRBS
	Devastation	Dispirited	Reorganis-ation	Attempts to Rationalise	Isolation	Self-efficacy
Lyndon						
First completion	7	12	13	13	11	23
After operation	8	11	14	14	13	24
Back in sling	9	12	15	14	9	28
Before first full game	6	12	16	12	8	28
End of study	6	10	17	11	6	28
Peter						
First completion	16	12	12	9	15	20
After release	18	16	14	11	14	21
After x-ray	15	15	15	10	18	21
First club training session	10	10	16	8	8	19
Before first game	6	7	15	6	4	16
End of study	4	7	17	4	4	22
Howard						
First completion	4	5	16	4	7	24
After minor surgery	4	4	15	4	6	24
2 weeks later & for rest of study	4	4	20	4	4	28

PRSII scores range from a low of 4 and a high of 20. SIRBS self-efficacy scale ranges from a low of 4 to a high of 28.

A number of researchers have suggested the importance of long-term outcome goals for maintaining motivation over protracted periods of rehabilitation (Fisher, 1990; Fisher & Hoisington, 1993; Hardy et al., 1996). Generally, short-term process and performance goals have been hypothesised to have positive effects on motivation, self-efficacy, and focusing attention (Hardy & Nelson, 1988; Locke & Latham, 1990; Kingston and Hardy, 1994). However, the loss of Peter and Howard's long-term goal (outcome expectancy) had a detrimental effect particularly on motivation, and consequently, adherence. As Howard reflected of his motivation to rehabilitate during the interview; "I haven't had anything to train for so I haven't trained as much as perhaps I should have ... I've always trained for something, rugby or athletics, and at the moment I don't feel as if I will play again". However, both Peter and Howard were keen to rehabilitate fully from their injuries, albeit for different reasons, and so the intervention proceeded. It is also interesting to note that both Peter and Howard described a change in priorities in their lives over the subsequent weeks. Peter's sentiments were similar to Howard's, who recalled during the interview, "my priorities have changed a bit. I had promotion in work, I've taken on more responsibilities with different teams coaching ... so I haven't got as much time to train as I did have". One can at best speculate about the coincidence, but it clearly detracted from the motivation to expedite rehabilitation. Brewer (1998) has recently highlighted the need to examine the relationship between rehabilitation adherence and rehabilitation outcome. The cases reported here provide some evidence to support the important moderating effect that outcome expectancy may have on rehabilitation adherence. What Peter and Howard experienced represented a significant 'loss' (cf., Gould et al., 1997b). Gould et al. (1997c) provides support for the importance of action which focuses an athlete on setting and working towards goals, and on rehabilitation / training ('driving through') as a strategy to cope with such a loss.

During this period, regular features in Howard's diary were, "left knee clicking", "both knees very sore", "left knee won't straighten". As a direct result the rehabilitation goals had to be very flexible, and even then invariably proved very difficult to achieve. It became apparent very quickly that Howard's right knee had not recovered sufficiently from the previous operation to provide the support he now required from it, which in turn was causing him to put too much weight on the

recently operated left leg. As a result Howard was admitted into hospital four weeks into the study to have fluid drained off the right knee and have the back of the left patella shaved and the cartilage trimmed. Gilbourne and Taylor (1998) have recently highlighted the importance of assessing rates of progress once goals are set as a basis for evaluating when to alter the nature or difficulty of the goal. They suggest that "this is particularly pertinent to injury rehabilitation as recovery is typified by an unpredictable mix of rapid progress and disappointing setbacks" (pp. 134-135). Although principles of effective goal-setting suggest the need for goals to be specific, measurable, and realistic (e.g., Weinberg, 1992), the participants' commitment to such goals leaves little flexibility in the goal. This can be particularly problematic within an injury rehabilitation context, especially in the early stages of rehabilitation. A natural rehabilitation set-back can be exacerbated if rehabilitation goals are not achieved. The unpredictability in Howard's case, of swelling, soreness and pain, had the potential to represent a set-back in itself. Although goals were regularly adjusted, setting goals that were sufficiently flexible and adhered to effective goal-setting principles in order to ensure he didn't experience further set-backs by not achieving goals, or by striving to achieve them he didn't further aggravate the knee, was extremely difficult. In order to overcome this, goals were sometimes set that only specified the process which Howard had to engage in and omitted an outcome. For example, goals such as one minute on the trampette doing controlled proprioceptive alternate leg hops, were replaced by use the trampette for controlled alternate leg hops when the knees 'are up to it'. Similarly 20 minutes in the swimming pool doing a prescribed number of leg strengthening exercises, was replaced by go to the pool 2-3 times this week and 'do what you can' of the leg exercises without aggravating the knee. This enabled Howard to engage in rehabilitation activities, and by so doing, take positive action, without incurring a negative reaction from trying to achieve a goal that would be detrimental to the continued progress of the knee. It may be that in a rehabilitation context, particularly in the early stages of rehabilitation, which is characterised by frequent swelling and soreness (minor set-backs), the flexibility offered by such an approach may be helpful. While Howard was encouraged to adjust goals on a daily basis, both Howard and Lyndon had a tendency to ignore discomfort, and aches and pain in the injured limb, in an effort to achieve the specified outcome associated with a previously agreed goal. As a result the self-evaluative nature of goals at times proved

dysfunctional. This dysfunctional feature of performance (and outcome) goals has been acknowledged in the goal-setting literature (e.g., Beggs, 1990).

Four days into the study, following an MRI scan on his shoulder, Lyndon was advised he would require surgery and would be out for a minimum of three months. As Lyndon recalled;

> I was gutted, ... I felt like filling up when I was told, but I just couldn't because *[the physio]* was next to me, and I thought, I'm not going to cry in front of *[the physio]* ... and then on the way home in the car, ... all I could think about was my contract ... a couple of the boys with injuries less serious than mine had been released from their contracts with the club, ... and I haven't got any qualifications to do any other job, ... so I was really up-tight about that.

Lyndon and I met a few days after his operation. Following the operation, Lyndon's shoulder had been put in a sling and he had been told it had to stay in the sling for six weeks. Lyndon found this prospect particularly frustrating. His diary entries during the first week of being in a sling read; "bored, really bored, and feel absolutely useless", "I'm really frustrated", "this is a nightmare". The PRSII sub scale scores (Table 8) seemed to confirm that he was feeling isolated and dispirited. Being in a sling meant he couldn't drive and so he was having to spend a lot of time in the house on his own. This in turn was exacerbating his feelings of isolation. He was also really concerned about putting weight on. As he recalled during the interview;

> ... the restriction, being in the house on my own, and knowing that I love to eat ... I was thinking about it all the time, when can I eat next? I can't because I'm not doing any exercise to burn it off.

When asked during the interview what emotions he associated with this period of time, his response was, "depression, weight gain, food". Because Lyndon had been told he had to completely rest the shoulder for two weeks, the first meeting with Lyndon post-operation was more about listening to his fears, frustrations, and concerns, providing emotional support by empathising with what he was experiencing both physically and psychologically. Shared social reality and emotional challenge were provided as a means of rationalising the implications of the injury, and helping him to maintain a positive attitude by viewing what he saw as barriers and obstacles as challenges. Life-style management goals focused on structuring his days such that the time he spent on his own was occupied with purposeful activities such as going for a walk, reading, and getting people to visit; a strategy akin to emotion

focused, and to a lesser extent, task focused coping. Later that day, because Lyndon was not clear on what activities he could and couldn't do, I contacted the physiotherapist. As a result we were able to incorporate activity on an exercise bike into his schedule. Lyndon was delighted by this, and although I was not initially sure that I had been able to provide sufficient tangible support for Lyndon, I was re-assured by his diary entries that week which read; "feel much better after talking to Lynne", "getting better every day", "weight still down, which is really good ... so glad I can cycle", "went on bike, I've lost some weight!".

A long-term goal had been agreed between the surgeon and physiotherapist for Lyndon's return to playing rugby, and the rugby club had reassured Lyndon that they were quite happy with this. However, by the third week of being in a sling Lyndon had become increasingly frustrated. This frustration reflected his perceived lack of progress and the imposed restriction, because of his inability to drive. At our consultation that week, during which we had agreed a number of rehabilitation goals, he admitted to having taken his arm out of the sling in order to be able to drive and get about. Adamant that the physiotherapist not be told, he assured me he would not do anything else he was not supposed to do. Looking back over the diary for that week it was clear that he increased the intensity of his training, and varied the training activities, beyond those agreed. Although I felt I had to honour his request for confidentiality, I felt somewhat uncomfortable about it. Later that week Lyndon started to experience pain in his shoulder and had to contact the physiotherapist himself. Sufficiently panicked by the incident, his arm was put back into the sling where it remained for a further two weeks. When asked about the incident during the interview, Lyndon recalled;

> I just thought it felt really good, and two other players who had had the same op were saying 'we had it done and took it out early', and they both played months before they should have, and they were okay, and I thought may be I'll be able to get back a bit quicker.

This desire to rehabilitate faster than both the surgeon and physiotherapist had recommended, while ever present, did not result in any further set-backs, although the management of it was challenging. Certainly the use of short-term goals was not sufficient as a strategy in itself, and what approached rational emotive therapy was briefly utilised. This was used to deal with Lyndon's maladaptive cognitions about the speed with which he felt he could expedite recovery. These cognitions were

incongruent with the time required for the healing process, prescribed by the surgeon. To this end, principles of logic and rationalisation were used (cf., Harrell, Beiman, & LaPointe, 1995). Once the sling was taken off and Lyndon could start to work on strengthening his shoulder, and two weeks later start running, short-term process and performance goals became the most essential feature of his rehabilitation. Performance goals were used to set specific rehabilitation targets, and process goals were used to focus on features of the activities, for example, range of movement and control in shoulder strengthening exercises. During the interview, Lyndon reflected on this period of his rehabilitation;

> once I was out of the sling, although the shoulder was still sore, I knew the exercises were worthwhile, and I knew I had to do them every couple of hours, but I didn't really mind because I had my goals, and I really stuck to them ... and once I could start running and I got a fitness programme via you from *[a fitness advisor who had previously been with the club (it was checked by the physiotherapist)]* ... I started drilling myself into the ground, knowing that I had to put some fitness back in the bank, and I really stuck to that as well.

Lyndon's responses during these early weeks raised a number of issues which have been identified in previous research, and which may shed some light on the 'action' taken. Flint (1998), although acknowledging the lack of data to support the premise, suggested that someone who is more dependent (e.g., on crutches), than someone else who for example has a shoulder injury, would experience more frustration and depression. This view is supported by Johnston and Carroll's (1998) qualitative study. However, Lyndon's case suggests the importance of considering the restriction imposed by the injury independently of the site of injury. One of the factors that contributed to Lyndon's initial reaction to his injury (and also identified by Peter), was his financial / contractual concerns. Primarily applicable to professional semi-professional athletes, Gould et al.'s (1997b) study is one of few which have identified this as a source of stress for injured athletes. In Gould et al.'s study financial concerns was the fifth largest higher order dimension, with 28.6% of the athletes citing a theme within it. The sixth largest higher order dimension, cited by 23.8% of athletes, was career concerns. With the funding available to elite athletes this may become an increasingly prevalent source of stress for injured athletes. In Lyndon's case, in order to address his concerns, he sought reassurance from the club

as to their contractual obligations and commitment. This proved sufficient to alleviate his immediate concerns.

As Lyndon suggested, his incapacitation and resulting isolation caused enormous frustration for him. The potentially debilitating effects of such perceptions have been highlighted in a number of qualitative studies (e.g., Gould et al., 1997b; Johnston & Carroll, 1998; Udry et al., 1997a). As a stress source in Gould et al.'s study, isolation was cited by 66.6% of the injured athletes and stemmed from feeling cut off from the sporting environment; coach, teammates and familiar routines. Despite the strategies employed, it was quite difficult to address this feature of Lyndon's injury experience because of the practical assistance required from other people. The intensity of Lyndon's feelings of frustration associated with his isolation led him to take his arm out of the sling in order to drive (to the club). This in turn, introduced another variable into the equation. Gould et al. (1997c) reported that 23.8% of injured athletes identified having other athletes who had been injured act as models or references as a facilitating factor. However, social comparison was cited as a source of stress by one third of injured athletes in an earlier study (Gould et al., 1997b). The use of such social comparison or models/references can have either a beneficial or detrimental effect on injured athletes. Lyndon's use of models/references was to validate actions that were dysfunctional to his own rehabilitation progress. Fortunately for Lyndon, the set-back which resulted from this was relatively minor, and served to reinforce the importance of adhering to the prescribed rehabilitation programme.

Mid Phase of Rehabilitation

Four weeks after his initial set-back, and having had two weeks where he had been able to exceed his rehabilitation goals, Peter experienced a further set-back. Following his appointment with the surgeon, he recorded in his diary;

> Very disappointed with my x-ray. Whereas the smaller bone seemed completely healed, the larger bone seemed not to have changed since my last x-ray. Although the consultant said I could gradually increase my training I could see that he was disappointed with this, as he's usually more encouraging. My next appointment is not until 19th December *[he had originally hoped to be playing by then]*, so it doesn't look like I'll be playing this year.

The contact that Peter had with his surgeon was the only medical support he continued to receive. The physiotherapy had been arranged through medical insurance with the rugby club, and although he knew the physiotherapist well, he only had contact with her twice over the phone throughout the remaining period of his rehabilitation. This meant that although I maintained contact and sought advice, collaboration, as it had originally been conceived did not take place. Initially this caused me some concern, but I gradually came to terms with it, as it was Peter's choice. Gilbourne et al. (1996) reported a decrease in injured athletes adherence to a goal-setting programme when they spent protracted periods away from the clinical environment. They suggested this resulted from the athletes' inability to interpret feedback from the injury, which would interfere with the confidence with which they could set rehabilitation goals. This did not appear the case for Peter. When I explored Peter's reasons for not seeking physiotherapy support, during the interview, Peter explained;

> I knew what rehab I had to do because *[the physio]* and *[consultant]* told me what I would have to do in the beginning, so there didn't seem any need to go back ... I think I had confidence in the physio and knew I could turn to *[the physio]*, and if *[the physio]* thought there was a problem *[the physio]* would say to me to come down and *[the physio]* would have a look.

Later he elaborated;

> I liked to have my independence ... I wanted to stand on my own two feet ... I would rather go through the pain barrier and see if I could beat it ... and I'd been through a lot of the stages before with my previous injuries, and drew on those experiences, and knew I had to ride out the troughs and just got on with it ... I suspect it reflects my stubborn character, I'd rather sort my own problems out and not look to others ... I suppose if I've got a weakness, I'd don't want other people to know about it.

Consultations continued with Peter, the focus of which were two-fold, providing support and managing his rehabilitation (primarily by means of goal-setting). During this period emotional support (and listening support), although provided to a lesser extent, was still a feature of the intervention, when Peter would describe his frustrations at his lack of motivation, and the conflict he was experiencing in trying to meet the demands of his job, family and rehabilitation. The uncertainty about where he would be playing rugby and at what level (outcome expectancy), was an ever

present feature. Task support focused on setting goals in relation to the management of his rehabilitation as well as setting rehabilitation goals per se. Gilbourne et al. (1996) also identified the importance of managing rehabilitation by ordering the week and ensuring that other 'life demands' and rehabilitation requirements could be met. The goals set during this period included training on targeted days of the week, and/or completing a specified number of sessions per week. Process goals focused, for example, on running form and technique (knee lift and stride pattern), and performance goals, included running a specified number of laps of the rugby pitch, or running continuously for a set period of time (e.g., 20 minutes). Also pertinent to Peter's rehabilitation was that since he was no longer associated with a club, his rehabilitation was undertaken on his own. Gilbourne and Taylor (1998) have drawn attention to the potentially debilitative effect this may have on athletes emotionally. In Peter's case, the debilitative effect was more to do with rehabilitation motivation. The situation was further exacerbated, by Peter's financial concerns, which precluded the regular use of indoor facilities because of the cost implications. For Peter, this meant rehabilitating outside during the winter months. However, it appeared that Peter generally found our discussions about his rehabilitation, and the process of managing his rehabilitation through goal-setting helpful; "Lynne visited again tonight. Enjoyed our discussion and found it really helpful - I've found a definite benefit to having another person's viewpoint on my training schedule and my recovery, particularly the way we are able to structure it" (diary extract). Although motivation proved to be an on-going problem, short-term goals helped to maintain Peter's rehabilitation progress. Three months into the study an extract from Peter's diary read;

> Went for a run tonight. I completed 10 (!!) laps of the field without stopping. No problem with my ankle or shins. I couldn't believe it tonight. This is as far as I could run before I broke my leg. Over the moon. This is definitely the end of my rehab - obviously I'll still get the odd ache and pain, but as far as I'm concerned the next big hurdle is to prove to myself that I haven't lost any ability during the last seven months. Considering waiting until the end of January to return to playing, though I think as soon as I start back with the local team I'll be itching to play.

Ten days later;

> Appointment today went really well. *[Consultant]* said that it would be between 6-8 weeks before I could play again. I was glad to see that the bones have now healed. He also said it would be okay for me to start training with my local team. A good day.

Although Peter experienced a number of minor set-backs over the ensuing weeks, the next hurdle for Peter and Lyndon was their return to competitive rugby.

Having had minor surgery on the one knee, and the other knee drained, two weeks later, Howard attended an appointment with the orthopaedic surgeon. His diary entry following that appointment read; "*[consultant]* very happy with both knees". Over the ensuing eight weeks the diary entries were very similar from one week to the next. "Knees sore" or "knees very sore" appeared frequently. Less frequent was "knees feel good" or "knees feel better". Throughout this period consultations took place on a regular basis, the focus of which was setting rehabilitation goals based upon physiotherapist feedback, and the soreness Howard was experiencing with the knees. Although Howard's motivation clearly diminished over time, at his behest we continued to set goals. However, setting goals which could account for the soreness Howard was experiencing, while also ensuring they were specific and challenging, continued to be difficult. Howard clearly preferred to work towards achieving performance goals that had some specified outcome, for example, five minutes continuous jogging on the treadmill, but when soreness meant this was no longer realistic, he would either get extremely frustrated and reduce his commitment to all goals, or ignore the pain in order to achieve them. Occassionally he would adjust the goal. However, sometimes striving to achieve the original goal would result in increased soreness the following day, and as a result failure to achieve subsequent goals. Despite this, Howard remained extremely positive. Almost five months into the study Howard recorded in his diary; "knees very sore, but confidence is beginning to build". Two weeks after introducing jogging into his rehabilitation, his diary entry read, "Saw physio and consultant. Both pleased with progress". At this appointment the consultant advised him that although he would always experience pain and soreness, if he wanted to, he would be able to play rugby again. He added, however, that it would result in problems in later life. While it became increasingly apparent that realistically Howard would not return to playing rugby, he made it clear to me that he wouldn't or couldn't admit to this. When

Howard told me what the consultant had said, he added, "but I'll never admit to the fact that I'm not going to play rugby again even if I know I won't. I can't admit to that".

Howard participated in this action research study for almost 12 months. At the time of writing it is 15 months since the injury occurred. Although he feels he has benefited from his involvement in the study, I have found the intervention particularly difficult to manage, and throughout have questioned whether I could be making a more significant contribution to his rehabilitation, particularly in relation to his rehabilitation motivation. Throughout the period Howard has had an extremely positive attitude. The results of the SIRBS and the PRSII seemed to support the fact that Howard was coping well with his injury and rehabilitation. However, the results of the SIRBS and the PRSII showed little change over this period for any of the sub scale scores, which led me at one stage to question the results. They seemed inconsistent with the slowness of progress, the lack of motivation (compared to his previous injury rehabilitation), and the on-going problems Howard was experiencing. During the interview a number of pertinent features emerged which, in the absence of empirical research into career (sport) ending injuries might explain some of these inconsistencies.

> Over the last three months my training has been poor in all aspects because I think I'm not pushing myself to play at the moment, and perhaps you could say that realistically that I won't play again, but I haven't thrown it out of the window. So I haven't really had anything to train for ... but that little bit of hope can keep you going. To say right I'm not going to play again, I'm finished, is a big decision to make, and for me to say, right I'll never play rugby again. I don't think I'll ever do it ... I don't think I will ever make the decision that I won't play again. If it happens, it'll just happen.

Of his motivation to train he suggested;

> Some people train because they want to lose weight, granted that is a reason, but I have always trained to compete, and I think that's what I miss, I haven't got that competitive edge or a competitive feeling in my training.

In relation to his positive attitude toward his injury and rehabilitation Howard suggested;

> I've always focused on the positive side of things. In training I'd focus on the positive aspects of my training rather than on my knees ... I've been lucky over the last 2 years. I've been unlucky with my knees, but I've been very lucky in my profession and other aspects of my life.

Two days before the interview Howard completed his first 5k run in a charity race.

Late Phase of Rehabilitation: Re-entry into Competitive Sport

In contrast to Howard, re-entry into competitive rugby was the final phase of rehabilitation for Peter and Lyndon. While Lyndon eagerly awaited his return, and two weeks prior to his return the exact game had been targeted, Peter initially reacted with some hesitation and concern about the prospect of playing. Peter had brought forward his final appointment with his consultant because he felt his rehabilitation had been going really well. When subsequently given the "green light" to start training however, he was quite shocked;

> when I sat down and thought about what I would need to do to be playing in the time-scale he suggested, all I could think of was having to take a tackle *[the injury occurred when he was being tackled],* and I realised, it came as a bit of a shock you know, that I'm not confident to go into a tackle situation ... so even though he said you've got six weeks I didn't think I was ready to play in that time-scale. Up until that day I thought I was, but then when he said it I thought, well I'm not going to be ready confidence wise.

Interestingly, Gould et al. (1997c) found that patience, and taking it slow was cited more by successful recoverers from injury than unsuccessful recoverers. Unfortunately, it is unclear from Gould et al.'s study whether this comment related to the whole rehabilitation period or distinct phases, such as re-entry.

During this phase the intervention focused on preparing both Peter and Lyndon for their return to competitive rugby, and confidence became the major component. All training was underpinned by goal-setting. Performance goals focused on the intensity, duration and nature of training activities, process goals were utilised to emphasise, for example, body position in contact situations, and correct angles of running. Initially, confidence was derived from training at an appropriate intensity

for game demands. Later the focus changed to ensuring confidence in the injured body part to meet specific game situations, through simulation training and imagery. As Peter's first game approached, the intervention focused on mental preparation for the game through the use of imagery, particularly in relation to specific situations (e.g., being tackled).Verbal persuasion information derived from performance success (i.e., goal achievements and successful experiences) was also used to enhance confidence. These strategies were based on Bandura's (1982) sources of self-efficacy. Ten months after the injury occurred Peter played his first competitive game of rugby. His diary entry the morning of the game read; "I'm writing this before I play - I'll be having a drink afterwards. I'm a bit nervous about today. I'm going to take my time and not get too involved. Fingers crossed". The following day he recorded in his diary;

> I survived!! Ended up playing for the second team. The first half went well, I scored an early try and felt okay. However, my batteries ran out big time in the second half - I know how far off match fitness I am now. I took a few tackles and made a couple of 'hits'. I'm not aching as much as I thought I would. At least this is under my belt - glad to get it out of the way.

In the time running up to Lyndon's first game a similar intervention strategy was employed to the one which had been employed with Peter. However, with less success. Lyndon had not been able to fully simulate tackle situations to be sufficiently confident to tackle players in the manner in which his injury had occurred. Although the importance of simulating this specific tackle situation was emphasised by both the physiotherapist and myself, and goals had been set in relation to this, the lack of collaboration with the coaching staff became a limiting factor in the effectiveness of the intervention. Gilbourne and Taylor (1998) suggested the importance of coaching staff playing an increasingly dominant role in the final phase of rehabilitation. Unfortunately, because of 'the prevailing political climate' (which cannot be elaborated on for reasons of anonymity) collaboration with coaching staff was not possible within the context of the current project. During the interview Lyndon described himself as "80% confident" going into his first game. In the discussion following his first game back he admitted to having a problem with tackling, and to not having made a single tackle during the time he was playing (it had been agreed he would only play the second half of the game). During the next two

games, Lyndon continued to avoid tackling players with his injured shoulder, and during the interview said; "if I could see someone coming towards me I'd change my body angle and try and get into a position whereby I could tackle with my right shoulder *[non-injured shoulder]*". Not only did this create a problem for his right shoulder, but Lyndon exposed himself to potentially dangerous situations by placing his head and neck in the wrong position. In reality the intervention was less than successful in initially addressing and correcting this problem. Eventually, although the problem was successfully addressed, it was largely as a result of the need to tackle using his injured shoulder because of the pain he was experiencing in the right shoulder.

It was agreed with both Peter and Lyndon that their participation in the study would conclude once they had regained full confidence in their ability to play rugby, and the injury was no longer interfering with their performance. Until this time, the intervention continued to focus on them regaining confidence by reviewing their previous performances, and setting goals for their next performance based on the performance review. Imagery was used as part of both the performance review and preparation strategy. It took about 6 weeks of playing competitive rugby before Peter and Lyndon considered they had regained confidence, and had very few injury related cognitions while playing. As Peter suggested during his interview;

> even then, although my focus during games was on my performance, the odd thing would occur during a game when I would think about my leg, but I think it'll be a very long time before that never happens. I think I was as close to being fully recovered after 6 weeks as I could be.

Both Lyndon and Peter have successfully returned to playing first class rugby with premiership teams.

Summary and Conclusions

The current paper has reported the implementation of a longitudinal action research project involving three injured athletes. The reflexive critique provides an insight into the intervention strategies employed in response to individual, situation specific needs, over the course of the athletes' rehabilitation. This study responds to the need for longitudinal collaborative research which takes place in the injury rehabilitation

environment. A number of features emerged from the study which have relevance to future research in this area.

The need for a multi-modal approach within intervention research has been identified by a number of researchers (e.g., Cupal, 1998; Greenspan & Feltz, 1989; Vealey, 1994). The present study has responded to this need, and supports the importance of such an approach to the rehabilitation of injured athletes. It also highlights the importance of accounting for the differing effects of various treatment interventions according to individual and situation specific characteristics (Vealey, 1994).

The salience of social support emerged from the present study. The importance of identifying, and gaining a better understanding, of conditions under which social support is mobilised or curtailed has recently been suggested by Gould et al. (1997c). The reflexive critique highlights the utility of different types of support. Emotional support (embracing listening and emotional challenge) was a feature of consultations throughout the rehabilitation period, but appeared most salient in situations where rehabilitation progress was slow, set-backs were experienced, or other life demands were placing additional pressures on participants. As a result it was a particularly prominent feature of the intervention in the earlier stages of rehabilitation, and in the re-entry phase for one particular participant. Task support was provided throughout the rehabilitation period, including re-entry into sport. Task support primarily took the form of goal-setting, but implicit within this was what Rosenfeld et al. (1989) term task challenge. The current study provided support for the effect of a number of variables during injury rehabilitation, such as financial concerns, isolation, and social comparison. This is consistent with sources of stress during injury rehabilitation, previously reported (Gould et al., 1997b).

With regard to the use of goal-setting as a rehabilitation intervention strategy, a number of interesting features emerged, not least of which was the importance of outcome expectancy. Brewer (1998) recently highlighted the need to examine the relationship between rehabilitation adherence and rehabilitation outcome, and the present study provided some support for the moderating effect that outcome expectancy can have on motivation. The present study provided some support for the use of process and performance goals in an injury rehabilitation context. Process goals were used to focus attention on specific aspects of a given task, and the

processes that participants needed to engage in when working towards performance goals. The importance of this was reinforced by the physiotherapist. Performance goals were used to structure the content of the rehabilitation, providing specific short-term and long-term targets. The present study highlighted the need for goals to be flexible. While one participant in particular was encouraged to adjust goals on a daily basis in response to physical symptoms, the existence of previously agreed goals to some extent mitigated against this process. Two of the participants, on occasions, ignored physical symptoms in a desire to achieve a specified goal. As a result, the study highlighted the dysfunctional nature of the self-evaluative process implicit within goal-setting. The use of both long-term and short-term goals was an integral feature of the intervention, and the reflexive critique provides support for the utility of this type of approach with injured athletes. In addition to the content of the rehabilitation programme goal-setting underpinned the management of the rehabilitation process within the context of other life demands. The accounts of the three athletes' rehabilitation experiences provide some evidence of the effects of goal-setting on motivation, self-confidence, and adherence, and makes a contribution to existing research in this area (e.g., Duda et al., 1989; Gilbourne et al., 1996; Theodorakis, Malliou, Papaioannou, Beneca, & Filactakidou, 1996; Theodorakis, Beneca, Malliou, & Goudas, 1997).

The need for collaboration between sports scientists and sports medicine personnel in the treatment of injured athletes has become an increasingly prominent feature of the injury literature. The extent to which collaboration occurred varied across the three cases. In this, situational and personal variables largely determined the extent to which collaboration was possible. While intuitively, close collaboration would seem to be beneficial, the implications of greater or less collaboration, would at best be extremely speculative based on the present study. What did become apparent as rehabilitation progressed, and as the need for physiotherapy treatment became less, was that the role of the researcher (sport psychologist) became all encompassing, embracing some of the functions that had previously been fulfilled by the physiotherapist. In one case in particular, this appeared to occur throughout, and reinforced the role that a sport psychologist may play in facilitating successful rehabilitation (the physiotherapist was consulted on all matters requiring physiotherapy expertise). One case in particular also highlighted the need for

collaboration with coaching staff, and the need to educate coaches on their role when working with injured athletes.

An important feature of the current study was the inclusion of the period of re-entry into sport for two of the participants. There has been limited research examining this re-entry phase following injury, and the current study offers an insight into the problems that athletes might face during this critical phase of their rehabilitation. Gaining confidence in the capability of the injured body part to meet the demands of their sport, and confidence to be able to confront the situations in which the injury occurred, were two important aspects of re-entry. Also important, although less significant, was confidence in their overall level of fitness to meet the demands of the game. Confidence was gained via simulation training in structured practice, the use of imagery to prepare for specific game situations, particularly those that approximated the situation in which the injury had occurred, and verbal persuasion information gained from successful experiences. Goal-setting underpinned this important phase of rehabilitation. One case, in particular, highlighted the risk of re-injury that performers face if they return to sport having not regained confidence, particularly in relation to situations in which the injury was sustained. The two performers who returned to playing considered it took them six weeks of playing before they were able to fully focus on their performance, have confidence in their injured body part to meet the demands of the game situation, and not be distracted by injury related cognitions. This has important implications for coaching and sports science personnel in the management of rehabilitating athletes generally, and their re-entry into sport specifically.

Within an action research cycle, the psychological intervention strategies implemented in this study were adopted in response to what were the perceived needs of the particular individual in any given situation. A number of features emerged as to the use of specific strategies during the course of the rehabilitation period. In the early phase of rehabilitation, and in response to rehabilitation set-backs emotional support emerged as an important strategy. It was also used in the latter stage with one participant when he began to experience doubts about his readiness to return to competitive sport. Task support was provided throughout, primarily through goal-setting. Goal-setting was used particularly during the early and middle phase of rehabilitation to enhance motivation, and adherence. In the mid to late

phases it was used as a means of enhancing self-confidence. The goal-setting strategy embraced the use of short-term and long-term goals, and both appeared to have an important role in maintaining motivation and adherence. As participants reached the latter stages of injury the emphasis changed from issues of motivation and adherence to enhancing self-confidence for re-entry to sport. The strategies used included simulation training through structured practice, imagery, and verbal persuasion information. The use of these strategies continued over the six week period of their return to sport. During this period, clear process and performance goals were set for training and playing; with much less need for flexibility in the goals. The use of these techniques was underpinned by the researcher's knowledge of the relevant research literature, but applied in response to individual, and situation specific needs.

The current collaborative action research study has addressed a number of issues identified within the injury literature. It embraced a multi-modal longitudinal intervention approach to the rehabilitation of three injured athletes, within an action research framework. Although it included the period of re-entry into sport, the study would have benefited from the inclusion of the pre-injury period. Unfortunately, as has been identified by a number of researchers, this is extremely difficult to achieve. The current project has identified a number of issues which future research should attempt to address. These include: (a) the moderating effect of rehabilitation outcome expectancy on adherence; (b) the relative merits of different psychological intervention strategies to address various features of rehabilitation from injury; (c) the salience of different types of goal-setting strategies (e.g., long-term, short-term, process, performance and outcome) to athletes psychological responses to, and rehabilitation from, injury; (d) the importance of collaboration between sports medicine, sports science, and coaching personnel, to the rehabilitation process; and (e) the factors affecting successful re-entry into sport.

Chapter 7

Summary and Concluding Comments

Introduction

The purpose of the final chapter of the thesis is to draw together this research project. The chapter is divided into five sections, as follows: (1) Summary - this section provides a resume of the aims, and major findings of the research; (2) Conceptual issues - this section examines the major conceptual issues emerging from the project; (3) Practical implications - here the implications emanating from the research are discussed; (4) Strengths and limitations - this section examines the strengths and weaknesses of the research comprising this research project; and (5) Future directions for research - this final section provides recommendations for future research in the area.

Summary

The global aim of this research project was to examine the psychological responses of injured athletes as the basis for designing theoretically meaningful intervention strategies. Early research into the psychological responses of injured athletes led to the proposed application of the clinically derived grief response model, and the stress based cognitive appraisal model. However, this research showed little regard for the clinical grief literature. Indeed, a review of the clinical grief and injury literature (chapter 2; Evans & Hardy, 1995) suggested that within the research, grief had been poorly conceptualised, with much misrepresentation of one particular model (Kübler-Ross' model), and limited regard for other grief models. In addition, the research had lacked empirical rigor in assessing athletes' psychological responses to injury, and the contribution of models of grief to enhancing our understanding of injury response. A reliance on non-population specific measures was an inherent limitation of much of the research (Evans & Hardy, 1995; Wiese-Bjornstal, Smith,

Shaffer, & Morrey, 1998). The research had also over-looked the importance of change (temporal dimension) implicit within models of psychological response. Study 1 (chapter 3) attempted to address a number of these limitations by developing a theoretically derived measure of athletes' psychological responses to sport injury. The Psychological Responses to Sport Injury Inventory (PRSII) was initially developed using exploratory factor analysis, and was found to possess good internal consistency and predictive validity. The twenty five item PRSII comprised five sub scales: Devastation, Dispirited, Reorganisation, Attempts to Rationalise, and Isolation. Subsequent confirmatory factor analysis with a separate sample of injured athletes resulted in one item being removed from each of the sub scales. This resulted in each sub scale containing four items. In its final form, the 20 item PRSII was considered to demonstrate acceptable psychometric integrity. Fundamental to the development of the PRSII was the need to account for transience, or change, implicit within models of psychological response (Aldwin, 1994). This had previously been ignored by much of the empirical research, despite being acknowledged by a number of researchers who had employed methodologies sensitive to this feature of athletes' psychological responses to injury.

The need to account for this temporal feature of athletes responses to injury was integral to the design and implementation of the intervention study reported in chapter 4. The five week goal-setting intervention study examined the effects of goal-setting on athletes' rehabilitation adherence, self-efficacy, treatment efficacy and the psychological response variables assessed by the PRSII. This study addressed the need for well controlled research which examines the effects of specific intervention strategies on athletes' adherence to rehabilitation programmes, and psychological responses. A number of variables have been reported to moderate athletes' responses to injury and adherence to rehabilitation programmes. The goal-setting intervention study attempted to control for the potential confounding effect of a number of these variables by matching participants across six such variables, and including a social support control group (in addition to a traditional control group). The results confirmed some of the hypothesised effects of the goal-setting intervention: (a) athlete self-report of adherence showed the goal-setting group adhered significantly more to the rehabilitation programme than the other two groups; (b) the goal-setting intervention resulted in significantly higher levels of self-efficacy and treatment

efficacy (at specific time phases); and (c) the goal-setting group were significantly more reorganised (at time 8 and across time) than the other two groups. However, not all the hypothesised effects were supported. In order to more fully understand the findings from the intervention study a qualitative follow-up study was conducted. This qualitative follow-up study was reported in chapter 5.

Although qualitative methods lend themselves particularly well to examining more closely the effects of intervention studies, they have rarely been used for this purpose within sport psychology research (Locke, 1989). The qualitative follow-up study utilised semi-structured interviews with a sample of nine injured athletes (three athletes representing each of the three intervention groups). The data derived from these interviews was discussed via case studies and cross case summaries, and then within an integrated framework that embraced the findings of the experimental goal-setting intervention study. The qualitative study highlighted the importance of individual difference variables, and the interaction of person and situational variables in participants' injury experiences. These included perceived support (from coaches and club), inability to train, weight gain, social comparison, slowness of progress, physiotherapist support and the importance to participants of long-term outcome goals. Such variables appeared to account in part for the intensity of the psychological responses, rehabilitation adherence, and the use of goal-setting. It also highlighted the salience of different types of goals. As a result of the qualitative follow-up study a number of possible mechanisms were posited for the observed effects of the goal-setting intervention. These included the effects of goal-setting on self-efficacy, attributions, perceptions of control and attention.

The final study reported in chapter 6, represented a further diversification in the methods commonly employed within sport psychology research, and addressed the need for longitudinal multi-modal intervention research. This collaborative action research study employed a multi-modal intervention with three athletes rehabilitating from injury. The study was conducted in the natural rehabilitation setting. The efficacy of a number of intervention strategies emerged from the study including social support, goal-setting, imagery, simulation training and verbal persuasion. Emotional support (embracing listening and emotional challenge) emerged as important in situations where rehabilitation progress was slow, set-backs were experienced, or where other life demands were placing additional pressures on

participants. Task support, including task challenge, primarily took the form of goal-setting. Goal-setting was used throughout the rehabilitation period. In the early and mid phases of rehabilitation goal-setting was used primarily to enhance motivation and adherence. Toward the latter phase, and during re-entry into competitive sport, it was used to enhance self-efficacy. The study provided support for the use of both long-term and short-term goals, and process and performance goals. In particular, process goals helped focus attention on specific features of a given task, and performance goals provided structure and specific targets for participants' rehabilitation. A number of features emerged as salient to athletes psychological responses to, and rehabilitation from injury. These included the effect of outcome expectancy, rehabilitation set-backs, financial concerns, isolation, and social comparison. The study also highlighted the importance of goal flexibility. In relation to the re-entry phase of rehabilitation, confidence in the injured body part, and the ability to meet game demands emerged as important to participants successful return to competition. The use of goal-setting, imagery, simulation training and verbal persuasion information were particularly salient in this.

Conceptual Implications

A number of conceptual issues have been addressed in this thesis, which are fundamental to psychological response to injury research. These issues are discussed as follows: models of injury response; measurement tools; temporal dimension; and, moderating and mediating variables. Although the implications are examined separately, there is much conceptual overlap.

Models of Psychological Response to Injury

Early research into the psychological responses of injured athletes proposed the application of the clinically derived grief response. However this literature showed little regard for the clinical literature on grief. The review of the clinical grief literature (chapter 2; Evans & Hardy, 1995), and its proposed application to the responses of injured athletes served a number of very important functions: (a) it provided a conceptualisation of grief in the context of loss through injury; (b) it drew attention

to the misrepresentation in the injury literature of Kübler-Ross' model of grief; (c) it highlighted a number of measurement implications that needed to be addressed in order to examine the application of models of loss to injury; (d) it demonstrated the importance of accounting for a number of moderating and mediating variables (such as the significance of the loss and self-esteem) in athletes psychological responses to injury; (e) it illustrated the need to not view models of grief and appraisal as mutually exclusive; and (f) it highlighted the limitations of much of the research in accurately assessing the contribution of models of grief.

A number of features of injury response have been identified that have not been examined previously by empirical research, for example, isolation, devastation and reorganisation. The present research adds to the clinical loss and qualitative research in providing support for these features as responses to loss. The current research also highlighted the importance of what grief models term determinants of response, and cognitive appraisal models conceptualise as mediating and moderating variables. The temporal feature, implicit within models of psychological response, but neglected by much of the psychological response to injury research, underpinned the current research project.

The qualitative research provides support for the intensity of psychological responses that has been reported in the grief and clinical loss literature. However, the quantitative data provides less support for the presence of a grief response amongst the injured athletes included in the current research. A number of possible explanations may be offered for the quantitative findings: (a) that injured athletes' responses are not akin to a grief response; (b) a number of variables may moderate athletes' responses to injury, and the presence of a grief response (e.g., severity and level of participation); and (c) in order to assess the presence of a grief-like response, athletes need to be assessed immediately post-injury occurrence. In the current research, only the assessment of the predictive validity of the PRSII assessed athletes immediately post-injury occurrence. The sample for this study comprised a large number of recreational athletes. Athletes participating in the intervention study (Study 2) were serious competitive athletes, which could have potentially controlled for the moderating effect of level of participation on the intensity of athletes' psychological responses. However, the assessment of athletes' psychological

responses was made some time post injury occurrence (1 month to 18 months), which may explain the absence of an intensity of distress which approached grief.

Measurement Tools

Issues of measurement have been integral to this research project. The use of non-population specific measures that failed to account for many of the response characteristics proposed by models of grief and appraisal provided the rationale for the development of a psychometrically derived, and theoretically meaningful, measure of injury response (chapter 3). The Profile of Mood States (POMS) has been used as the primary measure in much of the research into athletes psychological responses to injury. Although the variables assessed by POMS may in part be applicable to the population of injured athletes, POMS was not developed to measure or predict variables derived from any psychological model of injury. The development of the PRSII highlighted the importance of a number of response characteristics that had not previously been accounted for in much of the empirical research. However, the clinical and qualitative injury research literature provided support for the importance of the response characteristics assessed by the PRSII. The need for a process oriented measure of psychological response underpinned the development of the PRSII which was employed within much of the research reported in this thesis. Other measures utilised for data collection purposes, also reflected the importance of population specific measures (e.g., Sports Injury Rehabilitation Beliefs Survey; SIRBS). The qualitative research conducted as part of this project provided support for diversity in the use of qualitative methodologies in the assessment of athletes' psychological responses to injury.

Temporal Dimension

Change is an implicit feature of psychological and emotional responses. However, empirical research has shown limited regard for this important feature of athletes' psychological responses to injury. The current research project employed methodologies which accounted for this temporal feature. An intraindividual process oriented approach underpinned the development of the PRSII and thereafter the data

collection procedures employed in subsequent studies. The data collection procedures, in terms of frequency and duration, were intended to account (as far as possible) for all possible response phases, and tap the change in responses over time. In totality, the research conducted has embraced the whole continuum of the injury period from 24 hours after injury occurrence to re-entry into sport. The research has supported the change in athletes' psychological responses over time. Specifically, the assessment of the predictive validity of the PRSII showed a significant decrease across time for devastation and isolation, and a significant increase in reorganisation. Athletes attempted to rationalise their injury more in the mid phase of the injury period than during the early or late phases.

The five week intervention study demonstrated the effect that goal-setting could have not only in enhancing adherence to rehabilitation programmes, but in promoting perceptions of reorganisation, self-efficacy, and treatment efficacy. The assessment of change was essential to examining the hypothesised effects. The matched design of the study enabled a distinction to be made between naturally occurring change, and that resulting from the intervention. The qualitative follow up study (chapter 4) examined the process of change, from injury occurrence to return to sport within the framework of the intervention study. This provided a context for athletes' rehabilitation experience as well as examining the mechanisms for the effects of the goal-setting intervention study in more detail. The longitudinal action research project was able to explore some of the antecedents of athletes' psychological responses, and the factors that precipitated a change in these responses over time.

Moderating and Mediating Variables

Within the context of the current research project a number of variables have emerged as particularly salient. The significance of the loss was identified in the review of the grief literature as a determinant of the nature and intensity of response to loss. The anticipatory function of loss is acknowledged by models of grief and appraisal. In the injury literature, severity of injury has been proposed to determine athletes' psychological responses. The assessment of the predictive validity of the PRSII confirmed the potential moderating effect of injury severity on athletes' psychological responses to injury. More severely injured athletes (greater than three

weeks) were found to be more isolated, and attempted to rationalise more than the less severely injured athletes. However, despite the moderating effect that injury severity has been suggested to have on athletes responses to injury, the methodologies generally employed in the literature have persisted in paying limited attention to this in their operational definition of injury. Commonly, injury has been defined as one days loss of participation. Included within the same sample have been athletes who's injuries have necessitated rehabilitation periods of 120 days (e.g., Brewer, Linder & Phelps, 1995a). This design flaw clearly has serious implications not only for the observed responses to injury, but the assessment of the temporal pattern of responses.

In subsequent research conducted as part of this research project, injury was operationalised as necessitating at least five weeks loss of participation. In addition, in order to control for the possible confounding effects of injury severity, severity was included as a matching variable in the five week goal-setting intervention study. Both the qualitative follow-up study and the longitudinal action research study provided an insight into the effects that long-term injuries may have on athletes' motivation, adherence, self-efficacy and general mental well-being.

The present research has highlighted the importance of two related variables, isolation and social support. Social isolation has consistently been identified as a moderating variable in the clinical loss research, and is predicted to occur in response to loss by models of grief and appraisal. In the present research, perceptions of isolation were found to be greater for athletes sustaining severe injuries, and were also associated with incapacitation during the early phase of injury. Isolation from team mates, coaches and the sporting environment has emerged as a particularly important factor in athletes' psychological responses to injury. The cases presented in the action research project provide some support for the effect of isolation on injury rehabilitation. Although support for the importance of perceptions of isolation has been reported in a number of qualitative studies, empirical research has not used measures that account for this construct. The presence of a sub scale to assess isolation in the PRSII may prove particularly useful for future research in this area.

As a moderating variable, social support is assigned a key role in both the clinical loss literature and injury literature. There is some, but not complete, empirical support for the moderating effect of social support on injury adherence and

psychological responses. In controlling for the effects of social support, the five week intervention study provided empirical support for the effect that social support may have, in particular, on perceptions of self-efficacy. The qualitative follow-up study provided a further insight into the need for the support providers to have experienced injury or have an empathy for what injured athletes were experiencing. It also highlighted the importance, for some participants, of support from coaches, and the team. Gould, Udry, Bridges and Beck (1997c) suggested the importance of identifying, and gaining a better understanding, of conditions under which social support is mobilised or curtailed. The cases reported in the action research project illustrate some of the situations under which social support may be particularly important during rehabilitation. It also identified the salience of different types of support at different phases of the injury period, and in response to specific personal and situational antecedents.

The extinction of established, highly motivated and goal directed behaviour is thought to underlie responses to loss. Intervention strategies are targeted at addressing the loss of such goal directed behaviour, and providing the individual with a means of coping or managing circumstances appraised as stressful (Lazarus & Folkman, 1984). Models of cognitive appraisal consider intervention strategies as potential mediators of psychological response. The efficacy of a number of intervention strategies has been explored within the framework of the current research project. The five week intervention study provided support for the effects of goal-setting on self-report levels of adherence, and perceptions of self-efficacy, treatment efficacy and reorganisation. It also provided support for the effect of social support on self-efficacy. There has been limited research which has explored the mediating effects of goal-setting on rehabilitation adherence and psychological responses. The intervention study and qualitative follow-up study proposed a number of possible mechanisms underlying the effects of goal-setting. Although goal-setting is traditionally considered to operate through a motivational mechanism, the present research provided support, in an injury rehabilitation context, for a number of alternative mechanisms that have been proposed to underlie the effects of goal-setting (e.g., Locke, 1990, Hardy & Nelson, 1988; Kingston & Hardy, 1997). These included: (a) enhancing self-efficacy through self-evaluation of performance accomplishments (which may have resulted in a greater commitment to goals, and

possibly more difficult goals being set); (b) perceptions of control; and (c) directing attention. The use of short-term process and performance goals in the goal-setting intervention study was considered to compliment the long-term outcome goals participants had set. The importance of long-term goals and outcome expectations emerged as an important feature of rehabilitation. Indeed, the two qualitative studies, highlighted the importance of outcome expectancy on participants' motivation and rehabilitation adherence. The action research study also provided support for the use of process and performance goals in rehabilitation, but highlighted the need for goals to be flexible in response to the unpredictability of rehabilitation progress.

A social support control group was included in the five week goal-setting intervention study purely to control for the potential confounding effects of social support, implicitly provided in the goal-setting intervention. The differences that emerged between the social support control group and the traditional control group on self-efficacy were somewhat surprising, particularly since the support provided had been limited in terms of its form. However, it did provide evidence for the effect of social support on injured athletes' psychological responses to injury. Since similar intervention research has not controlled for the effects of social support, this is an important finding, and suggests the potential moderating effect that social support may have on athletes' psychological responses to injury.

The multi-modal intervention adopted in the action research study included goal-setting, social support, imagery, verbal persuasion information, and simulation training. Emotional support emerged as particularly important during the early stages of rehabilitation, in response to set-backs, and in response to situations where other life demands were impinging upon rehabilitation adherence and progress. The use of imagery, verbal persuasion information, and simulation training appeared salient as a means of enhancing confidence in the injured body part, and the ability to meet the demands of the game situation in preparation for, and during, re-entry into sport.

Practical Implications

A number of practical implications emerged from this research which may be of particular relevance to injured athletes, coaches, sports medicine personnel and sport psychologists. Injury represents actual, potential, and symbolic loss for many, if not

all, who experience it. Responses to injury will result from an interaction of person and situational variables, and may be facilitative and debilitative. The period of incapacitation following injury occurrence, or post operation, has been found to be extremely frustrating, and to result in perceptions of isolation and loss of independence. Perceptions of isolation appear to be increased by loss of contact with teammates, coaches, and the sporting environment. Protracted periods of rehabilitation can represent further frustration, loss of motivation to adhere to rehabilitation programmes, and perceived loss of support. Loss of confidence can make re-entry into sport difficult.

Particularly in the early stages of injury and rehabilitation, social support may be particularly important. This may take a number of forms, including emotional support, listening, and shared social reality. This type of support is also likely to be very helpful during set-backs associated with rehabilitation. Practical support in terms of providing assistance with normal day to day activities, and helping athletes to get about may also prove extremely useful during early incapacitation. As rehabilitation progresses, support for the task of rehabilitating may enhance motivation, adherence, and self-efficacy. Task support in the form of goal-setting has been seen to be extremely effective. Early in rehabilitation goal-setting may enhance motivation and adherence, and later it may be particularly useful in enhancing self-confidence. For many athletes returning to the sporting environment may prove difficult, although this does not necessarily preclude maintaining contact with team mates. Similarly, social comparison with athletes who have sustained similar injuries might prove to be a double edged sword, providing a positive role model on the one hand, but on the other hand, causing athletes to deviate from their agreed rehabilitation programmes.

The effective management of rehabilitation programmes is essential, and should take into consideration other life demands, and the athletes' personal circumstances. Effective management includes regard for issues of scheduling, access to facilities, and integrating the athlete into the sporting environment. Rehabilitation is generally characterised as comprising highs and lows. It rarely appears to progress smoothly without set-backs, however small. During lengthy periods of rehabilitation it may prove difficult for athletes to sustain the high levels of motivation necessary to maintain rehabilitation adherence. Goal-setting has been shown to enhance

rehabilitation adherence and self-efficacy, and should include the use of long-term and short-term goals. Long-term outcome goals appear particularly important for maintaining motivation over protracted periods of time. Short-term goals serve to focus the athletes' attention on what they need to focus on and achieve in the ensuing days and weeks, and provide for successful experiences as athletes work towards long-term goals. Short-term goals, therefore, appear particularly important in increasing an athlete's self-confidence. Outcome expectancy may moderate athletes' motivation and rehabilitation adherence.

Process and performance goals provide a mechanism for enhancing self-efficacy and treatment efficacy, and as a means of monitoring progress. Process goals may be particularly useful in focusing attention on the processes in which athletes need to engage while working towards performance goals, and may possess the greater flexibility needed during the early stages of rehabilitation. Performance goals can provide an overall structure for the content of the rehabilitation, with specific short-term and long-term targets. Goals need to be flexible in order to account for muscle soreness and swelling, frequent characteristics of the early stages of rehabilitation. A lack of flexibility may result in the self-evaluative process implicit within goal-setting being detrimental to athletes' rehabilitation progress. Previous injures can prove both a hindrance and a help. As such athletes should be encouraged to view the potential benefits of their previous injury experiences as a means of facilitating, and expediting their successful recovery from their current injury. In some circumstances, this may prove challenging, particularly if the experience has been recent, was extremely successful (comparison of like with unlike may prove detrimental), or if the cumulative effect of a number of injuries is a negative one. This has been seen to effect levels of motivation.

Re-entry into sport may be characterised by low levels of confidence, and a lack of mental readiness. Returning to sport too soon carries with it the potential for further loss of confidence and re-injury. There should be a transition between full rehabilitation and return to competitive sport that focuses on the athlete regaining confidence in the injured body part, and in their ability to meet competitive demands. A number of strategies may prove extremely beneficial in expediting this transition. Clear goals should be set to ensure that the athlete has regained confidence in the ability to execute skills and meet the demands of the competitive situation.

Simulation training through physical training and practice, and imagery (as a means of mentally rehearsing and preparing for specific situations) will also be useful in this. The use of verbal persuasion can enhance self-confidence. Social support in the form of emotional challenge and task support may also help to enhance confidence during this phase. Sports medicine and coaching personnel have important parts to play in this process.

Collaboration between sports medicine personnel, coaching personnel, and the sport psychologist, will undoubtedly prove beneficial in the management of an athletes rehabilitation from injury and subsequent return to competitive sport. The present study has highlighted the debilitating psychological effect that a lack of interest, and poor management on the part of coaches, can have on athletes rehabilitating from injury. Effective management of injured athletes may expedite their successful return to competitive sport. Although the involvement of a sport psychologist in dealing with athletes rehabilitating from injuries appears to be a recent occurrence, the present research suggests that they can make a valuable contribution to the rehabilitation of injured athletes. Moreover, they may be able to help educate coaches and sports medicine personnel in the important roles that they play in injured athletes' rehabilitation and return to competitive sport.

Research Strengths

A major strength of this research project is the diversity of the methods employed to address specific research questions. This has included a quasi-experimental, matched group design, and reflective research in a naturalistic rehabilitation setting. In addition, the research studies that comprise this research project have addressed a large number of the limitations that have been identified by previous researchers. These include the need for:

(1) Intraindividual process orientated research (Aldwin, 1994)

(2) A population specific measure of athletes' psychological responses to sport injury (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998).

(3) Research which accounts for the temporal dimension of injured athletes' psychological responses (Johnston & Carroll, 1998).

(4) Research that distinguishes between acute and chronic injuries in terms of sample characteristics (Wiese-Bjornstal et al., 1998).

(5) Homogenous samples based upon significant time loss (Flint, 1998).

(6) Research that controls for the effects of injury severity (Wiese-Bjornstal et al., 1998).

(7) Interventions that minimise the negative effects of injury on self-perceptions of efficacy (Wiese-Bjornstal et al., 1998).

(8) Well controlled intervention studies that examine the effects of specific psychological strategies on rehabilitation adherence in addition to athletes' emotional responses (Brewer, 1998).

(9) Research which examines the effects of multi-modal intervention strategies on the rehabilitation of injured athletes (Cupal, 1998; Vealey, 1994).

(10) Longitudinal research that examines athletes' psychological responses, and progress through long-term rehabilitation (Flint, 1998).

(11) Collaborative research involving sports medicine personnel (Cupal, 1998; Gilbourne, Taylor, Downie, & Newton, 1996).

(12) The use of qualitative research methods within the context of sport psychology generally, and intervention and injury research, specifically (Cupal, 1998, Hardy, Jones, & Gould, 1996; Krane, Anderson, & Strean, 1997; Vealey, 1994).

(13) Reflective research to be conducted in naturalistic settings (Vealey, 1994).

(14) The use of qualitative methods to examine more closely the effects of intervention studies (Locke, 1989).

The research conducted examined all phases of the injury period, from 24 hours within injury occurrence through to the fifth week of return to competitive sport. Data collection procedures employed during rehabilitation was of a frequency across studies that has not previously been reported. Multiple population specific psychometric measures were adopted in the intervention research, along with daily diaries, and interviews. The matching protocol employed in the goal-setting intervention study, of matching across six variables, accounted for the potential

confounding effects of a number of variables. In addition, the inclusion of a social support control group accounted for the potential confounding effect of social support. Data collection for this study took 22 months, and for the final action research study, 12 months. This research project has demonstrated a methodological rigor in many of the studies that has not previously been reported in research of its kind.

Research Limitations

A number of limitations exist in the present research project. The major limitation, and one which has been problematic at all stages of the research process, has been sample size. Research in the area of injury has commonly pursued methodological rigor via larger samples. This has resulted in researchers defining injury as the loss of one days participation, relying on retrospective methodologies, and adopting single data collection points for each athlete as a means of assessing athletes' psychological and emotional responses. The current project, in an effort to maintain integrity in the way in which it has pursued specific research questions, acknowledges that sample size has been a limitation of some of the research.

The current research has embraced all phases of the injury period, pre-injury data, however, would have provided further insight into the psychological effects of injury. To date, prospective research into the psychological responses of injured athletes has failed to examine athletes from pre-injury through to their return to competitive sport. This represents an on-going challenge for researchers in this area.

The results of the exploratory factor analysis demonstrated the PRSII to have adequate levels of psychometric integrity. Confirmatory factor analysis provided some, but not complete support, for the model. As a result of the confirmatory factor analysis, further developmental research needs to be conducted, in particular, to re-examine the sub scale construct, Attempts to Rationalise, and the inclusion of the sub scale Reorganisation.

The diversity of the research methods employed in this research project, was identified earlier as a strength. However, the absence of a completely randomised design within the context of the intervention study, equally, must be acknowledged as a limitation. In addition, while the longitudinal character of this research project

was considered a strength, in hindsight the efficacy of the goal-setting intervention would have been enhanced if the intervention period had been longer. This latter study might have also benefited from a check on all participants' use of goal-setting.

Collaboration with physiotherapists occurred throughout this research project. However, the research would have profited from similar collaboration with coaching staff, particularly in the final study. The absence of such collaboration is acknowledged as a limitation of the project.

Future Research Directions

As a result of this research project, a number of recommendations are considered salient for future research. Models of psychological response provide an important basis for understanding the psychological responses of injured athletes, and for the design of theoretically meaningful intervention strategies. Models of response that embrace grief responses within models of cognitive appraisal appear to have much merit, and could provide testable predictions. The further development and refinement of such models would make an important contribution to psychological injury response research. Central to such models is the implicit role of change in psychological responses. The PRSII offers a population specific measure with which injured athletes' psychological responses can be assessed. Further validatory work would confirm (or otherwise) the utility of the PRSII as a psychometrically derived measure with which the predictions of models of injury response could be assessed.

A number of moderating and mediating variables have been proposed to affect the psychological responses of injured athletes. It is vital that in order to advance our knowledge and understanding of the effects of such variables that empirical studies pursue greater methodological rigor. In this, the use of population specific measures is essential. Equally important is that such research includes homogenous samples of injured athletes (particularly in relation to injury severity), and accounts for the temporal feature of athletes' psychological responses.

Two related variables have emerged from the present research as particularly important to athletes' psychological responses to injury; isolation and social support. Future research needs to examine the effects of isolation on athletes' responses to, and rehabilitation from, injury. In addition, the importance of social support needs to

be considered, with particular attention to the types of support that are most salient at particular phases of rehabilitation in order to expedite successful recovery. The antecedents that precipitate such needs are also important.

Self-efficacy and self-confidence appeared to play a very important role in adherence to rehabilitation programmes and re-entry into sport. Future research should more fully explore the effect of these variables on the recovery process, and examine intervention strategies as a means of enhancing these effects. Another feature which emerged from the present research was the importance of outcome expectation. This may have implications, in particular, for severe and career ending injuries. Future research should examine the potential moderating effects of outcome expectancy, and explore the use of interventions to help athletes establish appropriate outcome expectations.

The current research employed both a goal-setting and multi-modal intervention strategy (social support was a feature of both interventions). At present there is limited research which has examined the effects of intervention strategies with injured athletes. In particular, the effects of different types of goal-setting strategies (embracing long-term and short-term, process, performance, and outcome goals) merits research attention in relation to adaptational responses to injury. Intervention research that could examine the effects of specific interventions at specific phases of the rehabilitation period, might be particularly useful for coaches and sports medicine personnel working with injured athletes. Future research should examine the effects of single and multi-modal interventions with injured athletes. It would also be useful to explore the prevalence of different coping strategies amongst injured athletes with a view to identifying the basis for specific intervention strategies.

Finally, qualitative methods have much to offer in the study of the psychological responses of injured athletes. The use of such methods may be particularly profitable as a means of exploring the antecedents of specific psychological responses, and the role of individual and situational variables.

References

Aldwin, C. M. (1994). Stress, coping, and development: An integrative perspective. New York: Guildford.

Anastasi, A. (1990). Psychological testing. New York: Macmillan.

Anderson, M. B., & Williams, J. M. (1988). A model of stress and athletic injury: Prediction and prevention. Journal of Sport and Exercise Psychology, 10, 294-306.

Archer, J., & Rhodes, V. (1993). The grief process and job loss: A cross-sectional study. British Journal of Psychology, 8, 4395-410.

Astle, S. J. (1986). The experience of loss in athletes. Journal of Sports Medicine and Physical Fitness, 26, 279-284.

Averill, J. A. (1968). Grief: Its nature and significance. Psychological Bulletin, 70, 721-748.

Bandura, A. (1977). Toward a unifying theory of behavioral change. Psychological Review, 84, 191-215.

Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1988). Self-regulation of motivation and action through goal systems. In V. Hamilton, G. H. Bower, & N. H. Frijda (Eds.), Cognitive perspectives on emotion and motivation (pp. 37-61). Dordrecht: Kluwer Academic Publishers.

Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. Journal of Personality and Social Psychology, 45, 1017-1028.

Beggs, A. (1990). Goal setting in sport. In G. Jones, & L. Hardy (Eds.), Stress and performance in sport (pp.135-170). Chichester: Wiley

Ben-Sira, Z. (1983). Loss, stress and readjustment: The structure of coping with bereavement and disability. Social Science and Medicine, 17, 1619-1632.

Bentler, P. M. (1990). Comparative fit indexes in structural models. Psychological Bulletin, 107, 238-246.

Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. Sociological Methods and Research, 16, 78-117.

Bowlby, J. (1961). Process of mourning. International Journal of Psycho-analysis, 42, 315-340.

Bowlby, J. (1978). Attachment and loss: Attachment (Vol. 1). Middlesex: Penguin.

Bowlby, J. (1991). Attachment and loss: Loss, sadness and depression (Vol. 3). Middlesex: Penguin.

Brannen, J. (1992). Combining qualitative and quantitative approaches: An overview. In. J. Brannen, Mixing methods: Qualitative and quantitative (pp. 3- 39). Avebury: Ashgate.

Brasted, W. S., & Callahan, E. J. (1984). A behavioral analysis of the grief process. Behavior Therapy, 15, 529-543.

Brawley, L. R. (1993). The practicality of using social psychological theories for exercise and health research and intervention. Journal of Applied Sport Psychology, 5, 99-115.

Brewer, B. W. (1994). Review and critique of models of psychological adjustment to athletic injury. Journal of Applied Sport Psychology, 6, 87-100.

Brewer, B. W. (1998). Adherence to sport injury rehabilitation programs. Journal of Applied Sport Psychology, 10, 70-82.

Brewer, B. W., Daly, J. M., Van Raalte, J. L., Petitpas, A. J., & Sklar, J. H. (1994a). A psychometric evaluation of the Rehabilitation Adherence Questionnaire [Abstract]. Journal of Sport and Exercise Psychology, 16, S34.

Brewer, B. W., Jeffers, K. E., Petitpas, A. J., & Van Raalte, J. L. (1994b). Perceptions of psychological interventions in the context of sport injury rehabilitation. The Sport Psychologist, 8, 176-188.

Brewer, B. W., Linder, D. E., & Phelps, D. O. (1995a). Situational correlates of emotional adjustment to athletic injury. Clinical Journal of Sports Medicine, 5, 241-245.

Brewer, B. W., Petitpas, A. J., Van Raalte, J. L., Sklar, J. H., & Ditmar, T. D. (1995b). Prevalence of psychological distress among patients at a physical therapy clinic specializing in sports medicine. Sports Medicine, Training, and Rehabilitation, 6, 139-145.

Bryman, A. (1988). Quantity and quality in social research. London: Unwin Hyman.

Bugen, L. A. (1977). Human grief: A model for prediction and prevention. American Journal of Orthopsychiatry, 47, 196-206.

Burton, D. (1989). Winning isn't everything: Examining the impact of performance goals on collegiate swimmers' cognitions and performance. The Sport Psychologist, 3, 105-132.

Byerly, P. N., Worrell, T., Gahimer, J., & Domholdt, E. (1994). Rehabilitation compliance in an athletic training environment. Journal of Athletic Training, 29, 352-355.

Byrne, B. M. (1989). A primer of Lisrel: Basic applications and programming for confirmatory factor analytic models. New York: Springer-Verlag.

Byrne, B. M. (1995). One application of structural equation modeling from two perspectives: Exploring the EQS and LISREL strategies. In R. H. Hoyle (Ed.), Structural equation modeling: Concepts, issues, and applications (pp. 138-157). Thousand Oaks, CA: Sage.

Carr, W., & Kemmis, S. (1988). Becoming critical. East Sussex: Falmer Press.

Cartwright, J., & Limandri, B. (1997). The challenge of multiple roles in the qualitative clinician researcher-participant client relationship. Qualitative Health Research, 7, 223-235.

Castle, A. (1994). Action research for developing professional practice. British Journal of Therapy and Rehabilitation, 1, 155-157.

Cattell, R. B. (1971). Patterns of change: Measurement in relation to state dimension, trait change, lability, and process concepts. In R. B. Cattell (Ed.), Handbook of multivariate experimental psychology (pp. 355-402). Chicago: Rand M°Nally.

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

Cohen, L., & Manion, L. (1994). Research methods in education. London: Routledge.

Cox, T., & Ferguson, E. (1991). Individual differences, stress and coping. In C. L. Cooper, & R. Payne (Eds.), Personality and stress: Individual differences in the stress process (pp. 7-30). Chichester: Wiley.

Cronbach, L. J. (1990). Essentials of psychological testing. New York: Harper-Collins.

Crossman, J., Gluck, L., & Jamieson, J. (1995). The emotional responses of injured athletes. New Zealand Journal of Sports Medicine, 23, 1-2.

Crossman, J., & Jamieson, J. (1985). Differences in perceptions of seriousness and disrupting effects of athletic injury as viewed by athletes and their trainer. Perceptual and Motor Skills, 61, 1131-1134.

Cupal, D. D. (1998). Psychological interventions in sport injury prevention and rehabilitation. Journal of Applied Sport Psychology, 10, 103-123.

Daly, J. M., Brewer, B. W., Van Raalte, J. L., Petitpas, A. J., & Sklar, J. H. (1995). Cognitive appraisal, emotional adjustment, and adherence to rehabilitation following knee surgery. Journal of Sport Rehabilitation, 4, 23-30.

DePalma, M. T., & DePalma, B. (1989). The use of instruction and the behavioral approach to facilitate injury rehabilitation. Athletic Training, 24, 217-219.

Dishman, R. (1986). Exercise adherence: A new view for public health. Physician and Sports Medicine, 14, 127-145.

Duda, J. L., Smart, A. E., & Tappe, M. K. (1989). Predictors of adherence in rehabilitation of athletic injuries. Journal of Sport and Exercise Psychology, 11, 367-381.

Elliott, J. (1991). Action research for educational change. Milton Keynes: Open University.

Engel, G. L. (1961). Is grief a disease?: A challenge for medical research. Psychosomatic Medicine, 23, 18-22.

Engel, G. L. (1964). Grief and grieving. American Journal of Nursing, 64(9), 93-98.

Evans, L., & Hardy, L. (1995). Sport injury and grief responses: A review. Journal of Sport and Exercise Psychology, 17, 227-245.

Evans, L., & Hardy, L. (in press). Psychological and emotional response to injury: Theoretical and conceptual issues in measurement. In D. Pargman (Ed.), Psychological bases of sport injuries (2nd ed.). Morgantown, WV: Fitness Information Technology.

Evans, L., & Hardy, L. (manuscript in preparation). The measurement of psychological responses to injury.

Evans, L., Hardy, L., & Mullen, R. (1996). The development of the Psychological Responses to Injury Inventory [Abstract]. Journal of Sports Sciences, 14, 27-28.

Fields, J., Murphey, M., Horodyski, M., & Stopka, C. (1995). Factors associated with adherence to sport injury rehabilitation in college-age recreational athletes. Journal of Sport Rehabilitation, 4, 172-180.

Fisher, A. C. (1990). Adherence to sport injury rehabilitation programmes. Sports Medicine, 9, 151-158

Fisher, A. C., Domm, M. A., & Wuest, D. A. (1988). Adherence to sports-injury rehabilitation programmes. The Physician and Sports Medicine, 16, 47-52.

Fisher, A. C., & Hoisington, L. L. (1993). Injured athletes' attitudes and judgments toward rehabilitation adherence. Journal of Athletic Training, 28, 48-54.

Flint, F. A. (1998). Integrating sport psychology and sports medicine in research: The dilemmas. Journal of Applied Sport Psychology, 10, 83-102.

Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. Journal of Personality and Social Psychology, 50, 992-1003.

Gilboure, D., & Taylor, A. (1998). From theory to practice: The integration of Goal Perspective Theory and life development approaches within an injury-specific goal-setting programme. Journal of Applied Sport Psychology, 10, 124-139.

Gilbourne, D., Taylor, A., Downie, G., & Newton, P. (1996). Goal-setting during sports injury rehabilitation: A presentation of underlying theory, administration procedure, and an athlete case study. Sports, Exercise and Injury, 2, 1-10.

Gordon, S., & Lindgren, S. (1990). Psycho-physical rehabilitation from a serious sport injury: A case study of an elite fast bowler. The Australian Journal of Science and Medicine in Sport, 22, 71-76.

Gordon, S., Milios, D., & Grove, R. J. (1991). Psychological aspects of the recovery process from sport injury: The perspective of sport physiotherapists. The Australian Journal of Science and Medicine in Sport, 23, 53-60.

Gordon, S., Milios, D., & Grove, R. J. (1992). Psychological adjustment to sport injuries: Implications for therapists and trainers. Sport Health, 10(2), 13-15.

Gould, D., Eklund, R., & Jackson, S. A. (1992). 1988 U.S. Olympic wrestling excellence: I. Mental preparation, precompetitive cognitions, and affect. The Sport Psychologist, 6, 358-382.

Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1996a). Burnout in competitive junior tennis players: I. A quantitative psychological assessment. The Sport Psychologist, 10, 322-340.

Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1996b). Burnout in competitive junior tennis players: II. Qualitative analysis. The Sport Psychologist, 10, 341-366.

Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1997a). Burnout in competitive junior tennis players: III. Individual differences in the burnout experience. The Sport Psychologist, 11, 257-276.

Gould, D., Udry, E., Bridges, D., & Beck, L. (1997b). Stress sources encountered when rehabilitating from season-ending ski injuries. The Sport Psychologist, 11, 361-378.

Gould, D., Udry, E., Bridges, D., & Beck, L. (1997c). Coping with season-ending injuries. The Sport Psychologist, 11, 379-399.

Greenspan, M. J., & Feltz, D. L. (1989). Psychological interventions with athletes in competitive situations: A review. The Sport Psychologist, 3, 219-236.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. Educational Evaluation and Policy Analysis, 11, 255-274.

Hardy, C. J., Richman, J. M., & Rosenfeld, L. B. (1991). The role of social support in the life stress/injury relationship. The Sport Psychologist, 5, 128-139.

Hardy, L. (1992). Psychological stress, performance, and injury in sport. British Medical Bulletin, 48, 615-629.

Hardy, L., Jones, G., & Gould, D. (1996). Understanding psychological preparation for sport: Theory and practice of elite performers. Chichester: Wiley.

Hardy, L., & Nelson, D. (1988). Self control training in sport and work. Ergonomics, 31,1573-1585.

Harrell, T. H., Beiman, I., & LaPointe, K. (1995). Didactic persuasion techniques in cognitive restructuring. In W. Dryden (Ed.), Rational emotive behaviour therapy (pp. 73-93). London: Sage.

Hart, E., & Bond, M. (1996). Making sense of action research through the use of a typology. Journal of Advanced Nursing, 23, 152-159.

Heil, J. (1993). A comprehensive approach to injury management. In J. Heil (Ed.), Psychology of sport injury (pp. 137-149). Champaign, IL: Human Kinetics.

Henderson, J., & Carroll, W. (1993). The athletic trainer's role in preventing sport injury and rehabilitating injured athletes: A psychological perspective. In D. Pargman (Ed.), Psychological bases of sport injuries (pp. 15-33). Morgantown, WV: Fitness Information Technology.

Hoyle, R. H., & Panter, A. T. (1995). Writing about structural equation models. In R. H. Hoyle (Ed.), Structural equation modeling: Concepts, issues, and applications (pp. 158-176). Thousand Oaks, CA: Sage.

Hu, L-T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), Structural equation modeling: Concepts, issues, and applications (pp. 76-99). Thousand Oaks, CA: Sage.

Hult, M., & Lennung, S-A. (1980). Towards a definition of action research: A note and bibliography. Journal of Management Studies, 17, 241-250.

Ievleva, L., & Orlick, T. (1991). Mental links to enhanced healing. The Sport Psychologist, 5, 25-40.

Jaccard, J., & Wan, C. K. (1996). Lisrel approaches to interaction effects in multiple regression. Thousand Oaks, CA: Sage.

Jackson, S. A. (1992). Athletes in flow: A qualitative investigation of flow states in elite figure skaters. Journal of Applied Sport Psychology, 4, 161-180.

Johnson, U. (1996). The multiply injured versus the first-time-injured athlete during rehabilitation: A comparison of nonphysical characteristics. Journal of Sport Rehabilitation, 5, 293-304.

Johnston, L. H., & Carroll, D. (1998). The context of emotional responses to athletic injury: A qualitative analysis. Journal of Sport Rehabilitation, 7, 206-220.

Jöreskog, K. G. (1993). Testing structural equation models. In A. Bollen, & J. S. Long (Eds.), Testing structural equation models (pp. 294-316). Newbury Park, CA: Sage.

Jöreskog, K. G., & Sörbom, D. (1993). LISREL 8.03. Chicago: Scientific Software International.

Kanfer, F. H. (1970). Self-monitoring: Methodological limitations and clinical applications. Journal of Consulting and Clinical Psychology, 35, 148-152.

Karl, G. T. (1987). Janforum: A new look at grief. Journal of Advanced Nursing, 12, 641-645.

Kerlinger, F. N. (1979). Foundations of behavioral research (2nd ed.). London: Holt, Rhinehart & Winston.

King, K. B., Reis, H. T., Porter, L. A., & Norsen, L. H. (1993). Social support and long-term recovery from coronary artery surgery: Effects on patients and spouses. Health Psychology, 12, 56-63.

Kingston, K., & Hardy, L. (1994). Factors affecting the salience of outcome, performance, and process goals in golf. In A. Cochran, & M. Farrally (Eds.), Science and golf 2 (pp. 144-149). London: Chapman-Hill.

Kingston, K., & Hardy, L. (1997). Effects of different types of goals on processes that support performance. The Sport Psychologist, 11, 277-293.

Klerman, G. L., & Izen, J. E. (1977). The effects of bereavement and grief on physical health and general well-being. Advances of Psychosomatic Medicine, 9, 63-104.

Krane, V., Andersen, M. B., & Strean, W. B. (1997). Issues of qualitative research methods and presentation. Journal of Sport and Exercise Psychology, 19, 213-218.

Kübler-Ross, E. (1969). On death and dying. London: Tavistock.

Kübler-Ross, E. (1975). Death: The final stage of growth. London: Prentice-Hall.

Lazarus, R. S. (1991). Emotion and adaptation. New York: Oxford Press.

Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal and coping. New York: Springer.

Leddy, M. H., Lambert, M. J., & Ogles, B. M. (1994). Psychological consequences of athletic injury among high-level competitors. Research Quarterly for Exercise and Sport, 65, 347-354.

Leininger, M. (1992). Current issues, problems, and trends to advance qualitative paradigmatic research methods for the future. Qualitative Health Research, 2, 392-415.

Lerner, B. S., & Locke, E. A. (1995). The effects of goal setting, self-efficacy, competition, and personal traits on the performance of an endurance task. Journal of Sport and Exercise Psychology, 17, 138-152.

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. Newbury Park, CA: Sage.

Lindemann, E. (1944). Symptomatology and management of acute grief. American Journal of Psychiatry, 101, 141-148.

Locke, L. F. (1989). Qualitative research as a form of scientific inquiry in sport and physical education. Research Quarterly for Exercise and Sport, 60, 1-20.

Locke, E. A., Frederick, E., Bobko, P., & Lee, C. (1984). Effect of self efficacy, goals and strategies on task performance. Journal of Applied Sport Psychology, 69, 241-251.

Locke, E. A., & Latham, G. P. (1990). A theory of goal setting and task performance. Englewood Cliffs, NJ: Prentice-Hall.

Loehlin, J. C. (1992). Latent variable models: An introduction to factor, path, and structural models (2nd ed.). London: Methuen & Co.

Lorr, M., & McNair, D. M. (1988). Manual for the Profile of Mood States-Bipolar form. San Diego, CA: Educational and Industrial Testing Service.

Maehr, M. L., & Nicholls, J. G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), Studies in cross-cultural psychology (pp. 221-267). New York: Academic Press.

McDonald, S. A., & Hardy, C. J. (1990). Affective response patterns of the injured athlete: An exploratory analysis. The Sport Psychologist, 4, 261-274.

McGowan, R. W., Pierce, E. F., Williams, N., & Eastman, N. W. (1994). Athletic injury and self-diminution. The Journal of Sports Medicine and Physical Fitness, 34, 299-304.

Mefferd, R. B. (1971). Structuring physiological correlates of mental processes and states: The study of biological correlates of mental processes. In R. B. Cattell (Ed.), Handbook of multivariate experimental psychology (pp. 684-710). Chicago: Rand M'Nally.

Meichenbaum, D., & Turk, D. C. (1987). Facilitating treatment adherence: A practitioner's guidebook. New York: Plenum.

Miller, J. T., & McAuley, E. (1987). Effects of a goal-setting training program on basketball free-throw self-efficacy and performance. The Sport Psychologist, 1, 103-113.

Morgan, D. L. (1998). Practical strategies for combining qualitative and quantitative methods: Applications for health research. Qualitative Health Research, 8, 362-376.

Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. Nursing Research, 40, 120-123.

Munro, B. H., Visintainer, M. A., & Page, E. B. (1990). Statistical methods for health care research. Philadelphia: Lippincott.

Nideffer, R. M. (1989). Psychologicsl aspects of sports injuries: Issues in prevention and treatment. International Journal of Sport Psychology, 20, 241-255.

Oltjenbruns, K. A. (1991). Positive outcomes of adolescent's experience with grief. Journal of Adolescent Research, 6, 43-53.

Ornstein, S. M., Musham, C., Reid, A., Jenkins, R. G., Zemp, L. D., & Garr, D. R. (1993). Barriers to adherence to preventive service reminder letters: The patient's perspective. Journal of Family Practice, 36, 195-200.

Parkes, C. M. (1975) Determinants of outcome following bereavement. Omega, 6, 303-323.

Parkes, C. M. (1985). Bereavement. British Journal of Psychiatry, 146, 11-17.

Parkes, C. M. (1991). Bereavement: Studies of grief in adult life (2nd ed.). London: Penguin.

Patton, M. Q. (1990). Qualitative evaluation and research methods. Newbury Park, CA: Sage.

Pearson, L., & Jones, G. (1992). Emotional effects of sports injuries: Implications for physiotherapists. Physiotherapy, 78, 762-770.

Pederson, P. (1986). The grief response and injury: A special challenge for athletes and athletic trainers. Athletic Training, 21, 312-314.

Peretz, D. (1970). Development, object-relationships and loss. In B. Schoenberg, A. C. Carr, D. Peretz, & A. H. Kutscher (Eds.), Loss and grief: Psychological management in medical practice (pp. 3-19). New York: Columbia University.

Quackenbush, N., & Crossman, J. (1994). Injured athletes: A study of emotional responses. Journal of Sport Behaviour, 17, 178-187.

Ramsay, R. W., & Happee, J. A. (1977). The stress of bereavement: Components and treatment. In C. D. Spielberger, & I. G. Sarason (Eds.), Stress and anxiety (Vol. 4) (pp. 53-64). New York: Wiley.

Richards, L. (1998). Closeness to data: The changing goals of qualitative data handling. Qualitative Health Research, 8, 319-328.

Roberts, G. C. (1992). Motivation in sport and exercise: Conceptual constraints and covergence. In G. C. Roberts (Ed.), Motivation in sport and exercise (pp. 3-29). Champaign, IL: Human Kinetics.

Rodgers, B. L., & Cowles, K. V. (1991). The concept of grief: An analysis of classical and contemporary thought. Death Studies, 15, 443-458.

Rose, J., & Jevne, R. F. J. (1993). Psychosocial processes associated with athletic injuries. The Sport Psychologist, 7, 309-328.

Rosenblatt, P. C. (1988). Grief: The social context of private feelings. Journal of Social Issues, 44(3), 67-78.

Rosenfeld, L. B., Richman, J. M., & Hardy, C. J. (1989). Examining social support networks among athletes: Description and relationship to stress. The Sport Psychologist, 3, 23-33.

Rossman, G. B., & Wilson, B. L. (1985). Numbers and words: Combining quantitative and qualitative methods in a single large scale evaluation. Evaluation Review, 9, 627-643.

Rossman, G. B., & Wilson, B. L. (1994). Numbers and words revisited: Being "shamelessly eclectic". Quality and Quantity, 28, 315-327.

Rotella, R. J. (1985). The psychological care of the injured athlete. In L. K. Bunker, R. J. Rotella, & A. S. Reilly (Eds.), Sport psychology: Psychological considerations in maximising sport performance (pp. 273-287). Ithaca, NY: Mouvement.

Rotella, R. J., & Heyman, S. R. (1986). Stress, injury and the psychological rehabilitation of athletes. In J. M. Williams (Ed.), Applied sport psychology: From growth to peak performance (pp. 343-364). Palo Alto, CA: Mayfield.

Scanlan, T. K., Ravizza, K., & Stein, G. L. (1989). An in-depth study of former elite figure skaters: I. Introduction to the project. Journal of Sport and Exercise Psychology, 11, 54-64.

Shontz, F. C. (1975). The psychological effects of disability and physical illness and disability. New York: Macmillan.

Singer, R. N., Murphey, M., & Tennant, L. K. (1993). Handbook of research on sport psychology. New York: Macmillan.

Simos, B. G. (1977). Grief therapy to facilitate healthy restitution. Social Casework, June, 337-342.

Smith, A. M. (1996). Psychological impact of injuries in athletes. Sports Medicine, 22, 391-405.

Smith, A. M., Scott, S. G., O'Fallon, W. M., & Young, M. L. (1990a). Emotional responses of athletes to injury. Mayo Clinic Proceedings, 65, 38-50.

Smith, A. M., Scott, S. G., & Wiese, D. M. (1990b). The psychological effects of sports injuries: Coping. Sports Medicine, 9, 352-369.

Smith, A. M., Stuart, M. J., Wiese-Bjornstal, D. M., Milliner, E. K., O'Fallon, W. J., & Crowson, C. S. (1993). Competitive athletes: Pre and post injury mood state and self-esteem. Mayo Clinic Proceedings, 68, 939-947.

Sperryn, P. (1994). Sports medicine on the line? British Journal of Sports Medicine, 28, 3.

Stake, R. E. (1998). Case studies. In: N. K. Denzin, & Y. S. Lincoln (Eds.). Strategies of qualitative inquiry (pp. 86-109). Thousand Oaks, CA: Sage.

Stange, K. C., Miller, W. L., Crabtree, B. F., O'Connor, P. J., & Zyzanski, S. J. (1994). Multimethod research: Approaches to integrating qualitative and quantitative methods. Journal of General Internal Medicine, 9, 278-284.

Stevens, J. (1996). Applied multivariate statistics for the social sciences (3rd ed.). Mahwah, NJ: Erlbaum.

Stringer, E. T. (1996). Action research: A handbook for practitioners. Thousand Oaks, CA: Sage.

Taylor, A. H., & May, S. (1993). Development of a survey to assess athletes' sports injury rehabilitation beliefs. In Proceedings of the Annual European Society for Health Psychology Conference [Abstract], Brussels.

Taylor, A. H., & May, S. (1996). Threat and coping appraisal as determinants of compliance to sports injury rehabilitation: An application of protection motivation theory. Journal of Sports Sciences, 14, 471-482.

Theodorakis, Y., Beneca, A., Malliou, P., & Goudas, M. (1997). Examining psychological factors during injury rehabilitation. Journal of Sport Rehabilitation, 6, 335-363.

Theodorakis, Y., Malliou, P., Papaioannou, A., Beneca, A., & Filactakidou, A. (1996). The effect of personal goals, self-efficacy, and self-satisfaction on injury rehabilitation. Journal of Sport Rehabilitation, 5, 214-223.

Thoits, P. A. (1995). Stress, coping, and social support processes: Where are we ? What next ? Journal of Health and Social Behavior, (extra issue), 53-79.

Udry, E. (1996). Social support: Exploring its role in the context of athletic injuries. Journal of Sport Rehabilitation, 5, 151-163.

Udry, E. (1997). Coping and social support among injured athletes following surgery. Journal of Sport and Exercise Psychology, 19, 71-90.

Udry, E., Gould, D., Bridges, D., & Beck, L. (1997a). Down but not out: Athlete responses to season-ending injuries. Journal of Sport and Exercise Psychology, 19, 229-248.

Udry, E., Gould, D., Bridges, D., & Tuffey, S. (1997b). People helping people? Examining the social ties of athletes coping with burnout and injury stress. Journal of Sport and Exercise Psychology, 19, 396-417.

Uemukai, K. (1993). Affective responses and the changes in athletes due to injury. Proceedings of the Eighth World Sport Psychology Conference, Portugal (pp. 500-503). Lisbon: International Society of Sport Psychology.

Uitenbroek, D. (1996). Sports, exercise, and other causes of injuries: Results of a population survey. Research Quarterly for Exercise and Sport, 67, 380-385.

Vealey, R. S. (1994). Current status and prominent issues in sport psychology interventions. Medicine and Science in Sports and Exercise, 26, 495-502.

Vitaliano, P. P., DeWolfe, D. J., Maiuro, R. D., Russo, J., & Katon, W. (1990). Appraised changeability of a stressor as a modifier of the relationship between coping and depression: A test of the hypothesis of fit. Journal of Personality and Social Psychology, 59(3), 582-592.

Weinberg, R. (1992). Goal-setting and motor performance: A review and critique. In G. C. Roberts (Ed.), Motivation in sport and exercise (pp. 177-198). Champaign, IL: Human Kinetics.

Weiner, B. (1979). A theory of motivation for some classroom experiences. Journal of Educational Psychology, 71, 3-25.

Weinholtz, D., Kacer, B., & Rocklin, T. (1995). Salvaging quantitative research with qualitative data. Qualitative Health Research, 5, 388-397.

Weiss, M. R., & Troxel, R. K. (1986). Psychology of the injured athlete. Athletic Training, 21, 104-110.

Werner-Bland, J. A. (1980). Grief responses to long-term illness and disability. Virginia: Reston.

Wiese, D. M., & Weiss, M. R. (1987). Psychological rehabilitation and the physical injury: Implications for the sports medicine team. The Sport Psychologist, 1, 318-330.

Wiese-Bjornstal, D. M., & Smith, A. M. (1993). Counseling strategies for enhanced recovery of injured athletes within a team approach. In D. Pargman (Ed.), Psychological bases of sport injuries (pp. 149-183). Morgantown, WV: Fitness Information Technology.

Wiese-Bjornstal, D. M., Smith, A. M., & LaMott, E. E. (1995). A model of psychologic response to athletic injury and rehabilitation. Athletic Training: Sports Health Care Perspectives, 1(1), 17-30.

Wiese-Bjornstal, D. M., Smith, A. M., Shaffer, S. M., & Morrey, M. A. (1998). An integrated model of response to sport injury: Psychological and sociological dynamics. Journal of Applied Sport Psychology, 10, 46-69.

Winer, B. J. (1971). Statistical principles in experimental design. New York: McGraw Hill.

Worden, W. (1991). Grief counseling and grief therapy: A handbook for the mental health practitioner (2nd ed.). London: Routledge.

Worrell, T. W. (1992). The use of behavioral and cognitive techniques to facilitate achievement of rehabilitation goals. Journal of Sport Rehabilitation, 1, 69-75.

Yin, R. K. (1984). Case study research: Design and methods. Beverly Hills, CA: Sage.

Appendix 1 - PSYCHOLOGICAL RESPONSE TO SPORT INJURY INVENTORY

ITEM POOL

		Extremely Relevant				Extremely Irrelevant
1	***SHOCK AND DISBELIEF***					
1.	I experience a sort of physical numbness.	1	2	3	4	5
2.	I am unable to sit still.	1	2	3	4	5
3.	I have lost my appetite for food.	1	2	3	4	5
4.	I seem to lack co-ordination.	1	2	3	4	5
5.	I feel physically sick.	1	2	3	4	5
6.	I am taking pills for relief.	1	2	3	4	5
7.	I avoid meeting people.	1	2	3	4	5
8.	I feel detached from life.	1	2	3	4	5
9.	I feel a general sense of apathy.	1	2	3	4	5
10.	The impact of this injury is traumatic.	1	2	3	4	5
11.	I feel that I have to cope with the injury on my own.	1	2	3	4	5
12.	I am oblivious of my surroundings.	1	2	3	4	5
13.	I feel so restless.	1	2	3	4	5
14.	At present there is no joy for me.	1	2	3	4	5
15.	I am unable to enjoy myself.	1	2	3	4	5
16.	I can't believe that I have got this badly injured.	1	2	3	4	5
17.	I am devastated by the injury.	1	2	3	4	5
18.	I experience images of the injury occurring.	1	2	3	4	5
19.	My life has lost meaning.	1	2	3	4	5
20.	My world has fallen apart.	1	2	3	4	5
21.	My behaviour has become withdrawn.	1	2	3	4	5
22.	My behaviour is reserved.	1	2	3	4	5
23.	I am much quieter now.	1	2	3	4	5
24.	If possible I avoid contact with other people.	1	2	3	4	5
25.	I feel distant from other people.	1	2	3	4	5
2	***DENIAL***					
26.	I feel out of touch with reality.	1	2	3	4	5

27.	Tasks that were previously automatic require concentration.	1	2	3	4	5
28.	I find it difficult to concentrate for any length of time.	1	2	3	4	5
29.	My thoughts are preoccupied with the circumstances of my injury.	1	2	3	4	5
30.	I try to deny what has happened.	1	2	3	4	5
31.	I idealise the standard of my training and performances prior to the injury.	1	2	3	4	5
32.	I am confused as to why my injury happened.	1	2	3	4	5
33.	I can't understand what went wrong.	1	2	3	4	5
34.	I am unable to focus my attention away from people associated with my injury.	1	2	3	4	5
35.	I question why it happened to me.	1	2	3	4	5
36.	I feel as if I have been cheated by being injured.	1	2	3	4	5
37.	I have to fight the feeling of being useless.	1	2	3	4	5
38.	I am unable to relax.	1	2	3	4	5
39.	I am unable to show my feelings toward others.	1	2	3	4	5
40.	I am unable to express my feelings toward others.	1	2	3	4	5
41.	I avoid going to certain places.	1	2	3	4	5
42.	I find myself searching for something to do.	1	2	3	4	5
43.	I am emotionally drowning.	1	2	3	4	5
44.	I cannot face forming new relationships.	1	2	3	4	5
45.	I feel I have let people down.	1	2	3	4	5

3 ***ANGER***

46.	I find myself sweating without real cause.	1	2	3	4	5
47.	I am conscious of feelings of guilt.	1	2	3	4	5
48.	My attitude to my surroundings is aggressive.	1	2	3	4	5
49.	I feel a sense of hostility.	1	2	3	4	5
50.	I am very angry.	1	2	3	4	5
51.	Certain people are to blame for my injury.	1	2	3	4	5
52.	I envy other performers who never seem to get injured.	1	2	3	4	5

53.	I feel resentful.	1	2	3	4	5
54.	I have been cheated.	1	2	3	4	5
55.	I can't help but feel bitter.	1	2	3	4	5
56.	I'm just not getting the support I need .	1	2	3	4	5
57.	Being injured is so frustrating.	1	2	3	4	5
58.	I feel rebellious.	1	2	3	4	5
59.	I am aggrieved at what has happened.	1	2	3	4	5
60.	I feel as if I am being tormented.	1	2	3	4	5
61.	My behaviour is more aggressive.	1	2	3	4	5
62.	I am hostile to other people.	1	2	3	4	5
63.	At times I cannot suppress my anger.	1	2	3	4	5
64.	I feel violent.	1	2	3	4	5
65.	I find myself throwing things in anger.	1	2	3	4	5
66.	I am irritable and agitated.	1	2	3	4	5
67.	At times I am hyperactive.	1	2	3	4	5
68.	My friends and fellow performers are not being supportive.	1	2	3	4	5
69.	I feel stigmatised.	1	2	3	4	5
70.	Socially I feel like an outcast.	1	2	3	4	5
71.	I don't feel like mixing with other performers.	1	2	3	4	5

4 DESPAIR

72.	I seem to lack my usual strength and power.	1	2	3	4	5
73.	I feel helpless.	1	2	3	4	5
74.	I feel totally dejected.	1	2	3	4	5
75.	I suffer from mood swings.	1	2	3	4	5
76.	I wonder if all the training has been worthwhile.	1	2	3	4	5
77.	I have noticed a reduction in my pain threshold.	1	2	3	4	5
78.	I find myself crying more than usual.	1	2	3	4	5
79.	I suffer from increased levels of tension.	1	2	3	4	5
80.	I get emotional when I think about my injury.	1	2	3	4	5
81.	I experience a feeling of emptiness.	1	2	3	4	5
82.	I feel physically exhausted for no apparent reason.	1	2	3	4	5
83.	I seem to lack energy and feel tired.	1	2	3	4	5
84.	I feel as though I have lost weight.	1	2	3	4	5
85.	I have put weight on.	1	2	3	4	5
86.	I find it difficult to digest my food.	1	2	3	4	5
87.	I seem to get headaches for no apparent					

	reason.	1	2	3	4	5
88.	I feel a sense of sadness.	1	2	3	4	5
89.	I feel a sense of despair.	1	2	3	4	5
90.	I feel depressed when I think about the injury and its possible consequences.	1	2	3	4	5
91.	At times I feel panic-stricken.	1	2	3	4	5
92.	I lack purpose.	1	2	3	4	5
93.	My sense of well-being has decreased.	1	2	3	4	5
94.	I feel as if I have lost control.	1	2	3	4	5
95.	I have difficulty accepting I am injured.	1	2	3	4	5
96.	I have lost my personal identity.	1	2	3	4	5
97.	I have difficulty accepting I am injured.	1	2	3	4	5
98.	My life is in a state of crisis.	1	2	3	4	5
99.	The security and safety I had in my life has been affected.	1	2	3	4	5
100.	I can't help feeling depressed.	1	2	3	4	5
101.	I get unduly upset by things unrelated to my injury.	1	2	3	4	5
102.	I can't help feeling everything is so meaningless.	1	2	3	4	5
103.	The situation is hopeless.	1	2	3	4	5
104.	I just can't function effectively at the moment.	1	2	3	4	5
105.	I have lost my self-concept.	1	2	3	4	5
106.	I have irrational thoughts.	1	2	3	4	5
107.	I am unable to cope with my injury.	1	2	3	4	5
108.	I am unusually anxious.	1	2	3	4	5
109.	In my mind I offer bargains and trade offs for the injury to go away.	1	2	3	4	5
110.	I experience nervousness.	1	2	3	4	5
111.	I wonder how I will make it through another day.	1	2	3	4	5
112.	I feel anguish.	1	2	3	4	5
113.	I am more disorganised than previously.	1	2	3	4	5
114.	At times my behaviour is self-destructive.	1	2	3	4	5
115.	My behaviour is inhibited.	1	2	3	4	5
116.	I have increased my consumption of alcohol.	1	2	3	4	5
117.	It is difficult to be decisive.	1	2	3	4	5
118.	It is difficult to be decisive.	1	2	3	4	5
119.	I find it difficult to use my own initiative.	1	2	3	4	5
120.	I lack motivation.	1	2	3	4	5

121. My behaviour is irrational. 1 2 3 4 5
122. I feel avoided by friends. 1 2 3 4 5
123. I feel deserted. 1 2 3 4 5
124. I feel cut off and isolated from team-mates/fellow athletes. 1 2 3 4 5
125. Team-mates and friends seem to have lost interest me. 1 2 3 4 5

5 REORGANISATION

126. I am seeking support from friends. 1 2 3 4 5
127. I have regained control. 1 2 3 4 5
128. I am beginning to feel like myself again. 1 2 3 4 5
129. I can talk about my injury without feeling uncomfortable. 1 2 3 4 5
130. I feel mentally much stronger. 1 2 3 4 5
131. I have regained my inner emotional strength. 1 2 3 4 5
132. I am able to put my injury into perspective. 1 2 3 4 5
133. I focus my attention on meeting people associated with my sport. 1 2 3 4 5
134. I feel philosophical about the experience of my injury. 1 2 3 4 5
135. I have much more confidence in myself. 1 2 3 4 5
136. Physically I feel a lot stronger. 1 2 3 4 5
137. I am able to relax. 1 2 3 4 5
138. Friends are supporting me. 1 2 3 4 5
139. I feel positive about my sport. 1 2 3 4 5
140. I feel secure. 1 2 3 4 5

Appendix 2

Model Testing Results - Parameter Estimates

PRSII Subscale Items	Model 2			Model 3		
	St. Errors	λ	t values	St. Errors	λ	t values
Devastation						
I am devastated by the injury.	0.052	0.54	11.09	0.053	0.55	11.00
I experience a feeling of emptiness.	0.050	0.61	12.54	0.053	0.59	11.80
I have difficulty accepting I am injured.	0.060	0.34	6.83	0.061	0.33	6.31
My world has fallen apart.	0.053	0.51	10.36	0.055	0.52	10.38
Dispirited						
I am aggrieved at what has happened.	0.052	0.53	10.92	0.053	0.53	10.86
I feel a sense of apathy.	0.060	0.31	6.48	0.061	0.30	6.14
I lack motivation.	0.055	0.47	9.79	0.055	0.47	9.59
Socially I feel like an outcast.	0.054	0.47	9.78	0.054	0.48	9.89
Reorganisation						
I have much more confidence in myself.	-0.054	-0.50	-10.10			
I am beginning to feel like myself again.	-0.053	-0.54	-10.84			
I suffer from increased tension.	0.054	0.52	10.47			
I am seeking support from friends.	0.063	0.24	4.76			
Attempts to Rationalise						
I can't help but feel bitter.	0.052	0.62	12.41	0.052	0.63	12.53
I cannot work out why my injury happened.	0.063	0.22	4.25	0.063	0.23	4.29
I have been cheated.	0.057	0.43	8.42	0.057	0.43	8.45
I feel as if I have been cheated by being injured.	0.053	0.57	11.26	0.053	0.57	11.45
Isolation						
I am unable to enjoy myself.	0.050	0.59	12.33	0.052	0.58	11.79
I am unable to relax.	0.049	0.62	13.12	0.049	0.64	13.21
I don't feel like mixing with other performers.	0.050	0.59	12.25	0.051	0.59	12.09
I am unusually anxious.	0.050	0.58	12.09	0.052	0.58	11.71

Note: Since the standard error scores provided by Lisrel 8 are not completely standardised, the values presented here have been re-scaled.

Appendix 3

Sport Injury Rehabilitation Beliefs Survey

The words "rehabilitation programme" should be read to mean any advice that you are given in order to assist the rehabilitation of your injury. Please respond to the following statements using the scale shown below, by circling the appropriate point on the scale.

Name: _____ Date: _____

	Very strongly disagree	Strongly disagree	disagree	Neither agree nor disagree	agree	Strongly agree	Very strongly agree
1. My recovery from injury may be hindered if I do not complete the rehabilitation programme.	1	2	3	4	5	6	7
2. In order to prevent a recurrence of this injury, my rehabilitation programme is essential.	1	2	3	4	5	6	7
3. The way to prevent my injury from worsening will be to follow my rehabilitation programme.	1	2	3	4	5	6	7
4. A successful and lasting recovery may not be possible if I do not complete my rehabilitation programme.	1	2	3	4	5	6	7
5. I am making it more likely that I will be re-injured by not doing what my rehabilitation programme involves.	1	2	3	4	5	6	7
6. The rehabilitation programme designed for me will ensure my complete recovery from this injury.	1	2	3	4	5	6	7
7. Completion of my rehabilitation programme will guarantee that I recover from my injury.	1	2	3	4	5	6	7
8. Following the advice that I have been given will have a very large impact upon how quickly I recover from this injury.	1	2	3	4	5	6	7
9. I have absolute faith in the effectiveness of my rehabilitation programme.	1	2	3	4	5	6	7
10. I am very capable of successfully completing all aspects of my rehabilitation programme even if it involves being less active, or something which may be discomforting.	1	2	3	4	5	6	7
11. I consider myself to be able to stick to my rehabilitation programme even though it may include activities which I do not enjoy.	1	2	3	4	5	6	7
12. I will have no serious difficulties in following the instructions of my rehabilitation programme.	1	2	3	4	5	6	7
13. I believe that I will stick with my rehabilitation programme despite any difficulties I may encounter.	1	2	3	4	5	6	7
14. Being fully recovered from injury is extremely important to me.	1	2	3	4	5	6	7
15. As injuries go, mine is serious.	1	2	3	4	5	6	7
16. Isee this injury as a serious threat to my sport / exercise involvement.	1	2	3	4	5	6	7
17. I fear that this injury will affect my long term sports involvement.	1	2	3	4	5	6	7
18. This injury is too serious to not follow medical advice.	1	2	3	4	5	6	7
19. Injuries like this are minor interruptions to my sport / exercise involvement.	1	2	3	4	5	6	7

NB (not on survey) Items 1-5 susceptibility, 6-9 treatment efficacy, 10-13 self-efficacy, 14 rehabilitation value, 15-19 severity

Appendix 4

Psychological Responses to Sport Injury Inventory

Name: _____ Date: _____

This inventory contains a number of statements about the experience of injury. Read each statement and indicate by circling the relevant point on the scale, the extent to which the statement reflects how you presently feel. There are no right or wrong answers, so please answer honestly. The information will be treated in strictest confidence.

		Strongly Agree				Strongly Disagree
1.	I can't help but feel bitter.	5	4	3	2	1
2.	I cannot work out why my injury happened.	5	4	3	2	1
3.	I have been cheated.	5	4	3	2	1
4.	I have much more confidence in myself.	5	4	3	2	1
5.	I am aggrieved at what has happened.	5	4	3	2	1
6.	I am beginning to feel like myself again.	5	4	3	2	1
7.	I am devastated by the injury.	5	4	3	2	1
8.	I feel as if I have been cheated by being injured.	5	4	3	2	1
9.	I feel a sense of apathy.	5	4	3	2	1
10.	I lack motivation.	5	4	3	2	1
11.	I am unable to enjoy myself.	5	4	3	2	1
12.	I am unable to relax.	5	4	3	2	1
13.	I don't feel like mixing with other performers.	5	4	3	2	1
14.	I am unusually anxious.	5	4	3	2	1
15.	Socially I feel like an outcast.	5	4	3	2	1
16.	I experience a feeling of emptiness.	5	4	3	2	1
17.	I suffer from increased tension.	5	4	3	2	1
18.	I have difficulty accepting I am injured.	5	4	3	2	1
19.	I am seeking support from friends.	5	4	3	2	1
20.	My world has fallen apart.	5	4	3	2	1

Scoring (does not appear on inventory)

Sub-scale scores are calculated by adding the scores indicated on the inventory for the items which comprise each sub-scale. Sub-scale scores should range from a low of 4 to a high of 20.

Devastation; items 7, 16, 18, 20
Reorganisation; items 4, 6, 17*, 19*
Isolation; items 11, 12, 13, 14
Dispirited; items 5, 9, 10, 15
Attempts to Rationalise; items 1, 2, 3, 8

* Denotes reversed item.

Appendix 5

Injury Goal-Setting Intervention Study

Interview Guide

Introduction

Having already participated in the first study you will be aware that I have been doing some research into psychological responses and rehabilitation adherence of injured performers. As I said when I spoke to you on the phone, I am now conducting a number of interviews with people who have taken part in the study to more fully explore some of the information that I have obtained. If you like, to get a better understanding of peoples injury experiences.

It is important that you know that the information gained from this study will used to make people who work with injured performers more aware of the psychological effects of injury. To this end the information gained from this study will be communicated via academic journals, conferences, and lectures. I must however emphasize that the data gained from the study will be completely confidential and although direct quotes may be used from the interview, your identity will remain anonymous.

As a possible interview participant it is also important that you are aware that you have a number of rights. Firstly, your participation in this interview is entirely voluntary, and you are free to refuse to answer any question at any time, or curtail the interview at any stage. There are no right or wrong answers to the questions, and the interview has been designed to try not to lead you or bias you in terms of your responses. The purpose of the interview is to learn as much as possible from your experiences. To this end, please take as much time as you want in responding to any question. If you are uncertain about any question and wish me to clarify what is being asked then please ask me to do so. If there are any questions which you would prefer not to answer then just indicate "I'd rather not comment" and I'll move on. It is important you do not attempt to second guess any questions. By that I mean provide an answer that you may think I would like you to provide. Please take as much time as you want in responding to any question.

If you have any questions at any stage of the interview please do not hesitate to ask them. Do you have any questions about anything I've said so far? The interview is structured into four sections, which focus on different aspects of your

injury experience. There is an initial section on demographic / factual information, a section on the psychological and emotional aspects of injury, a section specifically related to your rehabilitation, a section on social support, and a final section to explore any other important aspects of your injury. Okay then if I just reiterate the focus of the interview we can get started. As I said earlier, I am interested in your experiences during your recent injury, particularly, your responses to the injury and throughout your rehabilitation. This includes factors which may have affected your rehabilitation from injury, and your adherence to your rehabilitation programme.

Demographics

First of all just a few questions about your sporting involvement and your injury.

On average approximately how many hours per week did you spend prior to the injury, training for, or participating in sport?

Has that changed since the injury? How? Why

How important is your participation / involvement in sport?

What is your current injury status? Do you have any on-going symptoms?

So have you fully not fully recovered from the injury?

Approximately how long was it between the injury occurring and your full return to participation sport?

Psychological Emotional Responses to Injury

I'd like to ask you now about the types of psychological and emotional reactions you experienced as a result of the injury, from the time it occurred, to your return to full participation.

- Could you to describe for me the psychological and emotional responses you experienced, in as much detail as possible? Take your time and try to think of how you felt, the emotions you experienced, your mood.

Probe: You might find it easiest to start at the point you got injured and move through from there.

- How did these change over time / so these changed over time, how?

Probe: Was change in relation to the intensity? or did it involve different emotions, moods etc.? Could you describe these? What caused these changes?

- Did you experience any major set-backs during your rehab.? / So you experienced some major set-backs during your rehab. (if stated in response to previous question).
- What emotions did you experience during these set-backs?

Probe: Were there any specific psychological aspects associated with these set-backs? How did you feel, what were your moods like?

- What, if anything, determined how well you coped with the injury?

Probe: What did you do in order to deal with your experience / what you were experiencing? Did you have some sort of strategy?

- And, with the set-backs, how did you cope with these?

During the period of your injury and rehabilitation, what sort of thing affected the way you felt on a daily basis (how you felt, what you did, your mood)?

Probe: What sort of things do you associate with good days and bad days?
Describe a good day ... and a bad day?

- How would you describe to someone who was recently injured what they should expect to experience as a result of being injured? Take your time.

Probe: How they'll feel. The difficulties they'll experience.

Injury Rehabilitation

I'd now like to ask you now about specific features of your rehabilitation.

- Can you describe for me your rehabilitation?

Probe: You could start with the rehab. programme (exercises) itself.
Probe: How did you find this / these?

- How did you feel about your rehabilitation?

Probe: Your progress?
Probe: Who did you feel was in control of it?
Probe: To what extent did you adhere to the exercises / programme?
Probe: Can you tell me about some of the things that influenced your adherence to the programme?

- What about the psychological and emotional responses you described earlier, what effect did these have upon your rehabilitation? ... Or did your rehabilitation, and how it was going determine how you felt? (if not stated in response to previous question).

- What about rehabilitation goals / targets?

Probe: Did you have any?
Probe: And who set these, did you discuss them with anyone?
Probe: Can you describe them for me?
Probe: How did you feel about them?
Probe: Do you consider they - had any affect on your rehabilitation, on the way you felt / would have had any affect on your rehabilitation, on the way you felt, on your progress?
Probe: What type of affect?
Probe: How important do you consider them to be?

- To what extent was rehabilitating quickly and getting back to sport a priority?

Probe: What motivated you to get back?

Probe: How did this affect your rehabilitation?

- Was there anything else in relation to your rehabilitation, that you think we haven't discussed?

Probe: Either in terms of your adherence, your psychological and emotional responses, or even your treatment?

- Just two further questions before we move onto the final section. Based on your experiences, what advice would you have for other injured performers that might help their rehabilitation? Take your time.

Probe: things that worked well for you, things you would advise against?

Similarly, based on your injury experience what advice would you give to doctors and physiotherapists involved in the treatment and rehabilitation of injured performers?

Social Support

I'm interested now in the help, or if you like, support you received from other people during the time you were injured.

- What sort of help or support did people provide?
- Who provided this?
- How did you feel about the amount of help or support you received?

Probe: Did it differ from normal in any way?

- What type of help or support would you have found useful, but didn't get from anyone?

Probe: Was this important? Did it affect you in any way?

- How much help or support would you normally get from other people?

Probe: From friends, family, team mates. Do you normally look to other people for support / help?

- Could you describe for me any other type of help / support you feel you would have benefited from?

Probe: And, was it available?
Probe: Is this the type of support that you think other injured performers would benefit from?

Overall Experience of Injury

I've just got a few general questions to conclude.

- Could you describe for me anything positive that you associate with your injury?
- Similarly, what are the negative features you associate with being injured?
- Finally, is there anything else I should know about, or I should ask you about, in order to understand what you felt, thought, and did, while you were injured, and rehabilitating?

Probe: E.g., what motivated you, what helped, what hindered etc.

Conclusion

Well, we've discussed a lot of things in relation to your injury, do you feel there is anything we haven't discussed that would be relevant to the overall context of your injury experience.

I will now go away and get the interview transcribed / typed. Once that has been done I'll send you a copy of the interview and if you could read it, I'll give you a ring to check that you're happy that it accurately reflects how you felt. At that stage I can add anything you think needs to be added, or omitted.

In the meantime if anything comes to mind once I have gone, I would really appreciate a call.

Thanks very much for sparing the time to assist my research. Its been invaluable.